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

August 5, 2016

Mr. Michael R. Chisum
Site Vice President
Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED INSPECTION REPORT 05000382/2016002

Dear Mr. Chisum:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3. On July 14, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented four findings of very low safety significance (Green) in this report. All 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 NRC 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Waterford Steam Electric Station.

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 Regional Administrator, Region IV; and the NRC resident inspector at the Waterford Steam Electric Station.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, “Public Inspections, Exemptions, Requests for Withholding,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public Document Room or from the Publicly Available Records (PARS) component of the NRC's

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Sincerely,

/RA/

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

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

Enclosure:
Inspection Report 05000382/2016002
w/ Attachment: Supplemental Information

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Letter to Michael R. Chisum from Geoffrey Miller dated August 5, 2016

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED INSPECTION REPORT 05000382/2016002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000382
License:	NPF-38
Report:	05000382/2016002
Licensee:	Entergy Operations, Inc.
Facility:	Waterford Steam Electric Station, Unit 3
Location:	17265 River Road Killona, LA 70057
Dates:	April 1 through June 30, 2016
Inspectors:	F. Ramírez, Senior Resident Inspector C. Speer, Resident Inspector P. Elkmann, Senior Emergency Preparedness Inspector
Approved By:	Geoffrey Miller Chief, Projects Branch D Division of Reactor Projects

SUMMARY

IR 05000382/2016002; 04/01/2016 – 06/30/2016, Waterford Steam Electric Station, Unit 3; Maintenance Effectiveness, Maintenance Risk Assessments and Emergent Work Control, Maintenance of Emergency Preparedness, and Problem Identification and Resolution.

The inspection activities described in this report were performed between April 1 and June 30, 2016, by the resident inspectors at Waterford Steam Electric Station and inspectors from the NRC's Region IV office and other NRC offices. Four findings of very low safety significance (Green) are documented in this report. All of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." 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."

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 6.8, "Procedures and Programs," associated with the licensee's failure to properly pre-plan and perform maintenance on safety-related components in accordance with EN-DC-335, "Preventative Maintenance Basis Template." Specifically, the licensee did not follow the required preventive maintenance basis template for the safety-related cable vault and switchgear ventilation system, and was performing vibration monitoring of these components on an 18-month frequency instead of the required 3-month frequency. As a result, the licensee was deviating from the industry standard preventive maintenance recommendations without documented technical bases, and the required preventive maintenance tasks on these safety-related components were not performed. The licensee entered this condition into their corrective action program as condition report CR-WF3-2016-02353. The licensee restored compliance by assigning the proper preventive maintenance activities for the components in this system and instituting the appropriate frequency. In addition, a maintenance scope review is being performed.

  The performance deficiency was more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, actions to detect, preclude and address degradation of the safety-related components were delayed. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low significance (Green) because all the screening questions in Exhibit 2 – "Mitigating Systems Screening Questions" were answered 'No'.

  The finding had an Identification cross-cutting aspect in the area of Problem Identification and Resolution because individuals did not identify issues completely, accurately, and in a timely manner in accordance with the corrective action program. Specifically, during previous vibration tests, the licensee had opportunities to identify the incorrect classification of the preventive maintenance task but did not do so [P.1]. (Section 1R12)

- Green. The inspectors identified a non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," section (a)(4) because the licensee did not properly assess and manage risk associated with maintenance on the dry cooling tower fans train B. Specifically, the licensee failed to adequately assess risk and take appropriate risk management actions when replacing a logic card associated with the dry cooling tower train B fans. As a result, an electrical transient occurred that caused unexpected valve movements in component cooling water and auxiliary component cooling water train B systems, an unexpected start of the auxiliary component cooling water pump train B, and the unexpected shutdown of essential chiller train AB. The licensee entered this issue into their corrective action program as condition report CR-WF3-2016-04084. Corrective actions included reassessing the risk associated with the maintenance and identifying appropriate risk management actions to use when performing similar maintenance activities in the future.

  The inspectors determined that the performance deficiency was more than minor because it was associated with the Configuration Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to take appropriate risk management actions resulted in unexpected valve movements, an unexpected start of auxiliary component cooling water pump B, and an unplanned entry into Technical Specification 3.7.4, "Ultimate Heat Sink." The inspectors used Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, Flowchart 2, "Assessment RMAs," and determined the need to calculate the incremental core damage probability to determine the significance of this issue. The Waterford probabilistic risk assessment model yielded an incremental core damage probability, or actual increase in risk during this work window, of 1.5×10^{-8}. In accordance with Flowchart 2 in Appendix K, because the incremental core damage probability was less than 1×10^{-6}, the finding screened as having very low safety significance (Green).

  This finding had a Procedure Adherence cross-cutting aspect in the area of Human Performance because individuals did not follow processes, procedures and work instructions. Specifically, the licensee did not assess and manage the risk associated with the maintenance in accordance with EN-WM-104, "On Line Risk Assessment" [H.8]. (Section 1R13)

- Green. A self-revealing, Green, non-cited violation of Technical Specification 6.8, "Procedures and Programs," occurred because the licensee did not establish adequate procedures for the operation of the emergency diesel generators. Specifically, prior to July 7, 2015, the licensee's procedure for operating the emergency diesel generators allowed lube oil pressure to be maintained low enough to activate a design feature of the starting air system that injects starting air into the diesel cylinders, which could damage the emergency diesel generator turbocharger. The licensee entered this issue into their corrective action program as condition report CR-WF3-2015-04459. The corrective action taken to restore compliance was to increase the procedure requirement for operating lube oil pressure from 35 psig to 45 psig.

  The inspectors concluded that the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems

cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedural allowance to run the emergency diesel generator lube oil pressure at the starting air injection setpoint could have resulted in the failure of the emergency diesel generators when they were called upon to perform their safety function. The inspectors used NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," to determine the significance of the finding. The inspectors determined that the finding required a detailed risk evaluation because it represented the loss of a system or function. The detailed risk evaluation determined that the finding is of very low safety significance (Green). The senior reactor analyst estimated the increase in core damage frequency to be 4.6E-7/year and the increase in large early release frequency to be 3.9E-8/year. Dominant core damage sequences were medium break losses of coolant accidents and steam generator tube ruptures with associated losses of off-site power. Core damage was mitigated by the remaining emergency diesel generator.

This finding had an Evaluation cross-cutting aspect in the area Problem Identification and Resolution, because the licensee did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the licensee's previous evaluation performed for operating the emergency diesel generators with low lube oil pressures did not thoroughly evaluate the risk associated with the starting air system [P.2]. (Section 4OA2)

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a non-cited violation of 10 CFR 50.54(q)(2), which requires a power reactor licensee to follow and maintain the effectiveness of the site emergency plan. Specifically, Waterford Steam Electric Station, Unit 3, failed to conduct two proficiency drills in calendar year 2015 as required by the Site Emergency Plan, Revision 46, Section 8.1.2.4. The licensee has initiated work tracker surveillances to ensure all drills required in 2016 are performed.

  The issue is more than minor because the finding was associated with the Emergency Response Organization Performance attribute and adversely affected the Emergency Preparedness cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 23, 2014, and was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was not a risk-significant planning standard function, and was not a lost or degraded planning standard function. The inspectors determined that the finding had a Work Management cross-cutting aspect in the area of Human Performance, because the emergency preparedness department did not properly schedule, oversee, and manage required activities [H.5]. (Section 1EP5)

PLANT STATUS

The Waterford Seam 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

1R01 Adverse Weather Protection (71111.01)

Summer Readiness for Off-site and Alternate AC Power Systems

a. Inspection Scope

On April 16, 2016, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors walked down the switchyard to observe the material condition of equipment providing off-site power sources. The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walk-Down

a. Inspection Scope

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

- On April 15, 2016, shield building ventilation train B following extended maintenance
- On April 22, 2016, essential chilled water train A with train B out of service
- On April 26, 2016, temporary emergency diesel generators with emergency diesel generator train A out of service

- On May 15, 2016, emergency diesel generator train A with train B out of service

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 were correctly aligned for the existing plant configuration.

These activities constituted four partial system walk-down samples 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 five plant areas important to safety:

- On April 16, 2016, fire area RAB 8B, switchgear room B
- On May 9, 2016, fire area RAB 16, emergency diesel generator room 3A
- On May 9, 2016, fire area RAB 32, auxiliary component cooling water room and pipe penetration area
- On May 9, 2016, fire area RAB 41, diesel oil storage tank B
- On May 19, 2016, fire area RAB 8A, switchgear room A

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 five quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On May 11, 2016, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose the shutdown cooling heat exchanger rooms and plant areas containing risk-significant structures, systems, and components that were susceptible to flooding.

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constituted completion of one flood protection measures sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On May 4, 2016, the inspectors completed an inspection of the readiness and availability of risk significant heat exchangers. The inspectors observed the licensee's inspection of the turbine closed cooling water heat exchangers A and B and the material condition of the heat exchanger internals. Additionally, the inspectors walked down the turbine closed cooling water heat exchangers A and B to observe its performance and material condition.

These activities constituted completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

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 June 22, 2016, the inspectors observed simulator training and scenario validation for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the validation.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On May 24, 2016, 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 turbine controls and feedwater controls being in manual following an electrical transient. The inspectors observed the operators' performance of the following activities:

- alarm response and diagnostics
- shift briefings
- field communications

In addition, the inspectors assessed the operators' adherence to plant procedures, including EN-OP-115, "Conduct of Operations" 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)

a. Inspection Scope

On April 14, 2016, the inspectors reviewed one instance of degraded performance of the safety-related cable vault and switchgear room ventilation air handling unit. The inspectors reviewed the extent of condition of possible common cause structures, systems, and component 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 structures, systems, and components. 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 April 12, 2016, 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 preventative maintenance for structures, systems, and components. The inspectors verified that the periodic evaluation had been completed

within the time constrains 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 practicable 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

Introduction. The inspectors identified a Green, non-cited violation of Technical Specification 6.8, "Procedures and Programs," associated with the licensee's failure to properly pre-plan and perform maintenance on safety-related components in accordance with EN-DC-335, "Preventative Maintenance Basis Template."

Description. On April 14, 2016, licensee maintenance personnel took vibration data on the cable vault and switchgear area ventilation air handling unit, AH-25. The purpose of the cable vault and switchgear area ventilation system is to maintain a suitable operating environment for safety-related electrical equipment, battery, and cable areas during normal plant operations and accident conditions. The vibration measurements were taken as part of a preventive maintenance task. When operations personnel reviewed the data, they determined that the air handling unit's vibrations, which read 0.56 inches per second (ips) had exceeded the predictive maintenance program alert and alarm limits of 0.32 ips and 0.4 ips. Due to the increased vibrations the site performed an operability evaluation and replaced the air handling unit's outboard bearings to address the vibrations.

During a review of the maintenance program for the cable vault and switchgear area ventilation system, the inspectors noted that AH-25 was classified as a high critical component. Per the licensee's preventive maintenance template, vibration data should have been taken every 3 months. However, the task to take vibration data was assigned a test frequency for a non-critical component. The inspectors identified that even though AH-25 was classified appropriately, the preventive maintenance tasks associated with that component had not been identified as such. As a result, the licensee was taking AH-25 vibration data every 18 months. The vibrations exceeded the predictive maintenance alert and action limits, but the fan was not submitted to increased-frequency testing and monitoring that otherwise would have occurred if the vibration data was taken every 3 months. Further, the inspectors identified that in January 2015, during the prior 18-month preventive maintenance task, vibration measurements were also higher than expected, however, the licensee did not document the issue in a condition report.

In their review of the issue, the licensee found that as part of a maintenance optimization program in 2008, they had changed the classification of the cable vault and switchgear area ventilation system from non-critical to critical. However, the maintenance tasks associated with these components were not updated to match the new classification. Consequently, the licensee was deviating from established industry recommendations without documented technical bases. The inspectors noted this practice was not in accordance with site procedure EN-DC-335, "PM Basis Template."

When the licensee performed an extent of condition review, 15 other components in the cable vault and switchgear ventilation system were identified as having a high critical classification. In addition to other air handling units, the list included breakers and motors in that system. However, those components' tasks also were also given maintenance frequencies associated with non-critical components. Following this discovery, the licensee is performing a maintenance scope review since the preventative maintenance basis template for these 16 components, might require additional preventive maintenance tasks after they are properly classified. For example, for air handling equipment, in addition to the vibration monitoring task, the preventative maintenance basis template requires filter clean and inspection, external visual inspection, performance monitoring, and system functional tests that might not have been performed at the right frequency or at all.

Analysis. The failure to pre-plan and perform preventative maintenance on safety-related components in accordance with EN-DC-335, "Preventative Maintenance Basis Template," was a performance deficiency which was reasonably within the licensee's ability to foresee and correct. The performance deficiency was more than minor, and therefore is a finding, because it affects the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, by incorrectly assigning the preventive maintenance code to maintenance tasks, the licensee did not perform the specified preventive maintenance and tests at the frequency required by the licensee's preventive maintenance process. As a result, actions to detect, preclude and address degradation of the safety-related components were delayed.

The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2 – "Mitigating Systems Screening Questions," the inspectors determined that the finding was of very low significance (Green) because it did not affect the design or qualification of a mitigating structure, system and component (and the structure, system and component maintained its operability), it did not represent a loss of safety function, it did not represent an actual loss of function of at least a single train for greater than its Technical Specification outage time, and it did not represent an actual loss of function of one or more non-Technical 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 Identification cross-cutting aspect in the area Problem Identification and Resolution because individuals did not identify issues completely, accurately, and in a timely manner in accordance with the corrective action program. Specifically, during previous vibration tests, the licensee had opportunities to identify the incorrect classification of the preventive maintenance task but did not do so [P.1].

Enforcement. Technical Specification 6.8, "Procedures and Programs," Section 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 procedure EN-DC-335, "PM Basis Template," Revision 6, to satisfy this requirement. EN-DC-335, Step 5.2.6 states that Fleet Preventative Maintenance Basis Templates can deviate from established EPRI or Industry Standard Preventive Maintenance recommendations provided the technical bases for the differences are documented within the preventative maintenance template.

Contrary to the above, prior to April 13, 2016, the licensee deviated from established EPRI preventive maintenance recommendations and did not provide, nor document within the preventative maintenance template, the technical bases for the differences. Specifically, the licensee did not follow the required preventive maintenance template for the safety-related cable vault and switchgear ventilation system, and was performing vibration monitoring of these components on an 18-month frequency instead of the required 3-month frequency. As a result, actions to detect, preclude and address degradation of the fan and other system components were delayed. The licensee entered this condition into their corrective action program as condition report CR-WF3-2016-02353. The licensee restored compliance by properly classifying the preventive maintenance activities for the components in this system and instituting the proper frequency. In addition, the licensee will perform a maintenance scope review.

Because this violation was of very low safety significance and the licensee entered the issue into their corrective action program, this violation is treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000382/2016002-01, "Failure to Properly Pre-Plan and Perform Maintenance on the Cable Vault and Switchgear Ventilation System."

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

a. Inspection Scope

The inspectors reviewed two risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- On April 18, 2016, planned yellow risk due to emergency diesel generator test and circulating water system maintenance
- On June 1, 2016, planned yellow risk due to work in the switchyard

The inspectors verified that these risk assessments were 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 assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

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

- On April 18, 2016, emergent replacement of dry cooling tower logic cards
- On May 16, 2016, emergent yellow risk due to inoperability of battery bank 3B-S

- On June 3, 2016, emergent work on heater drain pump B
- On June 23, 2016, emergent work on main feedwater regulating valve #2

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 structures, systems, and components.

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

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," section (a)(4) because the licensee did not properly assess and manage risk associated with maintenance on dry cooling tower train B fans. Specifically, the licensee failed to adequately assess risk and take appropriate risk management actions when replacing a logic card associated with dry cooling tower train B fans. As a result, an electrical transient occurred that caused unexpected valve movements in component cooling water and auxiliary component cooling water train B systems, an unexpected start of auxiliary component cooling water pump train B, and the unexpected shutdown of essential chiller AB.

Description. On March 22, 2016, the licensee replaced a logic card associated with the dry cooling tower train B fans. The card is electrically daisy-chained with two other logic cards and together provide controls for component cooling water and auxiliary component cooling water flow to essential chiller train B. While inserting the card, an electrical transient occurred resulting in spurious actuation of the card and the associated daisy-chained cards. The actuations resulted in unexpected valve movements in component cooling water and auxiliary component cooling water train B systems, an unexpected start of auxiliary component cooling water pump train B, and the unexpected shutdown of essential chiller AB, which was aligned to train B at the time.

The licensee previously entered Technical Specification 3.7.3, "Component Cooling Water and Auxiliary Component Cooling Water Systems" for separate maintenance and remained in the applicable technical specifications until the affected equipment was restored to service. The dry cooling tower fan logic card work alone would not have led the licensee to enter any technical specifications. Prior to performing the work, the licensee performed a risk assessment and determined that the work was of normal risk and no additional risk management actions were needed.

The inspectors noted that licensee procedure EN-WM-104, "On Line Risk Assessment," Revision 12, step 5.2[1](a) required that a risk assessment be performed when any system, structure, or component in its scope is taken out of service for planned or emergent maintenance activities. Further, EN-WM-104 provides a list of mitigating actions to consider for such elevated risk conditions. The inspectors also noted that

Attachment 9.3 of EN-WM-104 specifically directs the licensee to consider elevated risk when working on energized components that are electrically daisy-chained.

The inspectors determined that the licensee did not assess risk in accordance with EN-WM-104 and did not apply appropriate risk mitigating actions for the dry cooling tower card maintenance. The licensee subsequently re-assessed the risk associated with the replacement of daisy-chained dry cooling tower logic cards and will categorize the work as high risk for future maintenance activities. As a result, the licensee will take risk management actions for future dry cooling tower logic card maintenance to prevent impacts to the plant, including manually placing the associated component cooling water and auxiliary component cooling water valves in their expected position prior to the maintenance to prevent inadvertent configuration changes. In addition, the licensee will enter Technical Specification 3.7.4, "Ultimate Heat Sink" for the work.

Analysis. The inspectors determined that the licensee's failure to properly assess and manage risk associated with maintenance on logic cards associated with the dry cooling tower train B fans was a performance deficiency. The inspectors determined that the performance deficiency was reasonably within the licensee's ability to foresee and correct. The performance deficiency was more than minor, and therefore a finding, because it was associated with the Configuration Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to take appropriate risk management actions resulted in unexpected valve movements, an unexpected start of the auxiliary component cooling water pump train B, and an unplanned entry in Technical Specification 3.7.4, "Ultimate Heat Sink."

The inspectors used Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, Flowchart 2, "Assessment Risk Management Actions," and determined the need to calculate the incremental core damage probability (ICDP) to determine the significance of this issue. As a bounding assumption, the senior reactor analyst assumed that the failure of train B equipment caused a complete failure of the entire train. The analyst also assumed, based on input from the inspectors, that all risk-significant equipment was realigned and returned to a functional status within 3 hours. With these assumptions, the Waterford probabilistic risk assessment model yielded an incremental core damage probability, or actual increase in risk during this work window, of 1.5×10^{-8}. In accordance with Flowchart 2 in Appendix K, because the incremental core damage probability was less than 1×10^{-6}, the finding screened as having very low safety significance (Green).

This finding had a Procedure Adherence cross-cutting aspect in the area of Human Performance, because individuals did not follow processes, procedures and work instructions. Specifically, the licensee did not assess and manage the risk associated with the maintenance in accordance with Procedure EN-WM-104 [H.8].

Enforcement. Title 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," section a(4), states, in part, that before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall

assess and manage the increase in risk that may result from the proposed maintenance activities.

Contrary to the above, on March 22, 2016, the licensee failed to properly assess and manage the increase in risk that resulted from a proposed maintenance activity. Specifically, the licensee failed to assess the risk and take appropriate risk management actions when replacing a logic card associated with the dry cooling tower train B fans. As a result, an electrical transient associated with replacing the card caused unexpected valve movements in the component cooling water and auxiliary component cooling water train B systems, an unexpected start of auxiliary component cooling water pump train B, and the unexpected shutdown of essential chiller AB.

The licensee entered this issue into their corrective action program as condition report CR-WF3-2016-04084. Corrective actions included reassessing the risk associated with the maintenance and identifying appropriate risk management actions to use when performing similar maintenance activities in the future. Future risk management actions will be requiring operators to manually position valve that could be affected and entering Technical Specification 3.7.4.

Because the licensee has entered the issue into their corrective action program and the finding is of very low safety significance, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000382/2016002-02, "Failure to Properly Assess and Manage Risk When Performing Dry Cooling Tower Maintenance."

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed five operability determinations that the licensee performed for degraded or nonconforming structures, systems, or components:

- On April 7, 2016, operability determination of auxiliary component cooling water header A component cooling water heat exchanger outlet temperature control valve
- On April 8, 2016, operability determination of cable vault and switchgear room ventilation air handling unit
- On April 29, 2016, operability determination of the emergency diesel generator trains A and B
- On May 11, 2016, operability determination of feedwater system snubbers
- On May 23, 2016, operability determination of auxiliary component cooling water pump B

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded structures, systems, or components to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The

inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded structures, systems, or components.

These activities constituted completion of five operability and functionality review samples as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On April 13, 2016, the inspectors reviewed a temporary modification to the reactor coolant pump 2A speed sensor.

The inspectors verified that the licensee had installed this temporary modifications in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected structures, systems, or components. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constituted completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five post-maintenance testing activities that affected risk-significant structures, systems, or components:

- On April 14, 2016, shield building ventilation train B
- On April 29, 2016, emergency diesel generator train A
- On May 16, 2016, emergency diesel generator train B
- On May 24, 2016, auxiliary component cooling water pump B
- On June 28, 2016, auxiliary component cooling water header A component cooling water heat exchanger outlet temperature control valve

The inspectors reviewed licensing- and design-basis documents for the structures, systems, or components 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 structures, systems, or components.

These activities constituted completion of five 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 structures, systems, and components were capable of performing their safety functions:

In-service tests:

- On June 27, 2016, auxiliary component cooling water pump A

Reactor coolant system leak detection tests:

- On June 20, 2016, reactor coolant system unidentified leakage calculation review

Other surveillance tests:

- On April 4, 2016, emergency diesel generator train A
- On May 5, 2016, high pressure safety injection pump A
- On May 26, 2016, recirculation actuation signal train A

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 test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected structures, systems, or components following testing.

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02)

a. Inspection Scope

The inspectors verified the adequacy of the licensee's methods for testing the primary and backup alert and notification system. The inspectors interviewed licensee personnel responsible for the maintenance of the primary and backup alert and notification system and reviewed a sample of corrective action system reports written for alert and notification system problems. The inspectors compared the licensee's alert and notification system testing program with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, FEMA Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," and the licensee's current FEMA-approved alert and notification system design report, "Updated Alert/Notification System Design Report," Revision 8, dated December 2014, and the design report addendum, dated July 2015. The inspectors also reviewed siren system preventative maintenance records for 2014 and 2015.

These activities constituted completion of one alert and notification system evaluation sample as defined in Inspection Procedure 71114.02.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

a. Inspection Scope

The inspectors verified the licensee's emergency response organization on-shift and augmentation staffing levels were in accordance with the licensee's emergency plan commitments. The inspectors reviewed documentation and discussed with licensee staff the operability of primary and backup systems for augmenting the on-shift emergency response staff to verify the adequacy of the licensee's methods for staffing emergency response facilities, including the licensee's ability to staff pre-planned alternate facilities. The inspectors also reviewed records of emergency response organization augmentation tests and events to determine whether the licensee had maintained a capability to staff emergency response facilities within emergency plan timeliness commitments.

These activities constituted completion of one emergency response organization staffing and augmentation testing sample as defined in Inspection Procedure 71114.03.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed an in-office review of Emergency Plan Implementing Procedure EP-001-001, "Recognition and Classification of Emergency Conditions," Revision 32, and Attachment 7.2 to EP-001-001, "EAL Basis Document," Revision 32. These revisions:

- Added caution statements to 27 emergency action levels with time durations to clarify the timeliness of classification
- Made minor administrative corrections

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, to Nuclear Energy Institute Report 99-01, "Emergency Action Level Methodology," Revision 5, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q)(3) and 10 CFR 50.54(q)(4). The inspectors verified that the revisions did not decrease the effectiveness of the emergency plan. This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection.

These activities constituted completion of two emergency action level and emergency plan change samples as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

a. Inspection Scope

The inspectors reviewed the following for the period December 2014 through March 2016:

- After-action evaluation reports for licensee drills and exercises
- Independent audits and surveillances of the licensee's emergency preparedness program
- Self-assessments of the emergency preparedness program conducted by the licensee
- Licensee evaluations of changes made to the emergency plan and emergency plan implementing procedures
- Drill and exercise performance issues entered into the licensee's corrective action program

- Emergency preparedness program issues entered into the licensee's corrective action program
- Maintenance records for equipment supporting the emergency preparedness program
- Emergency response organization and emergency planner training records

The inspectors reviewed summaries of 122 corrective action program reports associated with emergency preparedness, and selected 11 to review against program requirements, to determine the licensee's ability to identify, evaluate, and correct problems in accordance with planning Standard 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, IV.F. The inspectors verified that the licensee accurately and appropriately identified and corrected emergency preparedness weaknesses during critiques and assessments.

The inspectors reviewed summaries of 25 licensee evaluations of the impact of changes to the emergency plan and implementing procedures, and selected 10 to review against program requirements to determine the licensee's ability to identify reductions in the effectiveness of the emergency plan in accordance with the requirements of 10 CFR 50.54(q)(3) and 10 CFR 50.54(q)(4). The inspectors verified that evaluations of proposed changes to the licensee emergency plan appropriately identified the impact of the changes prior to being implemented.

These activities constituted completion of one sample of the maintenance of the licensee's emergency preparedness program as defined in Inspection Procedure 71114.05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50.54(q)(2) for the licensee's failure to follow all the requirements of the site emergency plan in calendar year 2015. Specifically, the licensee failed to conduct two proficiency drills during 2015 as required by the plan.

Description. The inspectors reviewed drill and exercise evaluation reports for licensee drills conducted between January 1, 2015, and March 31, 2016. The inspectors compared the drills described in the evaluation reports with the requirements of the Waterford Steam Electric Station, Unit 3, Emergency Plan, Revision 46, Section 8.1.2.4, to verify that all drills required by the emergency plan had been completed. The inspectors identified that no 2015 evaluation reports existed for an on-site medical drill responding to a contaminated and injured worker or for a health physics drill. The inspectors subsequently interviewed the emergency preparedness manager and emergency preparedness staff to determine whether the drills had been conducted.

The licensee stated that an on-site medical drill was scheduled in September 2015; however, the drill was stopped before the participants could demonstrate the ability to stabilize the (simulated) patient and address their contamination. A second medical drill was scheduled for the fourth quarter 2015, but was not held because the refueling outage went longer than anticipated. After the outage, personnel were not available, either as drill controllers or as participants. A medical drill was subsequently held in

January 2016, but did not meet the 2015 annual requirement. Additionally, the licensee failed to identify that a health physics drill was not scheduled for calendar year 2015, and the licensee staff did not recognize that a drill was required. Therefore, the inspectors concluded that the required drills had not been performed and the licensee had not followed the requirements of Emergency Plan, Revision 46, Section 8.1.2.4.

Analysis. The failure to follow the requirements of the approved site emergency plan is a performance deficiency within the licensee's ability to foresee and correct. The issue is more than minor because the finding adversely affected the Emergency Preparedness cornerstone objective and was associated with the Emergency Response Organization Performance attribute. The finding impacted the cornerstone objective because adequate measures to protect the health and safety of the public may not be taken if required on-site proficiency drills are not performed. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 23, 2014. The finding was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements of 10 CFR 50.54(q)(2), was not a risk-significant planning standard function, and was not a lost or degraded planning standard function. The function was not lost because some of the required proficiency drills were performed.

The inspectors determined that the finding had a Work Management cross-cutting aspect in the area of Human Performance, because the emergency preparedness department did not properly schedule, oversee, and manage required activities. The inspectors determined that the failure to conduct the required drills was also associated, in part, with the unavailability of staff during a plant outage that was unexpectedly extended [H.5].

Enforcement. Title 10 of the Code of Federal Regulations 50.54(q)(2), states, in part, that a power reactor licensee shall follow and maintain in effect, an emergency plan that meets the requirements of Appendix E to Part 50 and the standards of 10 CFR 50.47(b). The Waterford Steam Electric Station, Unit 3, Emergency Plan, Revision 46, Sections 8.1.2.4(4) and 8.1.2.4(6) requires that Waterford annually conduct a medical emergency drill and two semiannual health physics drills. Contrary to the above, between January 1 and December 31, 2015, Waterford failed to follow an emergency plan meeting the requirements of Appendix E to Part 50, and the standards of 10 CFR 50.47(b). Specifically, the licensee failed to conduct a medical emergency drill and one semiannual health physics drill during calendar year 2015 as required by the Waterford Steam Electric Station, Unit 3, Emergency Plan, Revision 46. The licensee entered these issues into their corrective action program as condition reports CR-WF3-2015-06411, CR-WF3-2016-02619, and CR-WF3-2016-02644. The licensee established work tracker system surveillances to ensure these drills are appropriately performed in 2016. Because this violation was of very low safety significance and the licensee entered the issue into their corrective action program, this violation is treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy: NCV 000382/2016002-03, "Failure to Perform Drills Required by the Site Emergency Plan."

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on April 6, 2016, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the control room simulator, technical support center and emergency operating facility, and attended the post-drill critique. 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 licensee in the post-drill critique and entered into the corrective action program for resolution.

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

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

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 1, 2015, through March 31, 2016, the inspectors reviewed licensee event reports (LERs), maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator Waterford Steam Electric Station, Unit 3, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating System Performance Index: Emergency AC Power Systems (MS06), and High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 1, 2015, through March 31, 2016, 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 mitigating system performance index for emergency ac power systems, and the high pressure injection systems performance indicator for the Waterford Steam Electric Station, Unit 3, 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 and selected drill and training evolutions, conducted between April 1, 2015, and March 31, 2016, to verify the accuracy of the licensee's evaluation of classification, notification, and protective action recommendation opportunities. The inspectors reviewed a sample of the licensee's completed classifications, notifications, and protective action recommendations 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.

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 1, 2015, and March 31, 2016, 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 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 emergency response organization 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.

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 1, 2015, and March 31, 2016, 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.

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, operability evaluations, 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 identified a trend involving deficient site operability evaluations. Specifically, the inspectors noted four examples of plant adverse conditions where operability was evaluated incorrectly. In all instances, inspector intervention was required for the licensee to expand the initially lacking technical assessment and ultimately produce an acceptable statement that concluded operability. The examples included the following conditions:

- CR-WF3-2016-02353 – The cable vault and switchgear area ventilation air handling unit was identified as having elevated vibrations; however, the licensee used acceptance criteria for pump vibrations to justify operability.

- CR-WF3-2016-2736 – During an emergency diesel generator train B work window, the licensee identified several relay base connections that were loose. The licensee did not provide sufficient technical justification for concluding the train A emergency diesel generator was operable and not impacted by this condition.

- CR-WF3-2016-3429 – The auxiliary component cooling water pump B was declared inoperable due to rising outboard motor bearing temperatures. The licensee did not provide sufficient technical justification to declare the pump operable based on lube oil bearing temperature limits.

- CR-WF3-2016-00736 – The reactor coolant pump 2A motor space heater was energized while the pump was running. The licensee documented an operability evaluation for when the plant was in Mode 6, however, the plant was in Mode 1.

In each instance, the inspectors ensured that the licensee corrected the condition and subsequently evaluated the technical issues with the technical rigor that was required to justify operability. The inspectors discussed this trend with the licensee. The licensee entered this issue into the corrective action program as condition report CR-WF3-2016-4546, and classified it as an adverse condition. At the time this inspection report was submitted, the licensee was in the process of evaluating the issue and developing appropriate corrective actions.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

On April 4, 2016, the inspectors reviewed the licensee's root cause evaluation entitled "Emergency Diesel Generator A Turbocharger Thrust Bearing Failure" for an in-depth follow-up. The licensee initiated this evaluation to determine the cause, extent of condition, and impact associated with a failure of the emergency diesel generator A turbocharger thrust bearing that occurred on July 7, 2015.

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and corrective actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to ensure the resolution of issues that had been previously identified with the corrective action program. In addition, the inspectors verified that condition reports were initiated in a timely manner, and were classified appropriately.

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

b. Findings

Introduction. A self-revealing, Green, non-cited violation of Technical Specification 6.8, "Procedures and Programs," occurred because the licensee did not establish adequate procedures for the operation of the emergency diesel generators. Specifically, prior to July 7, 2015, the licensee's procedure for operating the emergency diesel generators allowed lube oil pressure to be maintained low enough to activate a design feature of the starting air system that injects starting air into the diesel cylinders, which could damage the emergency diesel generator turbocharger.

Description. On July 7, 2015, the licensee started emergency diesel generator A in the emergency mode for testing following maintenance related to the emergency diesel generator sequencer. After operating for 31 minutes, the low lube oil pressure alarm actuated and the standby lube oil pump started. Operators found the engine lube oil pressure low, starting air system low pressure, and standby lube oil pump running annunciators locked in on the local panel. Operators then manually shutdown emergency diesel generator A. On July 8, 2015, operators started emergency diesel generator A in the test mode and fully loaded the diesel. After 58 minutes, emergency diesel generator A tripped due to a failure of the turbocharger thrust bearing. The licensee replaced the turbocharger for emergency diesel generator A and returned it to service on July 12, 2015.

The licensee found that the thrust bearing sensor for emergency diesel generator A had scorch marks and its eutectic cap wiped off, indicating contact with the thrust bearing due to thrust bearing movement. The licensee also found excessive clearances and cracking associated with the turbocharger thrust bearing, consistent with excessive axial loading. The licensee also found that the starting air system for the emergency diesel

generators includes logic to inject starting air if there is an emergency mode start and subsequently, the diesel speed drops below 280 rpm, or engine lube oil pressure decreases to the low lube oil setpoint of 35 +5/-0 psig.

Following the event, the licensee concluded that the guidance in the emergency diesel generator operating procedure, OP-009-002, “Emergency Diesel Generator,” was inappropriate. Although the emergency diesel generators are normally operated with a lube oil pressure of approximately 50 psig, the operating procedure allowed the emergency diesel generator to be operated at any lube oil pressure greater than 35 psig. After an emergency start, the starting air system will inject to an operating emergency diesel generator upon receipt of a low lube oil pressure signal, which could actuate at up to 40 psig. The OP-009-002 operating lube oil pressure value would allow the diesel to be normally operated at a lube oil pressure low enough to inject starting air into the running diesel, resulting in damage to the turbocharger. The inspectors noted that this vulnerability only existed in the event of an emergency start of the diesel, which occurs upon receipt of a safety-injection actuation signal, combined with a loss of off-site power and an actual low lube oil pressure condition.

In their review of the event, the inspectors also noted that the information regarding the design for injecting starting air at low lube oil pressures was available to the licensee in the design drawings for the emergency diesel generators. Additionally, the vendor manual for operation of the emergency diesel generators indicated that normal operating pressure should be maintained at 50 psig, and that control and alarm functions occurred at 35 psig.

The licensee had a previous opportunity to identify the inadequacy of the emergency diesel generator operating procedure and the potential failure of the emergency diesel generators due to low lube oil pressures. On January 20, 2014, the pressure regulating valves for emergency diesel generator B were replaced. Following the replacement, normal operating lube oil pressure for emergency diesel generator B dropped from 55 psig to 38 psig. Similar work on emergency diesel generator A in 2010 caused lube oil pressures to drop from 58 to 50 psig. Concerns regarding operating with the lowered lube oil pressures were evaluated in an apparent cause analysis as part of CR-WF3-2014-05092, however the licensee did not recognize the potential for starting air injection into an operating emergency diesel generator during the evaluation.

Analysis. The failure to establish adequate procedures for the operation of the emergency diesel generators was a performance deficiency. The inspectors determined that the performance deficiency was reasonably within the licensee’s ability to foresee and correct. The inspectors concluded that the performance deficiency was more than minor, and therefore a finding, because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedural allowance to run the emergency diesel generator lube oil pressure at the starting air injection setpoint and could have resulted in the failure of the emergency diesel generators at any time they were called upon to perform their safety function.

The inspectors used NRC Inspection Manual Chapter 0609, Attachment 4, “Initial Characterization of Findings,” to evaluate the finding for its impact on the Mitigating Systems cornerstone. The initial screening directed the inspectors to use Appendix A,

"The Significance Determination Process for Findings At-Power," to determine the significance of the finding. Using Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding required a detailed risk evaluation because it represented the loss of a system or function.

In order to perform the detailed risk evaluation, the senior reactor analyst made the following assumptions:

- The air start motors could have engaged and damaged the emergency diesel generator at any time the emergency diesel generator experienced a demand in the emergency mode. As a result, the exposure time was one year.

- When the air start motor engaged, the emergency diesel generator would be damaged and the emergency diesel generator would fail to run.

- The configuration and design of the diesels were such that common cause was possible on the opposite emergency diesel generator. As a result, the analyst set the basic event for emergency diesel generator A to TRUE.

- The damage to the emergency diesel generator turbocharger would occur upon initiation of a safety injection signal followed by a loss of off-site power. A large break loss of coolant accident, a medium break loss of coolant accident, a steam generator tube rupture, an interfacing system loss of coolant accident, and a main feed line break were the only initiators analyzed because they would be the only initiators of significance in the Waterford SPAR model which would lead to a safety injection signal. A main steam line break was not analyzed as this was not a risk dominant initiator for the station.

- The temporary emergency diesel generators were partially credited in this analysis. The analyst assumed these temporary emergency diesel generators were available 44 percent of the time, based on their availability in calendar year 2015, which was assumed to be representative of the time that the diesels were typically hooked up and available. If the temporary diesel generators were not hooked up, the analyst assumed that station management would have the opportunity to decide to install the generators. This implementation of the temporary diesel generators was represented by a human error probability basic event.

Version 8.16 of the Waterford SPAR model run on Version 8.1.4 of SPAHIRE was used to estimate the increase in core damage frequency. This version of the SPAR model was changed to make a more accurate estimate. The following changes were made:

- The analyst updated the model to include the possibility of a consequential loss of off-site power after a large break loss of coolant accident, a medium break loss of coolant accident, a steam generator tube rupture, an interfacing system loss of coolant accident, or a main feed line break occurred. The analyst used a template event in the SPAR library of events for the basic event parameter estimation. The basic event mean value was 2.00E-2 in a Constrained Non-Informative distribution.

- The analyst updated the SPAR model to remove a conservative error in the modelling of the safety injection system minimum flow logic such that the logic

accurately modelled the plant configuration. Fault tree HPR-MNFLW was removed from the fault trees of CSR (containment spray recirculation) and HPR (high pressure recirculation) as the minimum flow logic was already correctly modelled in the train specific fault trees.

The analyst estimated the increase in core damage frequency to be 4.6E-7/year (Green). Dominant core damage sequences were medium break losses of coolant accidents and steam generator tube ruptures with associated losses of off-site power. Core damage was mitigated by the remaining emergency diesel generators.

External Events. To identify the external event loss of off-site power initiators, the analyst reviewed the "Waterford 3 Individual Plant Examination of External Events (IPEEE)," dated July 28, 1995. First, the analyst considered external events whose occurrence during the degraded condition could have resulted in an increase in core damage frequency. Because the probability of these external events combined with the low probability of an event which included initiation of a safety injection signal followed by a loss of off-site power would be very low, the analyst qualitatively screened out this combination of events as insignificant. Next, the analyst reviewed external events for those that could cause an initiation of a safety injection signal followed by a loss of off-site power. The analyst concluded that the only plausible external event of significance which could result in this scenario was a seismic event which causes a rupture of reactor coolant system piping. The analyst considered the low seismicity of the area and the high fragility of the reactor coolant system piping to qualitatively screen out this seismic initiator.

As a result, the analyst concluded external events were not a significant contributor to increases in core damage frequency for this performance deficiency.

Large Early Release Frequency. The analyst used Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," to estimate in the increase in large early release frequency. The analyst assumed the finding was one that would affect both core damage frequency and large early release frequency. Using Appendix H, only interfacing system losses of coolant accidents and steam generator tube ruptures were determined to have significant potential impact on large early release frequency. Any increase in core damage frequency resulting from interfacing system losses of coolant accidents are predominantly driven by operator actions to diagnose and isolate the leak and therefore the analyst qualitatively screened out these sequences. The increase in large early release frequency was estimated by multiplying the increase in core damage frequency from steam generator tube ruptures for the performance deficiency (estimated to be 3.9E-8/year) by a large early release factor for steam generator tube ruptures obtained from Appendix H of Manual Chapter 0609 (with value of 1.0). As a result the increase in large early release frequency was estimated to be 3.9E-8/year (Green).

The inspectors concluded that the finding had an Evaluation cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the licensee's previous evaluation performed for operating the emergency diesel generators with low lube oil pressures did not thoroughly evaluate the risk associated with the starting air [P.2].

Enforcement. Technical Specification 6.8, "Procedures and Programs," Section 1.a, requires, in part, that procedures shall be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 3.s.(2)(a) of Regulatory Guide 1.33, Revision 2, Appendix A, recommends, in part, that instructions be established for operating the on-site emergency power sources (e.g., diesel generators, batteries).

Contrary to the above, prior to July 8, 2015, the licensee did not establish appropriate instructions for operating the on-site emergency power sources. Specifically, licensee procedure OP-009-002, "Emergency Diesel Generator," Revision 326 and prior, allowed maintaining emergency diesel generator lube oil pressure low enough to cause the starting air system to automatically inject into the emergency diesel generator cylinders while operating, resulting in damage to the associated emergency diesel generator turbocharger and failure of the emergency diesel generator. The licensee entered this condition into their corrective action program as condition report CR-WF3-2015-04459. The corrective actions taken to restore compliance was to increase the procedure OP-009-002 requirement for lube oil pressure from 35 psig to 45 psig.

Because this violation was of very low safety significance and the licensee entered the issue into their corrective action program, this violation is treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy: NCV 05000382/2016002-04, "Failure to Account for Starting Air Design Features in Emergency Diesel Operating Procedures."

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000382/2015-007-00, "Both Emergency Diesel Generators Declared Inoperable."

On August 26, 2015, the licensee declared emergency diesel generator trains A and B inoperable. Emergency diesel generator A was declared inoperable at 1:11 a.m. due to the failure of a current transformer during a surveillance run resulting in a generator differential trip. Per Technical Specification 3.8.1.1, "A.C. Sources," the licensee started emergency diesel generator B to determine extent of condition for the train A failure. At 7:40 a.m., emergency diesel generator B was declared inoperable due to its room air intake dampers not opening. The licensee entered Technical Specification 3.8.1.1 condition F, which required one emergency diesel generator be restored operable within two hours or the plant be in hot standby within six hours. The licensee took action to open the emergency diesel generator B room air intake dampers and restored emergency diesel generator B to an operable status at 10:01 a.m. In their review of the events, the inspectors did not note any performance deficiencies. This licensee event report is closed.

These activities constituted completion of one event follow-up sample, as defined in Inspection Procedure 71153.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On April 22, 2016, the inspectors presented the results of the on-site inspection of the licensee's emergency preparedness program to Mr. M. Richey, General Manager of

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 July 14, 2016, the inspectors presented the inspection results to Mr. M. Chisum, 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

D. Burnett, Corporate Director, Emergency Preparedness, Entergy South
M. Chisum, Site Vice President
J. Clavelle, Manager, Systems and Components
S. Fontenot, Manager, Performance Improvement
R. Gilmore, General Manager, Plant Operations
A. James, Manager, Security
J. Jarrell, Manager, Regulatory Assurance
B. Lanka, Director, Engineering
R. Ledet, Manager, Operations Support
W. McKinney, Manager, Training
S. Meiklejohn, Senior Licensing Specialist
B. Pellegrin, Manager, Production
P. Rodrigue, Manager Operations
D. Selig, Senior Manager, Maintenance
J. Signorelli, Manager, Emergency Preparedness

NRC Personnel

F. Ramirez, Sr. Resident Inspector
C. Speer, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000382/2016002-01	NCV	Failure to Properly Pre-Plan and Perform Maintenance on the Cable Vault and Switchgear Ventilation System (Section 1R12)
05000382/2016002-02	NCV	Failure to Properly Assess and Manage Risk When Performing Dry Cooling Tower Maintenance (Section 1R13)
05000382/2016002-03	NCV	Failure to Perform Drills Required by the Site Emergency Plan (Section 1EP5)
05000382/2016002-04	NCV	Failure to Account for Starting Air Design Features in Emergency Diesel Operating Procedures (Section 4OA2)

Closed

05000382/2015-007-00	LER	Both Emergency Diesel Generators Declared Inoperable

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

Number	Title	Revision
OP-006-001	Plant Distribution	320
OP-901-314	Degraded Grid Operations	3
OP-901-521	Severe Weather and Flooding	317

Condition Reports

CR-WF3-2016-01706	CR-WF3-2016-02041	CR-WF3-2016-02218	CR-WF3-2016-02375
CR-WF3-2016-02458	CR-WF3-2016-03317	CR-WF3-2016-03315	

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
OP-002-004	Chilled Water System	314
OP-008-008	Shield Building Ventilation	10
OP-009-002	Emergency Diesel Generator	332
OP-903-062	Chilled Water System Valve Lineup Check	303
OP-TEM-008	Emergency Diesel Generators A(B) Backup Temporary Diesel Generators	15
OP-TEM-008	Emergency Diesel Generators A(B) Backup Temporary Diesel Generators	14

Condition Reports

CR-WF3-2016-00500	CR-WF3-2016-03157	CR-WF3-2016-03156	CR-WF3-2016-02840

Miscellaneous

Number	Title	Date
Equipment Data Sheet G080358	Aggreko Diesel Generating Set	October 22, 2010
Engineer Data Sheet	Cummings Engine Data Sheet – QSK50-G4 NR2	July 24, 2009

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
FP-001-018	Pre-fire Strategies, Development and Revision	303
RAB 8A-001	Waterford-3 S.E.S Prefire Strategy Switchgear Room "A"	10
RAB 8B, E, F-001	Waterford-3 S.E.S Prefire Strategy Switchgear Room "B"	12
RAB 16-001	Waterford-3 S.E.S Prefire Strategy Elev. +21.00' RAB (RCA) Emergency Diesel Generator "3A"	11
RAB 32-001	Waterford-3 S.E.S Prefire Strategy Elev. -4.00', -35.00 RAB (RCA) Auxiliary Component Cooling Water Room and Pipe Penetration Area	9
RAB 41-001	Waterford-3 S.E.S Prefire Strategy Diesel Oil Storage Tank "B"	4

Condition Reports

CR-WF3-2016-03379

Section 1R06: Flood Protection Measures

Procedures

Number	Title	Revision
OP-009-008	Safety Injection System	39
OP-500-12	Control Room Cabinet N	24

Drawings

Number	Title	Revision
G-167, Sheet 3	Flow Diagram Safety Injection System	20

Miscellaneous

Number	Title	Revision
MNQ3-5	Flooding Analysis Outside Containment	4
PRA-W3-01-002	W3 Internal Flooding Analysis	3

Section 1R07: Heat Sink Performance

Procedures

Number	Title	Revision
OP-003-027	Turbine Closed Cooling Water System	16
SEP-HX-WF3-001	Generic Letter 89-13 Heat Exchanger Test Basis	0

Work Orders

52677875 52677876

Section 1R11: Licensed Operator Requalification Program

Procedures

Number	Title	Revision
OP-901-201	Steam Generator Level Control Malfunction	6
OP-901-312	Loss of Vital Instrument Bus	310
OP-901-102	CEA or CEDMCS Malfunction	304
OP-901-212	Rapid Plant Power Reduction	7
OP-902-000	Standard Post Trip Actions	15
OP-902-006	Loss of Feedwater Recovery	17
EP-001-001	Recognition & Classification of Emergency Conditions	32
OP-902-002	Loss of Coolant Accident Recovery	19
EN-OP-115	Conduct of Operations	17

Miscellaneous

Number	Title	Revision
WSXM-LOR-163EXM	2016 Cycle 4 Annual Simulator Exercise	E-158
WSXM-LOR-164EXM	2016 Cycle 4 Annual Simulator Exercise	E-182

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision
EC-63431	Cycle 20, Refuel 20 Maintenance Rule (a)(3) Periodic Assessment Report	0

Procedures

Number	Title	Revision
EN-DC-207	Maintenance Rule Periodic Assessment	3
EN-DC-324	Preventive Maintenance Program	15
EN-DC-335	PM Basis Template	6
EN-LI-118	Equipment Failure Evaluation	22
EN-DC-310	Predictive Maintenance Program	7

Condition Reports

CR-WF3-2015-02360	CR-WF3-2015-03563	CR-WF3-2015-04094	CR-WF3-2015-06438
CR-WF3-2016-02353	CR-WF3-2016-02473	CR-WF3-2016-02456	CR-WF3-2015-03808

Work Orders

00443364

Miscellaneous

Number	Title	Revision
PM Basis Template	EN-HVAC – Air Handling Equipment	5

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

Procedures

Number	Title	Revision
EN-IS-123	Electrical Safety	17
EN-OP-102	Protective and Caution Tagging	18
EN-WM-104	On Line Risk Assessment	12
ME-003-220	Station Battery Bank and Charger (18-month)	309
ME-004-213	Battery Intercell Connections	15
EN-OP-119	Protected Equipment Postings	7

Drawings

Number	Title	Revision
B425 T7075B1	CC-Dry Cooling Tower B Fan Cooling	4

Condition Reports

CR-WF3-2016-01944	CR-WF3-2016-01950	CR-WF3-2016-03644	CR-WF3-2016-03710

Work Orders

00437901	00441087	52675422

Section 1R15: Operability Evaluations

Procedures

Number	Title	Revision
EN-OP-104	Operability Determination Process	9
EN-OP-104	Operability Determination Process	10

Condition Reports

CR-WF3-2015-06808	CR-WF3-2016-02295	CR-WF3-2016-03418	CR-WF3-2016-03429
CR-WF3-2016-03447	CR-WF3-2016-02353	CR-WF3-2016-03026	CR-WF3-2016-03174
CR-WF3-2016-03150			

Miscellaneous

Number	Title	Date
AMCA Engineering Paper 5247-08	Vibration Measurement Systems and Guidelines for Centrifugal Fans	March 2, 2008

Section 1R18: Plant Modifications

Procedures

Number	Title	Revision
EN-DC-136	Temporary Modifications	12
EN-LI-102	Corrective Action Program	26

Condition Reports

CR-WF3-2015-09183	CR-WF3-2016-01441	CR-WF3-2016-01888

Miscellaneous

Number	Title	Revision
TMOD 63997	Add Potentiometer to RCP 2A Channel B Pulse Transmitter RC IST0133B	0

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
OP-903-050	Component Cooling Water Pump and Valve Operability Test	32
OP-903-068	Emergency Diesel Generator and Subgroup Relay Operability Verification	315
OP-903-118	Primary Auxiliaries Quarterly IST Valve Tests	37
OP-903-043	Shield Building Ventilation System Operability Check	309
OP-008-008	Shield Building Ventilation	10
EN-WM-107	Post Maintenance Testing	5
EN-WM-104	On Line Risk Assessment	12

Condition Reports

CR-WF3-2016-03250	CR-WF3-2016-03251	CR-WF3-2016-03252	CR-WF3-2016-03254
CR-WF3-2016-03255	CR-WF3-2016-03260	CR-WF3-2016-03261	CR-WF3-2016-03262
CR-WF3-2016-03263	CR-WF3-2016-03461	CR-WF3-2016-04201	

Miscellaneous

Number	Title	Revision
TD-S188.0015	Siemens Areva Horizontal Induction Motors	0

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
OP-903-030	Safety Injection Pump Operability Verification	28
OP-903-068	Emergency Diesel Generator and Subgroup Relay Operability Verification	314
OP-903-100	MOV Overload Bypass Procedure	308
OP-903-024	Reactor Coolant System Water Inventory Balance	22

Procedures

Number	Title	Revision
EN-MA-135	Online Motor Electrical Testing	5

Condition Reports

CR-WF3-2016-03983

Work Orders

52598004	52676986	52681435	52660527

Section 1EP2: Alert and Notification System Testing

Procedures and Documents

Number	Title	Revision/ Date
	Waterford 3 Alert and Notification System Siren Warning System Upgrade Project FEMA REP-10 Design Report Addendum	July 15, 2015
	Waterford 3 Nuclear Station Siren Acoustic Test Report, Precision Communications, Inc.	July 17, 2015
	Letter, Ms. Lisa R. Hammand, RAC Chair, FEMA Region VI, to Mr. Bryan P. Riche, Administrator, Louisiana Department of Environmental Quality, Subject: Final Approval for Waterford 3 Steam Electric Station Alert and Notification System Siren Warning System Design Report	November 10, 2015
	EPP-422, Attachment 7.1, Siren Maintenance Checklist for Whelen Sirens	Fourth Quarter 2014
	EPP-422, Attachment 7.1, Siren Maintenance Checklist for Whelen Sirens	First Quarter 2015
EPP-422	Siren and Helicopter Warning System Maintenance, June 12, 2015	8
EPP-424	Siren Testing and Siren System Administrative Controls, February 22, 2016	19

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Procedures and Documents

Number	Title	Revision
	Pager Test Analysis Results for March 4, 2015	
	Pager Test Analysis Results for June 16, 2015	

Procedures and Documents

Number	Title	Revision
	Pager Test Analysis Results for September 27, 2015	
	Pager Test Analysis Results for December 12, 2015	
	Pager Test Analysis Results for February 16, 2016	
EN-EP-310	Emergency Response Organization Notification System	4
EPP-462	Evaluation of Page Tests, February 6, 2016	3

Condition Reports

CR-WF3-2015-04054 CR-WF3-2016-01186 CR-WF3-2016-01187

Section 1EP5: Maintenance of Emergency Preparedness

Procedures and Documents

Number	Title	Revision/ Date
	Evaluation Report for the Exercise conducted May 20, 2015	
	Evaluation Report for the Control Room Breathing Air Drill conducted June 12, 2015	
	Evaluation Report for the Health Physics Drill conducted June 17, 2015	
	Evaluation Report for the Biennial Exercise conducted June 24, 2015	
	Evaluation Report for the Control Room Breathing Air Drill conducted August 28, 2015	
	Evaluation Report for the Exercise conducted September 30, 2015	
	Evaluation Report for the On-site Medical Drill conducted January 21, 2016	
	50.54Q Review for EP-001-001, Classification, R32	
	50.54Q Review for EP-001-001, Classification, R31	
	50.54Q Review for EP-003-020, Drills and Exercises, R303	
	50.54Q Review for EP-002-071, Site Protective Measures, R303	
	50.54Q Review for EP-002-052, Protective Action Recommendations, R25	

Procedures and Documents

Number	Title	Revision/ Date
	50.54Q Review for EP-003-030, Emergency Program Review, Updating, and Modification, R302	
	Waterford 3 Emergency Plan, June 17, 2015	46
EN-EP-202	Equipment Important to Emergency Preparedness	1
EN-EP-305	Emergency Planning 10 CFR 50.54(Q) Review Program, February 21, 2012	13
EN-EP-306	Drills and Exercises	7
EN-EP-308	Emergency Planning Critiques	3
EN-EP-801	Emergency Response Organization	13
EPP-421	Review, Publication, and Distribution of Public Information Materials, March 8, 2002	2
EPP-002-71	Site Protective Measures, November 27, 2015	303
EPP-003-020	Emergency Preparedness Drills and Exercises, April, 28, 2015	303
EPP-003-030	Emergency Program Review, Updating, and Modification, March 31, 2016	303
EPP-003-070	Emergency Communications Systems Routine Testing, April 3, 2013	304
KLD-TR-765	Waterford 3 Steam Electric Station 2015 Population Update Analysis	September 11, 2015
LO-WLO-2015-0018	WF3 Pre-NRC Exercise Assessment	April 20, 2015
LO-WLO-2015-0058	Assessment: Emergency Plan Evaluation of Repetitive Tasks	October 27, 2015
LO-WLO-2015-0114	Assessment: Reviews of the 2015 SRC Emergency Planning Subcommittee Issues	November 29, 2015
LO-WLO-2015-0131	WF3 Pre-NRC Inspection/INPO Evaluation Assessment	February 24, 2016
LO-WLO-2016-0005	Assessment: Upgrade EOF	March 29, 2016
PMID 25943-1	Quarterly OSC Storage Room Inventory	
PMID 25943-2	Field Kits A, B, C, Inventory	
PMID 25943-3	Personnel Decontamination Kits Inventory	
PMID 25943-4	TSC Storage Area Inventory	

Procedures and Documents

Number	Title	Revision/ Date
PMID 25943-5	EOF Storage Locker Inventory	
PMID 25943-6	Ambulance Kit Inventory	
PMID 25943-7	Assembly Area Supervisor Kit Inventory	
PMID 25943-8	Hospital Locker Inventory	
PMID 25943-9	Security Inventory	
PMID 25943-10	RAB Access Control Point Inventory	
PMID 25943-11	DLRS Inventory, Dosimetry Office	
PMID 25944-1	EP-0030070 Monthly Communications Checks	
PMID 25944-2	State and Local Agency Communications Checks	
PMID 25944-4	Facility and Equipment Readiness Checks	
PMID 25944-5	SAMG-01 Equipment Inventory	
PMID 25944-11	SAMB-01 Meter Refresh	
QA-7-2-15-W3-1	Emergency Preparedness Audit	May 13, 2015
QA-7-2015-W3-01	Offsite Interface Interview Questions, Louisiana Department of Environmental Quality	April 14, 2015
QA-7-2015-W3-01	Offsite Interface Interview Questions, St. Charles Parish Emergency Manager	April 14, 2015
QA-7-2015-W3-01	Offsite Interface Interview Questions, St. John Parish Emergency Manager	April 20, 2015
WLO-2015-0059	Assessment: Drill and Exercise Performance Indicators Benchmark	December 7, 2015
2015-011	Evaluation Report for the Offsite Medical Drill conducted August 26, 2015	February 8, 2016

Condition Reports (Corrective Action System, CR-WF3)

CR-WF3-2015-00272	CR-WF3-2015-00855	CR-WF3-2015-02248	CR-WF3-2015-03257
CR-WF3-2015-03649	CR-WF3-2015-04205	CR-WF3-2015-04212	CR-WF3-2015-06367
CR-WF3-2015-06411	CR-WF3-2016-00905	CR-WF3-2016-02078	CR-WF3-2016-02573

Section 1EP6: Drill Evaluation

Procedures

Number	Title	Revision/ Date
EP-001-001	Recognition & Classification of Emergency Conditions	31
EP-001-020	Alert	308
EP-001-030	Site Area Emergency	307
EP-001-040	General Emergency	308
EP-002-010	Notifications and Communications	313
	Waterford Site Team Drill Scenario	April 6, 2016

Condition Reports

CR-WF3-2016-2368 CR-WF3-2016-2369 CR-WF3-2016-2373

Section 4OA1: Performance Indicator Verification

Procedures

Number	Title	Date
W3F1-2015-0055	NRC Performance Indicator (PI) Data – 2015 Quarter 2nd Quarter	July 21, 2015
W3F1-2015-0083	NRC Performance Indicator (PI) Data – 2015 Quarter 3rd Quarter	October 8, 2015
W3F1-2016-0005	NRC Performance Indicator (PI) Data – 4th Quarter 2015	January 14, 2016
W3F1-2016-0006	NRC Performance Indicator (PI) Data – Change Report Data 4th Quarter 2015 SSFF Issue	January 19, 2016
W3F1-2016-0035	NRC Performance Indicator (PI) Data – 1st Quarter 2016 January - March	April 20, 2016

Condition Reports

CR-WF3-2015-06373 CR-WF3-2015-06375 CR-WF3-2015-06379 CR-WF3-2016-01442

CR-WF3-2016-02110 CR-WF3-2016-02124

Miscellaneous

Number	Title	Revision/ Date
EN-FAP-EP-005	Emergency Preparedness Performance Indicators, March 15, 2016	5
EPP-001-001	Recognition and Classification of Emergency Conditions, March 9, 2016	32
EPP-002-010	Notifications and Communications, December 15, 2015	313
EPP-002-052	Protective Action Guidelines, January 21, 2016	25
W3D3-2015-0001	Memorandum: Designated NEI-99-02 Performance Indicator Opportunities for 2015	January 12, 2015

Section 4OA2: Identification and Resolution of Problems

Procedures

Number	Title	Revision
OP-009-002	Emergency Diesel Generator	326
OP-009-002	Emergency Diesel Generator	327
W2.109	Procedure Development, Review, and Approval	17
OP-009-002	Emergency Diesel Generator	329

Drawings

Number	Title	Revision
5817-9399	Control Schematic Starting Sequence Control	7
5817-9400	Control Schematic Starting Sequence Control	3

Condition Reports

CR-WF3-2016-03368 CR-WF3-2015-04459 CR-WF3-2014-05092

Jobs

00419319

Miscellaneous

Number	Title	Revision/ Date
1062-0075-RPT-1	Failure Evaluation of Waterford 3 Emergency Diesel Generator A Turbocharger Blower End Bearing Assembly	0
TD-C629.0035	Cooper Bessemer KSV Diesel Generator Nuclear Power Plant Emergency Stand-By Operation & Maintenance Manual	21
ECE90-006	Emergency Diesel Generator Loading and Fuel Oil Consumption	8
	Evaluation of the Blower End Bearing Assembly Components of the Turbocharger of the Emergency Backup Diesel Generator	August 21, 2015

Section 4OA3: Event Follow-Up

Procedures

Number	Title	Revision
EN-DC-153	Preventative Maintenance Component Classification	12
EN-DC-335	PM Basis Template	6

Drawings

Number	Title	Revision
B-424, Sheet 1040	Diesel Gen A Room Vent System	15
B-424, Sheet 1041	Diesel Gen A Room Exhaust Fan E-28 (3A-SA)	14
B-424, Sheet 1042	Diesel Gen B Room Vent System	15
B-424, Sheet 1043	Diesel Gen B Room Exhaust Fan E-28 (3B-SA)	15

Condition Reports

CR-WF3-2015-05580 CR-WF3-2015-06782

Miscellaneous

Number	Title	Date
	EPRI Preventative Maintenance Basis Database – Preventative Maintenance Program Report	November 2, 2009
F15463-R-001	Examination and Testing of WF3 EDG-B Potter and Burmfield MDR Rotary Relays	January 2016

Miscellaneous

Number	Title	Date
TD-P297.0015	Potter & Brumfield Type MDR Relays	July 31,1997
W3F192-0092	Information Notice 92-04, “Potter and Brumfield Model MDR Rotary Relay Failures”	June 25, 1992