UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

December 28, 2017

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

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC DESIGN BASES ASSURANCE INSPECTION REPORT 05000382/2017008

Dear Mr. Dinelli:

On November 16, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3 and discussed the preliminary results of this inspection with you and other members of your staff. On December 14, 2017, the inspectors discussed the final results of this inspection with Mr. D. Brenton, General Manager-Plant Operations, and other members of your staff. The results of this inspection are documented in the enclosed report.

Nuclear Regulatory Commission inspectors documented two findings of very low safety significance (Green). These findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

Additionally, the inspectors documented one Severity Level IV traditional enforcement violation associated with impacting the ability of the NRC to perform its regulatory oversight function. The NRC is treating this violation as non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

From December 2016 to December 2017, the NRC issued four Severity Level IV traditional enforcement violations associated with impacting the ability of the NRC to perform its regulatory oversight function. As a result of the four Severity Level IV traditional enforcement violations, the NRC determined that the additional inspection was not warranted because the cause of the most recent violation occurred in 2006 and 2014 and current Waterford procedures and practices should prevent recurrence. Therefore, the NRC will not conduct Inspection Procedure 92723, “Follow up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period.”

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

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

Sincerely,

/RA/

Thomas R. Farnholtz, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000382/2017008
w/Attachments:
1. Supplemental Information
2. Additional Information Request

cc w/enclosure: Electronic Distribution

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTION REPORT

Docket:	05000382
License:	NPF-38
Report Nos.:	05000382/2017008
Enterprise Identifier:	I-2017-008-0023
Licensee:	Entergy Operations, Inc.
Facility:	Waterford Steam Electric Station, Unit 3
Location:	17265 River Road Killona, LA 70057
On-site Dates:	October 23 through November 16, 2017
Exit Date:	December 14, 2017
Team Leader:	G. George, Senior Reactor Inspector, Engineering Branch 1
Inspectors:	J. Braisted, Reactor Inspector, Engineering Branch 1 N. Okonkwo, Reactor Inspector, Engineering Branch 2 G. Callaway, Senior Reactor Technology Instructor, Technical Training Center
Accompanying Personnel:	A. Athar, Reactor Operations Engineer, ROP Assessment Branch, Nuclear Reactor Regulation C. Baron, Contractor, Beckman and Associates S. Gardner, Contractor, Beckman and Associates
Approved By:	Thomas R. Farnholtz Branch Chief, Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

"The NRC continued monitoring licensee's performance by conducting an Inspection Procedure 71111.21M, "Design Bases Assurance (Teams)," inspection at Waterford Steam Electric Station, Unit 3, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Three examples of Failure to Establish and Maintain Preventive Maintenance Procedures for Safety-Related Electrical Equipment			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000382/2017008-01 Closed	Not Applicable	71111.21M
The team identified three examples of a Green non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification 6.8.1.a, for failure to establish, implement, and maintain written procedures for activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978. Specifically, prior to November 16, 2017, the licensee failed to establish and maintain procedures covered in Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," to implement maintenance for safety-related 1600 A, 600 V non-segregated metal-enclosed bus ducts, safety-related 4.16 kV G.E. Magne-Blast circuit breakers, and safety-related 480 V G.E. switchgear AKR breakers.			

Failure to Meet RG 1.9 Emergency Diesel Testing Requirements during Surveillance Test Results in Missed Surveillance			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000382/2017008-02 Closed	H.11 – Human Performance, Challenge the Unknown	71111.21M
The team identified a Green non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification Limiting Condition for Operation 3.8.1.1 for failure to maintain operability of two separate independent diesel generators. Specifically, on May 23, 2017, the licensee failed to verify that the train A emergency diesel generator energized all auto-connected shutdown loads through the load sequencer and operated for greater than or equal to five minutes in accordance with Technical Specification Surveillance Requirement 4.8.1.1.2.			

Two Examples of Failure to Submit and Receive Prior Authorization of Alternatives to ASME OM Code Leak Testing Requirements			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000382/2017008-03 Closed	Not Applicable	71111.21M
The team identified two examples of a Severity Level IV, non-cited violation of 10 CFR 50.55a(z), for failure to submit and obtain authorization prior to implementation of multiple alternatives to leak testing requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) of Nuclear Power Plants Code. Specifically, prior to November 16, 2017, the licensee did not submit and receive prior authorization to alternative leak testing requirements for safety injection valves SI-512A and SI-602B.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000382/2017008-04	Potential Failure to Obtain a License Amendment for Changes to Diesel Generator Surveillance Test Interval	71111.21M	Open

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INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures in effect at the beginning of the inspection unless otherwise noted. Currently approved inspection procedures with their attached revision histories are located on the public Web site at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the inspection procedure requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

Inspection Procedure 71111.21M - Design Bases Assurance (Team) Inspection

From October 23, 2017, to November 16, 2017, the team inspected the following components and listed applicable attributes, permanent modifications, operating experience, and operator actions.

Components - 71111.21M (5 Samples)

(1) Emergency feedwater turbine steam supply valves, MSMVAAA401A and 401B:

a) Component maintenance history and corrective action program reports to verify the monitoring of potential degradation.

b) Calculations for valve thrust and torque to verify the capability of the valve to perform its required function under the most limiting conditions.

c) Evaluation of the electric heat tracing installed downstream of the motor-operated valves to verify excessive condensate will not be generated in the event of a cold start of the emergency feedwater turbine.

d) Procedures for testing the bypass of motor-operated valve thermal overloads under accident conditions to verify operability of valve.

(2) 125 VDC Bus 3AB-DC-S

a) Component maintenance history and corrective action program reports to verify the monitoring of potential degradation.

b) Calculations for electrical distribution, system load flow/voltage drop, short-circuit, and electrical protection to verify that bus capacity and voltages remained within minimum acceptable limits.

c) The protective device settings and circuit breaker ratings to ensure adequate selective protection coordination of connected equipment during worst-case short circuit conditions.

d) Procedures for circuit breaker preventive maintenance, inspection, and testing to compare maintenance practices against industry and vendor guidance.

(3) High pressure safety injection pump B:

a) Component maintenance history and corrective action program reports to verify the monitoring of potential degradation.

b) Calculations for system flow, system flow balance, net positive suction head, surveillance test acceptance criteria minimum flow, and runout flow.

c) The impact of minimum and maximum allowable electrical power supply frequency on pump performance and net positive suction head.

d) Procedures for operation of the high pressure safety injection system under accident conditions.

e) Routing of pump motor cables.

f) Corrective action documents issued in the past five years.

g) Procedures for preventive maintenance, inspection, and testing to compare maintenance practices against industry and vendor guidance.

h) Motor sizing calculations to verify input assumptions and design loading to ensure adequate design for pumping capacity. The team put special emphasis on pump motor testing methodology, the values assigned to acceptance criteria, and whether the values supported design parameters and assumptions.

(4) Safety injection sump outlet motor-operated valve, SI-602A:

a) Component maintenance history and corrective action program reports to verify the monitoring of potential degradation.

b) Calculations for the determination of allowable leakage, target torque values for stroke testing, maximum rim-pull force, and torque switch settings to ensure valve functionality.

c) Procedures for valve and operator preventive maintenance, inspection, and testing to compare maintenance practices against industry and vendor guidance.

d) Site specific commitments to NRC Generic Letter 89-10, “Safety-Related Motor-Operated Valve Testing and Surveillance.”

(5) 480 VAC Class 1E switchgear, Bus 3B31S:

a) System health reports, component maintenance history, and corrective action program reports to verify the monitoring and correction of potential degradation.

b) Calculations for electrical distribution, system load flow/voltage drop, short-circuit, and electrical protection to verify that bus capacity and voltages remained within the minimum acceptable limits.

c) The protective device settings and feeder circuit breaker ratings to ensure adequate selective protection coordination of connected equipment during worst-case short circuit conditions.

d) Procedures for preventive maintenance, inspection, and testing to compare maintenance practices against industry and vendor guidance; including the cable aging management program.

e) Results of completed preventative maintenance on switchgear and breakers, including breaker tracking.

Large Early Release Frequency Containment Related Structures, Systems, or Components - 71111.21M (1 Sample)

(1) Containment isolation actuation system:

a) Pressurizer low pressure and containment high pressure transmitter environmental qualification files and replacement history to maintain pressure transmitters' environmental qualification.

b) Calculations for measurement loop uncertainty and response time test acceptance criteria.

c) Surveillance test procedures for emergency safety features relay testing and plant protection system channel testing.

Modifications to Mitigation Structures, Systems, or Components – 71111.21M (6 Samples)

(1) Engineering Change 530, "Ultimate Heat Sink Water Replenishment for Tornado Event"

(2) Engineering Change 40828, "Evaluation of Replacement Bushings for Unit Auxiliary Transformer"

(3) Engineering Change 46556, "CC ISV0807A Solenoid Preventative Maintenance Equivalency"

(4) Engineering Change 44782, "Emergency Diesel Generator Governor Upgrade"

(5) Engineering Change 55752, "Replace SI-512B with a Swing Check Valve"

(6) Engineering Change 63801, "Emergency Feedwater Circuitry Modification"

Operating Experience – 71111.21M (3 Samples)

(1) NRC Generic Letter 1988-03, Resolution of Generic Safety Issue 93, "Steam Binding of Auxiliary Feedwater Pumps"

(2) NRC Information Notice 2013-05, “Battery Expected Life and its Potential Impact on Surveillance Requirements”

(3) NRC Information Notice 2014-03, “Turbine-Driven Auxiliary Feedwater Pump Overspeed Trip Mechanism Issues”

Evaluation of Inspection Sample Related Operator Procedures and Actions

(1) Control room operator actions resulting from a simulated small break loss-of-coolant accident followed by a post reactor trip loss-of-offsite power with a single failure of component cooling water pump B.

a) Control room crew expected to enter procedures for standard post trip actions and loss of coolant accident recovery.

b) Following the component cooling water pump B trip, the crew was expected to restore cooling to emergency diesel generator B, using component cooling water pump AB, and prior to emergency diesel generator failure.

INSPECTION RESULTS

<table>
<tr><td colspan="4">Three examples of Failure to Establish and Maintain Preventive Maintenance Procedures for Safety-Related Electrical Equipment</td></tr>
<tr><td>Cornerstone</td><td>Significance</td><td>Cross-cutting Aspect</td><td>Report Section</td></tr>
<tr><td>Mitigating Systems</td><td>Green
NCV 05000382/2017008-01
Closed</td><td>Not Applicable</td><td>71111.21M</td></tr>
<tr><td colspan="4">The team identified three examples of a Green non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification 6.8.1.a, for failure to establish, implement, and maintain written procedures for activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978. Specifically, prior to November 16, 2017, the licensee failed to establish and maintain procedures covered in Regulatory Guide 1.33, Appendix A, Section 9, “Procedures for Performing Maintenance,” to implement maintenance for safety-related 1600 A, 600 V non-segregated metal-enclosed bus ducts, safety-related 4.16 kV G.E. Magne-Blast circuit breakers, and safety-related 480 V G.E. switchgear AKR breakers.</td></tr>
<tr><td colspan="4">Description:
Example 1: The team identified that the licensee failed to establish a procedure to perform maintenance and inspection of safety-related 1600 A, 600 V non-segregated metal enclosed bus ducts as recommended by the vendor. The vendor manual, TD-G080.0735, “General Electric Important Instructions for Armor-Clad Indoor Feeder Busway, GEH-2636,” included recommendations for cleaning dust and dirt on the busway, checking for signs of overheating, megger checks, visually check for loose bolts at the joints, proper spring tension, excessive wear, arc spatter, and sooty deposits. No procedure for performing maintenance or plans for performing maintenance were established for the safety-related metal-enclosed bus ducts. This represented a failure to establish procedures for activities covered by Regulatory Guide 1.33, Appendix A, Section 9, “Procedures for Performing Maintenance.”

Example 2: The team identified that the licensee failed to revise safety-related 4.16 kV G.E. Magne-Blast circuit breaker preventive maintenance procedures to include auxiliary switch</td></tr>
</table>

contact resistance and functional tests. Entergy maintenance procedures are written to include requirements set forth in the Entergy preventive maintenance templates. The Entergy preventive maintenance templates for circuit breakers include vendor recommendations and industry best practices, such as EPRI Technical Report 109641, "Guidance on Routine Preventive Maintenance for Magne-Blast Breakers." EPRI Technical Report 109641, Section 7, "Preventive Maintenance Tasks," provides guidance on performing auxiliary switch contact resistance tests and justifies the tests' inclusion using industry operating experience. The "Task Content" section of the Preventive Maintenance Template, "EN-Switchgear – Medium Voltage – 1KV-7KV," Revision 3, requires during inspections, cleaning and testing, and breaker overhauls to "Perform contact resistance test." The team's review of maintenance Procedure ME-003-327, "4.16 KV G.E Magne Blast Breaker," Revision 18, identified that the procedure did not include the performance of auxiliary switch contact resistance tests as required by the preventive maintenance template. This represented a failure to maintain procedures for activities covered by Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance."

Example 3: The team identified that the licensee failed to revise 480 V G.E. AKR circuit breakers preventive maintenance procedures to include reduced control voltage tests. Entergy maintenance procedures are written to include requirements set forth in the Entergy preventive maintenance templates. The Entergy preventive maintenance templates for circuit breakers include vendor recommendations and industry best practices, such as EPRI Technical Report 112938, "Routine Preventive Maintenance Guidance for AK and AKR Type Circuit Breakers." EPRI Technical Report 112938 provides guidance on performing reduced control voltage tests. In September 2008, Preventive Maintenance Template, "EN-Switchgear – Low Voltage," was changed to include a required reduced control voltage test in the visual inspection task for low voltage circuit breakers. However, as of September 12, 2017, Maintenance Procedure ME-003-330, "480 V G.E Switchgear Breakers," Revision 310 did not include the performance of reduced control voltage tests required by the preventive maintenance template. This represented a failure to maintain procedures for activities covered by Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance." This represented a failure to establish procedures for activities covered by Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance."

Corrective Action(s): In response to this issue, the licensee created corrective actions to evaluate the appropriateness and scheduling for each preventive maintenance task. This finding does not represent an immediate safety concern.

Corrective Action Reference(s): Condition Reports CR-WF3-2017-08574, CR-WF3-2017-08611, CR-WF3 2017-08632, CR-WF3-2017-08635, and CR-WF3-2017-08737

Performance Assessment:

Performance Deficiency: The team determined that the failure to establish and maintain maintenance procedures for activities covered by Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," was a performance deficiency.

Screening: This performance deficiency was more than minor, and therefore a finding, because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the failure to incorporate the testing, and inspection requirements into preventive maintenance procedures could cause unacceptable conditions to go undetected.

Significance: In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather.

Cross Cutting Aspect: The team determined that this finding did not have a cross-cutting aspect because the most significant contributor did not reflect current licensee performance.

Enforcement:
Violation: Waterford Steam Electric Station, Unit 3, Technical Specification 6.8.1.a, requires that written procedures shall be established, implemented, and maintained to cover the applicable procedures recommended in Appendix A of Regulatory Guide RG 1.33, Revision 2, dated February 1978. Appendix A, Section 9, "Procedures for Performing Maintenance" recommends in part that, "Maintenance that can affect the performance of a safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstance."

Contrary to the above, prior to November 16, 2017, the licensee failed to establish and maintain written procedures for performing maintenance that can affect the performance of safety-related equipment. Specifically, the licensee failed to establish and maintain procedures covered in Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," to implement maintenance for safety-related 1600 A, 600 V non-segregated metal-enclosed bus ducts, safety-related 4.16 kV G.E. Magne-Blast circuit breakers, and safety-related 480 V G.E. Switchgear AKR Breakers.

Enforcement Action(s): This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Meet RG 1.9 Emergency Diesel Testing Requirements during Surveillance Test Results in Missed Surveillance

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000382/2017008-02 Closed	H.11 – Human Performance, Challenge the Unknown	71111.21M

The team identified a Green non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification Limiting Condition for Operation 3.8.1.1 for failure to maintain operability of two separate independent diesel generators. Specifically, on May 23, 2017, the licensee failed to verify that the train A emergency diesel generator energized all auto-connected shutdown loads through the load sequencer and operated for greater than or equal to five minutes in accordance with Technical Specification Surveillance Requirement 4.8.1.1.2

Description:
Technical Specification Surveillance Requirement 4.8.1.1.2 requires the licensee to demonstrate each diesel generator's operability by verification, for a simulated loss-of-offsite power and simulated loss-of-offsite power in conjunction with safety injection actuation system test signal, that the following is met:

"Verifying the diesel starts on the auto-start signal, energizes the emergency busses and the permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 +420, -240 volts and 60 +1.2, -0.3 Hz during this test."

The surveillance requirement for demonstrating operability is consistent with the recommendations of Regulatory Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," Revision 4, March 2007. The licensee performs Operating Procedure OP-903-115, "Integrated Emergency Diesel Generator/Emergency Safety Features Test – Train A," Revision 39, to accomplish this Surveillance Requirement.

Procedure OP-903-115 contains "Component List(s)" which identifies all the emergency safety features loads required to auto-connect on the emergency diesel generator bus for both the simulated loss-of-offsite power and the simulated loss-of-offsite power concurrent with a safety injection actuation signal. In various steps, Procedure OP-903-115 directs the operators to verify all components listed on the "Component List" are energized while performing the various tests.

On May 23, 2017, Procedure OP-903-115 was performed without verifying all components on the "Component List" were energized. Specifically, the surveillance test was performed without verifying that the listed safety components, boric acid makeup pump B and dry cooling tower fan 6A, auto-connected and were energized. In the test results, as documented in Work Order 52685292, the licensee acknowledged the components were not available because of equipment issues and determined the test was satisfactory. On May 24, 2017, the licensee initiated Condition Report CR-WF3-2017-04435 for the unavailable components, further determining that the train A emergency diesel generator was operable because the addition of the loads was within the capacity of the diesel generator.

Regulatory Guide 1.9, Revision 4, Section 2.2.5, "LOOP Test," states that the loss-of-offsite power test must demonstrate that the emergency diesel generator "energizes all auto-connected shutdown loads through the load sequencer." It further states, "If the required loads are not available, one or more equivalent load(s) may be used." Based on Regulatory Guide 1.9, the inspectors determined that the licensee failed to perform a satisfactory surveillance test, in accordance with Surveillance Requirement 4.8.1.1.2, because all auto-connected loads were not energized and equivalent loads were not energized on the safety bus when the licensee determined the components were not available. This resulted in a missed surveillance, in accordance with Surveillance Requirement 4.0.3, and a failure to meet Technical Specification Limiting Condition for Operation 3.8.1.1 when reactor startup commenced on June 1, 2017.

Corrective Action(s): The licensee entered these issues into the corrective action program, initiated the Surveillance Requirement 4.0.3 risk evaluation, and scheduled the performance of Surveillance Requirement 4.8.1.1.2 at the first opportunity.

Corrective Action Reference(s): Condition Reports CR-WF3-2017-09106 and CR-WF3-2017-09125

Performance Assessment:
Performance Deficiency: The team determined that the failure to perform the emergency diesel generator surveillance test in accordance with written test procedures was a performance deficiency.

Screening: This 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 to respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure all components would auto-connect did not ensure that the emergency diesel generator and sequencer would be capable of carrying required loads during an event.

Significance: In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At Power," dated July 19, 2012, the finding screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather.

Cross Cutting Aspect: This finding had a human performance cross-cutting aspect, associated with challenge the unknown, because the licensee failed to stop when faced with uncertain conditions. Specifically, individuals failed to stop work when it was determined that the surveillance test procedure could not be performed as written [H.11].

Enforcement:
Violation: Waterford Steam Electric Station, Unit 3, Technical Specification 3/4.8.1, "A.C. Sources," Limiting Condition for Operation 3.8.1.1 which requires that two separate and independent diesel generators shall be operable in Modes 1, 2, 3, and 4.

Contrary to the above, from June 1, 2017, to November 16, 2017, the licensee failed to maintain two separate and independent diesel generators operable in Modes 1, 2, 3, and 4. Specifically, the licensee failed to perform a satisfactory surveillance test on train A emergency diesel generator, in accordance with Surveillance Requirement 4.8.1.1.2, because all auto-connected loads were not energized and equivalent loads were not energized on the safety bus when the licensee determined the components were not available.

Enforcement Action(s): This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Two Examples of Failure to Submit and Receive Prior Authorization of Alternatives to ASME OM Code Leak Testing Requirements			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000382/2017008-03 Closed	Not Applicable	71111.21M
The team identified two examples of a Severity Level IV, non-cited violation of 10 CFR 50.55a(z), for failure to submit and obtain authorization prior to implementation of			

multiple alternatives to leak testing requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) of Nuclear Power Plants Code.

Description:

Example 1: Reactor coolant loop 2 hot leg injection check valve, SI-512B, is an ASME Code Class 1, 3-inch swing check valve that is inservice testing Categories A and C with an active safety function. During the team's inspection of Engineering Change 55752, "Replace SI-512B with a Swing Check Valve," the team reviewed completed work orders associated with leak rate testing. ASME OM Code required leak rate testing for SI-512B is performed using Procedure OP-903-008, "Reactor Coolant System Isolation Leakage Test." The team noted that the licensee had modified the procedure based on an evaluation performed in Engineering Change 47766, "Safety Injection Check Valve Leak Test Method," approved on January 8, 2014. The changes to the test methodology involved measuring the pressure rise downstream of the valve and correlating that rise to a leak rate. If the pressure rise was less than 30 pounds per square inch, gauge, over a 30-minute period, the test result was considered satisfactory and recorded as less than the acceptance criteria of 1 gallon per minute. If pressure were to rise above 30 pounds per square inch, gauge, a leak rate would be obtained by another test.

The team determined that this test did not conform to the leak testing requirements of the ASME OM Code, Subsection ISTC, "Inservice Testing of Valves," Paragraph ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," and the licensee did not obtain prior authorization for this alternative test. The team also observed that the alternative test did not guarantee a valid leak rate result because it assumed another downstream check valve, SI-510B, was leak tight and that the piping system downstream of SI-512B was water solid, without the test verifying those assumptions. These observations called into question whether or not the alternative test, as written, would have obtained a valid result.

Example 2: Safety injection sump outlet header A isolation valve, SI-602A, is a 24-inch butterfly valve that is ASME Code Class 2 and inservice testing Category A with an active safety function. The team reviewed completed work orders associated with leak rate testing. Required leak rate testing for valve SI-602A is performed in accordance with Procedure OP-903-128, "Category A Leak Test." The team noted that the procedure allows for two tests for determining SI-602A valve leakage, depending on whether or not a spool piece is removed. One of the tests allows the use of a leak detection fluid. If no evidence of leakage exists (i.e., bubbles), the test result is recorded as satisfactory and no further leak testing is performed. If evidence of leakage exists, a leak rate is then obtained by another test.

The team determined that this test does not conform to the leak testing requirements of the ASME OM Code, Subsection ISTC, "Inservice Testing of Valves," Paragraph ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," and the licensee did not obtain prior authorization for this alternative test. Although the use of leak detection fluid is not complicated, the team observed that the test did not provide specific instructions, for example, as to how much fluid to use, how long to wait, or where to apply the fluid. These observations called into question whether or not the alternative test, as written, would have obtained a valid result.

Corrective Action(s): For SI-512B, the licensee performed an operability determination which concluded that SI-512B met technical specification leakage rate acceptance criteria of 1 gallon per minute or less based on a review of the reactor coolant system leak rate program. For SI-602A, an initial review conducted by the licensee identified that the last time the use of leak detection fluid alone for the leakage rate test of SI-602A occurred in 2006. All other tests

since 2006 obtained leak rates by tests in compliance with the ASME OM Code and were less than the specified leakage rate limit.

Corrective Action Reference(s): Condition Report CR-WF3-2017-09143 and CR-WF3-2017-09201.

Performance Assessment:
The team determined that the failure to submit and receive prior authorization for alternatives to leak testing requirements for safety injection valves SI-512B and SI-602A was a violation of 10 CFR 50.55a(z).

Screening: The team determined this violation was associated with a minor performance deficiency.

Significance: The team determined the violation to be a Severity Level IV violation similar to violation example 6.1.d.2 in the NRC Enforcement Policy.

Enforcement:
Severity: Because this violation affected the NRC's ability to perform its regulatory function, the inspectors evaluated this violation using the traditional enforcement process in accordance with the NRC Enforcement Policy, dated November 1, 2016. This violation was more than minor because there was a reasonable likelihood the change would require NRC review and approval prior to implementation, similar to violations assessed in Section 2.1.3 of the NRC Enforcement Manual. The team determined the violation to be a Severity Level IV violation similar to violation example 6.1.d.2 in the NRC Enforcement Policy.

Violation: 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," requires, in part, "Alternatives to the requirements of paragraphs (b) through (h) of this section or portions thereof may be used when authorized by the Director, Office of Nuclear Reactor Regulation, or Director, Office of New Reactors, as appropriate. A proposed alternative must be submitted and authorized prior to implementation."

Paragraph (f) of 10 CFR 50.55a, "Inservice testing requirements," requires, in part, "Systems and components of boiling and pressurized water cooled nuclear power reactors must meet the requirements of the ASME BPV Code and ASME OM Code as specified in this paragraph."

Paragraph (4) of 10 CFR 50.55a(f), "Inservice testing standards requirement for operating plants," requires, in part, that "Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the inservice test requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in paragraphs (f)(2) and (3) of this section and that are incorporated by reference in paragraph (a)(1)(iv) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components."

Contrary to the above, prior to November 16, 2017, ASME Code Class 1 and 2 valves did not meet the inservice test requirements of the ASME OM Code and the alternatives were not submitted and authorized prior to implementation. Specifically, the licensee did not submit and receive prior authorization to alternative leak testing requirements for safety injection valves SI-512A and SI 602B, which are ASME Code Class 1 and 2 valves, respectively.

Enforcement Action(s): This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Unresolved Item (Open)	Potential Failure to Obtain a License Amendment for Changes to Diesel Generator Surveillance Test Interval	71111.21M

Description:
The team identified an unresolved item for the licensee's failure to perform a 10 CFR 50.59 safety evaluation and subsequently obtain a license amendment for changes to the surveillance testing frequency of the emergency diesel generators.

The licensee's process for changing surveillance test intervals is controlled by Technical Specification 6.5.18, "Surveillance Frequency Control Program." The licensee's changes to the surveillance test intervals are made in accordance with NEI 04-10, "Risk Informed Method for Control of Surveillance Frequencies," Revision 1, as written in procedure EN-DC-355, "Engineering Evaluation of Proposed Surveillance Test Interval Changes," Revision 2.

The team reviewed the licensee's changes to the surveillance test interval, as required by Technical Specification Surveillance Requirements 4.8.1.1.2.e, for emergency diesel generators. The licensee changed the surveillance test interval for the train A and B emergency diesel generators from both emergency diesel generators tested every 18 months to each emergency diesel generator tested every 36 months. The team determined that testing the emergency diesel generators once every 36 months was contrary to guidance in Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Revision 4. Specifically, Section 2.3.2.3, "Refueling Outage Testing," requires the capability of the overall emergency diesel generator design should be demonstrated during every refueling outage not exceeding a period of 24 months.

The team determined that the licensee did not correctly evaluate the change to the surveillance interval in accordance with surveillance frequency control program change process. Specifically, the licensee did not correctly evaluate NEI 04-10, step 1, "Check for Prohibitive Commitments," and step 2, "Can Commitments be Changed?" of the change process. The team determined that this change would require a 10 CFR 50.59 safety evaluation and subsequent license amendment because it would result in more than a minimal increase in likelihood of a malfunction of a component important to safety as previously described in the final safety analysis report. Specifically, the test interval would no longer meet the applicable acceptance standard, Regulatory Guide 1.9, to which the licensee is committed.

Planned Closure Action(s): The NRC inspectors will review the final corrective actions, pending NRC resolution of applicability of 10 CFR 50.59 to the surveillance frequency control program.

Licensee Action(s): Prior to this inspection, the licensee identified this 10 CFR 50.59 issue in the corrective action program because of industry operating experience. At the time of this inspection, the licensee had not completed the final corrective action and 10 CFR 50.59 activities. These corrective actions will be completed once industry guidance on the NRC resolution of applicability of 10 CFR 50.59 to the surveillance frequency control program was available.

Corrective Action Reference(s): Condition Reports CR-WF3-2017-05590 and CR-WF3-2017-5602

NRC Tracking Number: 05000382/2017008-04

EXIT MEETINGS AND DEBRIEFS

The inspection team verified no proprietary information was retained or documented in this report.

On November 16, 2017, the team presented the preliminary results of the Inspection Procedure 71111.21M inspection to Mr. J. Dinelli, Senior Vice President, and other members of the licensee staff.

On December 14, 2017, the team presented the final results of the Inspection Procedure 71111.21M inspection to Mr. D. Brenton, General Manager-Plant Operations, and other members of the licensee staff.

LIST OF DOCUMENTS REVIEWED

Calculations

Number	Title	Revision/Date
ECC99-008	TORMIS ANALYSIS: Tornado Generated Missile Strike at Waterford 3	1
ECE89-008	Electrical Design Criteria	8
ECE90-006	EDG Loading and Fuel Oil Consumption	10
ECE91-016	Battery 3AB-S Cell Sizing	6
ECE91-055	AC Short Circuit Calculations	7
ECE91-056	Relay Settings and Coordination Curves for 6,9KV, 4.16KV and 480 Volt Buses	4
ECE91-060	Battery 3AB-S SBO	5
ECE91-195	Load Study for PDP 3AB-DC-S, 346AB, 346AB-1 and 3FDAB	2
ECE91-252	Short Circuit Study for 3AB-S	0
ECE93-003	Voltage at Motor-Operated Valve	February 12, 1994
ECE9I-050	Degraded Voltage Relay Set-point & Plant Load Study	7
ECI01-007	Determination of ECCS Measurement Channels Functional Safety Significance	1
ECI92-019	Plant Protection System Uncertainty Calculation	4
ECI93-058	Transmitter Uncertainties	4
ECI95-011	HPSI Cold Leg Injection Flow Instrumentation Loop Uncertainty Calculation	2
ECI99-001	ESF Response Time Acceptance Criteria Basis	2
ECM00-004	Emergency Feedwater Turbine Steam Supply RELAP Model	0
ECM05-003	High Pressure Safety Injection System Capacity	1
ECM07-001	NPSH Analysis of Safety Injection and Containment Spray Pumps	1
ECM89-018	SI 602 A&B Pressure Requirements	1
ECM91-011	NPSH for Safeguard Pumps in Recirculation with Valve SI-106A(B) Failed Open	4
ECM92-037	MOV Design Basis Review Calculation No. SI.002	4
ECM92-042	MOV Design Basis Review Calculation MS-401A&B	4
ECM97-022	Wet Cooling Tower Makeup requirements	A

Calculations

Number	Title	Revision/Date
ECS04-019	Risk Assessment of SI-6028 Not Fully Closed	0
ECS91-016	SI-602 Leakage Study	0
ECS98-015	Containment P&T Response Analysis	2
EE2-12-05	4.16KV Switchgears High Resistance Grounding	0
EE2-16-06	Station Service Transformer Impedance and MCC Bus Reactor Calculation	0
HVAC-059	Battery Room Air Flow Required To Limit Hydrogen Concentration To 1%	2
HVAC-070	Hydrogen Generation By Station Batteries	2
IM1024	Piping Stress Qualification for IM1024 due to Replacement of Valve SI-512B	3
MN(Q)-6-29	SIS Maximum Operating Suction Pressure	1
MNQ9-17	Tornado Multiple Missile Protection of Cooling Towers	3
MNQ93	Heat Removal Capacities of DCT and WCT After LOCA	4
SQ-MN-352	3” – 2500# FLOWSERVE Check Valve	0
SQ-MN-370	Size 3 Class 2500 (CF8M) Swing Check Valve	0

Drawings

Number	Title	Revision/Date
02-441-0653-3	SMB-00 & 000 STANDARD UNITS WITH: A1 H0BC-H3BC WORM GEAR ASSEMBLY B1 SEISMIC SUPPORT BRACKET	February 20, 1987
52B8124	24 BODY SMB-00-HBC2 ACTUATOR LIMITORQUE - 9200 ELECTRIC ACTUATED CONTROL VALVE	B
75B70058, Sh.16	Electrical Diagram 52 Control CKT	0
75B70058, Sh.17	Electrical Diagram 52 Control CKT	0
75D700340, Sh. 5	Connection Diagram	4
75D701437	Indoor AKD-5 Power Master SWGR	3
B-289, Sh. 110	Power Distribution and Motor Data Panel 3AB-DC-S	8
B-289, Sh. 110A	Power Distribution and Motor Data Panel 3AB-DC-S	13
B-289, Sh. 157	Power Distribution and Motor Data 480V SWGR Front View	12

Drawings

Number	Title	Revision/Date
B-289, Sh. 16	Power Distribution and Motor Data 4.16KV SWGR 3B3-S One-line Diagram	12
B-289, Sh. 16-1	Power Distribution and Motor Data 4.16KV SWGR 3B3-S One-line Diagram	4
B-289, Sh. 16A	Power Distribution and Motor Data 4.16KV SWGR 3B3-S Protective Relay Settings	9
B-289, Sh. 20	Power Distribution and Motor Data 480V SWGR 3A31-S One-line Diagram	16
B-289, Sh. 21	Power Distribution and Motor Data 480V SWGR 3B31-S One-line Diagram	19
B-289, Sh. 21-1	Power Distribution and Motor Data 480V SWGR 3B31-S One-line Diagram	6
B-289, Sh. 22	Power Distribution and Motor Data 480V SWGR 3AB31-S One-line Diagram	12
B-289, Sh. 22-1	Power Distribution and Motor Data 480 SWGR 3AB31-S One-line Diagram	3
B-424, Sh. 1535	Emergency FW Pump Turbine Steam Shut-off Valve 611	23
B-424, Sh. 1541	Emergency FWPT Governor Valve	20
B-424, Sh. 2389S	Control Wiring Diagram, 480V MCC 3B31-S Undervoltage Relays Sh.1	8
B-424, Sh. 2390	Control Wiring Diagram, 480V Bus 3B31-S Undervoltage Relays Sheet 2	17
B-424, Sh. 2390S	Control Wiring Diagram, 480V Bus 3B31-S Undervoltage Relays Sheet 1	12
B-424, Sh. 2397S	Control Wiring Diagram, Station Services Transformer 3B31-S Feeder	10
B-424, Sh. 2410S	Control Wiring Diagram, 480V Bus 3AB31-S Undervoltage Relays Sh.1	10
B-424, Sh. 2506S	Control Wiring Diagram, 480V MCC 3B313-S Feeder	8
B-424, Sh. 2507S	Control Wiring Diagram, 480V MCC 3B314-S Feeder	8
B-424, Sh. 2925	Control Wiring Diagram, Annunciator Display Cabinet D CP-1	8
B-424, Sh. 3016S	Control Wiring Diagram – EFAS Test Module Channel A	5
B-424, Sh. 3017S	Control Wiring Diagram – EFAS Test Module Channel A	5
B-424, Sh. 509	Control Wiring Diagram, High Pressure Safety Injection Pump B	16

Drawings

Number	Title	Revision/Date
B-424, Sh. E1535	Control Wiring Diagram - Emergency Feedwater pump Turbine Shutoff Valve VA 2MS-V611a	9
B-424, Sh. E509	Control Wiring Diagram, High Pressure Safety Injection Pump B	6
G-167, Sh. 1	Safety Injection System Flow Diagram	July 8, 1991
G-167, Sh. 2	Safety Injection System Flow Diagram	July 8, 1991
G-250S07	Reactor Aux. Bldg. El. -35.00 Conduit Details & Sections	2
G-285	Main One Line Diagram	23
G-286	1977-1165 MW Installation Key Auxiliary One Line Diagram	19
G-287, Sh. 1	125VDC and 120VAC One Line Diagram	28
G-317-S01	Reactor Aux Bldg. – El. +7.00’ Conduit, Trays & Grounding – Sh.1	14
G-329	Reactor Aux. BLDG-El-4.00 Conduit, Trays and Grounding, Sh. 4	10
G-335-S01	Reactor Auxiliary Building – EL-35.00’ Conduit, Tray & Grounding- Sh. 3	14
G-344-S01	Electrical Equipment Room SWGR, MCC & Panel Detail Sh. 1	7
T025W2000HM,	Type O Plus C, IEEE, Condenser Bushing	4

Procedures

Number	Title	Revision/Date
01-002-000	Annunciator and Control Room Instrumentation Status Control	309
ECT-64802	Emergency Feedwater Control Valves EFWMVMA 224B and EFWMVAAA223A	0
ECT-64803	Emergency Feedwater Control Valves EFWMVAAA 224A and EFWMVAAA223B	0
EN-AD-101	NMM Procedure Process	29
EN-DC-115	Engineering Change Process	21
EN-DC-115	Engineering Change Process	15
EN-DC-153	Preventative Maintenance Component Classification	15
EN-DC-310	Predictive Maintenance Program	8
EN-DC-324	Preventive Maintenance Program	18

Procedures

Number	Title	Revision/Date
EN-DC-335	PM Basis Template	8
EN-DC-355	Engineering Evaluation of Proposed Surveillance Test Interval change	2
EN-LI-101	10 CFR 50.59 Evaluations	15
EN-LI-102	Corrective Action Program	30
EN-MA-101	Conduct of Maintenance	22
EN-MA-101-03	Maintenance Work Preparation Process	7
EN-MA-119-01	Control, Storage, and Inspection of Lifting Equipment	7
EN-OP-104	Operability Determination Process	13
EN-WM-105	RAB Train "AB" Thermography Route	June 21, 2011
ME-001-012	Temporary Power from Temporary Diesel for 3A2 and 3B2 4kV Buses (MODES 1-6)	313
ME-003-210	Performance Test on DC Battery	21
ME-003-230	Battery Service Test	315
ME-003-240	Performance Test on DC EBATAB Battery	313
ME-003-301	480 VAC Overcurrent Protective Integrated Device Functional Test	8
ME-003-327	4.16 kV G.E. Magne-Blast Breaker	18
ME-003-330	480 Volt GE Switchgear Breakers	310
ME-003-410	Motor-Operated Valve Thermal Overload Channel Calibration	311
ME-004-021	Emergency Diesel Generator	31
ME-004-061	Unit Auxiliary Transformer	308
ME-004-115	4.16/6.9 kV G.E. Magne-Blast Breaker Overhaul	3
ME-004-141	Low Voltage Switchgear	302
ME-004-142	480 Volt GE Switchgear AKR Breaker Overhaul	3
ME-004-161	Low Voltage Power Distribution Panels	9
ME-004-211	Station Battery Quarterly	12
ME-007-043	Viper Testing of MOV’s	1
ME-007-047	VOTES Testing of MOV’s	5

Procedures

Number	Title	Revision/Date
ME-007-073	Testing Procedure, Unit Auxiliary Transformer Power Factor Testing	1
MI-003-219	Plant Protection System Sensor Bi-stable Response Time Verification Channel A, B, C, or D	301
MI-003-222	Matrix Response Time Verification for Reactor Protection System and Engineered Safety Features Actuation System Channels A, B, C, or D	307
MI-003-302	Containment Pressure (Narrow Range) Loop Check and Calibration CB IP6701 SMA, SMB, SMC, or SMD	304
MI-003-316	Pressurizer Pressure (Wide Range) Loop Check and Calibration RC IP0102 A, B, C, or D	302
MI-003-514	Emergency Feedwater Control Loop Check and Calibration	311
MI-003-515	Emergency Feedwater Control Loop Check and Calibration	309
MI-005-204	Calibration of Temperature Instruments	8
MI-005-464	Plant Protection System Power Supply Calibration	305
MI-005-705	Engineered Safety Features Actuation System Auxiliary Relay Cabinet 3A or 3B Power Supply and Ground Detector Test	301
MI-013-522	PPS Ground Detection Test	5
MM-006-053	Check Valve Inspection (Swing)	5
OP-002-007	Freeze Protection and Temperature Maintenance	25
OP-006-001	Plant Distribution (7KV, 4KV and SSD) System	326
OP-009-002	Emergency Diesel Generator	341
OP-009-008	Safety Injection System	40
OP-100-014	Technical Specification and Technical Requirements Compliance	337, 341
OP-500-004, Attach. 4.113	480V Bus SB Bkr Trip/Trouble	20
OP-500-004, Attach. 4.85	SS Xfmr. 3B31-S Ground/Temp Hi	20
OP-500-011	Control Room Cabinet M	38
OP-500-012	Control Room Cabinet N	37
OP-500-013	Control Room Cabinet SA	22
OP-500-014	Control Room Cabinet SB	21
OP-901-521	Severe Weather and Flooding	325

Procedures

Number	Title	Revision/Date
OP-902-002	Loss of Coolant Accident Recovery	20
OP-903-008	Reactor Coolant System Isolation Leakage Test	18
OP-903-011	High Safety Injection Pump Operability Check	14
OP-903-029	Safety Injection Actuation Signal Test	24
OP-903-030	Safety Injection Pump Operability Verification	34
OP-903-033	Cold Shutdown IST Valve Tests	50
OP-903-066	Electrical Breaker Alignment Check	302
OP-903-094	ESFAS Subgroup Relay Test – Operating	30
OP-903-095	ESFAS Subgroup Relay Test – Shutdown	13
OP-903-100	MOV Overload Bypass Test	310
OP-903-107	Plant Protection System Channel A B C D Function Test	310
OP-903-108	SI Flow Balance Test	15
OP-903-108, Att. 10.3	Completed Flow Balance for HPSI Pump B	14
OP-903-115	Integrated Emergency Diesel Generator/Emergency Safety Features Test – Train A	39
OP-903-116	Train B Integrated Emergency Diesel Generator/ Engineering Safety Features Test	39
OP-903-128	Category A Leak Test	11
SEP-ISI-104	ASME SECTION XI, DIVISION I INSERVICE INSPECTION PROGRAM	6
SEP-WF3-IST-1	WF3 INSERVICE TESTING BASES DOCUMENT	6
SEP-WF3-IST-2	WF3 INSERVICE TESTING PLAN	6
SEP-WF3-IST-3	WF3 INSERVICE TESTING CROSS REFERENCE DOCUMENT	6
UNT-006-033	Technical Specifications Surveillance Frequency List	1
W2.109	Procedure Development, Review and Approval	23

Engineering Changes

Number	Title	Revision/Date
EC 31892	Documentation of Waterford 3's Response to NRC Generic Letter No. 96-01 "Testing of Safety-Related Logic Circuits"	0
EC 40828	Evaluation of Replacement Bushing for UAT	1
EC 44782	Emergency Diesel Generator Governor Upgrade	April 23, 2014
EC 47766	Safety Injection Check Valve Leak Test Method OP-903-008	0
EC 53772	Issue Markup to ECC99-008 For EDG Lines (Tormis) not Protected for Tornado Missiles	0
EC 54307	Leak Repair of EDG Fuel Oil Feed Tank Vent Pipes	0
EC 55752	Replace SI-512B with a Swing Check Valve	0
EC 59135	Child EC For SI-512B Hard Seat Option	0
EC 61267	EDG Day Tank Vent Lines Installation Clarification	0
EC 64801	Emergency Feedwater Circuitry Modification	0

Environmental Qualification Documents

Number	Title	Revision
EC 40278	Mark-up of LPLEQA8.1D LPLEQA8.1C	4
EC 59039	Mark-up of EQMI-8.1 LPLEQA8.1D	11
EC 73625	Mark-up of EQMI-8.1	11
LPL-EQA08.01C	Rosemount 1153 Series D Transmitters	3
LPL-EQA-8.01D	Rosemount Model 1154 Series H Transmitters	3
LPL-EQA-8.01D	Rosemount Model 1154 Series H Transmitters	4
LPL-EQA-8.0I	Rosemount Model 3154N Transmitters	0
LPL-EQMI-08.01	Rosemount Model 1153 Series A, B &D, 1154 &1154 Series H Transmitters and 1159 Remote Seals	11
LPL-EQMI-8.01B	Rosemount Model 3152N, 3153N, and 3154N Series Transmitters and 3159 Remote Seals	0

Vendor Documents

Number	Title	Revision/Date
15-111494-001	SWING CHECK VALVE STAINLESS STEEL. NOREM TRIM BUTT WELD ENDS. SIZE: 3” CLASS: 2500	1
Form 2432	Instruction Manual Type 9200 T-Ring Butterfly Valve Bodies	March 1974

Vendor Documents

Number	Title	Revision/Date
GEK-721	Instructions for Type AKD-6 Low voltage	August 1977
Letter-C&D Technologies	Battery Cover Crack	May 15, 2013
Lou-1564.261-B	Ebasco Purchase Specification for Metal-Enclosed 600Volt Class Draw-out type Class 1E Buses 3A31-S, 3B31-S, 3AB31-S, Transformer 3A315-S, 3B315-S & Non-Class 1E Buses 3A32, 3B32	13
RAL-21146	Design and Seismic Analysis Report (Size 3 Class 2500 (CF8M) Swing Check Valve Drawing 15-111494-001)	0
RS-1476	Standby Battery Vented Cell Installation and Operating Instruction	6
TD-A1800.0095	Allis-Chalmers Installation Operation Maintenance Instruction Induction Motors/Generators Horizontal 500, 580, 30 Frames M3514-02	October 31, 1996
TD-F994.0085	Swing check Valve, Size 3 Class 2500 Operation and Maintenance Manual	0
TD-G080,0735	General Electric Important Instructions for Armor-Clad Indoor Feeder Busway, GEH-2636	0
TD-G080.0625	General Electric Station Service Ventilated Dry Transformer	0
TD-G080-0095	General Electric Switchgear Magne-Blast Breaker	6
TD-G080-0145	GE Low Voltage Switchgear Tech Manual	0
TD-L200.0055	LIMITORQUE VALVE CONTROLS TYPE SB-1 AND SMB AND 00 FOR OPERATING AT HIGH TEMPERATURE	0
TD-S440.0015	Struthers Dunn Type A112 & 112 Relays	July 31, 1997
TD-W120.3115	Westinghouse MCCB AB De-ion breaker	0
TD-W120.3135	Westinghouse MCCB	0
TD-W120.3145	Westinghouse Tri-Pac Breaker	April 1976
W290.0055	2301A Load Sharing and Speed Control	0
W290.0065	Digital Reference Unit	0
W290.0075	EDG Proportional Governor/Actuator	0

Design Basis Documents

Number	Title	Revision
W3-DBD-001	Safety Injection System	305

Design Basis Documents

Number	Title	Revision
W3-DBD-002	Emergency Diesel Generator & Automatic Load Sequencer	305
W3-DBD-003	Emergency Feedwater System	302
W3-DBD-006	Main Steam System	2
W3-DBD-008	Electrical Distribution (DC Portion)	1
W3-DBD-009	Reactor Coolant System & Steam Generator Blowdown System	304
W3-DBD-011	Electrical Distribution (AC Portion)	1
W3-DBD-012	Plant Protection System Design Basis Document	2
W3-DBD-014	Safety Related, Air Operated Valves	303
W3-DBD-026	Containment Isolation and Leakage Rate Testing	0

Quality Assurance Audit Reports

Number	Title	Date
QA-4-2016-W3-1	Engineering (Design Control)	April 14, 2016
QA-8-2017-W3-1	Engineering Programs	March 13, 2017
QA-8-2017-W3-2	Engineering Programs	April 25, 2017

Miscellaneous

Number	Title	Revision/Date
CN7C7244	Connection To Auxiliary Transformer	1
DC	System Health Report, 125VDC Distribution	Q2-2017
EG	System Health Report, Emergency Diesel Generator	Q2-2017
EN-Motor	EN-Motor-Medium Voltage (>600V/<15KV)	4
ER-W3-2004-0575-001	Reclassify SI-602 A & B as IST Category A	0
LO-WLO-2017-00011	2017 Pre NRC DBAI Focus Self-Assessment	October 10, 2017
Procurement Eval. 00155992	Switch, Temperature Hot Spot, Indicating	---
SD-CC	Component Cooling Water System Description	22
SD-SI	Safety Injection	15

Miscellaneous

Number	Title	Revision/Date
SPEC-15-00002-W	Reactor Coolant Hot Leg Injection Check Valve SI MVAAA512 B Replacement	1
SSD	SSD - 480V Station Service Distribution	Q2-2017
STI 17-001	Integrated EDG/ESF Test	0
WLP-OPS-DG00	Emergency Diesel Generator Training	32

Condition Reports

CR-WF3-2014-05582	CR-WF3-2014-05662	CR-WF3-2014-05690	CR-WF3-2014-05131	CR-WF3-2016-01754	CR-WF3-2017-01231
CR-WF3-2017-04865	CR-WF3-2017-07888	CR-WF3-2017-08621	CR-WF3-2017-08618	CR-WF3-2017-08589	CR-WF3-2017-08448
CR-WF3-2015-05792	CR-WF3-2016-05473	CR-WF3-2017-02670	CR-WF3-2017-07682	CR-WF3-2015-06557	CR-WF3-2016-05478
CR-WF3-2017-02727	CR-WF3-2017-06067	CR-WF3-2015-07737	CR-WF3-2017-02633	CR-WF3-2017-04436	OE-NOE-2005-00338
CR-WF3-2017-06067	CR-WF3-2014-05529	CR-WF3-2014-05341	CR-WF3-2014-05413	CR-WF3-2014-05690	CR-WF3-2017-07223
CR-WF3-2014-05131	CR-WF3-2004-02847	CR-WF3-1998-00516	CR-WF3-2015-04850	CR-WF3-2008-05183	CR-WF3-2017-07462
CR-WF3-2015-04850	CR-WF3-2008-05183	CR-WF3-2017-05602	CR-WF3-2017-5590	CR-WF3-2017-04435	CR-WF3-2017-0572
CR-WF3-2017-7462	CR-WF3-2017-03768	CR-WF3-2016-07647	CR-WF3-2016-07921	CR-WF3-2016-04038	CR-WF3-2016-04038
CR-WF3-2015-07975	CR-WF3-2015-05346	CR-WF3-2015-07907	CR-WF3-2015-06950	CR-WF3-2009-05400	CR-WF3-2014-05458
CR-WF3-2017-01148	CR-WF3-2017-01055	CR-WF3-2017-01045	CR-WF3-2017-01046	CR-WF3-2017-01047	CR-WF3-2014-05369
CR-WF3-2014-05131	CR-WF3-2014-05841				

Condition Reports Generated During this Inspection

CR-HQN-2017-01724	CR-HQN-2017-01906	CR-WF3-2017-07462	CR-WF3-2017-08432	CR-WF3-2017-08448	CR-WF3-2017-08511
CR-WF3-2017-08518	CR-WF3-2017-08519	CR-WF3-2017-08521	CR-WF3-2017-08559	CR-WF3-2017-08568	CR-WF3-2017-08572

Condition Reports Generated During this Inspection

CR-WF3-2017-08574	CR-WF3-2017-08580	CR-WF3-2017-08582	CR-WF3-2017-08583	CR-WF3-2017-08585	CR-WF3-2017-08589
CR-WF3-2017-08606	CR-WF3-2017-08611	CR-WF3-2017-08616	CR-WF3-2017-08618	CR-WF3-2017-08621	CR-WF3-2017-08627
CR-WF3-2017-08632	CR-WF3-2017-08634	CR-WF3-2017-08635	CR-WF3-2017-08678	CR-WF3-2017-08680	CR-WF3-2017-08689
CR-WF3-2017-08737	CR-WF3-2017-08757	CR-WF3-2017-08940	CR-WF3-2017-08962	CR-WF3-2017-08982	CR-WF3-2017-08983
CR-WF3-2017-09093	CR-WF3-2017-09106	CR-WF3-2017-09107	CR-WF3-2017-09108	CR-WF3-2017-09125	CR-WF3-2017-09132
CR-WF3-2017-09140	CR-WF3-2017-09143	CR-WF3-2017-09144	CR-WF3-2017-09164	CR-WF3-2017-09165	CR-WF3-2017-09185
CR-WF3-2017-09201					

Work Orders

WR37471	12694	15069	27321 01	44570 01	48893 01
53699	57714 01	124211 01	125122 01	127292	153521 01
154929 01	183024 01	183173 01	212639 01	263714	263714
309077	357372	395966	396915	411850	411921
50010020	51523197 01	51523197 04	51523197 06	51655055 01	51663303 01
51663303 01	52320766 01	52333000 01	52369790	52369908 01	52433042
52442300	52475662	52475662	52485562 01	52496264 01	52504349 01
52505058 01	52507904 01	52507904 02	52514258 01	52523350 01	52534002
52550025	52570374 01	52577433	52581739 01	52591365 01	52610648
52610648	52628265	52645751	52647626	52655753 01	52679221 01
52680941	52683228	52683228	52685151	52737542 01	

ADDITIONAL REQUESTS

Paperwork Reduction Act Statement

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

Modification Selections

Number	Title	System	Inspector
40828	EVALUATION OF REPLACEMENT BUSHINGS FOR UAT		N Okonkwo
44782	EDG GOVERNOR UPGRADE (BASE EC)	EG	S Gardner
46556	CC ISV0807A SOLENOID PREVENTATIVE MAINTENANCE EQUIVALENCY	CC	J Braisted
55752	REPLACE SI-512B WITH A SWING CHECK VALVE	SI	J Braisted
63801	Emergency Feedwater Circuitry Modification	EFW	C Baron
	LBDCR Change to OP-100-014 Revision 337, Ultimate Heat Sink	UHS	C Baron
EC 530	Ultimate Heat Sink Water Replenishment for Tornado Event	UHS	C Baron

Component Selections

No.	Component	Inspector
1	Turbine Emergency Feedwater Steam Supply Valves, MSMVAAA401A AND 401B, (DC valves)	C Baron
2	125V dc Bus 3AB-DC-S	S Gardner
4	High Pressure Safety Injection Pump B and Motor	C Baron
5	Sump Outlet Motor-Operated Valve Safety Injection SI-602A	J Braisted
6	480 Vac Class 1E switchgear, Bus 3B31S	N Okonkwo
7	Containment isolation System/Actuation System	G George

Operating Experience

Number	**Title**	**Inspector**
IN 2013-05	Battery Expected Life and its Potential Impact on Surveillance Requirements	S Gardner
IN 2014-03	Turbine-Driven Auxiliary Feedwater Pump Overspeed Trip Mechanism Issues	A Athar
GL 88-03	Resolution of Generic Safety Issue 93, "Steam Binding of Auxiliary Feedwater Pumps"	A Athar

Problem Identification CRs

CR	**Subject**	**Inspector**
	Diesel generator day tank degradation	Jon Braisted
	3B31 issue	Nnaerika Okonkwo

Additional Requests

1. Please create an item (link) in Certrec for each component listed.
2. Provide the following documents for each component, in addition to Section II of the RFI:
    a. Preventive maintenance, surveillance, and test procedures; and normal/abnormal/emergency operating procedures.
    b. Frequency of preventive maintenance.
    c. A List with brief description of corrective action documents for previous 3 years. Provide an additional list of operability evaluations which discuss degraded or nonconforming conditions.
    d. Vendor Manuals.
3. Please the following program procedures in one certrec item:
    a. Corrective Action Program
    b. Operability Determinations
    c. Engineering Change
    d. Procedure Change
    e. 50.59 Procedures
    f. Preventive Maintenance Programs
4. Please provide electronic copies of the following CRs and corrective actions in one certrec item:

2014-5162	2014-5375	2014-5414	2014-5446	2014-5662
2014-5173	2014-5377	2014-5417	2014-5448	2014-5670
2014-5175	2014-5384	2014-5419	2014-5450	2014-5690
2014-5212	2014-5385	2014-5420	2014-5452	2014-5704
2014-5213	2014-5388	2014-5421	2014-5458	2014-5708
2014-5224	2014-5390	2014-5422	2014-5497	2014-5714
2014-5304	2014-5392	2014-5423	2014-5520	2014-5720
2014-5341	2014-5407	2014-5429	2014-5529	2014-5725
2014-5343	2014-5412	2014-5441	2014-5582	2014-5730
2014-5374	2014-5413	2014-5445	2014-5584	2014-5732

WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC DESIGN BASES ASSURANCE INSPECTION REPORT 05000382/2017008 - December 28, 2017

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DOCUMENT NAME: R:_REACTORS_WAT\2017\Word Docs\WAT2017008-DBA-GAG.docx
ADAMS ACCESSION NUMBER: ML17362A424
☒ SUNSI Review By: GGeorge ADAMS: ☒ Yes ☐ No ☐ Non-Publicly Available ☒ Publicly Available ☒ Non-Sensitive ☐ Sensitive Keyword: NRC-002

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NAME	GGeorge	JBraisted	NOkonkwo	GCallaway	AAthar	GMiller
SIGNATURE	*/RA/*	*/RA/*	*/RA/*	*/RA/*	*/RA/*	*/RA/*
DATE	12/26/17	12/21/17	12/26/17	12/20/17	12/27/17	12/27/17
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