



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

July 18, 2018

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

**SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – NRC INTEGRATED  
INSPECTION REPORT 05000382/2018002**

Dear Mr. Dinelli:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Waterford Steam Electric Station, Unit 3. On July 12, 2018, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. Further the inspectors documented a licensee-identified violation which was determined to be of very low safety significance. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

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

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the Waterford Steam Electric Station, Unit 3.

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

Sincerely,

**/RA/**

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

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

Enclosure:  
Inspection Report 05000382/2018002  
w/ Attachment: Documents Reviewed

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

Docket Number(s): 05000382

License Number(s): NPF-38

Report Number(s): 05000382/2018002

Enterprise Identifier: I-2018-002-0002

Licensee: Entergy Operations, Inc.

Facility: Waterford Steam Electric Station, Unit 3

Location: Killona, Louisiana

Inspection Dates: April 1, 2018 to June 30, 2018

Inspectors: F. Ramírez, Senior Resident Inspector  
C. Speer, Resident Inspector  
C. Henderson, Senior Resident Inspector, Arkansas Nuclear One  
W. Sifre, Senior Reactor Inspector  
C. Smith, Reactor Inspector  
E. Uribe, Reactor Inspector

Approved By: G. Miller  
Chief, Project Branch D  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated 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. A self-revealed violation and additional items are summarized in the tables below. A licensee-identified non-cited violation is documented in report Section 71153.

### List of Findings and Violations

Failure to Ensure Appropriate Chemistry Controls on the Component Cooling Water Heat Exchangers			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000382/2018002-01 Closed	[H.12] – Human Performance, Avoid Complacency	71111.07
The inspectors reviewed a self-revealed, Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," which occurred because the licensee did not prescribe procedures for preventing fouling of the component cooling water heat exchangers that were appropriate to the circumstances. Specifically, the licensee did not require in its instructions for adding biocide to the auxiliary component cooling water system that additions be coupled with running the associated auxiliary component cooling water pump or other means of ensuring that the biocide would be sufficiently circulated through the system. As a result, on February 8, 2018, component cooling water heat exchanger B failed a performance test and therefore would not maintain required design basis temperatures under all accident conditions due to biological fouling.			

### Additional Tracking Items

Type	Issue number	Title	Report Section	Status
URI	05000382/2018002-02	10 CFR 50.59 Evaluation Associated with Emergency Feedwater Logic Modification	71111.17T	Open
LER	05000382/2018-001-00	Failure to Enter Limiting Condition of Operation Action Statement due to Lack of Procedure Guidance Results in a Condition Prohibited by Technical Specifications	71153	Closed

## **PLANT STATUS**

The plant operated at or near rated thermal power for the entire inspection period.

## **INSPECTION SCOPES**

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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**

### 71111.01 - Adverse Weather Protection

#### Summer Readiness (1 Sample)

On April 30, 2018, the inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems and walked down:

- (1) Transformer yard
- (2) Switchyard

#### Seasonal Extreme Weather (1 Sample)

On May 7, 2018, the inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of hurricane season and walked down:

- (1) Main steam isolation valve areas
- (2) Dry cooling tower areas
- (3) Wet cooling tower areas

### 71111.04 - Equipment Alignment

#### Partial Walkdown (3 Samples)

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

- (1) Auxiliary component cooling water train B with train A out of service for maintenance on April 2, 2018
- (2) Emergency feedwater system train B with train A out of service for maintenance on May 2, 2018

- (3) Component cooling water train A with train B out of service for maintenance on May 23, 2018

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the containment spray system on May 16, 2018.

71111.05—Fire Protection

Quarterly Inspection (6 Samples)

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

- (1) +21 vestibule, Fire Area RAB 3A-003, on April 27, 2018
- (2) Component cooling water pump A, Fire Area RAB 19, on April 27, 2018
- (3) Condensate polisher building upper levels, Fire Area NS-CP-002, on May 9, 2018
- (4) Fire water pump house, Fire Area FWPH-001, on May 16, 2018
- (5) Battery Room 3A, Fire Area RAB 12, on June 12, 2018
- (6) Cable vault, Fire Area RAB 1E, on June 12, 2018

71111.06—Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the component cooling water pump rooms on April 4, 2018.

71111.07—Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated component cooling water heat exchanger performance on June 11, 2018.

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated licensed operator performance in the simulator during an emergency exercise on June 20, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated the control room during engineered safety features actuation system subgroup relay test on train B on June 25, 2018.

#### 71111.12—Maintenance Effectiveness

##### Routine Maintenance Effectiveness (3 Samples)

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

- (1) Containment spray system on May 8, 2018
- (2) Reactor cutback system on June 26, 2018
- (3) Startup transformers on June 28, 2018

#### 71111.13—Maintenance Risk Assessments and Emergent Work Control (6 Samples)

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

- (1) Risk assessment for planned Yellow risk due to emergency feedwater system train A work window on May 2, 2018
- (2) Risk assessment for planned work on switchgear ventilation on May 14, 2018
- (3) Emergent work on emergency diesel generator A1 fuel oil storage tank on June 1, 2018
- (4) Emergent Yellow risk due to severe weather on June 11, 2018
- (5) Emergent work on essential chiller B on June 13, 2018
- (6) Emergent work on static uninterruptible power supply A on June 19, 2018

#### 71111.15—Operability Determinations and Functionality Assessments (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Letdown inside containment isolation valve packing leak on April 18, 2018
- (2) Control room envelope during pressure boundary repairs on April 26, 2018
- (3) Containment spray riser level indication on May 8, 2018
- (4) Switchgear auxiliary air handling unit outlet damper on May 15, 2018
- (5) Letdown heat exchanger temperature control valve on June 27, 2018

#### 71111.17T—Evaluations of Changes, Tests, and Experiments (22 Samples)

The inspectors evaluated the following from April 1, 2018, to April 6, 2018:

##### 10 CFR 50.59 Evaluations

- (1) 15-02 – Fukushima Emergency Preparedness Communications – Engineering Change (EC) 47846 and licensing basis document change request (LBDCR) 15-019
- (2) 15-03 – EC 58901, “Evaluate RC 1T0125-1 for Use as CPC Input”
- (3) 15-05 – EC 61746, “Temporary Modification for Control Element Drive Mechanism Control System Position Switches”

- (4) 16-02 – EC 65610, “Technical Requirements Manual 3.3.4 Turbine Valve Testing One Time Extension”
- (5) 17-03 – EC 62939 - Update Specifications 1564.467 and 1564.468 to accept Drillco Maxi-Bolt undercut anchors, add Regulatory Guide (RG) 1.199 to Updated Final Safety Analysis Report (UFSAR) Chapter 1.8, add a description of how to use code ACI 349-01, Appendix B, to UFSAR Chapter 3.8, and issue Calculation ECC17-001
- (6) 17-04 – EC 64801 Emergency Feedwater Logic Modification
- (7) 17-07 – EC 62976 Enable Trip for Open Phase Detection Systems
- (8) 17-08 – CR-WF3-2017-5763 Compensatory Measure: Addition to OP-500-003 for Manual Action to Restart Essential Chiller for Design Basis Events without LOOP

#### 10 CFR 50.59 Screening/Applicability Determinations

- (1) PAD-EC-0000061092 – Revise Combustible Loading Calculation ECF91-024 for RAB 22 and ECF91-030 for RAB 30
- (2) PAD-MM-006-207 – WMVAAA184A and B (M),(M1), (N) and (N1) valve replacement
- (3) PAD-UNT-006-033 – Surveillance Frequency Extensions for Selected Population of Molded Case Circuit Breakers (Technical Specification Surveillance Requirement 4.8.4.1.B)
- (4) 0000044904 – Main Steam Isolation Valve Low Low Nitrogen Pressure Alarm Setpoint Change
- (5) 0000054158 – Dry Cooling Tower Missile Shield Panel Closure Plate - Train A Ultimate Heat Sink Margin Restoration Project Phase 1
- (6) 0000054159 – Dry Cooling Tower Missile Shield Covering – Train B Ultimate Heat Sink Margin Restoration Project
- (7) 0000059101 – Dry Cooling Tower Tube Sleeving
- (8) 0000062125 – RCP 2A Speed Input to CPC B Degraded Voltage Enhancement
- (9) 0000064156 – Engineering Evaluation of Pressurizer Heater Welds CR-WF3-2015-8163
- (10) 0000064246 – Evaluation of Crack Between Fire Areas RAB-33 AND RAB-30
- (11) 0000067163 – Evaluate 6W12CM10 Using the Ultimate Strength Design Method
- (12) 0000068045 – Update PAD SUPS A / B Move from Phase III to Phase II
- (13) 0000069189 – Temporary Power for the Supplementary Chiller B Chilled Water Common Circuits in PDP-386A
- (14) 0000073256 – Installation of Suppression Diode for 152X Relay in the Fast Bus Transfer Circuit



#### 71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following permanent modification:

- (1) Permanent modification to raise component cooling water flow to containment spray pump bearing and seals on May 9, 2018

#### 71111.19—Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Auxiliary component cooling water header A component cooling water heat exchanger outlet temperature control valve following maintenance on April 3, 2018
- (2) Chemical volume control pump B following maintenance on April 17, 2018
- (3) Emergency feedwater header B to steam generator 2 primary flow control valve following maintenance on April 25, 2018
- (4) Containment spray train B following maintenance on May 23, 2018
- (5) Control room envelope following repairs on May 31, 2018

#### 71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

##### In-service (3 Samples)

- (1) Auxiliary component cooling water pump B on May 18, 2018
- (2) Component cooling water pump B on May 24, 2018
- (3) Containment spray pump B on June 12, 2018

##### Reactor Coolant System Leak Detection (1 Sample)

- (1) Reactor coolant system unidentified leakage calculation on April 19, 2018

#### 71114.06—Drill Evaluation

##### Emergency Planning Drill (1 Sample)

The inspectors evaluated an emergency planning training drill on June 20, 2018.

### **OTHER ACTIVITIES – BASELINE**

#### 71151—Performance Indicator Verification

The inspectors verified licensee performance indicator submittals listed below:

##### MS05: Safety System Functional Failures (SSFFs) (1 Sample)

- (1) Unit 3 (April 1, 2017, through March 31, 2018)

MS06: Emergency AC Power Systems (1 Sample)

(1) Unit 3 (April 1, 2017, through March 31, 2018)

MS07: High Pressure Injection Systems (1 Sample)

(1) Unit 3 (April 1, 2017, through March 31, 2018)

71152—Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for potential adverse trends that might be indicative of a more significant safety issue. The inspectors identified an observation related to the evaluation of non-adverse conditions in the Maintenance Rule Program that is documented in the Inspections Results section below.

Annual Follow-up of Selected Issues (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) Potential preconditioning of safety-related valves on May 15, 2018
- (2) Corrective Actions to NCV 05000382/2017002-04 and CR-WF3-2017-06754

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

Licensee Event Reports (1 Sample)

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

- (1) Licensee Event Report (LER) 05000382/2018-001-00, Failure to Enter Limiting Condition of Operation Action Statement due to Lack of Procedure Guidance Results in a Condition Prohibited by Technical Specifications (ADAMS Accession No. ML18051B502), on February 20, 2018. A licensee-identified violation associated with this LER is documented in the Inspections Results section below.

## INSPECTION RESULTS

Failure to Ensure Appropriate Chemistry Controls on the Component Cooling Water Heat Exchangers			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000382/2018002-01 Closed	[H.12] – Human Performance, Avoid Complacency	71111.07
<p>The inspectors reviewed a self-revealed, Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” which occurred because the licensee did not prescribe procedures for preventing fouling of the component cooling water heat exchangers that were appropriate to the circumstances. Specifically, the licensee did not require in its instructions for adding biocide to the auxiliary component cooling water system that additions be coupled with running the associated auxiliary component cooling water pump or other means of ensuring that the biocide would be sufficiently circulated through the system. As a result, on February 8, 2018, component cooling water heat exchanger B failed a performance test and therefore would not maintain required design basis temperatures under all accident conditions due to biological fouling.</p>			
<p><u>Description:</u></p> <p>On February 8, 2018, while analyzing the results of Procedure PE-004-021, “Component Cooling Water Heat Exchanger Performance Test,” Revision 5, the licensee discovered that component cooling water heat exchanger B could not maintain its required outlet temperature. The outlet temperature of the heat exchanger is required to be maintained at less than 115 degrees Fahrenheit (F) under design basis accident conditions and the acceptance criterion for Procedure PE-004-021 is an outlet temperature of less than 114 degrees F. Testing showed that under design basis accident conditions, component cooling water heat exchanger B outlet temperatures could exceed 120 degrees F.</p> <p>In reviewing the event, the licensee determined that biological fouling was the most likely cause of the degraded condition. The component cooling water heat exchanger carries component cooling water in its tube side. Biological buildup on the shell side of the heat exchanger degraded its ability to transfer heat to the auxiliary component cooling water such that it could not meet its design basis requirements. This condition has potentially existed since the summer of 2015.</p> <p>The licensee uses Procedure CE-002-003, “Maintaining Auxiliary Component Cooling Water Chemistry,” Revision 304, to address potential biological fouling in the auxiliary component cooling water system, including the shell side of the component cooling water heat exchanger. Procedure CE-002-003 only required biocide to be added on an “as needed” basis based on periodic chemistry sampling. However, because the biological fouling adhered tightly to the component cooling water heat exchanger surfaces, the chemistry sampling of auxiliary component cooling water did not show increased biological levels despite biological fouling being present. Additionally, although it included instructions for adding biocide to reduce biological fouling, revisions of Procedure CE-002-003 in use prior to the February 8, 2018, failed test did not include specific instructions to ensure that the biocide additions were dispersed through the auxiliary component cooling water system. Notably, Procedure CE-002-003 did not include a requirement to couple additions with operation of the</p>			

auxiliary component cooling water pumps or for alternating biocide types to address biological resistance.

The licensee completed an engineering evaluation and determined that the heat exchanger could have performed its safety function despite the degraded condition. Although potentially unable to maintain its required outlet temperature given design basis ambient air temperatures, the licensee found that given the actual ambient air temperatures over the previous 3 years, the heat exchanger would have maintained the required outlet temperatures.

**Corrective Actions:** The licensee performed cleaning and biocide additions to reduce fouling in the component cooling water heat exchangers A and B. Additionally, the licensee revised Procedure CE-002-003 to include detailed guidance on adding biocide to address biological fouling, including requiring additions to coincide with auxiliary component cooling water pump operation, requiring routine monthly additions rather than basing additions solely on chemistry sampling, and directions for changing biocide types to address biological resistance.

**Corrective Action References:** CR-WF3-2018-00785, CR-WF3-2018-00951, CR-WF3-2018-01001

**Performance Assessment:**

**Performance Deficiency:** The failure to provide procedures to address biological fouling of the component cooling water heat exchangers that were appropriate to the circumstances was a performance deficiency.

**Screening:** The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not address biological fouling to ensure the component cooling water heat exchangers could maintain the required temperatures under all design basis accident conditions.

**Significance:** Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because it involved the design or qualification of a mitigating structure system or component but maintained its operability.

**Cross-cutting Aspect:** The finding had a cross-cutting aspect in the area of human performance associated with avoiding complacency because individuals did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk even while expecting successful outcomes. Specifically, the licensee did not recognize and plan for the possibility of latent issues associated with their approach to controlling biological fouling in the auxiliary component cooling water system.

**Enforcement:**

**Violation:** As required by Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances."

Contrary to the above, prior to February 8, 2018, the licensee's procedure for maintaining auxiliary component cooling water chemistry, an activity affecting quality, was not appropriate to the circumstances. Specifically, Procedure CE-002-003, "Maintaining Auxiliary Component Cooling Water Chemistry," did not include appropriate instructions for adding biocide to the auxiliary component cooling water system to ensure adequate dispersal. As a result, the train B component cooling water heat exchanger was unable to meet its design basis requirements due to biological fouling.

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

Unresolved Item (Open)	10 CFR 50.59 Evaluation Associated with Emergency Feedwater Logic Modification URI 05000382/2018002-02	71111.17T
<p><u>Description:</u> The licensee changed the emergency feedwater logic, as described in the Updated Final Safety Analysis Report (UFSAR), Section 7.3.1.1.6, from flow control mode to level control mode during a safety injection actuation signal. To accomplish this change, the licensee had to modify the following logic system signals and setpoints: steam generator critical level, steam generator lo level, steam generator lo-lo level, safety injection actuation, control board manual control, and the steam generator lo-lo level annunciator. The NRC team questioned whether the emergency feedwater modification required additional information to determine if the 10 CFR 50.59 evaluation was adequate, or if NRC approval was needed for the change. Specifically, the NRC team questioned if the emergency feedwater logic change:</p> <ul style="list-style-type: none"> <li>• used a method of evaluation other than what was described in the UFSAR (e.g. the use of the TRANFLOW program) or</li> <li>• would result in a more than minimal increase in the likelihood of occurrence of a malfunction of a system important to safety. Specifically, because the emergency feedwater logic change introduced the potential to overcool the reactor, and substituted a previous automatic action for manual operator action, the NRC team questioned if the change and associated 50.59 evaluation addressed these concerns.</li> </ul> <p>Planned Closure Actions: The NRC and the licensee are working to gather more information related to the Final Safety Analysis Report-described methods for steam generator analyses and if the change resulted in a "more-than-minimal" increase in risk. Specifically, the licensee plans to provide an analysis that demonstrates the emergency feedwater logic change would not result in a more than minimal increase in the likelihood of an overcooling accident.</p> <p>Licensee Actions: The licensee has implemented a compensatory measure to take manual control of the emergency feedwater system during a safety injection signal such that an overcooling event will be prevented.</p> <p>Corrective Action References: CR-WF3-2017-06067, CR-WF3-2017-05882, CR-WF3-2017-05173</p>		

Observation	71152
The inspectors identified a trend involving deficient Maintenance Rule functional failure screenings. Specifically, the inspectors identified that for condition reports that were classified as non-adverse in accordance with Licensee Procedure EN-LI-102, "Corrective Action	

Program,” the Maintenance Rule evaluation stated: “This condition report has been classified as non-adverse by CRG [condition review group]. Based on this non-adverse classification this CR [condition report] has been auto classified not to impact any system maintenance rule function.” The condition review group was the management group responsible for condition report review, categorization, and assignment of responsibilities. The same function is now performed by the performance improvement review group. The inspectors identified numerous condition reports with this Maintenance Rule screening, which impacted safety-related systems such as emergency feedwater system, containment spray system, plant protection system, component cooling water system, and 125 Vdc system. The inspectors concluded that the practice of screening condition reports in the Maintenance Rule process based on the condition report classification represented a vulnerability since once the performance improvement review group classified the condition report as non-adverse, the Maintenance Rule database did not provide it to systems engineering or the Maintenance Rule coordinator to fully assess if it constituted a maintenance rule functional failure.

The inspectors discussed this trend with licensee personnel, who captured the issue in Condition Reports CR-WF3-2018-00472 and CR-WF3-2018-02255. The licensee’s corrective actions included performing a review of the past 2 years in all the safety systems to ensure that condition reports categorized as non-adverse did not include a functional failure. In addition, systems engineering supervisors and the maintenance rule coordinator are now expected to review all condition reports on a daily basis to determine if non-adverse condition reports should be reclassified to adverse to ensure they are evaluated for maintenance rule functional failure.

Licensee-Identified Non-Cited Violation	71153
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Technical Specification 3.6.3, “Containment Isolation Valves,” requires, in part, that when an isolation valve for containment penetrations associated with an open system are inoperable, the licensee must “restore the inoperable valve(s) to operable status within 4 hours,” “isolate the affected penetration within 4 hours,” or “be in hot standby within the next 6 hours.”	
Contrary to the above, between December 8, 2017, and December 11, 2017, with containment isolation valves inoperable, the licensee did not restore the inoperable valves to operable status within 4 hours, isolate the affected penetrations within 4 hours, or place the unit in hot standby within the next 6 hours. The licensee restored the valves to operable status on December 20, 2017, exceeding the Technical Specification 3.6.3 allowed outage time by approximately 70 hours.	
Significance/Severity Level: The finding was of very low safety significance (Green) because the containment isolation valves were maintained closed during the period and did not represent an actual open pathway in the physical integrity of the reactor containment.	
Corrective Action Reference: CR-WF3-2018-00983	

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

On May 17, 2018, the inspector presented the Evaluations of Changes, Tests, and Experiments inspection results to Mr. R. Gilmore, Director, Regulatory Performance Improvement, and other members of the licensee staff.

On July 12, 2018, the inspector presented the quarterly resident inspector inspection results to Mr. J. Dinelli, Site Vice President, and other members of the licensee staff.

## **THIRD PARTY REVIEWS**

Inspectors reviewed Institute of Nuclear Power Operations reports that were issued during the inspection period.

## DOCUMENTS REVIEWED

### 71111.01 - Adverse Weather Protection

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Summer 2018 Seasonal Reliability Plan	May 1, 2018
ECM13-001	MSIV Area Flooding Analysis	0
ECM99-10	DCT Basin Ponding Analysis	0
MNQ3-5	Flooding Analysis Outside Containment	5

#### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-158	Entergy Nuclear South Unit Seasonal Capability Updating Process	1
EN-EP-309	Fatigue Management For Hurricane Response Activities	0
EN-FAP-EP-010	Severe Weather Response	6
EN-FAP-EP-012	Severe Weather Recovery	2
EN-FAP-WM-016	Seasonal Reliability	0
ENS-DC-199	Off Site Power Supply Design Requirements Nuclear Plant Interface Requirements	9
ENS-DC-201	ENS Transmission Grid Monitoring	7
OP-901-314	Degraded Grid Conditions	3
OP-901-521	Severe Weather and Flooding	325

#### Condition Reports (CRs)

CR-WF3-2017-05724   CR-WF3-2017-08052   CR-WF3-2018-02538

### 71111.04 - Equipment Alignment

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G-153	Flow Diagram Feedwater, Condensate & Air Evacuation Systems – Sheet 4	49
G-163	Flow Diagram Containment Spray & Refueling Water Storage Pool	43



### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-002-001	Auxiliary Component Cooling Water	311
OP-002-003	Component Cooling Water	317
OP-009-001	Containment Spray	306
OP-009-003	Emergency Feedwater System	309

### Condition Reports (CRs)

CR-WF3-2018-00938 CR-WF3-2018-01550 CR-WF3-2018-01628

### 71111.05—Fire Protection Quarterly

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FWPH-001	Waterford-3 S.E.S Prefire Strategy Fire Water Pump House	3
NS-CP-002	Waterford-3 S.E.S Prefire Strategy Condensate Polisher Building – Upper Levels	2
RAB1E-001	Waterford-3 S.E.S Prefire Strategy Elev. +35.00' RAB Cable Vault	10
RAB3A-003	Waterford-3 S.E.S Prefire Strategy Elev. +21.00' Vestibule	3
RAB13-001	Waterford-3 S.E.S Prefire Strategy Elev. +21.00' RAB Battery Room “3A”	7
RAB19-001	Waterford-3 S.E.S Prefire Strategy Elev. +21.00' RAB (RCA) Component Cooling Water Pump “A”	7

### Condition Reports (CRs)

CR-WF3-2018-00923 CR-WF3-2018-02168 CR-WF3-2018-02526

## 71111.06—Flood Protection Measures

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 72874	Incorporate Seismic Leakage Criteria Into Design Basis For CCW	0
ECM05-004	Required Isolation Time to Prevent Depletion of CCW Surge Tank Due to SSE	0
ECM97-006	Design Basis for CCW Makeup	0
ECM97-042	Design Basis Review for CCW Pumps Header Isolation Valves CC-114A, CC-114B, CC-115A, CC-115B, CC-126A, CC-126B, CC-127A, and CC-127B	0
ECM98-009	CCW Makeup Design Basis	1
ER-W3-2005-0430-000	Stroke Times for CCW Isolation Valves	0
MNQ3-5	Flooding Analysis Outside Containment	0
MNQ9-2	Component Cooling Water System	2

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-903-118	Primary Auxiliaries Quarterly IST Valves Test	44
STI-0063	CCW Non-Seismic Loop Isolation Valve Leakage Test	0

### Condition Reports (CRs)

CR-WF3-2014-03301   CR-WF3-2015-00828   CR-WF3-2015-05751   CR-WF3-2016-00260  
CR-WF3-2018-00983

## 71111.07—Heat Sink Performance

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
457000087	Component Cooling Water Heat Exchangers	65
Chemistry Standing Instruction 57	General Guidelines on Cooling Water Chemical Additions	0

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-002-003	Maintaining Auxiliary Component Cooling Water Chemistry	5
CE-002-003	Maintaining Auxiliary Component Cooling Water Chemistry	305
CE-002-003	Maintaining Auxiliary Component Cooling Water Chemistry	304

### Condition Reports (CRs)

CR-WF3-2018-00785   CR-WF3-2018-00951   CR-WF3-2018-01001   CR-WF3-2018-01302  
CR-WF3-2018-02829

## 71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP-100-010	Equipment Out of Service	315
OP-100-010	Equipment Out of Service	316
OP-100-014	Technical Specification and Technical Requirements Compliance	344
OP-100-017	Emergency Operating Procedure Implementation Guide	5
OP-901-524	Fire In Areas Affecting Safe Shutdown	16
OP-902-000	Standard Post Trip Actions	16
OP-902-007	Steam Generator Tube Rupture Recovery Procedure	17
OP-902-008	Functional Recovery	27
OP-903-094	ESFAS Subgroup Relay Test	31

### Condition Reports (CRs)

CR-WF3-2018-03667

## 71111.12—Maintenance Effectiveness

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-203	Maintenance Rule Program	4
EN-DC-204	Maintenance Rule Scope and Basis	4
EN-DC-205	Maintenance Rule Monitoring	6
EN-DC-206	Maintenance Rule (A)(1) Process	3

Condition Reports (CRs)

CR-WF3-2016-06499	CR-WF3-2016-07340	CR-WF3-2016-07536	CW-WF3-2017-03529
CR-WF3-2017-04589	CR-WF3-2017-04983	CR-WF3-2017-05842	CR-WF3-2017-06078
CR-WF3-2017-06386	CR-WF3-2017-06622	CR-WF3-2017-07110	CR-WF3-2017-07644
CR-WF3-2017-09550	CR-WF3-2018-00196		

Work Orders

00480584	00480585
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71111.13—Maintenance Risk Assessments and Emergent Work ControlMiscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
B-424	Letdown Containment Isolation Control and Wiring Diagram	13

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-FAP-WM-107	Emergent Issues Process	1
EN-MA-125	Troubleshooting and Control of Maintenance Activities	22
EN-WM-104	On Line Risk Assessment	16
OI-037-000	Operations' Risk Assessment Guideline	313

Condition Reports (CRs)

CR-WF3-2018-03380	CR-WF3-2018-03492
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Work Orders

00379330	00379590	00395470	52689943	52689944
52747600				

71111.15—Operability Determinations and Functionality AssessmentsDrawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G153	Feedwater, Condensate & Air Evacuation Systems, Sheet 4	49
G160	Component Closed Cooling Water System, Sheet 1	49

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
G160	Component Closed Cooling Water System, Sheet 4	17

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-OP-104	Operability Determination Process	15

### Condition Reports (CRs)

CR-WF3-2017-06534	CR-WF3-2018-00785	CR-WF3-2018-00951	CR-WF3-2018-01829
CR-WF3-2018-02171	CR-WF3-2018-02242	CR-WF3-2018-02281	CR-WF3-2018-02298
CR-WF3-2018-02781	CR-WF3-2018-03587	CR-WF3-2018-03509	

### 71111.17T – Evaluations of Changes, Tests and Experiments

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1501532	ASME Code, Section III Qualification of Pressurizer Heater Sheath to Heater Sleeve Fillet Weld	1
CN-NCE-08-44	Waterford 3 Replacement Steam Generator TRANFLOW Analysis: Emergency and Faulted Transients to Support Emergency Feedwater System Modifications	1
EC-8427	Evaluation of Train B Dry Cooling Tower Air Recirculation with Temporary Work Platform	0
EC-61746	Temporary Modification for CEA 66 RSPT 2 Temporary Signal from RSPT Substitution Box	0
EC-64801	Emergency Feedwater (EFW) Circuitry Modification (Parent)	0
EC-65610	Technical Requirements Manual 3.3.4 Turbine Valve Testing One Time Extension	0
EC-67163	Common Mat Stress Analysis – Cooling Tower Area	2
EC-67815	TRM Update to Address Equipment Dependency on HVAC	0
EC-69180	Tube Clamp Installation for DCT Tube Bundle 1B at Tube Location 5F	0
EC-70422	Incorporate LPI CALC LA170375-LR-001 into Design Basis CALC A13073-C-001	0

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC-71946	Document PAD for Design Change EC 69180 for DCT Bundle NO. 1/5 F Tube Support Clamp per EN-OP-104	0
EC-72083	Mark Up Drawings G802C & G802F to Reflect Approval to Have Less Than 1" Gap Between Grating and Containment Wall	0
EC-73298	Determine Leakage Criteria for Essential Chiller Select Valves	0
ECM10-006	Dry Cooling Tower B Airflow Reduction Limits to support Steam Generator Replacement	0
EN-ME-SOO1-W	Tube Sleeve Installations for Dry Cooling Towers	2
G707	Tornado Missile Protection Dry Cooling Towers, Sh.1	3
W3-DBD-37	Essential Chilled Water System	301
W3-DBD-38	Safety Related HVAC-Control Room	301
WF3-ME-15-00004	Tube Sleeve Qualification for Dry Cooling Towers	0

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-100	Process Applicability Determination	21
EN-LI-101	10 CFR 50.59 Evaluations	15
OP-002-004	Chilled Water System	314
OP-500-003	Control Room Cabinet C	31
OP-901-502	Evacuation of Control Room and Subsequent Plant Shutdown	34

### Condition Reports (CRs)

CR-WF3-2017-05173	CR-WF3-2017-05761	CR-WF3-2017-05763	CR-WF3-2017-05882
CR-WF3-2017-06067	CR-WF3-2017-09164	CR-WF3-2018-01612	CR-WF3-2018-01841

### 71111.18—Plant Modifications

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 68240	Increase Containment Spray Pump Bearing Seal Cooling by CCW	0

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EC 68489	Chile EC for CC IFIS7651B Alarm Setpoint Change	0
EC-M97-028	Bearing Frame Cooling Water Flow Requirements	0

### Condition Reports (CRs)

CR-WF3-2016-06113   CR-WF3-2016-06499

### 71111.19—Post Maintenance Testing

#### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-DC-177	Control Room Habitability Program	4
OP-903-035	Containment Spray Pump Operability Check	29
OP-903-118	Primary Auxiliaries Quarterly IST Valves Test	44
OP-903-121	Safety Systems Quarterly IST Valve Tests	28

### Condition Reports (CRs)

CR-WF3-2018-01857   CR-WF3-2018-02281   CR-WF3-2018-03120

### Work Orders

454900                      485093                      500167-07                      52764205                      52785365

### 71111.22—Surveillance Testing

#### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-040-000	Reactor Coolant System Leakage Monitoring	15
OP-903-006	Reactor Trip Circuit Breaker Test	13
OP-903-035	Containment Spray Pump Operability Check	29
OP-903-050	Component Cooling Water and Auxiliary Component Cooling Water Pump and Valve Operability Test	41

### Condition Reports (CRs)

CR-WF3-2018-01823   CR-WF3-2018-01845   CR-WF3-2018-02338   CR-WF3-2018-02473  
CR-WF3-2018-04237

Work Orders

52807736

71114.06—Drill EvaluationMiscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Emergency Preparedness Drill Scenario	June 20, 2018

71151—Performance Indicator VerificationMiscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
W3F1-2017-0058	NRC Performance Indicator (PI) Data – 2 <sup>nd</sup> Quarter 2017 ROP Data	Jul 13, 2017
W3F1-2017-0076	NRC Performance Indicator (PI) Data – 3 <sup>rd</sup> Quarter 2017 ROP Data	Oct 6, 2017
W3F1-2018-0004	NRC Performance Indicator (PI) Data – 4 <sup>th</sup> Quarter 2017 ROP Data	Jan 9, 2018
W3F1-2018-0024	NRC Performance Indicator (PI) Data – 1 <sup>st</sup> Quarter 2018 ROP Data	Apr 12, 2018

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EN-LI-114	Regulatory Performance Indicator Process	11

71152—Problem Identification and ResolutionMiscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC 77747	Engineering Analysis Required by CEP-IST-4 for CR-WF3-2018-02496	0
EC 78126	CR-WF3-2018-03279 Containment Spray Start Time	0
ECI99-001	ESF Response Time Acceptance Criteria Basis	2
ECS10-001	Waterford 3 Cycle 22 Reload Analysis Groundrules	5
ER-W3-97-0174-00-00	CCW & ACCW Flow Balance Test Acceptance Criteria	May 26, 1997
UNT-006-033	Technical Specification Surveillance Frequency List	1



### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CEP-IST-4	Standard on In-service Testing	308
EN-TQ-129	Planner Training Program	1
EN-TQ-129	Planner Training Program	2
OP-100-014	Technical Specification and Technical Requirements Compliance	344
PE-004-024	CCW/ACCW System Flow Balance	306
SEP-WF3-IST-1	WF3 Inservice Testing Bases Document	7
SEP-WF3-IST-2	WF3 Inservice Testing Plan	7

### Condition Reports (CRs)

CR-WF3-2017-01977	CR-WF3-2017-04390	CR-WF3-2017-05507	CR-WF3-2017-06754
CR-WF3-2017-07110	CR-WF3-2018-00472	CR-WF3-2018-02255	CR-WF3-2018-02496
CR-WF3-2018-03279	CR-WF3-2018-03308	CR-WF3-2018-03604	

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

#### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
LER 2018-001-00	Failure to Enter Limiting Condition of Operation Action Statement due to Lack of Procedure Guidance Results in a Condition Prohibited by Technical Specifications	February 20, 2018

### Condition Reports (CRs)

CR-WF3-2018-00983

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