



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

November 5, 2019

Mr. Sergio Vazquez
Site Vice President
Entergy Operations, Inc.
17265 River Road
Killona, LA 70057

**SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – INTEGRATED
INSPECTION REPORT 05000382/2019003**

Dear Mr. Vazquez:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Waterford Steam Electric Station, Unit 3. On October 10, 2019, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as an NCV consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or significance or severity of the violation documented in this inspection report, 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 Waterford.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC Resident Inspector at Waterford Steam Electric 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/

John L. Dixon, Jr., Chief
Reactor Projects Branch D
Division of Reactor Projects

Docket No. 05000382
License No. NPF-38

Enclosure:
As stated

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SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – INTEGRATED
INSPECTION REPORT 05000382/2019003 – November 5, 2019

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

Docket Number: 05000382

License Number: NPF-38

Report Number: 05000382/2019003

Enterprise Identifier: I-2019-003-0002

Licensee: Entergy Operations, Inc.

Facility: Waterford Steam Electric Station, Unit 3

Location: Killona, LA 70057

Inspection Dates: July 1, 2019 to September 30, 2019

Inspectors: B. Baca, Health Physicist
L. Carson, Senior Health Physicist
K. Clayton, Senior Operations Engineer
M. Doyle, Operations Engineer
N. Greene, Senior Health Physicist
S. Makor, Reactor Inspector
J. O'Donnell, Health Physicist
F. Ramirez Munoz, Senior Resident Inspector
C. Speer, Resident Inspector
J. Vera, Resident Inspector

Approved By: John L. Dixon, Jr., Chief
Reactor Projects 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 licensee-identified non-cited violation is documented in report section: 71153.

List of Findings and Violations

Failure to Periodically Calibrate Radiation Monitoring Equipment			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000382/2019003-01 Open/Closed	[H.3] - Change Management	71124.05
The inspectors identified a Green non-cited violation (NCV) of 10 CFR 20.1501(c) for failure to periodically calibrate area radiation monitoring equipment used to perform dose rate measurements. Specifically, on or around January 18, 2012, the licensee began changing the periodic calibrations of area radiation monitors without verifying the instruments were in calibration.			

Failure to Implement Procedures for Main Generator Exciter Maintenance			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000382/2019003-03 Open	[H.5] - Work Management	71153
The inspectors reviewed a self-revealed Green finding because the licensee did not follow procedure requirements when performing periodic maintenance on the main generator exciter. Specifically, the licensee did not implement the preventative maintenance steps required by Procedure ME-004-003, "Main Exciter," Revisions 300 through 303, to perform inspection, cleaning, and testing of the main exciter during refueling outages.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000382/2019003-02	Quantity of Radioactive Material Shipment Error	71124.08	Open
LER	05000382/2019-004-00	Boron Dilution Alarm (Startup Channel High Neutron Flux) Inoperable Resulting in Operation or Condition Prohibited by Technical Specifications.	71153	Closed
LER	05000382/2019-005-00	Automatic Reactor SCRAM due to Steam Generator 1 High Level Resulting from a	71153	Discussed

		Main Turbine Trip and Subsequent Reactor Power Cutback due to Failed Diode Modules within the Main Exciter		
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PLANT STATUS

The Waterford Steam Electric Station, Unit 3, began the inspection period at 100 percent power. On July 31, 2019, operators shutdown the reactor in accordance with Technical Specification 3.0.3 due to excessive leakage in the chemical and volume control system, due to a crack in a drain line weld. On August 7, 2019, operators restarted the reactor. The unit achieved full power on August 8, 2019, and maintained full power for the remainder of the 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

External Flooding Sample (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding for the following areas on July 11, 2019:
 - Dry cooling towers
 - Reactor auxiliary building
 - Turbine building

71111.04Q - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) Auxiliary feedwater during a period of increased risk significance due to plant shutdown lineup on August 2, 2019
- (2) Emergency feedwater train B with train A inoperable for maintenance on August 3, 2019
- (3) Auxiliary component cooling water train A with train B inoperable for maintenance on August 22, 2019
- (4) Emergency diesel generator train A with train B inoperable for maintenance on September 16, 2019

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated fire brigade performance during an unannounced drill on September 4, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (5 Samples)

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

- (1) Fire area RAB 8C, switchgear room AB, on July 30, 2019
- (2) Fire area ROOF W, main steam isolation valve A room, on July 30, 2019
- (3) Fire area RAB 8B, switchgear room B, on August 23, 2019
- (4) Fire area RAB 13, battery room 3A, on September 3, 2019
- (5) Fire area RAB 1A, B, C, D, control room, on September 30, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Flood zone 14, +46 heating, ventilation and air conditioning (HVAC) and chiller room, on July 25, 2019

71111.07A - Heat Sink Performance

Annual Review (IP Section 02.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) Component cooling water heat exchanger A on September 9, 2019

71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

- (1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examinations.

Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the facility licensee's annual requalification operating test.

Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the facility licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives.

Requalification Examination Security

The inspectors evaluated the ability of the facility licensee to safeguard examination material, such that the examination is not compromised.

Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee, and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

Control Room Simulator

The inspectors evaluated the adequacy of the facility licensee's control room simulator in modeling the actual plant and for meeting the requirements contained in 10 CFR 55.46.

Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the control room during a period of heightened activity due to an unplanned plant shutdown and cooldown in accordance with Technical Specification 3.0.3 due to excessive leakage in the chemical and volume control system, due to a crack in a drain line weld on July 31, 2019.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the simulator during an evaluated examination on August 20, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

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

- (1) Main generator and 25 kV distribution system on September 18, 2019
- (2) Essential chillers on September 30, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

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

- (1) Emergent work review associated with control element assembly 43 control system failure on July 17, 2019
- (2) Risk assessment associated with planned yellow risk due to emergency feedwater pump B maintenance on July 29, 2019
- (3) Emergent work review associated with elevated leakage in the chemical and volume control system on July 31, 2019
- (4) Risk assessment and emergent work review associated with control element drive motor control system undervoltage relay failure on August 21, 2019
- (5) Emergent work review associated with the failure of the auxiliary component cooling water header A component cooling water heat exchanger outlet temperature control valve on September 6, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Operability determination associated with the flow path to the charging pump suction header due to a leak near the volume control tank outlet header drain to the equipment drain tank sump valve on July 10, 2019
- (2) Operability determination associated with main generator lockout relays not actuating following a manual turbine trip on August 6, 2019
- (3) Operability determination associated with the essential chiller B hot gas bypass valve failing to open on September 27, 2019

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Auxiliary component cooling water wet tower basin level setpoint change on July 17, 2019

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Control element assembly subgroup 10 following the replacement of associated control element drive system electrical components on July 22, 2019
- (2) Emergency feedwater header A to steam generator 1 backup flow control valve, following valve repacking, on August 4, 2019
- (3) Control element drive mechanism control system cabinet 3 undervoltage relay following relay replacement on August 22, 2019
- (4) Safety related switchgear 31A following undervoltage relay calibration on September 11, 2019
- (5) Emergency diesel generator B following a system maintenance outage on September 23, 2019

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the licensee's performance during a forced outage to repair failed piping in the chemical and volume control system from July 31 to August 8, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

- (1) Auxiliary component cooling water pump A Baker test on July 11, 2019
- (2) Shutdown cooling heat exchanger A temperature loop calibration on July 18, 2019
- (3) Essential chillers A and B component cooling water common header inlet and outlet isolation valves on August 19, 2019
- (4) High pressure safety injection pump AB testing on September 17, 2019

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Condensate makeup train A quarterly valve testing on July 16, 2019

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01)
(1 Sample)

- (1) The inspectors evaluated an emergency preparedness drill on September 25, 2019

RADIATION SAFETY

71124.05 - Radiation Monitoring Instrumentation

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

- (1) The inspectors reviewed the following:

Portable Survey Instruments

- AMP 100 (CHP-ARM014)
- AMS-4 (CHP-RD-261)
- LM-177 (CHP-CR-148, CHP-CR-186, CHP-CR-195)
- Ludlum 9-3 (CHP-DR-286, HP-DR-562, CHP-DR-661)
- RO-20 (CHP-DR-119)
- SAC-4 (HP-DS-066)
- Wide range telepole (CHP-TEL034, CHP-TEL039, CHP-TEL138)

Source Check Demonstration

- AMS4 (CHP-AMSD-0214)
- ARGOS 5AB (1410-186)
- Cronos 4 (1011-061)
- MGP Small Tool Monitor (89-0527)
- PM7 (394, 395)

Area Radiation Monitors and Continuous Air Monitors

- Area Radiation Monitors: ARMIR5103, ARMIR5014, ARMIR5015, ARMIR5018, ARMIR5208
- Fuel Handling Building Normal Ventilation Radiation Monitor Loop
- Containment Particulate, Iodine, and Gaseous Monitor

Personnel Contamination Monitors, Portal Monitors and Small Article Monitors

- ARGOS 5AB (1410-86, 1412-364)
- Cronos 4 (1011-061, 1412-364)
- Fastscan (Dosimetry Office, West Side Access)
- GEM 5 (HP-DS-080, HP-DS-095)
- PM7 (394, 395)

Calibration and Testing Program (IP Section 02.02) (1 Sample)

The inspectors evaluated the calibration and testing program implementation.

- (1) The inspectors reviewed the following:

Alarm Setpoint and Calibration Method Check of Personnel Contamination Monitors, Portal Monitors and Small Article Monitors

- ARGOS 5AB (1410-186)
- Cronos4 (1011-061)
- MGP Small Tool Monitor (89-0527)
- PM7 (394, 395)

Failure to Meet Calibration or Source Check Acceptance Criteria

- GEM 5 (1410-190)
- Ludlum 9-3 (HP-DR-559, HP-DR-562)
- RO20 (CHP-DR-163)
- Telepole (CHP-TEL126, CHP-TEL135, CHP-TEL137)

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors walked down the following gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design:

- (1)
- Fuel Handling Building Exhaust Gaseous Radiation Monitor (RE-5107)
 - Plant Stack RAB Ventilation Gaseous Radiation Monitor (RE-0100)
 - Dry Cooling Tower Sump 1 Liquid Radiation Monitor (RE-6665)
 - Turbine Building Industrial Waste Tank Liquid Radiation Monitor (RE-6778)
 - Component Cooling Water Liquid Radiation Monitor (RE-7050)
 - Circwater Discharge Liquid Radiation Monitor (RE-1900)
 - Control Room Emergency Filtration Unit
 - Controlled Ventilation Areas Filter Unit

Calibration and Testing Program (Process & Effluent Monitors) (IP Section 02.02) (1 Sample)

The inspectors reviewed the following gaseous and liquid effluent monitor instrument calibrations and tests:

(1) Gaseous Effluent Radiation Monitors

- WO 52776602, RE-0002, Main Condenser Evacuation System (MCES), March 19, 2019
- WO 52798848, RE-0100.1, RAB Ventilation System / Plant Stack A, June 3, 2019
- WO 52730813, RE-0648, Gaseous Waste Management System (GWMS), July 7, 2018
- WO 52748891, RE-5107A, Fuel Handling Building Ventilation System A, December 3, 2018

- WO 52719287, RE-5107B, Fuel Handling Building Ventilation System B, March 20, 2018

Liquid Effluent Radiation Monitors

- WO 52717425, RE-7050B, Component Cooling Water Blowdown, March 12, 2018
- WO 52734471, RE-6776, Dry Cooling Tower Sump B, June 21, 2018
- WO 52773476, RE-6778, Turbine Building Industrial Waste Sump, May 6, 2019
- WO 52721495, RE-1900, Circulating Water Discharge, April 2, 2018

Sampling and Analysis (IP Section 02.03) (1 Sample)

The inspectors reviewed the following sampling and analysis:

(1) Radioactive Effluent Sampling and Analysis Activities

- Fuel Handling Building Radiation Monitor A and B Filter Changeout, September 17, 2019
- Fuel Handling Building Radiation Monitor B Tritium Sample, September 17, 2019
- Plant Stack RAB Ventilation Filter Changeout, September 17, 2019
- Dry Cooling Tower Sump 2 Liquid Sample, September 18, 2019

Effluent Discharges

- The inspectors were unable to observe any active liquid or gaseous discharge activities, but reviewed numerous permits.

Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed the following radioactive effluent discharge system surveillance test results:

- (1)
 - WO 52716247, HVC B - Control Room Emergency Filtration Unit Charcoal Sampling, February 14, 2018
 - WO 52716248, HVC B - Control Room Emergency Filtration Unit In-Place Charcoal Testing, February 14, 2018
 - WO 52714811, CVAS B - Controlled Ventilation Areas Filtration Unit In-Place Charcoal Testing, March 15, 2018
 - WO 52728264, SBV A - Shield Building Ventilation Unit Charcoal Sampling, June 4, 2018
 - WO 52767953, CVAS A - Controlled Ventilation Areas Filtration Unit In-Place Charcoal Testing, January 11, 2019
 - WO 52795776, HVC A - Control Room Emergency Filtration Unit In-Place Charcoal Testing, July 9, 2019

Dose Calculations (IP Section 02.05) (1 Sample)

The inspectors reviewed the following to assess public dose:

(1) Gaseous Discharge Permits

- W3GB2017-151
- W3GB2018-038
- W3GB2019-017
- W3GC2018-063
- W3GC2018-150
- W3GC2019-020

Liquid Discharge Permits

- W3LB2017-269
- W3LB2018-078
- W3LB2019-023
- W3LC2017-267
- W3LC2018-242
- W3LC2019-016

Annual Radiological Effluent Release Reports

- 2017 Annual Radioactive Effluent Release Report
- 2018 Annual Radioactive Effluent Release Report

Abnormal Gaseous or Liquid Tank Discharges

- None occurred

71124.07 - Radiological Environmental Monitoring Program

Site Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the radiological environmental monitoring program implementation.

(1) The inspectors reviewed the following:

Walkdowns, Calibrations, and Maintenance Record Review

Air Samplers

- APP-1
- APQ-1
- APF-1
- APE-26/30

TLDs

- P-1
- Q-1
- R-1

- E-1
- M-1

Environmental Sample Collections and Preparation Observation

- SWK-1
- SWE-5
- SWP-7

Licensee Actions in Response to Missed Sample, Inoperable Sampler, Lost TLD or Anomalous Measurement

- For both 2017 and 2018, milk was unavailable at the indicator locations, so broadleaf vegetation was collected as a surrogate.
- In July 2019, air sample pump not running at full capacity, so pump was replaced.
- In July 2019, the G-8 and K1 thermoluminescent dosimeters (TLD) were missing and replaced with new TLDs.

Sampling Program for the Potential of Licensed Material Entering Groundwater

- Condensate Storage Tank
- Old Steam Generator Storage Facility
- Spent Fuel Pool

Groundwater Protection Initiative (GPI) Implementation (IP Section 02.02) (1 Sample)

- (1) The inspectors evaluated the licensee's voluntary groundwater protection initiative. No additional observations were identified.

71124.08 - Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (IP Section 02.01) (1 Sample)

The inspectors evaluated radioactive material storage.

- (1) The inspectors toured the following areas:
 - Spent Fuel Pool
 - Cask Storage Pit
 - Low Level Waste Storage Facility
 - Old Steam Generator Mausoleum

The inspectors performed a container check (e.g., swelling, leakage and deformation) on the following containers:

- Radwaste and Radioactive Material Containers in the Low Level Waste Storage Facility
- Spent Fuel Pool Container Inventory
- Cask Storage Pit Container Inventory

Radioactive Waste System Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated the following radioactive waste processing systems [and processes] during plant walkdowns:

(1) Liquid or Solid Radioactive Waste Processing Systems

- Spent Fuel Pool
- Cask Storage Pit
- Low Level Waste Storage Facility
- Old Steam Generator Mausoleum

Radioactive Waste Resin and/or Sludge Discharges Processes

- There were no current or resin and sludge discharge processes being conducted this inspection.

Waste Characterization and Classification (IP Section 02.03) (1 Sample)

The inspectors evaluated the radioactive waste characterization and classification for the following waste streams:

- (1)
- Spent Fuel Pool Operations
 - Storage of Spent Tri-Nuclear Filters
 - Dry Active Waste
 - Spent Resin Transfers

Shipment Preparation (IP Section 02.04) (2 Samples)

The inspectors evaluated [and observed] the following radioactive material shipment preparation processes:

- (1) There were no shipments being prepared for transit during this inspection period. However, the details and content of the following spent resin shipment to the licensee's waste processor were reviewed:
- 18-1013, Rx Drain Tank Sludge to Bear Creek
 - 18-1020, RWM Resin to Bear Creek
 - 19-1015, RWM Resin LSA to Bear Creek
 - 19-1019, LWM Resin LSA to Bear Creek

Shipping Records (IP Section 02.05) (1 Sample)

The inspectors evaluated the following non-excepted package shipment records:

- (1)
- ACME Shipment to UniTech Services ORSC
 - 18-3002, Detector ARM RD

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS08: Heat Removal Systems (IP Section 02.07) (1 Sample)

- (1) July 1, 2018, through June 30, 2019

MS09: Residual Heat Removal Systems (IP Section 02.08) (1 Sample)

- (1) July 1, 2018, through June 30, 2019

MS10: Cooling Water Support Systems (IP Section 02.09) (1 Sample)

- (1) July 1, 2018, through June 30, 2019

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

- (1) 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 and associated minor violation related to the licensee's treatment of repetitive issues with subgroup 10 of the control element drive mechanism control system documented in the Inspection Results section of this report.

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

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000382/2019-004-00, "Boron Dilution Alarm (Startup Channel High Neutron Flux) Inoperable Resulting in Operation or Condition Prohibited by Technical Specifications" (ADAMS Accession: ML19129A439). The inspectors documented a licensee identified violation associated with this LER in the inspection results section of this report.
- (2) LER 05000382/2019-005-00, "Automatic Reactor Scram due to Steam Generator 1 High Level Resulting from a Main Turbine Trip and Subsequent Reactor Power Cutback due to Failed Diode Modules within the Main Exciter" (ADAMS Accession: ML19196A346). The circumstances surrounding this LER are documented in the Inspection Results section of this report.

INSPECTION RESULTS

Failure to Periodically Calibrate Radiation Monitoring Equipment			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Occupational Radiation Safety	Green NCV 05000382/2019003-01 Open/Closed	[H.3] - Change Management	71124.05
<p>The inspectors identified a Green NCV of 10 CFR 20.1501(c) for failure to periodically calibrate area radiation monitoring equipment used to perform dose rate measurements. Specifically, on or around January 18, 2012, the licensee began changing the periodic calibrations of area radiation monitors without verifying the instruments were in calibration.</p> <p><u>Description:</u> During a review of calibration records for four area radiation monitors (ARMIR5013, ARMIR5014, ARMIR5015 and ARMIR5018), the inspectors identified the monitors last had a detector calibration on November 18, 2009, November 13, 2009, October 28, 2009, and November 19, 2009, respectively. Upon further review, the inspectors identified that on January 18, 2012, the licensee initiated an Action Request (AR 133414) to increase the radiation detector calibration frequency for these area radiation monitors from 2R (three years) to 4R (six years), where R represents a refueling cycle of 18 months. The licensee again extended the calibration frequency of the radiation detectors another time from 4R to 6R (nine years): AR 195165 dated November 18, 2014, for ARMIR5013 and ARMIR5014; AR 213067, dated March 24, 2015, for ARMIR5015; and AR 267979, dated February 6, 2017, for ARMIR5018. For each of the frequency extensions, the licensee did not calibrate nor verify the calibration was acceptable before extending the calibration frequency.</p> <p>These four area radiation monitors are listed in the licensee's Final Safety Analysis Report (FSAR), Chapter 12, Table 12.3-2, and are used, in part, to (1) measure ambient gamma radiation and to indicate to operations personnel the ambient gamma radiation in specific areas of the plant; (2) annunciate and warn of abnormal radiation levels in specific areas of the plant; (3) provide base data in controlling access of personnel to radiation areas; (4) warn of uncontrolled or inadvertent movement of radioactive material in the plant; (5) provide local indication and alarms at key points where a substantial change in radiation levels might be of immediate importance to personnel frequenting the area; and (6) furnish information for making radiation surveys. Additionally, a specific note for these monitors in Table 12.3-2 of the FSAR points out these monitors are used by Radiation Protection during shutdown for personnel protection.</p> <p>The inspectors determined the preventative maintenance program, as described in licensee Procedure EN-DC-324, "Preventative Maintenance Program," Revision 22, does not prescriptively include the involvement of radiation protection within its program or process. By not including a member from the Radiation Protection organization during the calibration frequency change process for these four area radiation monitors, the licensee personnel implementing the changes failed to fully understand the area radiation monitor functions, as described in the FSAR, and how they related to Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 20, "Standards for Protection Against Radiation," Subpart F, "Surveys and Monitoring."</p>			

Corrective Actions: The licensee entered the issue in the corrective action program to re-evaluate and document an adequate basis for the calibration frequency change of monitors ARMIR5013, ARMIR5014, ARMIR5015, and ARMIR5018.

Corrective Action References: Condition Report CR-WF3-2019-07366

Performance Assessment:

Performance Deficiency: The failure to periodically calibrate area radiation monitoring instruments used to evaluate dose rate measurements as required by 10 CFR Part 20 was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the plant facilities/equipment and instrumentation attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, the licensee failed to calibrate or verify the calibration of four area radiation monitors prior to extending their calibration frequency. As a result, the failure to calibrate or verify the calibration of the four area radiation monitors impacts the licensee's ability to ensure accurate radiation measurements.

Significance: The inspectors assessed the significance of the finding using Appendix C, "Occupational Radiation Safety SDP." The finding was: (1) not related to as low as is reasonably achievable planning, (2) did not involve an overexposure or (3) did not involve a substantial potential for overexposure, and (4) the ability to assess dose was not compromised. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross-Cutting Aspect: H.3 - Change Management: Leaders use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. The finding had a cross-cutting aspect in the area of human performance associated with change management because the licensee's change process did not identify that the instrument calibration requirements of 10 CFR Part 20 were applicable to area radiation monitors. Specifically, the change process did not involve an adequate systematic process to include members of the radiation protection organization to ensure compliance of 10 CFR Part 20 were maintained. Although these changes were made effective in 2012, there were recent opportunities for the licensee to evaluate the changes and/or ensure the affected monitors were appropriately calibrated due to multiple condition reports reviewed relative to the performance of these monitors.

Enforcement:

Violation: Title 10 CFR 20.1501(c) requires, in part, the licensee ensure that instruments used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated periodically for the radiation measured.

Contrary to the above, on or around January 18, 2012, the licensee failed to ensure that instruments used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated periodically for the radiation measured. Specifically, the licensee began changing the periodic calibrations of area radiation monitors without verifying the instruments were currently calibrated and may be adequately used for dose rate measurements of plant areas.

Enforcement Action: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Quantity of Radioactive Material Shipment Error

Unresolved Item (Open)	Unresolved Item URI 05000382/2019003-02	71124.08
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Description: While reviewing the circumstances associated with a solid radwaste/radioactive material (SRW/RAM) transportation event that was identified on May 1, 2019, the inspectors identified several issues of concern related to compliance with certain regulatory requirements, such as, 10 CFR Part 37 and 10 CFR 71.5. The inspectors identified that during a period from April 2–17, 2019, the licensee unknowingly mischaracterized, relocated, prepared, and shipped offsite Category 2 radioactive material quantities of concern (RAMQC). On April 17, 2019, the licensee sent a radioactive waste shipment (19-1015) to a waste processor in Tennessee. The shipment left the site with inaccurate information relative to the total weight and radioactivity amounts on the waste manifest shipping papers. The waste manifest (NRC Forms 540 and 541) accompanying the shipment indicated that shipment 19-1015 contained a total of 8.32 Curies; however, it actually contained 79.2 Curies.

The licensee became aware of the problem with this shipment because their waste processor questioned the net weight of the shipment upon its arrival at their facility. On May 1, 2019, Energy Solutions, located in Oak Ridge, Tennessee, received a shipment of spent resin from Waterford, Unit 3, for processing. The weight of the container was determined to be significantly different from the weight listed on the manifest. Specifically, the manifest indicated the container weighed approximately 742 lbs. When Energy Solutions weighed the container upon receipt, it weighed 6,550 lbs. Waterford, Unit 3, was notified of the inaccuracy of the weight in the manifest, and after revising the weight-based calculated activities for the radionuclides, the licensee provided a revised manifest to Energy Solutions. The original manifest indicated a total package activity of 8.2 Ci, of which 2.1 Ci was Co-60. The revised and corrected manifest specified a total package activity of 72.9 Ci, including 18.7 Ci of Co-60. This radioactivity amount exceeded the Category 2 limits (8.2 Ci) for security concerns under 10 CFR Part 37. Additionally, the licensee had stored, prepared, and shipped offsite RAMQC into the public domain which appeared to be in non-compliance with 10 CFR 71.5 in the implementation of DOT regulations 49 CFR 172.203(d)(3), Subpart C and 49 CFR 172.800 and 802, Subpart I.

These issues of concern require additional information and review to determine whether the preparation and shipment of RAMQC constituted violations of NRC requirements. Consequently, we are considering this matter as an Unresolved Item (URI).

Planned Closure Actions: The NRC inspectors plan to continue their review of documents provided by the licensee, as they are made available. This review will be a comprehensive assessment of all associated violations and/or findings related to this shipping occurrence of incorrectly calculating the weighted-activities of radionuclides and improperly characterizing the shipment.

Licensee Actions: The licensee placed this matter into their corrective action program for review. The inspectors did not perceive any immediate safety or security concerns.

Corrective Action References: CR-WF3-2019-04477, CR-WF3-2019-07307, CR-WF3-2019-07312

Observation: Semi-Annual Trend Review Associated with the Control Element Drive Mechanism Control System	71152
<p>The inspectors identified an adverse trend involving operability reviews for repetitive failures involving subgroup 10 of the control element drive mechanism control system. From April 29, 2019, through September 9, 2019, the licensee initiated 18 condition reports involving apparent repetitive failures of control element assemblies in subgroup 10 that caused the assemblies to become immovable, but remain trippable. Each condition report affected at least one of the four control element assemblies in subgroup 10. In each instance, the licensee declared the affected rods inoperable and took the actions required by Technical Specification 3.1.3.1, "Moveable Control Assemblies."</p> <p>After six of the condition reports were generated, the inspectors noted that for each identified condition, the licensee reviewed the impact of the condition on the individually affected control element assemblies and made the appropriate operability determination, but the licensee did not review the impact of the aggregate conditions on the operability of subgroup 10 overall.</p> <p>The licensee addressed the operability of equipment using licensee procedure EN-OP-104, "Operability Determination Process," Revision 16. Section 8.10.11 of EN-OP-104 specifically addresses reduced reliability as a degraded or nonconforming condition. Section 8.10.11 requires that the licensee review repetitive failures and, if reliability has been reduced, to consider the equipment degraded or non-conforming and assess its operability.</p> <p>The inspectors questioned the licensee regarding the operability of subgroup 10 given the guidance in Section 8.10.11 of EN-OP-104. Due to inspector questioning, the licensee reclassified subgroup 10 as operable but degraded or non-conforming due to reduced reliability in condition report CR-WF3-2019-05729. The licensee concluded that subgroup 10 was still capable of performing its safety function to insert control element assemblies into the reactor core.</p> <p>The inspectors determined that the licensee's failure to address the impact of reduced reliability on the operability of subgroup 10 as required by EN-OP-104 was a minor violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The licensee's cause evaluation for the underlying conditions leading to the repetitive failures of subgroup 10 is still ongoing. The inspectors will document any findings related to the underlying condition in a future inspection report.</p>	

Failure to Implement Procedures for Main Generator Exciter Maintenance			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000382/2019003-03 Open	[H.5] - Work Management	71153
The inspectors reviewed a self-revealed Green finding because the licensee did not follow procedure requirements when performing periodic maintenance on the main generator exciter. Specifically, the licensee did not implement the preventative maintenance steps			

required by procedure ME-004-003, "Main Exciter," Revisions 300 through 303, to perform inspection, cleaning, and testing of the main exciter during refueling outages.

Description: On May 16, 2019, the Waterford, Unit 3, main generator automatically tripped as designed following a loss of excitation field. As part of their troubleshooting, the licensee disassembled the main exciter and discovered that the rotating rectifier had 13 of the 72 outboard fuses failed, 12 of the 36 outboard diodes failed, 2 additional outboard diodes arced and shorted between phases, and one of the 36 inboard diodes failed. The design of the rotating rectifier is to operate at full capacity with up to two diodes per phase out of service. In addition to the component failures, the licensee discovered excessive dirt and debris buildup in the interior of the rotating rectifier.

The licensee established a preventative maintenance program for the main exciter that required the main exciter to be sent offsite to a specialist vendor for major refurbishment every 8 years. This was last performed as part of the refueling outage in 2012. The licensee's preventative maintenance program also required minor refurbishment be performed on the main exciter during refueling outages where major refurbishment was not performed. The licensee accomplished this minor refurbishment using licensee Procedure ME-004-003, "Main Exciter." Procedure ME-004-003 provides instructions for maintenance and testing of the main exciter, including instructions to ensure electrical and mechanical integrity of the rotating rectifier and its components. The licensee scheduled the minor refurbishment tasks using procedure ME-004-003 during refueling outages in 2014, 2015, 2017, and 2019.

In their review of the past maintenance on the main generator exciter, the licensee found that large portions of procedure ME-004-003 were not performed. During refueling outages 19, 20, 21, and 22, electrical maintenance personnel only inspected the rectifier wheel fuses and cleaned accessible portions of the exciter. Since the main generator exciter was not fully disassembled when Procedure ME-004-003 was performed during those refueling outages, the steps to clean, inspect, and test the internal components of the main exciter were marked as "not applicable" and not performed. In each instance, electrical maintenance personnel documented the concurrence of systems engineering personnel to not perform the applicable portions of Procedure ME-004-003.

Licensee Procedure EN-HU-106, "Procedure and Work Instruction Use and Adherence," Revisions 3 through 7, is used to control when personnel may mark procedural steps as "not applicable." Section 7.1.3 of Procedure EN-HU-106 only allows the use of "not applicable" when doing so does not change the intent of the steps or sections.

Prior to performing Procedure ME-004-003, electrical maintenance personnel requested guidance from systems engineering personnel for which portions were required. Systems engineering personnel advised that the scope of work should be based off the previous refueling outages. System engineering personnel did not confirm the adequacy of the scope of maintenance performed during previous outages. Additionally, electrical maintenance personnel did not ensure that marking sections of Procedure ME-004-003 as "not applicable" did not change the intent of the steps or sections.

Corrective Actions: The licensee's immediate corrective action was to disassemble and clean the main generator exciter, and to either repair or replace the failed components associated with the rotating rectifier. Long term corrective actions include revising the preventative maintenance strategy and procedures to ensure the correct scope of maintenance is included in both the 8-year major and every refueling cycle minor refurbishments.

Corrective Action References: CR-WF3-2019-04788

Performance Assessment:

Performance Deficiency: The failure to implement the requirements of Procedure ME-004-003 when required by the preventative maintenance program was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to perform maintenance in accordance with Procedure ME-004-003 to ensure the integrity and cleanliness of internal components of the main generator exciter resulted in an electrical fault that caused an automatic trip of the main turbine and generator.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined the finding to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the licensee did not implement the process of controlling and executing work activities controlled by Procedure EN-HU-104 when personnel implementing Procedure ME-004-003 regularly marked large sections as "not applicable" which changed the intent of the sections.

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

LER (Discussed)	Automatic Reactor SCRAM due to Steam Generator 1 High Level Resulting from a Main Turbine Trip and Subsequent Reactor Power Cutback due to Failed Diode Modules within the Main Exciter LER 05000382/2019-005-00	71153
Description: On May 16, 2019, the Waterford main generator automatically tripped as designed following a loss of excitation field. Following the trip, the reactor power cutback system actuated as designed to reduce reactor power. Following the reactor power cutback, the reactor automatically tripped due to high feedwater level in steam generator 1. The inspectors documented a Green finding in this report related to the cause of the automatic main generator trip. The cause evaluation of the subsequent automatic reactor trip due to high steam generator level is still ongoing and will be documented in a later inspection report.		

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 an NCV, consistent with Section 2.3.2 of the Enforcement Policy.	
<p>Violation: Technical Specification 3.1.2.9, "Boron Dilution," requires, in part, that "with one boron dilution alarm inoperable and the primary makeup water flow path to the reactor coolant system not isolated, determine reactor coolant system boron concentration within one hour." Contrary to the above, on March 10, 2019, with one boron dilution alarm inoperable and the primary makeup water flow path to the reactor coolant system not isolated, the licensee did not determine reactor coolant system boron concentration within one hour.</p> <p>On March 10, 2019, startup channel 1, one of the boron dilution alarms, was de-energized and rendered inoperable during the performance of surveillance testing at approximately 3:30 p.m. on March 10, 2019. The licensee identified that startup channel 1 was de-energized while taking Technical Specification logs and re-energized startup channel 1 on March 10, 2019, at 11:18 p.m., exceeding the Technical Specification 3.1.2.9 allowed outage time by approximately 7 hours.</p> <p>Significance/Severity: The finding was of very low safety significance, Green, in accordance with Inspection Manual Chapter 0609, Appendix G, Attachment 1, Exhibit 3, "Mitigating Systems Screening Questions" because the loss of the boron dilution alarms did not represent the actual loss of a safety function.</p> <p>Corrective Action References: CR-WF3-2019-03161</p>	

EXIT MEETINGS AND DEBRIEFS

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

- On September 19, 2019, the inspectors presented the Public Radiation Safety exit meeting inspection results to Mr. B. Lanka, Acting Site Vice President, and other members of the licensee staff.
- On September 24, 2019, the inspectors presented the 2019003 Biennial Requalification telephonic exit debrief inspection results to Mr. V. Ford, Operations Training Superintendent, and other members of the licensee staff.
- On October 10, 2019, the inspectors presented the integrated inspection results to Mr. S. Vazquez, Site Vice President, and other members of the licensee staff.
- On October 17, 2019, the inspectors presented the Final Exit Meeting for Radiation Safety Inspection results to Mr. S. Vazquez, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Calculations	ECM15-004	Waterford FLEX Internal Flooding Calculation	0
		MNQ3-5	Flooding Analysis Outside Containment	6
	Corrective Action Documents	CR-WF3-YYYY-NNNN	2018-06958, 2019-03900, 2019-05201	
	Procedures	OP-901-521	Severe Weather and Flooding	
71111.04Q	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-04798, 2019-03258	
	Procedures	OP-002-001	Auxiliary Component Cooling Water	315
		OP-003-035	Auxiliary Feedwater	310
		OP-009-002	Emergency Diesel Generator	351
		OP-009-003	Emergency Feedwater	309
71111.05Q	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-03742, 2019-05956	
	Miscellaneous	NS-TB-002	Turbine Building +15.00' West including Feedwater Pump "A" Auxiliary Feedwater Pump, Main Lube Oil Storage Tank and Condensate Pump	3
	Procedures	EN-TQ-125	Fire Brigade Drills	8
		FP-001-019	Fire Brigade Equipment	310
		FP-001-020	Fire Emergency/Fire Report	312
		RAB 13-001	Battery Room 3A	7
		RAB 1A, B, C, D-001	Control Room, H&V Room, Emergency Living Quarters and Computer Room	12
		RAB 8B,E,F-001	Switchgear Room B	13
		RAB 8C-001	Switchgear Room A/B	11
		ROOF W-001	Roof W (MSIV A)	2
		UNT-005-013	Fire Protection Program	14
71111.06	Calculations	ECM05-004	Required Isolation Time to Prevent Depletion of CCW Surge Tank due to SSE	0
		ECM15-004	Waterford FLEX Internal Flooding Calculation	0
		MNQ3-5	Flooding Analysis Outside Containment	6
		PRA-W3-01-002	W3 Internal Flooding Analysis	3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-01724, 2019-01719	
	Procedures	OP-002-004	Chilled Water System	317
71111.07A	Corrective Action Documents	CR-WF3-YYYY-NNNN	2018-05404, 2018-06396, 2018-07109, 2019-2164	
	Procedures	CE-002-003	Maintaining Auxiliary Component Cooling Water Chemistry	306
		CE-002-007	Maintaining Component Cooling Water Chemistry	309
71111.11B	Corrective Action Documents	Control Room Condition Report Summary for 2018-2019	Control Room Condition Report Summary for 2018-2019	06/25/2019
	Miscellaneous	Simulator Differences List	Simulator Differences List	June 26, 2019
		Simulator Discrepancy Report July 2017 to July 2019	Simulator Discrepancy Report July 2017 to July 2019	07/02/2019
		Waterford 2019 Requalification Exam Week 1 - 3	Operations Exam	07/29/2019
		Waterford 2019 Requalification Exam Week 1 - 3	Written Exam	07/29/2019
	Procedures	EN-TQ-114	Licensed Operator Requalification Training Program Description	12
		EN-TQ-201	Systematic Approach to Training Process	Revision 23
		EN-TQ-202	Simulator Configuration Control	Revision 10
		EN-TQ-210	Conduct of Simulator Training	Revision 15
		EN-TQ-217	Examination Security	Revision 8
		OI-024-000	Maintaining Active SRO-RO Status	314
		TQF-202-SBT	Scenario Based Testing Checklist	Revision 1
		TQF-210-DD03	LOR Simulator Crew performance Evaluation Grading Criteria	Revision 5
		WSIM-DIR-002	Simulator Core Reload Acceptance Test	Revision 4

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.11Q	Miscellaneous	WSXM-LOR-194EXM	2019 Cycle 4 Biennial Simulator Exam Week 5	0
	Procedures	OP-010-005	Plant Shutdown	336
		OP-010-006	Outage Operations	333
		OP-901-113	Volume Control Tank Makeup Control Malfunction	305
		OP-901-311	Loss of Train B Safety Bus	312
		OP-902-000	Standard Post Trip Actions	16
		OP-902-003	Loss of Offsite Power/Loss of Forced Circulation Recovery	11
71111.12	Corrective Action Documents	CR-WF3-YYYY-NNNN	2017-05763, 2017-05844, 2019-04788, 2019-04813, 2019-04848, 2019-07376	
	Procedures	EN-DC-203	Maintenance Rule Program	4
		EN-DC-204	Maintenance Rule Scope and Basis	4
		EN-DC-205	Maintenance Rule Monitoring	7
71111.13	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-06375	
	Procedures	EN-OU-108	Shutdown Safety Management Program (SSMP)	9
		EN-WM-104	On Line Risk Assessment	20
		OI-37-000	Operations Risk Assessment Guideline	313
	Work Orders		52790245	
71111.15	Calculations	SI Calculation 1900769.301	Evaluation of Leaking 1-inch Line Upstream of Valve CVC-186	0
	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-05704, 2019-05755, 2019-06307, 2019-07242, 2019-07462	
	Miscellaneous	BOP-RT-19-001	Digital Radiographic Examination	07/09/2019
		BOP-VT-19-019	Visual Examination of Welds	07/09/2019
	Procedures	EN-OP-104	Operability Determination Process	16
71111.18	Calculations	EC 102-001	Ultimate Heat Sink Margin Restoration - WCT Basin Level Setpoint Change - Train A	1
		EC 64016	COLSS Analysis/Station Interface Calculation	0
		ECI91-005	Wet Cooling Tower Basin Water Level Instrumentation Loops Uncertainty Calculation	1
		MN(Q)-9-38	Capacity of Wet Cooling Tower Basins	4
	Drawings	B425 L7079A	ACC - WET COOLING TOWER A BASIN WATER LEVEL	3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Miscellaneous	DEIC-I-502	Setpoint and Uncertainty Determination	6
		EC 52043	Ultimate Heat Sink Margin Restoration	0
71111.19	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-06374	
	Procedures	EN-OP-104	Operability Determination Process	16
		ME-003-318	G.E. Undervoltage Relay Model 12IAV55C	306
		ME-007-036	G.E. Auxiliary Relays 12HFA51B and 12HFA151B7F	306
		OP-903-005	Control Element Assembly Operability Check	15
		OP-903-121	Safety Systems Quarterly IT Valve Tests	30
	Work Orders		00528219, 00529055, 52811969, 530144	
71111.20	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-06358, 2019-06379, 2019-06384	
	Procedures	EN-OM-119	On-Site Safety Review Committee	19
		EN-OU-108	Shutdown Safety Management Program (SSMP)	9
		OP-003-033	Main Feedwater	325
		OP-003-035	Auxiliary Feedwater	310
		OP-010-003	Plant Startup	349
		OP-010-006	Outage Operations	333
71111.22	Calculations	ECP96-007	Auxiliary Component Cooling Water Supply and Return Piping	1
	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-06518, 2018-01724, 2018-01719	
	Procedures	EN-MA-135	Online Motor Electrical Testing	9
		MI-005-219	Calibration Check and Verification of Thermocouples and RTDs	304
		OP-903-119	Secondary Auxiliaries Quarterly IST Valve Test	34
	Work Orders		52798924, 52877149, 52814428	
71114.06	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-07397, 2019-07422, 2019-07424, 2019-07445, 2019-07449, 2019-07450, 2019-07451, 2019-07467	
	Procedures	EP-001-001	Recognition & Classification of Emergency Conditions	33
		EP-001-020	Alert	310
		EP-001-030	Site Area Emergency	309

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		EP-001-040	General Emergency	310
		OP-010-005	Plant Shutdown	337
		OP-901-102	CEA or CEDMCS Malfunction	305
		OP-901-212	Rapid Plant Power Reduction	11
		OP-901-402	High Airborne Radioactivity in Reactor Auxiliary Building	5
		OP-901-410	High Activity in Reactor Coolant System	4
		OP-901-512	Loss of Turbine Cooling Water	3
		OP-902-000	Standard Post Trip Actions	16
		OP-902-001	Reactor Trip Recovery	16
		OP-902-007	Steam Generator Tube Rupture Recovery Procedure	30
71124.05	Calibration Records	2018-B2.28-CALDAT-04015	Portable Instrumentation Calibration Data Sheet: Ludlum LM-177 (CHP-CR-186)	10/01/2018
		2018-B2.28-CALDAT-05747	Portable Instrumentation Calibration Data Sheet: AMP100 (CHP-ARM014)	09/06/2018
		2018-B2.28-CALDAT-06937	Portable Instrumentation Calibration Data Sheet: Wide Range Telepole (CHP-TEL034)	10/10/2018
		2018-B2.28-CALDAT-06939	Portable Instrumentation Calibration Data Sheet: Wide Range Telepole (CHP-TEL039)	10/10/2018
		2018-B2.28-CALDAT-07490	Portable Instrumentation Calibration Data Sheet: RO-20 (CHP-DR-119)	11/14/2018
		2018-B2.28-CALDAT-08281	Portable Instrumentation Calibration Data Sheet: Ludlum LM-177 (CHP-CR-195)	12/18/2018
		2018-B2.28-CALDAT-08396	Portable Instrumentation Calibration Data Sheet: AMS-4 Particulate Detector (HP-RD-261)	12/27/2018
		2019-B2.28-CALDAT-00247	Portable Instrumentation Calibration Data Sheet: SAC-4 (HP-DS-066)	01/08/2019
		2019-B2.28-CALDAT-03118	Portable Instrumentation Calibration Data Sheet: Ludlum LM-177 (CHP-CR-148)	04/11/2019
		2019-B2.28-CALDAT-03128	Portable Instrumentation Calibration Data Sheet: Wide Range Telepole (CHP-TEL138)	04/15/2019
		2019-B2.28-CALDAT-03199	Portable Instrumentation Calibration Data Sheet: Ludlum 9-3 (CHP-DR-286)	04/16/2019
		2019-B2.28-CALDAT-03211	Portable Instrumentation Calibration Data Sheet: Ludlum 9-3 (HP-DR-562)	04/17/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		2019-B2.28-CALDAT-04802	Portable Instrumentation Calibration Data Sheet: Ludlum 9-3 (CHP-DR-661)	08/20/2019
		ARGOS Calibration Data Sheet HP-DS-077	ARGOS Calibration Data Sheet: HP-DS-077, Westside Access	5/8/2019
		ARGOS Calibration Data Sheet HP-DS-098	ARGOS Calibration Data Sheet: HP-DS-098, Westside Access	05/07/2019
		Canberra GEM-5 Calibration Sheet HP-DS-080	Canberra GEM-5 Calibration Sheet HP-DS-080, Westside Access	07/10/2019
		Canberra GEM-5 Calibration Sheet HP-DS-095	Canberra GEM-5 Calibration Sheet HP-DS-095, PAP	10/30/2018
		CRONOS Calibration Data Sheet HP-DS-090	CRONOS Calibration Data Sheet: HP-DS-090, Westside Access	3/26/2019
		CRONOS Calibration Data Sheet HP-DS-091	CRONOS Calibration Data Sheet: HP-DS-091, Westside Access	08/12/2019
		Fastscan	2019 Fastscan Recalibration Waterford 3 West Side Access	07/14/2019
		Fastscan	2019 Fastscan Recalibration Waterford 3 Dosimetry Office	07/14/2019
	Corrective Action Documents	CR-WF3-YYYY-NNNN	2017-09300; 2017-09392; 2017-09662; 2018-00104; 2018-00239; 2018-00362; 2018-00547; 2018-00983; 2018-01348; 2018-01371; 2018-02007; 2018-02085; 2018-02917; 2018-03146; 2018-03680; 2018-03868; 2018-05670; 2018-05842; 2018-06684; 2019-00461; 2019-00780; 2019-01532; 2019-03504; 2019-03529; 2019-03899; 2019-04105; 2019-04407; 2019-04624	
	Miscellaneous		Results of the Radiochemistry Cross Check Program - Entergy Waterford 4 - 2nd Quarter 2019	07/24/2019
			Results of the Radiochemistry Cross Check Program - Entergy Waterford 4 - 3rd Quarter 2018	11/27/2018
			Results of the Radiochemistry Cross Check Program -	10/04/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Entergy Waterford 4 - 2nd Quarter 2017	
			Instrument Source Checking Source Inventory	09/11/2019
		2018-B2.28-LABSTN-0004	Laboratory Standard - Calibration/verification Data: V-570 Meter	06/12/2018
		2018-B2.28-SRCVER-0006	Source Verification: MODEL-89 (400) Serial Number: 2414-SRC1993001	12/18/2018
		TD-G063.0115	General Atomic Area Radiation Monitoring Systems Equipment Manual E-115-930	12/10/1987
	Procedures	EN-CY-102	Laboratory Analytical Quality Control	13
		EN-CY-102-01	Quality Control for Analytical Laboratory Interlab and Intralab Cross-Check Programs	1
		EN-CY-102-02	Analytical Method Development Quality Assurance	1
		EN-CY-102-03	Calculation Guide for Laboratory QAQC	0
		EN-DC-153	Preventive Maintenance Component Classification	20
		EN-DC-204	Maintenance Rule Scope and Basis	4
		EN-DC-324	Preventive Maintenance Program	22
		MI-005-906	RADIATION MONITORING SYSTEM DESK GUIDE	4
		MI-005-923	Calibration Procedure - General Atomic Area Radiation Monitor Assemblies 0359-360: ARMIR5013, 5014, 5015, 5018	4
	Self-Assessments	LO-WLO-2017-0032	Pre-NRC Self-Assessment IP 71124.05 Radiation Monitoring Instrumentation	09/20/2017
		LO-WLO-2019-0015	Pre-NRC Self-Assessment, IP71124.05 Radiation Monitoring Instrumentation	07/18/2019
	Work Orders	WO-WF3-	180572; 180573; 425005; 470721; 485439; 495141; 519720; 51693877; 52329961; 52668978; 52675543; 52739065; 52743583; 52745414; 52759169; 52780184; 52780545; 52780748; 52781284; 52782394; 52782394; 52878443	
71124.06	Calibration Records	WO52717425	Component Cooling Water Blowdown (RE-7050B)	03/12/2018
		WO52719287	Fuel Handling Building Ventilation System B (RE-5107B)	03/20/2018
		WO52721495	Circulating Water Discharge (RE-1900)	04/02/2018
		WO52730813	Gaseous Waste Management System (GWMS) (RE-0648)	07/16/2018
		WO52734471	Dry Cooling Tower Sump B (RE-6776)	06/21/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		WO52748891	Fuel Handling Building Ventilation System A (RE-5107A)	12/03/2018
		WO52773476	Turbine Building Industrial Waste Sump (RE-6778)	05/06/2019
		WO52776602	Main Condenser Evacuation System (MCES) (RE-002)	03/19/2019
		WO52798848	RAB Ventilation System/Plant Stack A (RE-0100.1)	06/03/2019
	Corrective Action Documents	CR-HQN-YYYY-NNNN	2017-00319	
		CR-WF3-YYYY-NNNN	2017-08186; 2017-09325; 2017-09736; 2018-00983; 2018-02000; 2018-02007; 2018-03972; 2019-04516; 2019-04712; 2019-06735; 2019-006736; 2019-06737; 2019-06748	
	Miscellaneous		2018 Annual Radioactive Effluent Release Report	2018
			Results of Radiochemistry Cross Check Program - 4th Quarter 2018	05/13/2019
			Results of Radiochemistry Cross Check Program - 3rd Quarter 2018	11/27/2018
			Results of Radiochemistry Cross Check Program - 2nd Quarter 2019	08/12/2019
			2017 Annual Radioactive Effluent Release Report	2017
			Results of Radiochemistry Cross Check Program - 4th Quarter 2017	07/11/2018
		W3GB2017-151	Containment Gas Effluent Release Report - Batch	12/20/2017
		W3GB2018-038	Containment Gas Effluent Release Report - Batch	03/22/2018
		W3GB2019-017	Miscellaneous Gas Effluent Release Report - Batch	02/22/2019
		W3GC2018-063	Plant Stack Gas Effluent Release Report - Continuous	05/17/2018
		W3GC2018-150	Main Condenser Evacuation System (MCES) Gas Effluent Release Report - Continuous	11/29/2018
		W3GC2019-020	Fuel Handling Building (FHB) Gas Effluent Release Report - Continuous	02/19/2019
		W3LB2017-269	Boric Acid Condenser Tank C Liquid Effluent Release Report - Batch	12/01/2017
		W3LB2018-078	Liquid Waste Management Liquid Effluent Release Report - Batch	05/12/2018
		W3LB2019-023	Steam Generator Blowdown Liquid Effluent Release Report - Batch	01/29/2019
		W3LC2017-267	Turbine Building Industrial Waste System (TBIWS) Liquid	12/04/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Effluent Release Report - Continuous	
		W3LC2018-242	Turbine Building Industrial Waste System (TBIWS) Liquid Effluent Release Report - Continuous	01/01/2019
		W3LC2019-016	Dry Cooling Tower Sump 1 (DCTS1) Liquid Effluent Release Report - Continuous	01/01/2019
	Procedures	CE-001-004	Periodic Analysis Scheduling Program	318
		CE-003-509	Routine Filter Replacement and Grab Sampling on Particulate Iodine Gas (PIG) Monitors and Wide Range Gas Monitors (WRGMs)	308
		CE-003-512	Liquid Radioactive Waste Release Permit (Manual)	002
		CE-003-513	Gaseous Radioactive Waste Release Permit (Manual)	304
		CE-003-514	Liquid Radioactive Waste Release Permit (Computer)	303
		CE-003-515	Gaseous Radioactive Waste Release Permit (Computer)	304
		CE-003-516	Calculation and Adjustment of Radiation Monitoring Setpoints	302
		CE-003-700	General Grab Sampling Techniques	316
		MI-003-368	Fuel Handling Building Ventilation System Normal Effluent Exhaust A or B Particulate and Gaseous Radiation Monitor Calibration PRMIR5107.A or PRMIR5107.B	016
		MI-003-380	Plant Vent Stack Safety Channel A or B Particulate and Gaseous Radiation Monitor Calibration PRMIR0100.1 or PRMIR0100.2	309
		MI-003-466	Dry Cooling Tower Sumps Liquid Effluent Radiation Monitor Channel Calibration PRMIR6775 or PRMIR6776	308
		MI-003-469	Turbine Building Industrial Waste Sumps Combined Discharge Liquid Effluent Radiation Monitor Channel Calibration PRMIR6778	013
		MI-003-471	Circulating Water Discharge Liquid Effluent Radiation Monitor Channel Calibration PRMIR1900	011
		MI-003-473	Gaseous Waste Management Discharge Noble Gas Radiation Monitor Channel Calibration PRMIR0648	305
		UNT-005-014	Offsite Dose Calculation Manual	307
	Self-Assessments	LO-WLO-2019-0016	Pre-NRC Assessment of Radiation Safety Inspection Criteria	08/07/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	WO-52714811	CVAS B - Controlled Ventilation Areas Filtration Unit In-Place Charcoal Testing	03/15/2018
		WO-52716247	HVC B - Control Room Emergency Filtration Unit Charcoal Sampling	02/14/2018
		WO-52716248	HVC B - Control Room Emergency Filtration Unit In-Place Charcoal Testing	02/14/2018
		WO-52728264	SBV A - Shield Building Ventilation Unit Charcoal Sampling	06/04/2018
		WO-52767953	CVAS A - Controlled Ventilation Areas Filtration Unit In-Place Charcoal Testing	01/11/2019
		WO-52795776	HVC A - Control Room Emergency Filtration Unit In-Place Charcoal Testing	07/09/2019
71124.07	Calibration Records	ENV-FT-016	Flow Totalizer for APQ-1	03/13/2019
		W/O 52817697	EM IM0110, Calibrate Backup Met Tower IAW MI-003-396	09/19/2019
		W/O 52835981	EM IM0100, Calibrate Primary Met Tower IAW MI-003-395	12/20/2018
		W/O 52843683	EM IM0110, Calibrate Backup Met Tower MI-003-396	03/20/2019
		W/O 52859453	EM IM0100, Calibrate Primary Met Tower IAW MI-003-395	07/05/2019
	Corrective Action Documents	CR-HQN-YYYY-NNNN	2017-01911; 2018-02412	
		CR-WF3-YYYY-NNNN	2017-09465; 2017-09810; 2018-00539; 2018-01625; 2018-01749; 2018-02620; 2018-04363; 2018-05354; 2018-06463; 2018-07201; 2018-07297; 2019-02608; 2019-03611; 2019-03804; 2019-04264; 2019-04329; 2019-04412; 2019-05720; 2019-05762; 2019-05882; 2019-06851	
	Miscellaneous		Ground Water Monitoring Plan	02/10/2014
		2017	Annual Radioactive Effluent Release Report	2018
		2017	Annual Radiological Environmental Operating Report	2018
		2018	Annual Radioactive Effluent Release Report	2019
		2018	Annual Radiological Environmental Operating Report	2019
		CR-WF3-2019-07315	CR with attached Inspections of Met Towers	09/19/2019
		PR-PRHQN-2018-00908	Procedure Revision Tracker associated with CR-HQN-2018-02412 for EN-FAP-OM-012	11/06/2018
		Primary	Guyed Tower Inspection Report	6/3/2019
		Secondary	Guyed Tower Inspection Report	6/3/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		WF3-CR-2017-09001	Response to Contaminated Spills/Leaks	11/10/2017
		WF3-CR-2018-03420	Response to Contaminated Spills/Leaks	06/16/2018
	Procedures	CE-001-004	Periodic Analysis Scheduling	318
		CE-003-522	Meteorological Data Collection and Processing	6
		CE-003-523	Meteorological Monitoring Program	1
		EN-CY-108	Monitoring of Nonradioactive Systems	6
		EN-CY-111	Radiological Ground Water Monitoring Program	9
		EN-CY-130	Radiological Environmental Monitoring Program	0
		EN-RP-113	Response to Contaminated Spills/Leaks	9
		MI-003-395	Primary Meteorological Tower Instrument Calibration EM IM0110	302
		MI-003-396	Secondary Meteorological Tower Instrument Calibration EM IM0110	11
		UNT-005-014	Offsite Dose Calculation Manual	307
	Self-Assessments		Teledyne Brown Engineering Knoxville Laboratory Internal QA Audit 2018	11/13/2018
			Internal Assessment – Stanford Dosimetry	01/29/2019
			NUPIC Joint Utility Audit No. 24791	05/09/2019
		LO-WLO-2019-0016	Pre-NRC Assessment of Radiation Safety Inspection Criteria	08/07/2019
	Work Orders	WO 488788	Primary Met Tower Reading Suspect	12/19/2017
		WO 501576	Troubleshoot/Repair Secondary Met Tower From WR 437511	08/22/2018
		WO 523912	Troubleshoot/Repair BU Met Tower 33 ft. Wind Direction CR-19-4329	05/01/2019
71124.08	Corrective Action Documents	CR-HQN-YYYY-NNNNN	2017-01400; 2017-01543	
		CR-WF3-YYYY-NNNNN	2017-03321; 2017-07899; 2017-07903; 2019-4177	
	Procedures	EN-RW-105	Process Control Program	5
		EN-RW-106	Integrated Transportation Security Plan	6

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Self-Assessments	WLO-2019-000015	Pre-Assessment of NRC IP71124.08	8/21/2019
	Shipping Records	17-1009	Unitech ORSC: Blowdown Resin	4/20/17
		17-1017	Unitech-ORSC: Wood waste	6/19/17
		17-1018	Unitech-ORSC: Wood waste	7/28/17
		18-1013	ESM: Scaffolding	
		18-1014	ESBS: Cask Liner with Resin and Sludge	5/24/18
		18-3002	Radiation Instruments: GA	1/18/18
		19-1015	ESBC: Resin in a Shielded Cask	
		19-1019	ESBC: Resin in a Shielded Cask	8/15/19
71151	Miscellaneous	W3F1-2018-0066	NRC Performance Indicator (PI) Data - 3rd Quarter 2018 ROP Data	10/21/2018
		W3F1-2019-0003	NRC Performance Indicator (PI) Data - 4th Quarter 2018 ROP Data	01/10/2019
		W3F1-2019-0030	NRC Performance Indicator (PI) Data - 1st Quarter ROP Data	04/11/2019
		W3F1-2019-0053	NRC Performance Indicator (PI) Data - 2nd Quarter ROP Data	07/15/2019
71152	Corrective Action Documents	CR-WF3-YYYY-NNNN	2019-03572, 2019-04410, 2019-04628, 2019-04654, 2019-04988, 2019-05014, 2019-05026, 2019-05279, 2019-05488, 2019-05489, 2019-05662, 2019-05729, 2019-06000, 2019-07075, 2019-07529	
	Procedures	EN-OP-104	Operability Determination Process	16
		OP-004-004	Control Element Drive	24