



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200  
ATLANTA, GEORGIA 30303-1200

February 13, 2019

Mr. J. Ed Burchfield, Jr.  
Site Vice President  
Duke Energy Corporation  
Oconee Nuclear Station  
7800 Rochester Highway  
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION – NUCLEAR REGULATORY COMMISSION  
INTEGRATED INSPECTION REPORT 5000269/2018004, 050000270/2018004,  
AND 05000287/2018004

Dear Mr. Burchfield:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. On February 11, 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.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest this violation or significance of the NCV, 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 II; the Director, Office of Enforcement; and the NRC resident inspector at the Oconee Nuclear Station. If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC resident inspector at the Oconee Nuclear Station.

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

Sincerely,

**/RA/**

Frank Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 50-269, 50-270, 50-287  
License Nos.: DPR-38, DPR-47, DPR-55

Enclosure:  
IR 05000269/2018004, 05000270/2018004, and 05000287/2018004

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

Docket Numbers: 50-269, 50-270, 50-287

License Numbers: DPR-38, DPR-47, DPR-55

Report Numbers: 05000269/2018004, 05000270/2018004, 05000287/2018004

Enterprise Identifier: I-2018-004-0034

Licensee: Duke Energy Carolinas, LLC

Facility: Oconee Nuclear Station, Units 1, 2, and 3

Location: Seneca, SC

Inspection Dates: October 1, 2018 to December 31, 2018

Inspectors: E. Crowe, Senior Resident Inspector  
J. Parent, Resident Inspector  
A. Ruh, Resident Inspector  
B. Collins, Reactor Inspector  
M. Meeks, Senior Operations Engineer  
R. Williams, Senior Reactor Inspector

Approved By: F. Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting a quarterly baseline inspection at Oconee Units 1, 2, and 3 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

### List of Findings and Violations

Failure to Implement Administrative Procedures During Transient Conditions			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000269/2018004-01 Closed	[H.14] – Conservative Bias	71153 – Personnel Performance
A self-revealed Green finding and associated NCV was identified of Technical Specification (TS) 5.4.1, "Procedures" with two examples. The licensee failed to properly implement the variance process per AD-OP-ALL-1001, "Conduct of Abnormal Operations," and manage reactivity per AD-OP-ALL-0203, "Reactivity Management," during a planned Unit 1 reactor shutdown. Specifically, a variance was improperly used because there was no reason the reactor could not or should not have been tripped per AP/1/A/1700/027, "Loss of Condenser Vacuum." Additionally, an inadvertent positive reactivity insertion was performed during the transient which was not directed by a procedure.			

### Additional Tracking Items

Type	Issue number	Title	Report Section	Status
LER	05000269/2018-002-00	Loss of Condenser Vacuum Results in a Main Turbine Trip and a Manual Reactor Trip	71153	Closed

## **PLANT STATUS**

Unit 1 began the inspection period at 100 percent rated thermal power (RTP). On October 19, 2018, the unit was shut down for a planned refueling outage. The unit was returned to 100 percent RTP on November 16, 2018. On December 1, 2018, the unit was shut down for planned repairs to the 1B2 reactor coolant pump. The unit was returned to 100 percent RTP on December 9, 2018. The unit remained at 100 percent RTP for the remainder of the inspection period.

Unit 2 operated at or near 100 percent RTP for the entire inspection period.

Unit 3 operated at or near 100 percent RTP 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

#### External Flooding (1 Sample)

The inspectors evaluated readiness to cope with external flooding on November 7, 2018.

### 71111.04 - Equipment Alignment

#### Partial Walkdown (2 Samples)

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

- (1) Unit 1 low pressure service water system (LPSW) (A train) on October 22, 2018
- (2) Unit 1 and 2 LPSW system on October 24, 2018

#### Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the Unit 1 low pressure injection system on October 19 and 26, 2018.

## 71111.05 - Fire Protection

### Quarterly Inspection (5 Samples)

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

- (1) Unit 1 reactor building on October 20, 2018
- (2) Fire Zone 46 – CT4 blockhouse on November 20, 2018
- (3) Fire Zone 75 – Unit 1 decay heat removal coolers room on November 29, 2018
- (4) Fire Zone 92 – Unit 2 equipment room on November 29, 2018
- (5) Fire Zone 4 – Unit 3 turbine driven emergency feedwater pump area on December 20, 2018

## 71111.08 - Inservice Inspection Activities (1 Sample)

The inspectors evaluated pressurized water reactor non-destructive testing by reviewing the following examinations from October 24 to November 2, 2018:

- (1) Ultrasonic Examination (UT)
  - a) 10" reactor coolant overlay weld (1-RC-229-67V), ASME Class 1, manual UT (observed)
  - b) 3.5" high pressure injection nozzle-to-safe end weld (1-PDB1-11), ASME Class 1, encoded UT (observed)
- (2) Visual Examination
  - a) WO20077944, 2" high pressure injection pipe-to-elbow weld (1-HP-0599-6), ASME Class 1 (reviewed; associated with welding package, which was also reviewed)
- (3) Radiographic Examination
  - a) WO20077944, 2" high pressure injection pipe-to-elbow weld (1-HP-0599-6), ASME Class 1 (reviewed; associated with welding package, which was also reviewed)
- (4) Eddy Current Testing
  - a) Steam Generator (SG) A (tubes R6C32, R76C116, R11C42, R1C10, R75C116), ASME Class 1 (observed)
  - b) SG B (tubes R76C123, R20C20, R130C92), ASME Class 1 (observed)

The inspectors evaluated the licensee's boric acid control program performance.

## 71111.11 - Licensed Operator Regualification Program and Licensed Operator Performance

### Operator Regualification (1 Sample)

The inspectors observed and evaluated administration of simulator-based operator requalification testing on October 2, 2018.

### Operator Performance (1 Sample)

The inspectors observed and evaluated licensed operators' actions during a maintenance calibration of the 1B outlet temperature instrument which resulted in a down power of less than 2

percent power on October 9, 2018.

The inspectors observed and evaluated licensed operators' actions during the draining of the reactor coolant system to 80" in preparation for reactor head removal on October 22, 2018.

#### Operator Exams (1 Sample)

The inspectors reviewed and evaluated requalification examination results during the week of December 17, 2018.

### 71111.12 - Maintenance Effectiveness

#### Routine Maintenance Effectiveness (2 Samples)

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

- (1) Essential Siphon Vacuum float valve 3ESV-1 failed to open during performance testing on October 19, 2018.
- (2) Unit 1 / 2 'B' spent fuel cooling pump tripped and had smoke coming from the motor area due to a loose connection on October 23, 2018.

### 71111.13 - Maintenance Risk Assessments and Emergent Work Control (4 Samples)

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

- (1) Unit 1 elevated risk due to draining to 80" for reactor coolant system loop drop on October 22, 2018
- (2) Unit 2 and 3 elevated auxiliary building internal flooding risk due to maintenance on 1-LPSW-15 on October 26, 2018
- (3) Unit 2 and 3 elevated auxiliary building internal flooding risk due to maintenance of 1-LPSW-1116 on October 29, 2018
- (4) Unplanned repair of standby shutdown facility's diesel generator while simultaneously performing planned maintenance on Keowee hydro unit 1, testing of pneumatic circuit breaker 12 in the 230kV switchyard, and performing work in and around the area of CT5 on December 19, 2018

### 71111.15 - Operability Determinations and Functionality Assessments (1 Sample)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) 1A core flood tank discharge isolation valve (CF-1) failed to open electrically from the main control on November 11, 2018

### 71111.18 - Plant Modifications (1 Sample)

The inspectors evaluated the following permanent modification:

- (1) Engineering Change (EC) 405220, Unit 1 main transformer replacement from October



20, 2018 to December 12, 2018

71111.19 - Post Maintenance Testing (3 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) PT/1/A/0150/022 G, Flow check after reassembly of 'B' train reactor building spray line check valve 1-BS-19 on October 26, 2018 and October 30, 2018
- (2) PT/1/A/0610/001 J, "Emergency Power Switching Logic Functional Test" following switchyard breaker replacement on November 5, 2018
- (3) PT/0/A/0400/011, "SSF Diesel Generator Test" following replacement of the automatic voltage regulator and remote gate firing module on December 22, 2018

71111.20 - Refueling and Other Outage Activities (2 Samples)

The inspectors evaluated refueling outage U1R30 activities from October 19, 2018, to November 14, 2018, and Unit 1 forced outage activities from November 30, 2018, to December 8, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (2 Samples)

- (1) PT/2/A/0230/015, "High Pressure Injection Motor Cooler Performance Test" on October 1, 2018
- (2) PT/3/A/0202/011, "High Pressure Injection Pump Test" (3B) on November 5, 2018

In-service (1 Sample)

- (1) PT/1/A/0400/007, "SSF RC Makeup Pump Test" on November 5, 2018

Containment Isolation Valve (2 Samples)

- (1) PT/1/A/0151/039B, "Penetration 39B Leak Rate Test" on November 5, 2018
- (2) Penetration 49 leak rate test on November 8, 2018

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below for the period from September 1, 2017, through September 30, 2018. (6 Samples)

- (1) Unit 1, 2, and 3 mitigating systems performance indicator (MSPI) emergency AC power system
- (2) Unit 1, 2, and 3 MSPI residual heat removal system

## 71152 - Problem Identification and Resolution

### Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue.

### Annual Follow-up of Selected Issues (3 Samples)

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

- (1) Causal evaluations performed regarding operating crew performance and unplanned manual reactor trip (Nuclear Condition Report (NCR) 02238263)
- (2) Causal evaluations associated with multiple valve positioner board problems for protected service water flow control valves PSW-22/24 on all three units (NCRs 02108086, 02190207, 02228898, 02229564, 02229649, 02229669, and 02247382).
- (3) 230kV switchyard 125V DC bus tie breakers open with monitoring relay 74BB indicating the breakers are closed (NCR 02226106)

## 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) 05000269/2018-002-00, Loss of Condenser Vacuum Results in a Main Turbine Trip and a Manual Reactor Trip, on October 19, 2018

### Personnel Performance (1 Sample)

The inspectors evaluated an unplanned manual reactor trip during a scheduled shutdown of Unit 1 and licensee's performance on October 19, 2018.

## **OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL**

### 60855.1 - Operation of an Independent Spent Fuel Storage Installation

The inspectors evaluated the licensee's independent spent fuel storage installation cask loadings on December 13, 2018.

## **INSPECTION RESULTS**

Observation	71152 – Annual Follow-up of Selected Issues
On October 19, 2018, an unplanned manual reactor trip occurred during a planned shutdown of Unit 1 due to degrading main condenser vacuum. Inspectors reviewed a root cause evaluation, and related performance analyses associated with operator performance issues that were revealed during the event. Inspectors reviewed these evaluations to assess whether the licensee had accurately documented the problems, identified the root and	

contributing causes of the event, identified appropriately focused corrective actions, and considered the extent of condition. Overall, inspectors assessed the evaluations as being adequate to support nuclear safety. Inspectors identified one weakness related to actions taken for correcting an identified problem.

One of the causes identified was that the shift manager and control room supervisor questioned the basis of the procedure step to trip the reactor while less than 27.75 percent power and rationalized that the procedure was in error. As a corrective action, operations revised training materials to include the rationale behind the procedure step. The revised study guide included a basis for tripping the reactor when above 27.75 percent power and when there was “no vacuum.” However, there was no basis cited for tripping the reactor when less than 22 inches of mercury vacuum (inHg) existed while less than 27.75 percent power. Since the lack of a basis for a reactor trip in this operating range was the point of confusion for the original problem, inspectors determined the updated study guide material did not completely address the cited cause.

Failure to Implement Administrative Procedures During Transient Conditions			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000269/2018004-01 Closed	[H.14] – Conservative Bias	71153 – Personnel Performance
<p><u>Introduction:</u> A self-revealed Green finding and associated NCV was identified of Technical Specification (TS) 5.4.1, “Procedures” with two examples. The licensee failed to properly implement the variance process per AD-OP-ALL-1001, “Conduct of Abnormal Operations,” and manage reactivity per AD-OP-ALL-0203, “Reactivity Management,” during a planned Unit 1 reactor shutdown. Specifically, a variance was improperly used because there was no reason the reactor could not or should not have been tripped per AP/1/A/1700/027, “Loss of Condenser Vacuum.” Additionally, an inadvertent positive reactivity insertion was performed during the transient which was not directed by a procedure.</p>			
<p><u>Description:</u> On October 19, 2018, during a planned Unit 1 reactor shutdown, a loss of main turbine sealing steam occurred as reactor power was lowered. As non-condensable gasses entered the main condenser through the main turbine shaft seals, condenser vacuum began to degrade. Operators entered abnormal procedure AP/1/A/1700/024 and dispatched field operators to restore sealing steam and stabilize condenser vacuum. Step 4.2 of the procedure required the reactor to be tripped if condenser vacuum was less than or equal to 22.0 inHg while operating in Technical Specification Modes 1 or 2. Field operators were not able to reestablish sealing steam prior to vacuum reaching the reactor trip criteria. In consultation with the shift manager, the control room supervisor utilized an administrative process (the variance process) to approve not tripping the reactor. AD-OP-ALL-1001, “Conduct of Abnormal Operations,” Step 5.2.7.b states that “the variance process is applicable when procedure steps cannot, or should not, be executed as written.” In this case, there were no reasons the reactor could not or should not have been tripped. Additionally, the variance was taken without conducting a required focus brief with the entire crew, and it was not formally approved before exceeding the reactor trip criterion. Operators mistakenly rationalized that the abnormal procedure was in error because reactor power was at a level where a turbine trip would not cause an anticipatory reactor trip. Under normal low power conditions, the design capacity of the turbine bypass valves and main condenser can remove</p>			

reactor heat which alleviates the need for an anticipatory reactor trip. However, the crew failed to consider that the air intrusion had degraded the design heat removal capability of the condenser to the point that it was no longer able to support the reactor at 19 percent power. Until the air could be removed, and/or steam load (reactor power) reduced, condenser vacuum would continue to decline.

As condenser vacuum continued to decrease toward the feedwater pump trip setpoint of 19.0 inHg, the shift manager directed the control room supervisor to start the motor driven emergency feedwater pumps (MDEFWPs) and trip the reactor in anticipation of the automatic initiations that would occur from the loss of the remaining main feedwater pump. Based on the unit supervisor's direction, rather than procedure, reactor operators started both pumps. The control room supervisor then began a crew focus brief prior to initiating the reactor trip to review operator immediate actions. During the brief, and because steam generator water level was below the emergency feedwater (EFW) level controller setpoint, the flow control valves were open, which allowed cold water to be pumped into the steam generators. The additional cooling resulted in an inadvertent increase in reactor power of approximately five percent over the next 80 seconds. AD-OP-ALL-0203, "Reactivity Management," states in Section 5.4.7, "Abnormal Operations," that positive reactivity insertions "shall not be performed during transient conditions unless directed by procedure." The power increase resulted in added steam loading on the degraded main condenser and exacerbated the decline in condenser vacuum toward the main feedwater pump trip setpoint. Following the focus brief, condenser vacuum was approximately 19.2 inHg when operators tripped the reactor. Once the reactor was tripped, condenser vacuum immediately recovered and operators started a controlled cooldown.

Corrective Action(s): The crew members involved were disqualified and remediated. Standing instructions were created to enhance the guidance in the administrative procedures until permanent changes could be made. The licensee also conducted a root cause investigation to determine what additional corrective actions were necessary.

Corrective Action Reference(s): NCR 02238263

#### Performance Assessment:

Performance Deficiency: The failure to follow two site procedures during a planned Unit 1 shutdown was a performance deficiency. Specifically, the licensee failed to properly implement the variance process per AD-OP-ALL-1001, "Conduct of Abnormal Operations," because there was no reason the reactor could not or should not have been tripped per AP/1/A/1700/027, "Loss of Condenser Vacuum." Additionally, the licensee failed to manage reactivity per AD-OP-ALL-0203, "Reactivity Management," and an inadvertent positive reactivity insertion was performed during the transient which was not directed by a procedure.

Screening: The performance deficiency was more than minor because it was associated with the human performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in a delay of tripping the reactor in accordance with the AOPs and in an inadvertent positive reactivity insertion.

Significance: The inspectors screened the issue using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems

Screening Questions,” and determined that IMC 0609, Appendix M “Significance Determination Process Using Qualitative Criteria,” was required because the finding involved control manipulations that unintentionally added positive reactivity (e.g. inadvertent cold water injection). A regional senior risk analyst (SRA) conducted a quantitative initial evaluation under IMC 0609 Appendix M using SAPHIRE Version 8.1.8 and limited use Oconee SPAR model 8.57. Because the performance deficiency in this issue resulted in an initiating event, the SRA further used the incremental conditional core damage probability (iCCDP) approach described in IMC 0308 Attachment 3. In completing the evaluation the SRA assumed: the engineered safeguard protection system would not actuate due to the low power conditions and that the motor driven EFW pumps were running at the start of the event. The result was a change in core damage frequency of less than 1E-6/year, which was of very low safety significance (Green). Given that feed water addition occurred, the dominant sequence was related to failure of the PORV and one safety valve on the pressurizer to reseal after opening along with operator failure to establish high pressure recirculation.

Cross-Cutting Aspect: The inspectors determined the finding had a cross-cutting aspect of conservative bias in the area of human performance, because the licensee failed to use decision making-practices that emphasize prudent choices over those that are simply allowable. The proposed actions to not trip the reactor when procedurally required, and to start the MDEFWPs before tripping the reactor, did not reflect a conservative approach to decision-making when facing unusual conditions.

#### Enforcement:

Violation: Oconee Unit 1 Technical Specification 5.4.1, “Procedures,” states, in part, that written procedures shall be implemented covering the applicable procedures recommended in Appendix ‘A’ of Regulatory Guide (RG) 1.33, February 1978. RG 1.33, “Quality Assurance Program Requirements (Operation), Rev. 2, Feb. 1978, Appendix A, Paragraph 1, “Administrative Procedures,” specifies safety-related activities that should be covered by written procedures, including authorities and responsibilities for safe operation and shutdown.

Contrary to the above, on October 19, 2018, during the conduct of a planned reactor shutdown, Oconee Unit 1 operators failed to implement AD-OP-ALL-1001, “Conduct of Abnormal Operations,” and AD-OP-ALL-0203, “Reactivity Management,” which specified their authorities and responsibilities for safe operation and shutdown. The violation resulted in an improper use of a variance and an inadvertent positive reactivity insertion during a transient.

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

## **EXIT MEETINGS AND DEBRIEFS**

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

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

- On February 11, 2019, the inspector presented the inspection results to Mr. J. Ed Burchfield, and other members of the licensee staff.

## **DOCUMENTS REVIEWED**

### **71111.01: Adverse Weather Protection**

#### Calculations

OSC-7256, External Flood / Ground Water Mitigation Requirements, Rev. 1

#### Engineering Change (EC)

108176; 408447

#### Drawings

O-PDF-0003, Event Flood Barriers, Rev. 5

O-PDF-0003-001, PMP Rainfall Event Flood Barriers Sections & Details, Rev. 2

#### Procedures

RP/0/A/1000/035, Severe Weather Preparations, Rev. 004

### **71111.04: Equipment Alignment**

#### Documents

AD-OP-ALL-0201, Protected Equipment, Rev. 4

System Health Report, Unit 1 Low Pressure Injection System, Q2-2018

OSC-8671, Auxiliary Building Flood Design Values, Rev. 6

OSS-0254.00-00-1028, "Design Basis Spec for the Low Pressure Injection and Core Flood System (LPI), Rev. 55

#### Nuclear Condition Report

2198178

#### Drawings

OFD-102A-1.1, "Flow Diagram of Low Pressure Injection System," Rev. 71

OFD-102A-1.2, "Flow Diagram of Low Pressure Injection System," Rev. 61

OFD-102A-1.3, "Flow Diagram of Low Pressure Injection System," Rev. 31

OFD-101A-1.3, "Flow Diagram of High Pressure Injection System," Rev. 34

OFD-100A-1.1, "Flow Diagram of Reactor Coolant System," Rev. 42

OFD-124A-1.1, "Flow Diagram of Low Pressure Service Water System," Rev. 54

OFD-124B-1.1, "Flow Diagram of Low Pressure Service Water System," Rev. 67

OFD-124B-1.2, "Flow Diagram of Low Pressure Service Water System," Rev. 35

OFD-124B-1.4, "Flow Diagram of Low Pressure Service Water System," Rev. 32

#### Other

Protected Equipment Clearance: 18-0366

#### Procedures

OP/0/A/1108/001, Curves and General Information," Rev. 114

OP/1/A/1103/011, Draining and Nitrogen Purging RCS, Rev. 101

OP/1/A/1104/004, "Low Pressure Injection System," Rev. 155

### **71111.05: Fire Protection**

#### Documents

AD-EG-ALL-1520, Transient Combustible Control, Rev. 11

CSD-ONS-PFP-1RB, Rev. 0

MP/0/A/1705/019, Fire Protection – SLC – Related Fire Doors – HELB Doors – Annual and Bi-

Monthly Inspections, Rev. 027  
OSS-0254.00-00-4008, Design Specification for Fire Protection, Rev. 42  
Pre Fire Plan: O-FS-0-PA-9000-001, Fire Zone 46, Unit 1 & 2 Blockhouse CT4 Room, Rev. 1  
Pre Fire Plan: O-FS-1-RB-9000-001, Fire Zone 122, Unit 1 Reactor Building, Rev. 1  
Pre Fire Plan: O-FS-1-AB-9771-001, Fire Zone 75, Unit 1 Decay Heat Removal Coolers, Rev. 002  
Pre Fire Plan: O-FS-2-AB-9796-001, Fire Zone 92, Unit 2 Equipment Room, Rev. 001  
Pre Fire Plan: O-FS-3-TB-9775-001, Fire Zone 4, Unit 1 Turbine Building Elevation 775', Rev. 001

Other  
Fire Impairments Sheet

### **71111.08: Inservice Inspection Activities**

#### Procedures

8-QPP-761, Multifrequency Eddy Current Examination of Steam Generator Tubing, Rev. 7  
MP/0/A0/8140/001, QA and Non-QA Welding, Rev. 010  
NDE-NE-ALL-6302, Utilization of EPRI-WOL-PA-1, Procedure for Manual Phased Array Ultrasonic Examination of Weld Overlaid Similar and Dissimilar Metal Welds, Rev. 000  
NDE-NE-ALL-7701, Visual Examination of Welds and Brazed Joints, Rev. 000  
NDE-NE-ONS-0131, Eddy Current Guidelines for Oconee Nuclear Station's Replacement Once-Through Steam Generators (ROTSG), Rev. 1  
PD-EG-PWR-1801, Steam Generator Management Program, Rev. 4  
S000001-07-000015, Mechanical Rolled Tube Plug & Stabilizer Installation Field Procedure for Replacement Once Through Steam Generators, Rev. 12

#### Corrective Action Documents

AR 02239734, FM discovered in the 1B SG bowl delayed installation  
AR 02239659, FME discovered & retrieved during post offload debris scan  
AR 02239731, 90 rem per hour particle delayed 1B SG lower manway removal

#### Miscellaneous

3010-AST-101033, Steam Generator Final Condition Monitoring and Operational Assessment for Oconee-1 EOC29 Outage, Rev. 0  
Certificate of Calibration for Eddy Current Tester SN: 644403, 649080, 649081  
Certificate of Conformance for Probe SN: 750281, 739844, 752091, 752085, 752086, 739800  
Certificate of Method Qualification: RT LII-N (Jones), dated 7/30/2018  
Certificate of Method Qualification: UT LII-N (Jensen), dated 1/16/2017  
Certificate of Method Qualification: VT (Sherrill), dated 7/30/2018  
Certificate of NDE Personnel Qualification for Examiner: A2945, D6502, B5926, D3162, L7871, S4373, M2655  
Certificate of Personnel Qualification: UT-LII (C. McDonald), dated 01/09/18  
Certificate of Personnel Qualification: UT-LII (Gatica), dated 04/11/18  
EC114931, Replacement of the Unit 1 SSF RCMU Pulsation Dampener, Rev. 008  
Eddy Current Examination Technique Specification Sheet #: ETSS#1, ETSS#2  
GTOO0808-04, Welding Procedure Specification, Rev. 0  
L-110D, Procedure Qualification Record, dated January 3, 1991  
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#### **71111.11: Licensed Operator Requalification**

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##### Drawings

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#### **71111.12: Maintenance Effectiveness**

##### Documents

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## Oconee Maintenance Rule Database

### Nuclear Condition Report

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## **71111.13: Risk Assessments**

### Documents

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AD-OP-ALL-0106, Conduct of Infrequently Performed Tests or Evolutions, Rev. 4

AD-OP-ALL-0201, Protected Equipment, Rev. 4

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## **71111.15: Operability Evaluations**

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**71111.19: Post-Maintenance Testing**

Drawings

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**71111.20: Refueling and Other Outage Activities**

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OFD-102A-1.3, "Flow Diagram of Low Pressure Injection System," Rev. 31  
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#### Work Orders/Requests

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### **71151: Performance Identification Verification**

#### Documents

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Oconee Unit 2 MSPI Emergency AC Power System Performance Level Exceeded Report, September 2018

Oconee Unit 3 MSPI Emergency AC Power System Unreliability Index Derivation Report, September 2018

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## **71152: Problem Identification and Resolution**

### **Documents**

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**71153: Followup of Events and Notices of Enforcement Discretion (NOED)**

Documents

Unit 1 Operator Narrative Logs, night-shift October 19, 2018

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