



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

November 1, 2017

Mr. Tom Ray
Site Vice President
Duke Energy Corporation
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT
05000269/2017003, 05000270/2017003, AND 05000287/2017003

Dear Mr. Ray:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. On October 20, 2017, 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.

The NRC inspectors did not identify any findings or violations of more than minor significance.

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 05000269/2017003, 05000270/2017003,
and 05000287/2017003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-269, 50-270, 50-287

License Nos.: DPR-38, DPR-47, DPR-55

Report No.: 05000269/2017003, 05000270/2017003, and 05000287/2017003

Licensee: Duke Energy Carolinas, LLC

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

Location: Seneca, SC 29672

Dates: July 1, 2017 through September 30, 2017

Inspectors: E. Crowe, Senior Resident Inspector
N. Childs, Resident Inspector
J. Parent, Resident Inspector
S. Sanchez, Senior Emergency Preparedness Inspector (Sections 1EP2, 1EP3, 1EP4)
C. Fontana, Emergency Preparedness Inspector (Sections 1EP5, 4OA1)

Approved by: Frank Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000269/2017003, 05000270/2017003, and 05000287/2017003, July 1, 2017, through September 30, 2017; Oconee Nuclear Station, Units 1, 2, and 3; Integrated Inspection Report

The report covered a 3-month period of inspection by resident inspectors and regional inspectors. No findings were identified during this inspection period. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

REPORT DETAILS

Summary of Plant Status

Unit 1: Operated at or near 100 percent rated thermal power (RTP) for the entire inspection period.

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

Unit 3: The unit began the inspection period at approximately 100 percent RTP. On July 24, 2017, the unit experienced an automatic reactor trip from 100 percent RTP due to a main generator lockout caused by improper operation of a 525KV switchyard relay. The unit returned to 100 percent RTP on July 26, 2017, and operated at or near 100 percent RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Impending Adverse Weather Conditions

The inspectors reviewed the licensee's preparations to protect risk-significant systems from high winds expected during September 11 – 12, 2017. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of and during the adverse weather conditions. The inspectors reviewed the licensee's plans to address the consequences that may result from the high winds from Hurricane Irma. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintain readiness of essential systems. The inspectors verified that required surveillances were current, or were scheduled and completed, if practical, before the onset of anticipated adverse weather conditions. The inspectors also verified that the licensee implemented periodic equipment walkdowns or other measures to ensure that the condition of plant equipment met operability requirements. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown

The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. The inspectors selected systems for assessment because they were a redundant or backup system or train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors determined the correct system lineup by reviewing

plant procedures and drawings. The inspectors observed whether there was indication of degradation, and if so, verified the degradation was being appropriately managed in accordance with an aging management program and it had been entered into the licensee's corrective action program. Documents reviewed are listed in the attachment.

The inspectors selected the following four systems or trains to inspect:

- Units 1, 2, and 3, backup instrument air (IA) and diesel service air compressors with primary IA compressor tripped
- Units 1, 2, and 3, emergency feedwater (EFW) pumps, switches, and breakers; high pressure injection (HPI) pumps, switches, and breakers; control batteries; and elevated water storage tank with protected service water (PSW) inoperable for greater than 14 days
- Units 1, 2, and 3, emergency AC power system, standby shutdown facility (SSF), and EFW systems during planned replacement of the Keowee main step-up transform and 230 KV switchyard circuit breakers PCB-8 and PCB-9
- Unit 1, 1B essential siphon vacuum (ESV) train due to 1A and 1C ESV train testing

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

Quarterly Inspection

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items:

- control of transient combustibles and ignition sources
- fire detection systems
- fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program

The inspectors toured the following four fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the attachment.

- Units 1, 2, and 3, PSW building, fire zones PSW-002 and PSW-003
- Unit 3, lube oil purifier, electro hydraulic control (EHC), and heater bay areas, fire zones 1, 2, and 3
- Unit 3, turbine driven EFW, condensate booster, main feedwater (MFW), and motor driven EFW pump areas, fire zones 4, 5, 6, and 7
- Unit 3, hotwell pump, turbine building sump oil skimmer, and powdex/low pressure service water pump areas, fire zones 8 and 9

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification

On September 13, 2017, the inspectors observed an evaluated simulator scenario administered to an operating crew conducted in accordance with the licensee's accredited requalification training program.

The scenario involved 1A HPI pump tripping and 1B HPI pump failure to auto-start. Afterwards, a reactor coolant pump (RCP) seal failed on 1A2 RCP and 1RC-1 (pressurizer spray valve) failed in the throttled position. The only main feedwater pump running tripped and the reactor failed to trip as designed causing an anticipated transient without scram (ATWS). Following the ATWS, a large break loss of coolant accident occurred as 1B1 RCP failed to trip. During the scenario events progressed to a point where the crew entered an alert declaration.

The inspectors assessed the following:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Documents reviewed are listed in the attachment.

.2 Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room

On July 20, 2017, the inspectors observed licensed operator performance in the main control room during the shift of the Unit 3 main turbine oil tank from a single cooler to a dual cooler operation. On July 24, 2017, the inspectors observed licensed operator performance in the main control room following the automatic trip and subsequent reactor startup.

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)a. Inspection Scope

The inspectors assessed the licensee's treatment of the three issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. Documents reviewed are listed in the attachment.

- Units 1, 2, 3, primary IA, maintenance rule (MR) (a)(1) evaluation required
- Units 1, 2, 3, coolant storage, 1CS-56 inspection and delayed return to MR (a)(2) for coolant storage
- Units 1, 2, 3, Keowee Hydro Unit MR evaluation to transition to (a)(1) status following human performance events

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)a. Inspection Scope

The inspectors reviewed the three maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. Documents reviewed are listed in the attachment.

- Units 1, 2, and 3, July 7, 2017, during planned maintenance to HPSW-960 which increases risk of auxiliary building flooding
- Units 1, 2, and 3, August 16, 2017, evaluated green risk during planned Keowee main step-up transformer & pneumatic circuit breaker 8 & 9 replacements
- Unit 1, August 17, 2017, evaluated green risk during planned 1A and 1C ESV system test

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

Operability and Functionality Review

The inspectors selected the eight operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

- Units 1, 2, and 3, Keowee main stepup transformer deluge system u-bolts are not QA-4 certified as described on station drawings, Nuclear Condition Report (NCR) 02144740
- Units 1, 2, and 3, SSF "B" diesel engine driven water pump water leak, NCR 02146304
- Units 1, 2, and 3, Lee combustion turbine 7C tripped while supplying the Oconee standby electrical buses as required by technical specifications, NCR 02144786
- Units 1, 2, and 3, Keowee Hydro Unit-2 2AG-6 governor pressure relief valve lifted at lower pressure than expected, NCR 02149830
- Unit 1, 1LPSW-4 failed to close in the required stroke time, NCR 02147020
- Unit 2, oil leak discovered on 2A HPI pump, NCR 02151321
- Unit 3, letdown line penetration #6 relief valve 3HP-934 leaking, NCR 02139215
- Unit 3, radiography identified spacer looseness in 3B HPI pump minimum recirculation orifice, NCR 02142750

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the eight maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- Work Order (WO) 20183281, Primary IA Compressor Tripped, July 17, 2017
- WO 20075352, 1A Reactor Building Spray Motor Replacement, July 19, 2017
- WO 20139283, 1PSW-22 Replace Positioner, July 20, 2017
- WO 20139284, 1PSW-24 Replace Positioner, July 20, 2017
- WO 20162675, Replace ACB-1 Jack Shaft, July 20, 2017

- WO 20085998, Engineering Change (EC) 401423 Perform 3CA Battery Discharge Test, July 24, 2017
- WO 20139285, 2PSW-22 Replace Positioner Control Board, July 25, 2017
- WO 20102614, TT/0/A/EC95361/001 – Keowee Main Transformer Commissioning Test, August 21, 2017

The inspectors evaluated these activities for the following:

- acceptance criteria were clear and demonstrated operational readiness
- effects of testing on the plant were adequately addressed
- test instrumentation was appropriate
- tests were performed in accordance with approved procedures
- equipment was returned to its operational status following testing
- test documentation was properly evaluated

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the six surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met technical specification and current licensing basis. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with surveillance testing. Documents reviewed are listed in the attachment.

Routine Surveillance Tests

- PT/0/A/0400/015, SSF Submersible Pump Test (procedure accomplished testing of the PSW submersible pump)
- PT/0/A/0500/020, PSW Power Path Test
- PT/1/A/0261/010, Essential Siphon Vacuum System Test
- PT/3/A/0202/011, HPI Pump Test
- PT/3/A/0600/013, Motor Driven Emergency Feedwater Pump Test

In-Service Tests (IST)

- PT/3/A/0251/001, Low Pressure Service Water (LPSW) Pump Test – 3A LPSW Pump

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors evaluated the adequacy of the licensee's methods for testing and maintaining the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, "Alert and Notification System Evaluation." The applicable planning standard, 10 CFR Part 50.47(b)(5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, were also used as a reference.

The inspectors reviewed various documents which are listed in the attachment, interviewed personnel responsible for system performance, and observed aspects of periodic siren maintenance and testing. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed the licensee's emergency response organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection was reviewed to assess the effectiveness of corrective actions. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization Staffing and Augmentation System." The applicable planning standard, 10 CFR 50.47(b)(2), and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the attachment. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, two changes were made to the Radiological Emergency Plan, one change was made to the emergency action levels, along with changes to several implementing procedures. The licensee determined that, in accordance with 10 CFR 50.54(q), the Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors reviewed these changes to evaluate for potential reductions in the effectiveness of the Plan. However, this review was not documented in a Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standards of 10 CFR 50.47(b), and its related requirements in 10 CFR 50, Appendix E, were used as reference criteria.

The inspectors reviewed various documents that are listed in the attachment to this report. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed the corrective actions identified through the Emergency Preparedness (EP) program to determine the significance of the issues, the completeness and effectiveness of corrective actions, and to determine if issues were recurring. The licensee's post-event after action reports, self-assessments, and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their EP program. Inspectors reviewed the licensee's 10 CFR 50.54(q) change process, personnel training, and selected screenings and evaluations to assess adequacy. The inspectors toured facilities and reviewed equipment and facility maintenance records to assess the licensee's adequacy in maintaining them. The inspectors evaluated the capabilities of selected radiation monitoring instrumentation to adequately support Emergency Action Level (EAL) declarations. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Maintenance of Emergency Preparedness." The applicable planning standards, related 10 CFR 50, Appendix E requirements, and 10 CFR 50.54(q) and (t) were used as reference criteria.

The inspectors reviewed various documents which are listed in the attachment. This inspection activity satisfied one inspection sample for the maintenance of emergency preparedness on a biennial basis.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1, Unit 2, and Unit 3 PIs listed below. The inspectors reviewed plant records compiled between September 2016, and September 2017, to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data. Documents reviewed are listed in the attachment.

Cornerstone: Mitigating Systems

- safety system functional failures
- heat removal system

Cornerstone: Barrier Integrity

- reactor coolant system specific activity

The inspectors sampled licensee submittals relative to the PIs for the emergency preparedness cornerstone listed below for the period October 1, 2016, through June 30, 2017. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used to confirm the reporting basis for each data element.

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the attachment. This inspection satisfied three inspection samples for PI verification on an annual basis.

Emergency Preparedness Cornerstone

- Drill/Exercise Performance (DEP)
- Emergency Response Organization Drill Participation (ERO)
- Alert and Notification System Reliability (ANS)

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

Routine Review

The inspectors screened items entered into the licensee's corrective action program to identify repetitive equipment failures or specific human performance issues for followup. The inspectors reviewed NCRs, attended screening meetings, or accessed the licensee's computerized corrective action database.

4OA5 Other Activities

Operation of an Independent Spent Fuel Storage Installation (60855.1)

a. Inspection Scope

The inspectors performed a walkdown of the onsite independent spent fuel storage installation (ISFSI) and monitored the activities associated with the dry fuel storage campaign completed on July 13, 2017. The inspectors reviewed changes made to the ISFSI programs and procedures, including associated 10 CFR 72.48, "Changes, Tests, and Experiments," screens and evaluations to verify that changes made were consistent with the license or certificate of compliance. The inspectors reviewed records and observed the loading activities to verify that the licensee recorded and maintained the location of each fuel assembly placed in the ISFSI. The inspectors also reviewed surveillance records to verify that daily surveillance requirements were performed as required by technical specifications. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 20, 2017, the resident inspectors presented the inspection results to Mr. Tom Ray and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

K. Brocklesby, Senior Licensing Specialist
E. Burchfield, Plant Manager
C. Dunton, Director of Nuclear Site Support
M. Dunton, Operations Manager
R. Elliott, Organizational Performance Manager
T. Grant, Manager Engineering
D. Hubbard, Organizational Effectiveness Director
C. King, Assistant Operations Manager
P. Kuhlman, Senior Emergency Preparedness Specialist
W. McIntyre, Emergency Preparedness Manager
R. Meixell, Regulatory Compliance
J. Overly, Fleet EP Programs & Projects Manager
J. Ratliff, Reactor Electrical Systems Director
T. Ray, Site Vice-President
T. Roland, Operations Specialist
D. Thompson, Corporate Functional Area Manager
C. Wasik, Regulatory Affairs Manager

NRC Personnel

N. Childs, Resident Inspector
E. Crowe, Senior Resident Inspector
F. Ehrhardt, Branch Chief
C. Fontana, Emergency Preparedness Inspector
J. Parent, Resident Inspector
S. Sanchez, Senior Emergency Preparedness Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Nuclear Condition Report

02149216

Procedures

AP/0/A/1700/006, Natural Disaster, Rev. 030

RP/0/A/1000/035, Severe Weather Preparations, Rev. 003

Section 1R04: Equipment Alignment

Documents

Clearance PRT-0-17-PIAC OOS-0293, Primary IA Compressor Tripped, printed July 20, 2017

Clearance PRT-0-17-KEOWEE MSU-0302, Keowee Main Step up Transformer Replacement, printed August 16, 2017

Clearance PRT-0-17-KEOWEE MSU-0337, Keowee Main Step up Transformer Replacement, printed August 16, 2017

Drawings

OFD-130A-1.1, Flow Diagram of Essential Siphon Vacuum (ESV) System, Rev. 8

Other

Protected Equipment Log, July 20, 2017

Procedures

PT/1/A/0261/010, Essential Siphon Vacuum System Test, Rev. 019

Work Orders/Requests

20168454

Section 1R05: Fire Protection

Procedures

O-FS-3-TB-9775-001, Pre-Fire Plan for Unit 3 Turbine Building Elevation 775', Rev. 1

O-FS-0-PA-9000-002, Pre-Fire Plan for Yard Protected Area South, Rev. 3

Section 1R11: Licensed Operator Regualification

Documents

OP-OC-ASE-02, Active Simulator Exam, Rev. 02

Procedures

AP/1/A/1700/014, Loss of Normal HPI Makeup and/or RCP Seal Injection, Rev. 018

AP/1/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 035

EP/1/A/1800/001 00, Unit 1 EOP Immediate Manual Actions and Subsequent Actions, Rev. 001

EP/3/A/1800/001, Unit 3 EOP Immediate Manual Actions and Subsequent Actions, Rev. 1

OP/3/A/1102/001, Controlling Procedure for Unit Startup, Rev. 269

OP/3/A/1102/004, Operation at Power, Rev. 128

Op/3/A/1102/010, Controlling Procedure for Unit Shutdown, Rev. 241

RP/0/A/1000/001, Emergency Classification, Rev. 006

Section 1R12: Maintenance Effectiveness

Documents

AD-EG-ALL-1210, Maintenance Rule Program, Rev.1

AD-OP-ALL-0204, Plant Status Control, Rev. 2

Nuclear Condition Report

010907025; 01932636; 02131608; 02134262; 02139231; 02137156; 02144310

Other

System Health Reports for Instrument Air and Service Air Systems, Quarter 1 and Quarter 2 2017

Eval-ON-14-13771, Maintenance Rule (a)(1) Evaluation for Coolant Storage (CS) System, Originated February 9, 2015

Revised Maintenance Rule (a)(1) Action Plan for CS, Revised August 2017

Procedures

AD-EG-ALL-1210, Maintenance Rule Program, Rev. 1

Section 1R13: Risk AssessmentsDocuments

AD-EG-ALL-1004, Conduct of Probabilistic Risk Analysis Engineering, Rev. 1

AD-NF-ALL-0501, Electronic Risk Assessment Tool (ERAT), Rev. 0

AD-NF-NGO-0502, Probabilistic Assessment (PRA) Model Technical Adequacy, Rev. 1

AD-WC-ALL-0410, Work Activity Integrated Risk Management (Critical Activity Plan), Rev. 2

NSD-415, Nuclear Policy Manual, Rev. 8

Procedures

PT/1/A/0261/010, Essential Siphon Vacuum System Test, Rev. 019

Work Orders/Requests

20168454

Section 1R15: Operability EvaluationsDocuments

OSS-0254.00-00-1001, Design Basis Specification for the High Pressure Injection and Purification and Deborating Demineralizer Systems, approved 6/1/2017

OSS-0254.00-00-1008, Design Basis Specification for the Standby Shutdown Facility Diesel Support System, approved 5/15/2017

OSS-0254.00-00-1039, (Mech) Design Basis Specification for the Low Pressure Service Water System, Rev. 049

OSS-0254.00-00-4001, Design Basis Specification for Reactor Building Containment Isolation, Rev. 41

OSS-0254.00-00-4008, Design Basis Specification for Fire Protection, approved 6/12/2017

OSS-025.00-00.4010, Design Basis Specification for the Seismic Design, approved 6/1/1993

OSS-0254.00-00.4015, Design Basis Specification for the Oconee Piping Classification, approved 2/17/2013

Drawings

KFD-104A-1.1, Flow Diagram of Governor Air Sys, Rev. 7

KFD-104A-2.1, Flow Diagram of Governor Air Sys, Rev. 9

KLRD-105A-2.1, License Renewal Boundary Drawing of Governor Oil Sys, Rev. 0

OFD-124B-1.1, Flow Diagram of Low Pressure Service Water System (Auxiliary Building Services), Rev. 65

Nuclear Condition Report

02139215; 02142750, 02144740; 02144786; 02146304; 02147020; 02149830; 02151240; 02151321

Procedures

PT/1/A/0152/013, Low Pressure Service Water System Valve Stroke Test, Rev. 042

Work Orders/Requests

20079520; 20083875; 20196283; 20196284

Section 1R19: Post-Maintenance TestingDocuments

AD-WC-ALL-0410, Attachment 9; Critical Activity Plan: Keowee Main Transformer Placement; Rev. 000

AD-WC-ALL-0410, Attachment 9; Critical Activity Plan: PCB – 8 & 9 Replacement; Rev. 000

Kuke KMSU Online Partial Discharge and Acoustic Assessment, 8/30/2017

EC 95361, Keowee Main Step-up (KMSU) Transformer Replacement, Rev. 22

KM 301.—0060.001, Keowee Main Step-up Transformer ABB Factory Acceptance Test Report, Rev. 001

KS-0301.00-00-0005, Duke Energy Keowee Hydro-Generation Station Units 1 & 2 QA Condition 1, Rev. 4

OSS-0254.00-00-2005, (Elect) Keowee Emergency Power Design Bases Document, Rev. 027

Drawings

OP-OC-EL-EPD-2, Electrical Distribution, Rev. 2

Nuclear Condition Report

01905669; 01905999; 02041457; 02131608; 02141002

Procedures

IP/0/A/0101/001, Low Risk Maintenance Configuration Control, Rev. 17

IP/3/A/3000/003 CA, Instrument and Control Battery 3CA Service Test and Annual Surveillance, Rev. 3

PT/0/A/0620/009, Keowee Hydro Operation, Rev. 51

PT/1/A/0204/007, Reactor Building Spray Pump Test, Rev. 104

PT/2/A/0521/035, 2PSW-22 and 2PSW-24 Valve Stroke Test, Rev. 4

TT/0/A/EC95361/001, Keowee Main Transformer Commissioning Test, Rev. 002

Work Orders/Requests

20075352; 20085998; 20087687; 20102614; 20183281; 20139283; 20139284; 20139285; 20162675

Section 1R22: Surveillance TestingDocuments

Selected Licensee Commitments, Implementation Date 1/30/2015

Technical Specifications, Revised 8/23/2016

Technical Specifications Bases, Bases Revision Dated 9/3/14

Drawings

OFD-130A-1.1, Flow Diagram of Essential Siphon Vacuum (ESV) System, Rev. 8

OP-OC-EL-EPD-2, Electrical Distribution, Rev. 2

Nuclear Condition Report

02151310

Other

PT/3/A/0251/001, Low Pressure Service Water Pump Test, August 4, 2017 completed performance

Procedures

PT/0/A/0400/015, SSF Submersible Pump Test, Rev. 21
 PT/0/A/0500/020, PSW Power Path Test, Rev. 008
 PT/1/A/0261/010, Essential Siphon Vacuum System Test, Rev. 019
 PT/2/A/0521/035, 2PSW-22 and 2PSW-24 Valve Stroke Test, Rev. 4
 PT/3/A/0202/011, High Pressure Injection Pump Test, Rev. 091
 PT/3/A/0600/013, Motor Driven Emergency Feedwater Pump Test, Rev. 065

Work Orders/Requests

20084311; 20147634; 20168454

Section 1EP2: Alert and Notification System EvaluationProcedures and Reports

Emergency Planning Functional Area Manual, 3.3 Alert and Notification System (Siren Program), Rev. 16

Records and Data

Siren System FEMA ANS Approval Report, dated 12/10/14
 Duke Energy letter to FEMA, 2016 Annual Siren Availability report, dated 1/26/17
 Duke Energy Carolinas, LLC (Duke Energy) Oconee Nuclear Station (ONS) 2016 Siren Availability Report, 1/26/17, Annual repeater equipment preventative maintenance checklists, dated 1/2/16
 Annual RTU and battery preventative maintenance checklists, dated 9/1/16
 Siren preventative maintenance (PM) 5/9/17 through 6/12/17
 IEAL-R/85-29, Oconee Nuclear Station Site-Specific Offsite Radiological Emergency Preparedness Alert and Notification System Quality Assurance Verification Final Draft Report, FEMA, dated October 4, 1985
 ONS ANS DC Power Supply Project & Site Services Siren Battery Installation, dated 4/16/15
 2016 & 2017 Nuclear Station Emergency Preparedness Information Calendar
 2016 & 2017 Nuclear Station Emergency Preparedness Guide for Schools (Visitors)
 Equipment Maintenance Records
 Weekly Silent Tests and Quarterly Growl Tests, July 2015 – June 2017
 2016 Annual Siren Full Volume Test

Corrective Action Program Documents (Nuclear Condition Reports)

NCR 1938796, ONS siren 41 rotation failure during silent test on 7/30/15
 NCR 1961152, ONS siren 54 (Pickens County) determined to be inoperable
 NCR 1962768, ONS siren 4 (Oconee County) silent test failure
 NCR 1995021, Siren failed silent test
 NCR 2035893, ONS siren 29 failed its test on Tuesday, 6/7/16
 NCR 2036717, ONS siren (Pickens County) reported a rotation failure

Section 1EP3: Emergency Response Organization Staffing and Augmentation SystemProcedures

AD-EP-ALL-301, Emergency Response Organization System, ERONS, Rev. 1
 AD-EP-ALL-501, Duke Energy Nuclear Generation Department Emergency Preparedness Staff Training Plan Position Specific Guide, Rev. 1
 PT/0/A/2000/002, Periodic Test of Emergency Response Communication Equipment, Rev. 4

Records:

Drill Critique Reports: 1/28/16, 2/23/16, 5/9/16, 7/18/16, 10/13/16, 1/13/17, 5/2/17, & 6/22/17
 ONS ERO Activation/Augmentation drill, dated 7/13/17
 Oconee 2017 Augmentation Drill and critique report, dated 7/24/17
 Weekly duty ERONS test, dated 3/7/17
 ERONS callout notification report, dated 2/23/16
 Monthly Communication Check, Federal, State, and County Agencies, 3/8/17 to 3/9/17
 ERO On-Shift Staffing Analysis Report, Rev. 0
 Oconee ERO multiple assigned job status report, dated 9/25/17
 ERO Group Duty Roster Details, dated 9/25/17
 NEI 12-01, Phase 1 – Staffing Assessment Report, Rev. 0

Corrective Action Program Documents

NCR 1939835, Need to review revisions to ERTG-001
 NCR 1942872, 0-ORG-SA-15-11 AFI #2 NRC DEP Key Performance Indicator Data
 NCR 1959213, Inaccuracies in reporting EP DEP related performance information
 NCR 1959550, NRC EP inspection EP procedure changes not current TSC/OSC
 NCR 1965160, EAL Classification Basis Document requires revision
 NCR 1987119, ERO team member scheduled without qualifications completed
 NCR 1995894, Dose Assessment Liaison staffing decreased to NSD-117 minimum
 NCR 2009312, merging of two ERO jobs
 NCR 2058090, Condition reports not timely generated
 NCR 2058686, ERO member not showing qualified in ERO data base report
 NCR 2063021, Drill 16-05 Documentation of declaration difference
 NCR 2071148, ONS TSC discrepancies per E-Plan staffing requirements
 NCR 2071167, ONS OSC discrepancies per E-Plan staffing requirements
 NCR 2072112, ERO Data Support does not meet minimum staffing per NSD-117
 NCR 2072636, NSD-117 qualification challenged for ERO Emergency Planner
 NCR 2086510, 2016 Drill Critique failure to activate ERFs w/in 75 minutes
 NCR 2082831, Evaluate SLC 16.13.1 minimum staffing for fire brigade member
 NCR 2086323, Lost NRC performance indicator report for ERO participation
 NCR 2086503, 2016-006 Drill improvement item on minimum staffing
 NCR 2086552, ERO updates can't be heard by field teams outside the OSC
 NCR 2014773, ERO Declared Event Critique Report
 NCR 2139063, Incorrect ERO KPI numbers reported to the NRC
 NCR 2140449, ERO Team 5 muster meeting

Section 1EP4: Emergency Action Level and Emergency Plan ChangesProcedures

AD-EP-ALL-0501, Emergency Preparedness Staff Training & Qualifications, Rev. 1
 AD-EP-ALL-0502, Emergency Preparedness 10 CFR 50.54(q) Training Requirements, Rev. 1
 AD-EP-ALL-0602, Emergency Plan Change Screening & Effectiveness Evaluations 10 CFR
 50.54(q), Rev. 2
 Oconee Nuclear Station (ONS) Emergency Plan (E-Plan), Rev. 2017-001 & 2017-002
 ON-EP-EAL-EAL Matrix, Rev. 0
 RP/0/A/1000/001, Emergency Classifications, Rev. 5 & 6
 RP/0/A/1000/024, Dose Assessment, Rev. 2, 3, & 4

Change Packages

10 CFR 50.54(q) Screening Evaluation Form for E-Plan Rev. 2017-001, dated 3/6/17
 10 CFR 50.54(q) Screening Evaluation Form for E-Plan Sections B, D, H, I, P, & App. 5 Rev.
 2017-002, dated 3/28/17

- 10 CFR 50.54(q) Effectiveness Evaluation Form for E-Plan Sections B, D, H, I, P, & App. 5 Rev. 2017-002, dated 3/28/17
- 10 CFR 50.54(q) Screening Evaluation Form for RP/0/A/1000/001, Emergency Classifications Rev. 6, dated 3/7/17
- 10 CFR 50.54(q) Effectiveness Evaluation Form for RP/0/A/1000/001, Emergency Classifications Rev. 6, dated 3/7/17
- 10 CFR 50.54 (q) Screening Evaluation Form for RP/0/A/1000/024, Rev. 4, dated 3/12/17
- 10 CFR 50.54(q) Effectiveness Evaluation Form for RP/0/A/1000/024, Rev. 4, dated 3/12/17

Corrective Action Program Documents

- NCR 02063541, QHSA 2055677 AFI#1: evaluate all 10 CFR 50.54(q)'s
- NCR 02094952, (NOS Identified) ONS Emergency Plan discrepancies
- NCR 02144569, AFI#1 ONS SAST 2086117 EP readiness assessment
- NCR 02153682, Emergency Plan 2017-002, Section P reference error (NRC-identified)
- NCR 02154274, 2017 baseline EP inspection, RP/0/A/1000/024 EREG error (NRC-identified)

Section 1EP5: Maintenance of Emergency Preparedness

Procedures

- AD-PI-ALL-0100, Corrective Action Program, Rev. 8
- AD-PI-ALL-0300, Self-Assessment & Benchmark Programs, Rev. 4
- AD-PI-ALL-0301, Mid-Cycle Self-Assessment Process, Rev. 2
- HP/0/B/1009/001, Emergency Equipment Inventory and Instrument Check, Rev. 45

Records and Data

- 2016-FLEET-EMP-LSA-01, NOS Limited Scope Audit Report, dated 1/5/17
- 2016-FLEET-EMP-PR-01, NOS Performance Review Audit Report, dated 1/17/17
- 2016-ONS-EP-01, NOS Audit Report, dated 2/4/16
- 2017-NGO-EMP-PR-01, NOS Performance Review Audit Report, dated 6/12/17
- 2017-ONS-EMP-PR-01, NOS Performance Review Audit Report, dated 6/29/17
- 2017 ONS EP Program Readiness Pre-Assessment for NRC EP Inspection, dated 7/17-21/17
- Letters of Agreement with offsite agencies
- Oconee 2016-01 Drill Critique Report, dated 1/28/16
- Oconee 2016-03 Drill Critique Report, dated 5/9/16
- Oconee 2017-02, Quarterly Drill Report, dated 5/2/17
- Oconee 2017-05, Quarterly Drill Report, dated 8/30/17
- Oconee Nuclear Station Drill Contaminated Patient Critique Report, dated 11/30/16
- Oconee Nuclear Station, 2016 Population Update Analysis, KLD Engineering, P.C., KLD TR-877, dated 8/25/14, 10/19/15, & 10/18/16
- Seismic Kinematics Instrument Preventative Maintenance (PM): WO# 20049635, U1 Strong Motion Calibration 1/14/16 & WO #20049660, U1 Strong Motion Functional Test, dated 1/14/16
- Work Order (WO) #20140876-01, Unit 1 RIA-57 Has Flickering Indications, dated 5/14/17
- WO #20145048-01, Unit 1 RIA-RT-0043 Green Operate Light Failure RIA-43, dated 6/25/17

Corrective Action Program Documents

- NCR 02040228, 6/21/16 ONS D.01 – Classification Drill Objective UNSAT
- NCR 02086287, ONS Graded Exercise Objective failures from the control room
- NCR 02086446, ONS Graded Exercise Objective G 01 Criteria 01 not met
- NCR 02086459, ONS Graded Exercise Objective G 01 Criteria 04 not met
- NCR 02086510, 2016-06 Drill critique failure to activate ERF's within 75 minutes
- NCR 02086554, Graded Exercise Objective J-01 (Control Room) unsatisfactorily
- NCR 02086556, Graded Exercise Objective J-02 (Control Room) unsatisfactorily
- NCR 02086568, Personnel not frisking when reporting to OSC during ERO drill

Section 40A1: Performance Indicator Verification**Documents**

MSPI System Heat Removal System MSPI PLE Derivation Report for Unit 1, dated August 2017
 MSPI System Heat Removal System MSPI UAI Derivation Report for Unit 1, dated August 2017
 MSPI System Heat Removal System MSPI URI Derivation Report for Unit 1, dated August 2017
 MSPI System Heat Removal System MSPI PLE Derivation Report for Unit 2, dated August 2017
 MSPI System Heat Removal System MSPI UAI Derivation Report for Unit 2, dated August 2017
 MSPI System Heat Removal System MSPI URI Derivation Report for Unit 2, dated August 2017
 MSPI System Heat Removal System MSPI PLE Derivation Report for Unit 3, dated August 2017
 MSPI System Heat Removal System MSPI UAI Derivation Report for Unit 3, dated August 2017
 MSPI System Heat Removal System MSPI URI Derivation Report for Unit 3, dated August 2017
 Unit 1 station logs covering period of September, 2016 through September, 2017
 Unit 2 station logs covering period of September, 2016 through September, 2017
 Unit 3 station logs covering period of September, 2016 through September, 2017

Procedures

AD-BO-ALL-002, Performance Measures Program, Rev. 3
 AD-EP-ALL-001, Emergency Preparedness Key Performance Indicators, Rev. 2
 AD-EP-ALL-002, NRC Regulatory Assessment Performance Indicator Guideline Emergency Preparedness Cornerstone, Rev. 2
 AD-EP-ALL-0803, Evaluation & Critique of Drills & Exercises, Rev. 2
 AD-PI-ALL-0700, Consolidated Data Entry – INPO & WANO Performance Indicators, Rev. 1

Records and Data

DEP opportunities documentation for 4th quarter 2016, 1st & 2nd quarters 2017
 Siren test data for 4th quarter 2016, 1st & 2nd quarters 2017
 Drill & exercise participation records of ERO personnel for 4th quarter 2016, 1st & 2nd quarters 2017

Corrective Action Program Documents

NCR 1984959, ONS Drill and Exercise Performance KPI off color escalation
 NCR 2052569, Planned muster tabletop on 8/8/16 was not counted as DEP
 NCR 2053329, Simulated Emergency Notification for filled out incorrectly
 NCR 2058090, Condition reports not timely generated
 NCR 2058785, Escalation - ONS drill and exercise performance indicator KPI off color
 NCR 2063021, Drill 16-05 Documentation of declaration difference

Section 40A5: Other Activities**Licensing Basis Documents**

Final Safety Evaluation Report, Amendment No. 13
 Technical Specifications for the Standardized NUHOMS Horizontal Modular Storage System, Docket 72-1004, Amendment Number 13 to COC 1004

Procedures

MP/0/A/1500/023, Independent Spent Fuel Storage Installation Phases V, VI, And VII DSC Loading And Storage, Rev. 030
 PT/0/A/0750/003, Physical Inventory of Reportable Special Nuclear Materials, Rev. 022
 PT/0/A/0750/010, Inspection of Fuel Assemblies Prior to Insertion in ISFSI, Rev. 008
 TE-NF-NGO-0601, Selection of Fuel for Storage in the NUHOMS Dry Fuel Storage System, Rev. 1

Nuclear Condition Report

02136254; 02136613

Other Documents

Amendment No. 13 to Certificate of Compliance No. 1004 for the standardized NUHOMS system (letter)

NRC Form 651, Certificate of Compliance for Spent Fuel Storage Casks, Certificate No. 1004, Amendment No. 13

ONEI-0400-476, ISFSI Oconee Nuclear Station DSC 142 (1-93), Rev. 0

ONEI-0400-477, ISFSI Oconee Nuclear Station DSC 143 (1-94), Rev. 0

ONEI-0400-478, ISFSI Oconee Nuclear Station DSC 144 (1-95), Rev. 0

ONEI-0400-479, ISFSI Oconee Nuclear Station DSC 145 (1-96), Rev. 0