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

October 30, 2015

Mr. Scott Batson
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000269/2015003, 05000270/2015003, 05000287/2015003

Dear Mr. Batson:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. On October 20, 2015, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of the inspection in the enclosed inspection report.

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

In accordance with 10 Code of Federal Regulations 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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: NRC Integrated Inspection Report 05000269/2015003, 05000270/2015003, 05000287/2015003 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-269, 50-270, 50-287
License Nos:	DPR-38, DPR-47, DPR-55
Report Nos:	05000269/2015003, 05000270/2015003, 05000287/2015003
Licensee:	Duke Energy Carolinas, LLC
Facility:	Oconee Nuclear Station, Units 1, 2 and 3
Location:	Seneca, SC 29672
Dates:	July 1, 2015, through September 30, 2015
Inspectors:	E. Crowe, Senior Resident Inspector N. Childs, Resident Inspector G. Croon, Resident Inspector J. Rivera-Ortiz, Senior Reactor Inspector (Section 1R07) G. Ottenberg, Senior Reactor Inspector
Approved by:	Frank Ehrhardt, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2015-003, 05000270/2015-003, 05000287/2015-003; July 1, 2015 through September 30, 2015; Oconee Nuclear Station Units 1, 2 and 3; Integrated Inspection Report

The report covered a three-month period of inspection by the resident inspectors and two Region-based reactor inspectors. No NRC-Identified or self-revealing findings were identified during this inspection period. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process Revision 5."

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP) and remained at 100 percent RTP for the remainder of the inspection period.

Unit 2 began the inspection period at approximately 100 percent RTP. On July 25, 2015 the unit was reduced to 46 percent RTP due to a dropped control element assembly. On July 26, the unit entered Mode 3 to effect repairs to the controls of a control element assembly. The unit was made critical on July 27 and 100 percent RTP was achieved on July 28. The unit remained at 100 percent RTP for the remainder of the inspection period.

Unit 3 began the inspection period at approximately 100 percent RTP and remained at 100 percent RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

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 six systems or trains to inspect:

- Unit 0, KHU-2 electrical alignment with KHU-1 and overhead path out of service for maintenance
- Unit 0, safe shutdown facility (SSF) during protected service water (PSW) pump out of service for installation of FLEX modification
- Unit 2, emergency feed water system during the annual SSF maintenance outage
- Unit 2, 2B reactor building spray during maintenance on 2A reactor building spray
- Unit 2, 2A reactor building spray train during 2B reactor building spray train out of service for pump test
- Unit 3, emergency feed water system with SSF out of service for monthly preventive maintenance (PM) outage

b. Findings

No findings were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors verified the alignment of the accessible components of the Unit 2 essential syphon vacuum system. The inspectors selected this system for assessment because it is a risk-significant mitigating system. The inspectors determined the correct system lineup by reviewing plant procedures, drawings, the updated final safety analysis report, and other documents. The inspectors reviewed records related to the system's outstanding design issues, maintenance work requests, and deficiencies. The inspectors verified that the selected system was correctly aligned by performing a complete walkdown of accessible components. 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.

To verify the licensee was identifying and resolving equipment alignment discrepancies, the inspectors reviewed corrective action documents, including condition reports and outstanding work orders. The inspectors also reviewed periodic reports containing information on the status of risk-significant systems, including maintenance rule reports and system health reports. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Quarterly Inspection

a. Inspection Scope

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 five fire areas to assess material condition and operational status of fire protection equipment. Documents reviewed are listed in the attachment.

- Unit 1, equipment room, fire zone 95
- Unit 1, turbine building, fire zone 44
- Unit 2, east penetration room, fire zone 103
- Unit 3, 4160 V switchgear area, fire zone 29
- Unit 3, main feedwater pump area, fire zone 6

b. Findings

No findings were identified.

.2 Annual Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire brigade performance during a drill on August 7, 2015 and assessed the brigade's capability to meet fire protection licensing basis requirements. The inspectors observed the following aspects of fire brigade performance:

- capability of fire brigade members
- leadership ability of the brigade leader
- use of turnout gear and fire-fighting equipment
- team effectiveness
- compliance with site procedures

The inspectors also observed the post-drill critique to assess if it was appropriately critical, included discussions of drill observations, and identified any areas requiring corrective action. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors interviewed plant personnel, conducted plant walkdowns, and reviewed records for a sample of heat exchangers that were directly cooled by the low pressure service water (LPSW) system, to verify that heat exchanger deficiencies or potential common cause problems that could result in initiating events, or affect multiple heat exchangers in mitigating systems, were being identified, evaluated, and resolved. The inspectors reviewed licensee's activities to determine if these were adequate to detect

degradation prior to loss of heat removal capabilities below design basis values, and consistent with the licensee's regulatory commitments in response to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The inspectors selected the following heat exchangers for review based on their risk-significance in the licensee's probabilistic risk analysis, and/or their safety-related mitigating functions.

- Unit 3 reactor building cooling units (RBCUs)
- Unit 1 low pressure injection (LPI) coolers (decay heat removal)
- Unit 2 high pressure injection (HPI) pump motor coolers
- SSF heating, ventilation, and air conditioning (HVAC) unit condenser 2

For the Unit 3 RBCUs, the inspectors reviewed the results of routine thermal performance tests performed to monitor the effects of fouling and establish the inspection/cleaning frequency. The inspectors reviewed the test methodology, conditions, and acceptance criteria to verify they were consistent with accepted industry practices, and adequate to demonstrate operability under design basis conditions. The inspectors also reviewed engineering calculations to verify that the licensee used performance test results to confirm that the design basis criteria were met. Additionally, the inspectors reviewed records for recent inspection/cleaning activities, to verify these were adequate to maintain thermal performance in accordance with the system design basis. The inspectors' review included recent eddy current (EC) examination reports to verify that tube integrity was being assessed, and that the number of tubes plugged was within the plugging limits in design basis calculations. The inspectors also reviewed engineering calculations to verify that the licensee had evaluated the potential for water hammer in these heat exchangers, and appropriate measures were implemented.

For the Unit 1 LPI coolers, the inspectors reviewed the results of thermal performance tests performed to monitor the effects of fouling on the shell side of the heat exchanger. The inspectors reviewed the test methodology, conditions, and acceptance criteria to verify they were consistent with accepted industry practices, and adequate to demonstrate operability under design basis conditions. The inspectors also reviewed engineering calculations to verify that the licensee used performance test results to confirm that the design basis criteria were met. Additionally, the inspectors reviewed recent EC examination reports to verify that tube integrity was being assessed, and that the number of tubes plugged was within the plugging limits in design basis calculations. The inspectors reviewed calculations and operating procedures to verify that operational limits were in-place to prevent heat exchanger tube degradation, due to excessive flow induced vibration.

For the Unit 2 HPI pump motor coolers, the inspectors reviewed the results of temperature and flow monitoring performed during routine pump tests along with the calculation of fouling factor using empirical formulas, to verify that heat transfer capability was monitored and maintained. The inspectors reviewed the test methodology, conditions, and acceptance criteria to verify they provided reasonable assurance that the coolers would be able to perform their design basis function.

For the SSF HVAC condenser 2, the inspectors reviewed performance test records for the HVAC system to verify the test methodology, conditions, and acceptance criteria

were consistent with accepted industry practices, and adequate to demonstrate operability under design basis conditions. The inspectors reviewed recent EC examination reports to verify that tube integrity was being assessed, and that the number of tubes plugged was within the plugging limits in design basis calculations.

The inspectors' review included periodic flow testing records at or near maximum design flow, to verify flow through each heat exchanger was consistent with the system design basis. Except for the Unit 3 RBCUs, the inspectors conducted a walkdown of the selected heat exchangers to verify that visible conditions adverse to quality were identified and corrected. The walkdown included verification that local and Unit 3 main control room instrumentation was functional in accordance with the systems' design basis, and that no indications of water hammer damage existed.

In addition to the heat exchangers, the inspectors reviewed a sample of ultimate heat sink (UHS) inspection attributes, as described in the next paragraphs, to verify the performance of the UHS and its subcomponents were adequate to ensure availability and accessibility to the in-plant cooling water systems.

The inspectors conducted a walkdown of the Keowee Dam, and the adjacent embankment, to verify that structural integrity and functionality was maintained in accordance with the site's design basis. The inspectors also reviewed third party inspections of the dam to verify that the integrity issues with the UHS structures were identified and resolved.

The UHS inspection sample also included a walkdown of the site's intake structure and portions of the LPSW system to assess the material condition, and functionality of accessible structures and components such as strainers, pumps, instrumentation, and component supports. The inspectors selected the following components for a review of testing and inspection records, to verify that their performance was consistent with the system design basis.

- Valve 2-LPSW-139 (Unit 2 non-essential header isolation valve)
- LPSW pump strainer 3B
- Valve 1-LPSW-4 (1A LPI cooler shell outlet)
- SSF service water pump strainer

In addition, the inspectors interviewed plant staff, and reviewed inspection records for visual inspections of the intake structure to determine whether structural integrity and pump bay silt accumulation was monitored, trended, and maintained. The review of intake structure inspection records included a sample of visual inspections for the internal surface of the condenser circulating water piping, which contains the volume of water required for the UHS function, to verify that piping degradation was being monitored and corrected to maintain the system's design function. During the walkdown, the inspectors interviewed plant staff to assess the operation of the LPSW system and UHS, including functionality during adverse weather conditions and monitoring, trending, and control of macro-fouling to prevent clogging. The inspectors also reviewed history of through wall leaks in LPSW piping, to verify the licensee dispositioned the leaks in accordance with the applicable codes and standards.

Additionally, the inspectors reviewed corrective action documents related to the LPSW system and UHS performance issues, to determine whether the licensee had an appropriate threshold for identifying issues, and to evaluate the effectiveness of the corrective actions. The documents reviewed are included in the attachment to this report.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

a. Inspection Scope

On July 22, 2015, the inspectors observed a simulator scenario conducted for training of an operating crew for requalification. The scenario involved a large steam leak on a main feedwater pump, followed by high pressure injection system component failures, and a small break LOCA. Events progressed to a point where the crew entered an Alert event emergency 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.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed operator performance in the main control room on July 15 during entry into an Orange risk profile due to SSF outage; and on July 27, 2015 during Unit 2 reactor startup following a dropped control element assembly and shift turnover of Unit 1 and Unit 2.

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

a. Inspection Scope

The inspectors assessed the licensee's treatment of the four 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. The inspectors also interviewed plant personnel to assess the licensee's treatment of performance deficiencies and extent of condition. Documents reviewed are listed in the attachment.

- Nuclear condition report (NCR) 01937198, SSF diesel generator trip during post outage run
- NCR 01938803, 1A motor driven emergency feedwater pump outboard bearing temperature anomaly
- NCR 1955296, U3 ground fault alarm on fire panel
- NCR 1956311, SSF AHU-42 HVAC tripped

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the six 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.

- Yellow risk condition during 2LP-14 maintenance and 2B LPI pump test
- Yellow risk condition during replacement of thermal overloads and removal of MOV operator on 1LP-5
- Yellow risk condition during 1N-310 relief valve maintenance
- Green risk condition during SSF monthly outage
- Yellow risk during 1DIC inverter planned maintenance
- Yellow risk during 3DIC inverter planned maintenance

b. Findings

No findings were identified.

1R15 Operability Evaluations and Functionality Assessments

Operability and Functionality Review

a. Inspection Scope

The inspectors selected the seven 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.

- NCR 01906143, Unit 0, Lack of quality inspections on materials supplied on Duke Energy PO 00156821
- NCR 01936886, Unit 0, SSF nuclear instrument rack concrete anchor pullout
- NCR 01937459, Unit 0, B LPSW pump motor stator temperature high
- NCR 01941278, Unit 3, 3A blockhouse exhaust fan failed to restart in hand
- NCR 01942267, Unit 0, SSF HVAC compressor #1 tripped while operating as the lead compressor
- NCR 01945932, Unit 2, reactor building spray motor/cable testing results lower than acceptance criteria
- NCR 01948302, Unit 1, 1A low pressure injection pump suction isolation valve (1LP-5) failed to open during stroke testing

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 six 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.

- MP/0/A/3007/019, SSF HVAC AHU-42, performed on 9-25-15 following fan belt adjustment
- PT/0/A/0400/011, SSF Diesel Generator Test performed 7-29-2015 following annual outage of the SSF diesel generator
- PT/0/A/0400/011, SSF Diesel Generator Test, performed on 9/22/15 following monthly SSF diesel generator PM activities
- PT/1/A/152/012, Low Pressure Injection System Valve Stroke Test performed 9-11-2015 following actuator replacement for failed thermal overloads
- PT/1/A/0600/013, Motor Driven Emergency Feedwater Pump Test performed 8-6-2015 following outboard bearing replacement
- PT/2/A/2200/003, KHU-2 Quarterly Surveillance performed 9-16-2015 following Keowee Hydro Unit 2 high pressure oil leak repairs

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

a. Inspection Scope

The inspectors reviewed the four 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 Surveillances

- PT/2/A/0150/22M, 2 FDW-315 Stroke Test
- PT/2/A/0152/012, 2LPI-21 Stroke Test
- PT/2/A/0204/007, Reactor Building Spray Test

In-Service Tests

- PT/0/A/0500/001, PSW Primary and Booster Pump Test

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on July 28, 2015. The inspectors observed licensee activities in the simulator to evaluate implementation of the emergency plan, including event classification, notification, and protective action recommendations. The inspectors evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

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 30, 2014 and September 30, 2015 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
- heat removal system (3 units)
- safety system functional failures (3 units)

Cornerstone: Barrier Integrity
- reactor coolant system specific activity (3 units)

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Routine Review

a. Inspection Scope

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

b. Findings and observations

No findings were identified.

4OA6 Meetings, Including Exit

On October 20, 2015, the resident inspectors presented the inspection results to Mr. Scott Batson and other members of 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
G. Armentrout, Programs Engineering
S. Batson, Site Vice President
S. Boggs, Emergency Services Coordinator
B. Bowers, Operations Instructor
E. Burchfield, Engineering Manager
T. Cheslak; Oconee Fire Protection Engineer
T. Doss, LOR Supervisor
C. Dunton, Site Support Director
P. Fisk; Superintendent of Operations
D. Harrleson, Balance of Plant Engineering
D. Lewis, Programs Engineering
A. Lotfi, Duke - Construction
T. Patterson, Safety Assurance Manager
J. Pottmeyer, Simulator Supervisor
J. Pounds, OMP Tornado/HELB QA Oversight
T. Ray, Station Manager
F. Rickenbaker, OMP Manager
D. Robinson, Radiation Protection Manager
C. Ropp, Operations Training Supervisor
M. Russo, Balance of Plant Engineering
C. Saville, Programs Engineering
J.R. Steely, Training Manager
J. Smith, Regulatory Compliance
P. Street, Emergency Planning Manager
C. Wasik, Regulatory Compliance Manager

NRC
R. Hall, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, DISCUSSED AND UPDATED

Opened and Closed
None

Discussed
None

Opened
None

Closed
None

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Drawings:
OFD-130A-2.1, Flow Diagram of Essential Siphon Vacuum (ESV) System, Rev 10.

Work Order:
02000305; 2000172; 02161340

Other:
OAC output of ESV system for September 22, 2015
Oconee Nuclear Station Protected Equipment Log for September 1, 2015
Oconee Nuclear Station Protected Equipment Log for August 27, 2015

Section 1R05: Fire Protection

Procedures:
O-FS-1-AB-9796-001, Pre Fire Plan, Rev 01
O-FS-1-TB-9796-001, Pre Fire Plan, Rev 00
O-FS-2-AB-9809-001, Pre Fire Plan, Rev 00
O-FS-3-TB-9775-001, Pre Fire Plan – Turbine Bldg Elev 775', Rev 00
O-FS-3-TB-9796-001, Pre-Fire Plan – Turbine Bldg Elev 796', Rev 00
O-0-SOG-9000-003, Pre Fire Plan – Electrical Fires, Rev 1
PT/0/B/2000/050, Fire Drill – Performance and Evaluation, Rev 2

Calculations:
OSC-9302, Fire Protection Evaluation for Power Block Building and Fire Area Separation, Rev 2

Drawings:
O-50313, Heating & Ventilation – Air Conditioning, Elev. 796'-6" Auxiliary Building, Rev. 27

Other:
Oconee Nuclear Site Drill Number 01-15-03, Third Quarter 2015 Fire Drill

Section 1R07: Heat Sink Performance

Procedures
OP/1/A/1104/004, Low Pressure Injection System, Rev. 151
OP/3A/1102/020B, U3 Turbine Building Basement Rounds, Rev. 51
PT/1/A/0152/013, Low Pressure Service Water System Valve Stroke Test, Rev. 41
PT/2/A/0152/013, Low Pressure Service Water System Valve Stroke Test, Rev. 41
PT/2/A/0202/011, High Pressure Injection Pump Test, Rev. 87
PT/2/A/0230/015, High Pressure Injection Motor Cooler Flow Test, Rev. 35

Calculations
OSC-10196, Decay Heat Removal Cooler {LPI Cooler} Flow-induced Vibration Analysis, Rev. 1
OSC-2042, HPI Pump Motor Upper Bearing Cooling Report, Rev. 8
OSC-2042, HPI Pump Motor Upper Bearing Cooling Report, Rev. 9
OSC-3993, Unit 1 LPI Heat Exchanger Performance Calculation, Rev. 19
OSC-5667, Reactor Building Cooling Units Performance Test, Rev. 65
OSC-7380, Unit 2 CCW Intake and Discharge Piping for EDM-410 Five-Year Civil Inspection, Rev. 14, 15

OSC-9049, Thermal-hydraulic Analysis of LPSW RB Water Hammer Prevention System with 15 psig Setpoint, Rev. 0
OSC-9507, Oconee Nuclear Station Units 1, 2, 3 – Intake Cooling Water Blockage, Rev. 2
OSS-0254.00-00-1028, Design Basis Specification for the Low Pressure Injection and Core Flood System (LPI), Rev. 48

Drawings
O-331, Condenser Cooling Water Intake & Discharge Pipe General Layout, Rev. 18
ONTC-2-124B-0020-001, ONS 2 LPSW Flow to Unit 2 HPI Pump Motor Coolers Test Acceptance Criteria, Rev. 0

Work Requests/Work Orders
WO 02024015-04, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/16/2012
WO 02024015-05, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/17/2012
WO 02024015-06, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/18/2012
WO 02024015-07, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/19/2012
WO 02057070, SSF HVAC System Flow Test, 5/12/2013
WO 02076412-01, U2 CCW Pumps: Divers Inspect Screens and Pump Bays, 10/22/2013
WO 02076991, Backwash "3B" LPSW Pump Strainer Per OP/3/A/1104/010, 9/17/2013
WO 02105927-01, U3 CCW Pumps: Divers Inspect Screens and Pump Bays, 4/21/2014
WO 02123931-01, SSF HVAC System Flow Test, 7/8/2014
WO 02139424, LPSW System Flow Test Per PT/1/A/0251/023, 11/28/2014
WO 02140028-04, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/21/2014
WO 02140028-05, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/22/2014
WO 02140028-06, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/23/2014
WO 02140028-07, U1 CCW Pumps: Divers Inspect Screens and Intake Canal, 10/24/2014
WO 02142983, Perform Inspection 3B LPSW Pump Strainer, 8/20/2014
WO 02144867, Backwash "3B" LPSW Pump Strainer Per OP/3/A/1104/010, 8/20/2014
WO 02146046, 3B LPSW Pump Strainer CVR Oscillator Assembly, 1/9/2015
WO 0215403301, SSF Air Conditioning Performance Test per PT/0/A/0400/023, 11/15/2014
WO 02163347, U2 CCW Piping Internal Coating Repairs 2EOC 27, 3/16/2015
WO 02164896-04/02180717-06, SSF HVAC System Flow Test, 5/13/2015
WO 02196038, Backwash "3B" LPSW Pump Strainer Per OP/3/A/1104/010, 8/12/2015
WO 02203003, U3 CCW Piping Internal Coating Repairs 3EOC 28, 4/15/2015
WO 20010148, U1 CCW Piping Internal Coating Repairs 1EOC 29, 8/11/2015
WR 20005910, Loose Conduit on Cable Going to Actuator for 3 LPSW-139, 9/3/2015

Corrective Action Documents
AR 01855538, LPSW-366 Leak, 1/25/2015
AR 01855601, Documentation of Leaking Components Found during System Leak, 1/28/2015
AR 01855617, External Pitting of LPSW Piping Elbow, 1/27/2015
AR 01856154, LPSW Supply Piping to AHU 1-6 has a Small Through Wall Leak, 2/18/2015
AR 01857522, Water Suspected Leaking from LPSW Strainer and/or 3-LPSW-383, 3/2/2015
AR 01907108, Thin Piping Identified Downstream of Valve 2-LPS-251, 1/8/2015
AR 01910120, UT Data Identified Thin Piping Upstream of Valve 1LPSW-74, 5/20/2015
AR 01931156, HPI Pump Motor Cooler Cooling During Loss of Lake Keowee, 6/11/2015
PIPs 13-6809, 13-9550, 13-9872, 13-14041, 14-0279, 14-0353, 14-5715, 14-9536, 14-10978, 14-11904, 14-13016, 15-0860, and 15-1527 (Historical LPSW Through-Wall Leaks)

Other Documents
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Balance of Plant Eddy Current Inspection Report, Decay Heat Removal Heat Exchanger 1A, 10/25/2012
Balance of Plant Eddy Current Inspection Report, Reactor Building Cooling Unit 3B1, 4/22/2014
FERC Part 12D Safety Inspection Report - Keowee Development Keowee/Toxaway Project FERC Project No. 2503, January 2012
Fouling Factor Data for Unit 2 HPI Pump Motor Coolers per PT/2/A/0202/011, Sept 2012–Aug 2015
Inservice Testing Stroke Time Data for Valve 1 LPSW-4, Aug 2012–June 2015
Inservice Testing Stroke Time Data for Valve 2 LPSW-139, Oct 2012–Aug 2015
OSC-8692, Keowee Hydroelectric Project – 2009 Underwater Inspection, Rev. 4
OSS-0254.00-00-1005, Design Basis Specification for the Standby Shutdown Facility Auxiliary Service Water System, Rev. 33
OSS-0254.00-00-1026, Reactor Building Cooling System Design Basis Document, Rev. 38
OSS-0254.00-00-1039, Design Basis Specification for the Low Pressure Service Water System, Rev. 47
PT/3/A/0160/003, Component Test of ES Channels 5 & 6, Rev. 18
PT/3/A/0251/023, Unit 3 LPSW System Flow Test, Performed on 5/2009-10/2014
SSFHVACCOND#2-INAGE 0715, Eddy Current Inspection Report SSF HVAC Condenser 2, 7/14/2015
VT-06-480, Visual Examination of Pipe Hanger, Support or Restraint (VT-3)

Section 1R11: Licensed Operator Requalification
Other
Active Simulator Exam OP-OC-ASE-22, Rev 00a

Section 1R12: Maintenance Effectiveness
Drawings:
OFD-121D-1.1, Flow Diagram of Emergency Feedwater System, Rev 038

Nuclear Condition Reports (NCR) and Problem Identification Program Reports (PIPs):
01907169; 01937057; 01937182; 01937187; 01937198; 01938803; 1955296; 1956311

Procedures:
IP/0/A/0101/001, Low Risk Maintenance Configuration Control, Rev 15
IP/0/A/0380/006, Standby Shutdown Facility (SSF) Diesel Load and Speed Control, Rev 31
OP/1/A/1102/001, Controlling Procedure for Unit Startup, Rev 309
OP/1/A/1106/006, Emergency FDW System, Rev 130
PT/0/A/0400/011, SSF Diesel Generator Test. Rev 14
PT/0/A/0600/021, Standby Shutdown Facility Diesel-Generator Operation, Rev 16
PT/1/A/0600/013, Motor Driven Emergency Feedwater Pump Test, Rev 72

Other:
1A MDEFWP Temperature Trends from OAC dated 7/1/2017; 10/6/2014; 12/29/2014; 3/31/2015; 6/29/2015; 8/6/2015
Oil Analysis Data for 1A MDEFW Pump dated 3/30/2015 and 8/5/2015
OM-351-164.001, SSF Diesel Generator Instruction and Parts Manual
OSS-0254.00-00-1008, Design Basis Specification for the SSF Diesel Support Systems, Rev 044

Work Orders:
01789625; 20007358; 20010431; 02151609; 02189068; 02197367

Section 1R13: Maintenance Risk Assessments and Emergent Work Control
Procedures:
MP/0/A/1200/010 A, Relief Valve Set Pressure Testing and Adjustment, Rev 27
AP/0/A/1700/006, Natural Disaster, Rev 26

Work Orders:
1958387; 20001733; 20014175; 02135351; 02187502; 02196206

Section 1R15: Operability Evaluations
Nuclear Condition Reports (NCR) and Problem Identification Program Reports (PIPs):
01942267; 01945119; 01945442; 01948302; 01906143

Other:
OSC-11233, Standby Shutdown Facility (SSF) Thermal Environmental Evaluation using GOTHIC (SSF HVAC)

Work Orders:
20005570

Section 1R19: Post-Maintenance Testing
Procedures:
IP/0/A/3001/010, Maintenance of Limitorque Valve Operators, Rev 105
IP/0/A/3001/011F, Limitorque Actuator Testing Using Kalsi Engineering Test Bench, Rev 14
MP/0/A/1210/004, Operator Limitorque – SB/SMB-0 Through 4/4T Disassembly, Repair, and Reassembly, Rev 52
MP/0/A/1210/034B, Operator Limitorque – Spring Pack Test Using Teledyne Spring Pack Calibration Stand, Rev 0
MP/0/A/1210/007, Operator Limitorque – SMB/SB Series – Removal and Replacement, Rev 45
MP/0/A/3007/019, Air Handling Unit – SSF – Air Conditioning Preventative Maintenance Safety Related Equipment, Rev 43
OP/0/A/1600/010, Operation of the SSF Diesel Generator, Rev 87
OP/0/A/2000/041, KHS- Modes of Operation, Rev 35
PT/0/A/0600/021, Standby Shutdown Facility Diesel Generator Operation, Rev 16
PT/0/A/0400/011, SSF Diesel Generator Test. Rev 14
PT/1/A/0152/012, Low Pressure Injection System Valve Stroke Test, Rev 39
PT/1/A/0600/013, Motor Driven Emergency Feedwater Pump Test, Rev 72
PT/2/A/2200/003, KHU-2 Quarterly Surveillance, Rev 18

Work Orders:
20002551; 20010431; 20012861; 20014175

Other:
Critical Activity Plan, Keowee Unit 2 HPO Leak Repairs, dated 9-14-15
KC-086, Keowee Mechanical Systems Seismic Evaluation, Rev 0
KC-Unit 1-2-0087, Review / Evaluation of the Seismic Adequacy of Keowee Safety Related Piping Systems, Rev

Section 1R22: Surveillance Testing

Procedures

PT/0/A/0500/001, PSW Primary and Booster Pump Test, Rev 1
PT/2/A/0152/012, Stroke Test 2 LP-21, Rev 43
PT/2/A/0150/22M, 2 FDW-15 Stroke Test, Rev 38
PT/2/A/0204/007, Reactor Building Spray Test, Rev 93

Work Orders

02181668; 02204008; 20000172; 20003310

Section 1EP6: Drill Evaluation

Other:

Oconee Nuclear Station, ERO Quarterly Drill Scenario

Section 4OA1: Performance Indicator Verification

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 6
MSPI Basis Document for Oconee Nuclear Station Units 1, 2, 3, Rev. 14

Records and Data Reviewed

Unit 1, 2, and 3 Control Room Logs for RCS leakage

October 30, 2015

Mr. Scott Batson
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000269/2015003, 05000270/2015003, 05000287/2015003

Dear Mr. Batson:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. On October 20, 2015, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of the inspection in the enclosed inspection report.

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

In accordance with 10 Code of Federal Regulations 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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: NRC Integrated Inspection Report 05000269/2015003, 05000270/2015003, 05000287/2015003 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

☒ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☒ NON-SENSITIVE

ADAMS: ☒ Yes ACCESSION NUMBER: ML15306A418 ☒ SUNSI REVIEW COMPLETE ☒ FORM 665 ATTACHED

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NAME	E. Crowe	N. Childs	G. Croon	J. Rivera-Ortiz	G Ottenberg	J. Worosilo	F. Ehrhardt
DATE	10/26/2015	10/26/2015	10/26/2015	10/23/2015	10/23/2015	10/30/2015	10/30/2015
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