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

May 30, 2017

Mr. Thomas D. Ray
Vice President, Oconee Nuclear Station
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION – NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000269/2017008, 05000270/2017008 AND 05000287/2017008

Dear Mr. Ray:

On April 20, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution biennial inspection at your Oconee Nuclear Station Units 1, 2, and 3 and discussed the results of this inspection with you and other members of your staff. The inspection team documented the results of this inspection in the enclosed inspection report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

The NRC inspectors did not identify any finding or violation 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 Witholding."

Sincerely,

/RA/

Philip McKenna, Chief
Reactor Projects Branch 7
Division of Reactor Projects

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

Enclosure:
IR 05000269/2017008, 05000270/2017008
and 05000287/2017008 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 Nos.:	05000269/2017008, 05000270/2017008 and 05000287/2017008
Licensee:	Duke Energy Carolinas, LLC
Facility:	Oconee Nuclear Station, Units 1, 2 and 3
Location:	Seneca, SC 29672
Dates:	April 3, 2017 through April 20, 2017
Inspectors:	R. Taylor, Senior Project Inspector, Team Leader J. Parent, Resident Inspector L. Pressley, Senior Project Engineer R. Rodriguez, Senior Project Engineer J. Wallo, Senior Security Inspector
Approved by:	P. McKenna, Chief Reactor Projects Branch 7 Division of Reactor Projects

Enclosure

SUMMARY

IR 05000269/2017008, 05000270/2017008, 05000287/2017008; April 3, 2017 – April 20, 2017; Oconee Nuclear Station Units 1, 2 and 3; Biennial problem Identification and resolution report.

The inspection was conducted by three senior project engineers, a senior security inspector, and a resident inspector. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Identification and Resolution of Problems

The inspectors concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. The licensee was effective at identifying problems and entering them into the corrective action program (CAP) for resolution, as evidenced by the relatively few number of deficiencies identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. Generally, prioritization and evaluation of issues were adequate, formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems were acceptable. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner.

The inspectors determined that overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience (OE) usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work and plant operations.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Assessment of the Corrective Action Program

a. Inspection Scope

The inspectors reviewed the licensee's CAP procedures which described the administrative process for initiating and resolving problems primarily through the use of the problem investigation program. To verify that problems were properly identified, appropriately characterized and entered into the CAP, the inspectors reviewed Nuclear Condition Reports (CRs) that were issued between April 2015 and April 2017, including a detailed review of selected CRs associated with the following risk-significant systems: emergency feedwater system, Keowee hydro-electric, high pressure injection system and 4160 kilovolt (kV) electric system. Where possible, the inspectors independently verified that the corrective actions were implemented. The inspectors also reviewed selected common causes and generic concerns associated with root cause evaluations to determine if they had been appropriately addressed. To help ensure that samples were reviewed across all cornerstones of safety identified in the NRC's Reactor Oversight Process (ROP), the inspectors selected a representative number of CRs that were identified and assigned to the major plant departments, including operations, maintenance, engineering, health physics, chemistry, emergency preparedness and security. These CRs were reviewed to assess each department's threshold for identifying and documenting plant problems, thoroughness of evaluations, and adequacy of corrective actions (CAs). The inspectors reviewed selected CRs, verified corrective actions were implemented, and attended meetings where CRs were screened for significance to determine whether the licensee was identifying, accurately characterizing, and entering problems into the CAP at an appropriate threshold.

The inspectors conducted plant walkdowns within the selected systems listed above and other plant areas to assess the material condition and to identify any deficiencies that had not been previously entered into the CAP. The inspectors reviewed CRs, maintenance history, CAs, completed work orders (WOs) for the systems, and reviewed associated system health reports. These reviews were performed to verify that problems were being properly identified, appropriately characterized, and entered into the CAP. Items reviewed generally covered a two-year period; however, in accordance with the inspection procedure, a five-year review was performed for selected systems for age-dependent issues.

Control room walkdowns were also performed to assess the main control room (MCR) deficiency list and to ascertain if deficiencies were entered into the CAP and tracked to resolution. Operator workarounds and operator burden screenings were reviewed, and the inspectors verified compensatory measures for deficient equipment which were being implemented in the field.

The inspectors conducted a detailed review selected CRs to assess the adequacy of the root-cause and apparent-cause evaluations of the problems identified. The inspectors reviewed these evaluations against the descriptions of the problem described in the CRs and the guidance in licensee procedures AD-PI-ALL-0101, "Root Cause Evaluation," Revision 4 and AD-PI-ALL-0102, "Apparent Cause Evaluation," Revision 4. The inspectors assessed if the licensee had adequately determined the cause(s) of identified problems, and had adequately addressed operability, reportability, common cause, generic concerns, extent-of-condition, and extent-of-cause. The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence for significant conditions adverse to quality.

The inspectors reviewed selected industry OE items, including NRC generic communications, to verify that they had been appropriately evaluated for applicability and that issues identified through these reviews had been entered into the CAP.

The inspectors reviewed site trend reports, to determine if the licensee effectively trended identified issues and initiated appropriate corrective actions when adverse trends were identified.

The inspectors reviewed licensee audits and self-assessments, including those which focused on problem identification and resolution programs and processes, to verify that findings were entered into the CAP and to verify that these audits and assessments were consistent with the NRC's assessment of the licensee's CAP.

The inspectors attended various plant meetings to observe management oversight functions of the corrective action process. These included CR screening meetings and Performance Improvement and Oversight Committee (PIOC) meetings.

Documents reviewed are listed in the Attachment.

b. Assessment

Problem Identification

The inspectors determined that the licensee was generally effective in identifying problems and entering them into the CAP and there was an appropriately low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating CRs as described in licensee procedure AD-PI-ALL-0100, "Corrective Action Program," Revision 7, in addition to management's expectation that employees were encouraged to initiate CRs for any reason. Trending was generally effective in monitoring equipment performance. Site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

Based on reviews and walkdowns of accessible portions of the selected systems, the inspectors determined that system deficiencies were being identified and placed in the CAP.

Problem Prioritization and Evaluation

Based on the review of CRs sampled by the inspection team during the onsite period, the inspectors concluded that problems were generally prioritized and evaluated in accordance with the licensee's CAP procedures as described in the CR severity level determination guidance in AD-PI-ALL-0100. Each CR was assigned a priority level at the Central Screening Team (CST) meeting and adequate consideration was given to system or component operability and associated plant risk.

The inspectors determined that station personnel had conducted root cause and apparent cause analyses in compliance with the licensee's CAP procedures and assigned cause determinations were appropriate, considering the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used depending on the type and complexity of the issue consistent with AD-PI-ALL-0100.

Effectiveness of Corrective Actions

Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that, overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected and non-recurring. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence, in that a review of performance indicators, CRs, and effectiveness reviews demonstrated that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

c. Findings

No findings were identified.

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors examined the licensee's use of industry OE to assess the effectiveness of the plant. In addition, the inspectors selected OE documents (e.g., NRC generic communications, 10 CFR Part 21 reports, licensee event reports, vendor notifications, and plant internal OE items, etc.) which had been issued since April 2015, to verify whether the licensee had appropriately evaluated each notification for applicability to the Oconee Nuclear Station, and whether issues identified through these reviews were entered into the CAP. Documents reviewed are listed in the Attachment.

b. Assessment

Based on a review of selected documentation related to operating experience issues, the inspectors determined that the licensee was generally effective in screening OE for applicability to the plant. Industry OE was evaluated at either the corporate or plant level depending on the source and type of the document. Relevant information was then forwarded to the applicable department for further action or informational purposes.

Operating experience issues requiring action were entered into the CAP for tracking and closure. In addition, OE was included in all root cause evaluations in accordance with licensee procedure AD-PI-ALL-0101.

c. Findings

No findings were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed audit reports and self-assessment reports, including those which focused on problem identification and resolution, to assess the thoroughness and self-criticism of the licensee's audits and self-assessments, and to verify that problems identified through those activities were appropriately prioritized and entered into the CAP for resolution in accordance with licensee procedure AD-PI-ALL-0300, “Self Assessments and Benchmark Programs,” Revision 4.

b. Assessment

The inspectors determined that the scopes of assessments and audits were adequate. Self-assessments were generally detailed and critical, as evidenced by findings consistent with the inspector’s independent reviews. The inspectors verified that CRs were created to document all areas for improvement and findings resulting from the self-assessments, and verified that actions had been completed consistent with those recommendations. Generally, the licensee performed evaluations that were technically accurate.

c. Findings

No findings were identified.

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

During the course of the inspection, the inspectors assessed the station’s safety-conscious work environment (SCWE) through review of the stations employee concerns program (ECP) and interviews with various departmental personnel. The inspectors reviewed a sample of ECP issues to verify that concerns were being properly reviewed and identified deficiencies were being resolved and entered into the CAP when appropriate.

b. Assessment

Based on the interviews conducted and the CRs reviewed, the inspectors determined that licensee management emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs, including the CAP and ECP. These methods were readily accessible to all employees. Based on discussions conducted with a sample of plant employees from various

departments, the inspectors determined that employees felt free to raise issues, and that management encouraged employees to place issues into the CAP for resolution. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

c. Findings

No findings were identified.

4OA6 Exit

Exit Meeting Summary

On April 20, 2017, the inspectors presented the inspection results to you, Mr. T. Ray, and other members of the site staff. The inspectors confirmed that all proprietary information examined during the inspection had been returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
T. Ray, Site Vice President
T. Alexander, Performance Improvement
K. Anderson, Security Manager
K. Brocklesby, Regulatory Affairs
D. Boggs, Security Operations
J. Brady, Nuclear Licensing Consultant
C. Dunton, Site Support Director
W. Elliot, Nuclear Oversight Manager
T. Grant, Engineering
T. Hiller, Security Operations
P. Kelley, Radiation Protection
C. King, Assistant Operations Manager
R. Mathison, Performance Improvement Manager
B. Meixell, Regulatory Affairs
D. Richardson, Performance Improvement
C. Wasik, Regulatory Affairs Manager
B. Woodall, Oconee Operations

LIST OF REPORT ITEMS

Opened and Closed
None

Closed
None

Discussed
None

LIST OF DOCUMENTS REVIEWED

Procedures
AD-PI-ALL-0100, Corrective Action Program, Rev. 7
AD-PI-ALL-0105, Effectiveness Reviews, Rev. 1
AD-PI-ALL-0101, Root Cause Evaluation, Rev. 4
AD-PI-ALL-0102, Apparent Cause Evaluation, Rev. 4
AD-PI-ALL-0103, Quick Cause Evaluation, Rev. 4
AD-PI-ALL-0104, Prompt Investigation Response Team, Rev. 2
AD-OP-ALL-0105, Operability Determinations and Functionality Assessments, Rev. 3
AD-EG-ALL-1209, System, Component, and Program Health Reports and Notebooks, Rev. 6
AD-EG-ALL-1211, System Performance Monitoring and Trending, Rev. 4
AD-PI-ALL-0400, Operating Experience Program, Rev. 3
AD-NO-ALL-0202, Employee Concerns Program, Rev. 1
AD-PI-ALL-0300, Self-Assessment and Benchmark Programs, Rev. 4
AD-MN-ALL-0015, Nuclear Station Scaffold Erection, Tracking, and Dismantling, Rev. 9
AD-EG-ALL-1208, Life Cycle Management Planning, Rev. 3
AD-EG-ALL-1210, Maintenance Rule Program, Rev. 1
AD-OP-ALL-0202, Aggregate Operator Impact Assessment, Rev. 1
AD-SY-ALL-1000, Conduct of Security, Rev. 2
AD-SY-ALL-0170, Security Program Reviews, Screenings, and Evaluations, Rev. 2
AP/)/A/1700/045, Site Security Threats, Rev. 16
AP/)/A/1700/045, Site Security Threats, Rev. 17
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of maintenance at Nuclear Power Plants, Rev. 4A
OP/0/A/1650/005, PSW AC Power, Rev. 016
OP/2/A/1104/002, HPI System, Rev. 165
OSS-0254.00-00-1001, (Mech) High Pressure Injection and Purification & Deborating Demineralizer Systems, Rev. 053
PT/1/A/0251/024, HPI Full Flow Test, Rev. 047

Cause Evaluations
RCE Report, Emergency Feedwater Actuation on Unit 2, Rev. 2, CR# 0193907
ACE Report, Voltage discovered on LC 3X1 relay 27X4 during ZEC, Rev. 2, PIP# O-15-03596 NCR# 01910532
ACE Report 1A2 Feedwater Heater Tube Failure Oconee Nuclear Station, Rev. 2

Self-Assessments
Emergency Planning Annual Assessments, 2015 and 2015
High Pressure Injection (HPI) System Health Reports, Q4-2016 through Q1-2013
Keowee Supersystem Maintenance Rule Summary
Keowee Underground Maintenance Rule Summary
Keowee Overhead Power Path Maintenance Rule Summary
Keowee Lake Level Maintenance Rule Summary
Keowee Crane Maintenance Rule Summary
Nuclear Oversight – Audit, 2015 Oconee Maintenance Functional Area Audit, 2015-ONS-MNT-01
ONS-SEC-1497.02-2016-2, ONS Performance Trending Report, 3dr Trimester 2016
Nuclear Oversight – Audit, Oconee Corrective Action Program, 2014-ONS-CAP-01

Radiation Protection Annual Assessments, 2015 and 2015
Security Annual Assessments, 2015 and 2015

Drawings
OSFD-121B-1, Summary Flow Diagram of Emergency Feedwater System, Rev. 5
OSFD-121D-1, Summary Flow Diagram of Emergency Feedwater System, Rev. 9

Nuclear Condition Reports (CRs)

01938925	02101065	02011450
01775928	02110935	01972902
01786665	02025770	02071995
01824525	02026007	02007972
01868363	02052992	02008187
01909639	01928751	02032941
01910532	02068839	02098610
01928935	02070053	01910046
01939072	02085280	02001817
01948566	02107078	02029563
01978251	02011454	01965716
01981365	02081523	02094824
02055274	02098648	02051120
02002321	02099289	02078948
02007812	02100532	01974540
02057579	02101193	02022857
02057606	02114958	01910385
01936423	02115043	01733811
01998330	01975965	02114403
01903427	01931081	01996252
01942633	01965957	01973809
02008720	01977954	01908452
02054523	02001687	01909660
02081368	02007869	01910404
02009318	02043069	01931470
02076227	01908569	
02080586	01908573	

Lists Reviewed
CRs related to the Emergency Feedwater systems & Keowee Hydro (impacting ONS) for last two years
List of NRC Generic Communications 04/01/2015 through 03/07/2017
List of Oconee Operator Burdens, Challenges and Workarounds and Control Room Deficiencies
List of aging management related NCR's

Work Orders

20041209	20073245	20013602
20069005	20102988	
20136024	20063019	

Other Documents
Maintenance Rule (a)(1) SSCs, April 2015 - February 2017
DPC-1205.19-00-0005, Evaluations of Mobil 28 Grease as a Motor Operated Valve Stem Lubricant, Dated June 6, 1996
RIA Maintenance Rule Responses to NRC Questions
Station Health Reports, 4160 VAC Emergency Power (4160VAC) Period: Q1-2016
Station Health Reports, 4160 VAC Emergency Power (4160VAC) Period: Q2-2016
Station Health Reports, 4160 VAC Emergency Power (4160VAC) Period: Q3-2016
Station Health Reports, 4160 VAC Emergency Power (4160VAC) Period: Q4-2016
Security Forum Agenda-Talking Points, April 5, 2015
Security Forum Agenda-Talking Points, July 6, 2015
Security Forum Agenda-Talking Points, January 14, 2016
Security Forum Agenda-Talking Points, April 4, 2016
Security Forum Agenda-Talking Points, July 5, 2016
Security Forum Agenda-Talking Points, October 3, 2016
Security Forum Agenda-Talking Points, January 16, 2017
Security Forum Agenda-Talking Points, April 5, 2017
Shift Equipment Camera log Data, 2015-2016
Emergency Planning Drill Critique, 3rd Quarter, 2016
Emergency Planning Operating Experience, 2015-2017
Security Operating Experience, 2015-1017
Radiation Protection Operating Experience, 2015-2017