



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

June 2, 2014

Mr. Scott Batson
Vice President
Oconee Nuclear Station
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672-0752

**SUBJECT: OCONEE NUCLEAR STATION UNIT 3 – U.S. NUCLEAR REGULATORY
COMMISSION POST-APPROVAL SITE INSPECTION FOR LICENSE
RENEWAL, INSPECTION REPORT 05000287/2014009**

Dear Mr. Batson:

On April 24, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Oconee Nuclear Station, Unit 3, in accordance with NRC Inspection Procedure (IP) 71003. On April 24, 2014, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

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

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 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 System (PARS) component of NRC's Agencywide Documents

S. Batson

Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Omar R. López-Santiago, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Docket No. 05000287
License No. DPR-55

Enclosures:
NRC Post-Approval Site Inspection
For License Renewal, Inspection
Report 05000287/2014009
w/Attachment: Supplemental Information

cc: Distribution via ListServ

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PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: Yes ACCESSION NUMBER: ML14153A244 SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	RII:DRS/EB3	RII:DRS/EB3	RII:DRP/BR	RII:DRS/EB3			
SIGNATURE	REW1	MSC2	GJM1	ORL			
NAME	R. Williams	M. Coursey	G. McCoy	O. López-Santiago			
DATE	5/ 30 /2014	5/ 30 /2014	5/ 30 /2014	6/ 2 /2014			
E-MAIL COPY	YES NO	YES NO	YES NO	YES NO			

OFFICIAL RECORD COPY

**U.S. NUCLEAR REGULATORY COMMISSION
REGION II**

Docket No: 05000287

License No: DPR-55

Report No: 05000287/2014009

Licensee: Duke Energy Carolinas, LLC

Facility: Oconee Nuclear Station, Unit 3

Location: 7800 Rochester Highway
Seneca, SC 29672

Dates: April 21 – 24, 2014

Inspectors: R. Williams, Senior Reactor Inspector (Lead)
M. Coursey, Reactor Inspector

Approved by: Omar R. López-Santiago, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY

Inspection Report (IR) 05000287/2014009; April 21 – 24, 2014; Oconee Nuclear Station, Unit 3; Post-Approval Site Inspection for License Renewal, Phase 1

The report covers an inspection conducted by two regional inspectors in accordance with NRC Inspection Manual Chapter 2515 and NRC Inspection Procedure 71003.

Based on the sample selected for review, the inspectors determined that commitments, license conditions, and regulatory requirements associated with the renewed facility operating license were met. The inspectors also determined that the licensee had administrative controls in place to ensure completion of pending actions scheduled both prior and during the period of extended operation (PEO).

The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process," Revision 5.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 Post-Approval Site Inspection for License Renewal – Inspection Procedure 71003 (Phase 1)

a. Inspection Scope

(1) Implementation of License Conditions and Commitments, including Aging Management Programs

The inspectors reviewed a sample of license renewal activities scheduled for the Unit 3 Spring 2014 refueling outage, which was the last outage prior to the period of extended operation (PEO). The inspectors selected this refueling outage because it would present the best opportunity to observe the implementation of mature programs associated with license renewal commitments specific to Unit 3. The inspection objective was to maximize observations of the actual implementation of license renewal activities before the beginning of the PEO (July 19, 2014), and to verify that the licensee completed the necessary actions to: (a) comply with the conditions stipulated in the renewed facility operating license; (b) meet the license renewal commitments described in NRC Memorandum dated March 6, 2007 (ADAMS Accession Number ML070640041), and (c) meet the future inspection activities described in the Updated Final Safety Analysis Report (UFSAR) supplement submitted pursuant to 10 CFR 54.21(d). The license renewal application (LRA) for Oconee Nuclear Station, Units 1, 2 and 3, and the corresponding NRC Safety Evaluation Report (SER) documented in NUREG-1723, are publicly available on ADAMS under accession numbers ML003692763 and ML003695154, respectively.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures, applicable condition reports, and work orders regarding these documents to verify that the selected Aging Management Programs (AMPs) had been implemented as described in the LRA. Additionally, the inspectors conducted interviews with licensee staff, observed in-process outage activities, and performed visual inspection of structures, systems, and components (SSCs), including those not accessible during power operation. The commitment items and AMPs selected for the inspection sample are summarized below based on their description in Appendix A of the LRA and their respective UFSAR description. The specific additional inspection activities conducted for each AMP are also described below. Specific documents reviewed are listed in the report Attachment.

UFSAR SECTION 18.2.2 – GALVANIC SUSCEPTIBILITY INSPECTION [NRC MEMORANDUM COMMITMENT NO. 2]:

This commitment specified that prior to the end of the initial operating license terms for Units 1, 2 and 3; a Galvanic Susceptibility Inspection Program would be implemented to

manage the aging effects of the loss of material due to galvanic corrosion on the internal surfaces of susceptible piping and components. Section 18.2.2 of the UFSAR supplement for license renewal stated that this program involved one-time inspections on the internal surfaces of selected piping and components with the greatest susceptibility to galvanic corrosion.

During the Phase 2 implementation of inspection procedure (IP) 71003 (ADAMS Accession Number ML12277A420), an observation was made that upon completion of the one-time inspections, the licensee evaluated the inspection results and made the assessment that follow-on inspections would be required during the PEO. The licensee placed these follow-on inspections into the Service Water Piping Corrosion Program (UFSAR Section 18.3.21). The inspectors identified that there was no tie in the UFSAR to indicate that this was how the Galvanic Susceptibility Program was being managed during the PEO. During the current inspection, the inspectors verified that the licensee had subsequently implemented UFSAR change package number 12-023, which identified that the additional galvanic susceptibility inspections were added Service Water Piping Corrosion Program.

UFSAR SECTION 18.3.17.5 – CONDENSER CIRCULATING WATER SYSTEM INTERNAL COATING INSPECTIONS PROGRAM

This AMP specified that, continuing through the PEO, the Condenser Circulating Water (CCW) System Internal Coating Inspections Program would consist of visual inspections of the coatings on the interior surfaces of the underground portions of the CCW system intake and discharge piping. These inspections would be conducted on a maximum frequency of 5 years, and would manage the loss-of-material due to corrosion on the internal surfaces of the CCW piping.

The inspectors verified that the licensee developed procedures and conducted inspections as described in the Program Basis Document and the UFSAR. The inspectors also verified that the inspections were appropriately scheduled and tracked to meet the required inspection period. Additionally, the inspectors directly observed the implementation of CCW piping coating inspections on the inside surfaces of CCW piping to verify that they were performed in accordance with the license renewal commitment.

UFSAR SECTION 18.3.17.11 – MAIN CONDENSER TUBING EXAMINATION

This AMP specified that, continuing through the PEO, the Main Condenser Tubing Examination Program would consist of eddy current testing of the main condenser tubing. These inspections were scheduled to occur every refueling outage on ten percent of the tubes in one-half of the condensers, with tubes in each half of the condensers being examined every other refueling outage. These inspections would manage the effect of loss-of-material due to pitting corrosion and microbiologically induced corrosion.

The inspectors verified that the licensee developed procedures and conducted inspections as described in the Program Basis Document and the UFSAR. The inspectors also verified that the inspections were appropriately scheduled and tracked to meet the required inspection period. Additionally, the inspectors directly observed the

implementation of main condenser tubing inspections to verify that they were performed in accordance with the license renewal commitment.

UFSAR SECTION 18.3.17.13 – REACTOR BUILDING COOLING UNIT TUBING INSPECTION

This AMP specified that, continuing through the PEO, the reactor building cooling unit tubing inspection program would consist of rodding out and visually inspecting the cooling unit tubes, cleaning and inspecting the shell side, and inspecting the ductwork and internal supports. Additionally, the program specified that an engineering analysis would be completed for any loss of material found to determine appropriate corrective actions.

The inspectors verified that the licensee developed procedures and conducted inspections as described in the Program Basis Document and the UFSAR. The inspectors also verified that the inspections were appropriately scheduled and tracked to meet the required inspection period. Additionally, the inspectors directly observed the implementation of reactor building cooling unit tubing inspections to verify that they were performed in accordance with the license renewal commitment. The inspectors identified one observation for this AMP that is detailed in the Findings section below.

UFSAR SECTION 18.4.1 – PLANT SPECIFIC INTERNALS DUCTILITY ANALYSIS [NRC MEMORANDUM COMMITMENT NO. 13]:

This commitment specified prior to PEO, a plant-specific analysis would be developed to demonstrate that, under loss of coolant accident (LOCA) and seismic loading and irradiation accumulated at the expiration of the PEO, the reactor vessel internals would have adequate ductility to absorb local strain at the region of maximum stress intensity, and would meet the deformation limits through the PEO.

The inspectors verified that the pending actions identified during the review of the LRA, and its subsequent submittals, were completed as described in the LRA and the NRC SER.

(2) Review of Newly-Identified Structures, Systems, and Components

This inspection requirement was completed during the Phase 2 implementation of IP 71003.

(3) Review of the Description of Aging Management Programs and Time-Limited Aging Analysis in the UFSAR Supplement

As part of the review of implementation activities for the selected AMPs described in section 40A5.1.a(1) of this report, the inspectors reviewed the corresponding UFSAR sections to verify that the program descriptions were consistent with the licensing basis. The inspectors reviewed three versions of the UFSAR supplement for license renewal as follows:

- The inspectors reviewed the last revision of the UFSAR supplement submitted with the LRA to identify the program attributes, and future inspection activities that were originally relied upon for the approval of the renewed operating license.
- The inspectors reviewed the last revision of the UFSAR submitted to the NRC pursuant to the requirements in 10 CFR 50.71(e)(4) to verify that the UFSAR supplement for license renewal was included with the updated FSAR, as required by the renewed operating license.
- The inspectors reviewed the latest revision of the UFSAR supplement for license renewal (aka "Living FSAR") to verify that the program attributes and inspection activities were consistent with the AMPs as originally approved by the NRC and subsequent revisions performed under the provisions of 10 CFR 50.59.

(4) Review of License Renewal Commitment Changes

This inspection requirement was completed during the Phase 2 implementation of IP 71003.

b. Findings

No findings were identified. Based on the review of licensee actions completed at the time of this inspection and the timeliness of those actions, the inspectors determined that the implementation of AMP activities reviewed during the Unit 3 Spring 2014 refueling outage, were consistent the license renewal commitments, license conditions, and applicable regulatory requirements. The inspectors also determined that the licensee had administrative controls in place to ensure completion of pending actions scheduled both prior to and during the PEO.

The following observation for the Reactor Building Cooling Unit Tubing Inspection AMP was identified:

- The licensee's SER for Reactor Building Cooling Unit Tubing Inspection states in part, "To manage loss of material due to corrosion, the applicant credits its reactor building cooling unit tubing inspection. The inspection consists of rodding out the tubes followed by a visual inspection of the tubes, duct work, and internal supports to assess their condition. The applicant performs the waterside procedure (tube rodding) every refueling or as required by performance testing." Additionally, the licensee's UFSAR Section 18.3.17.13 Reactor Building Cooling Unit Tubing Inspection states, "As required by periodic performance testing, tubes are rodded out and visually inspected." The inspectors noted that in implementing this AMP, the licensee was not performing visual inspections of the tubes for these heat exchangers, but instead was performing periodic eddy current examinations of the tubes. The inspectors also noted that the industry's standard practice for identifying loss of material due to corrosion in heat exchanger tubing was to employ eddy current examinations. The licensee entered this discrepancy between their licensing documentation and their implementing procedures into their corrective action program as problem identification program (PIP) O-14-04421, with the intention to align their commitment with their current implementation practices.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 24, 2014, the inspectors presented the inspection results to Mr. Scott Batson, Site Vice President, and other members of the licensee staff. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

H. Galloway, License Renewal Program Owner
J. Smith, Regulatory Affairs
S. Batson, Site Vice President

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

None

LIST OF DOCUMENTS REVIEWED

Calculations

OSC-10336, Main Condenser Tubing Examination Program, Rev. 0
OSC-10403, Condenser Circulating Water Internal Coating Inspections Program, Rev. 0
OSC-10418, Reactor Building Cooling Unit Tubing Inspection Preventive Maintenance Program, Rev. 0

Condition Reports

PIP O-12-07152
PIP O-14-04274
PIP O-14-04421
PIP-O-14-04359

Other Documents

Balance of Plant Eddy Current Inspection Report for RBCU-3B1, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3B2, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3B3, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3B4, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3C1, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3C2, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3C3, dated 4/22/2014
Balance of Plant Eddy Current Inspection Report for RBCU-3C4, dated 4/22/2014
NSD 220-1, UFSAR Change Summary Form, Package 12-023
Safety Evaluation by the Office Nuclear Reactor Regulation Time-Limited Aging Analysis for Reactor Vessel Internals Duke Energy Carolinas, LLC Oconee Nuclear Station, Units 1, 2, and 3 Docket Nos. 50-269, 50-270 and 50-287

Enclosure