



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 2, 2022

Mr. Steven M. Snider
Site Vice President, Oconee Nuclear Station
Duke Energy Carolinas, LLC
7800 Rochester Highway
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 – LIMITED AGING
MANAGEMENT REGULATORY AUDIT PLAN REGARDING THE
SUBSEQUENT LICENSE RENEWAL APPLICATION REVIEW (EPID NO.
L-2021-SLR-0000)

Dear Mr. Snider:

By letter dated June 7, 2021 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML21158A193), as supplemented by letters dated October 22, 2021 (ADAMS Accession No. ML21295A035), October 28, 2021 (ADAMS Accession No. ML21302A208), November 11, 2021 (ADAMS Accession No. ML21315A012), December 2, 2021 (ADAMS Accession No. ML21336A001), December 15, 2021 (ADAMS Accession No. ML21349A005), December 17, 2021 (ADAMS Accession No. ML21351A000), January 7, 2022 (ADAMS Accession No. ML22010A129), January 21, 2022 (ADAMS Accession No. ML22021A000), February 14, 2022 (ADAMS Accession No. ML22045A021), February 21, 2022 (ADAMS Accession No. ML22052A002), March 22, 2022 (ADAMS Accession No. ML22081A027), March 31, 2022 (ADAMS Accession No. ML22090A046), April 20, 2022 (ADAMS Accession No. ML22110A207), and April 22, 2022 (ADAMS Accession No. ML2212A016), Duke Energy Carolinas, LLC (Duke Energy) submitted to the U.S. Nuclear Regulatory Commission (NRC or staff) an application to renew the Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 for the Oconee Nuclear Station (ONS), Units 1, 2, and 3. Duke Energy submitted the application pursuant to Title 10 of the Code of Federal Regulations Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," for subsequent license renewal.

The NRC staff plans to conduct a limited aging management regulatory audit specific to aging management program B2.1.7, "PWR Vessel Internals," from May 17-18, 2022, in accordance with the enclosed regulatory audit plan.

S. Snider

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If you have any questions, please contact Angela Wu at Angela.Wu@nrc.gov.

Sincerely,



Signed by Gibson, Lauren
on 05/02/22

Lauren K. Gibson, Chief
License Renewal Projects Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

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

Enclosure:
Aging Management Audit Plan

cc w/encl: Listserv

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MANAGEMENT REGULATORY AUDIT PLAN REGARDING THE
SUBSEQUENT LICENSE RENEWAL APPLICATION REVIEW (EPID NO. L-
2021-SLR-0000) DATED: May 2, 2022

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E-MAIL:Paul.Guill@duke-energy.comReene.Gambrell@duke-energy.comArun.Kapur@duke-energy.com**ADAMS Accession No.ML22111A314**

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Audit Plan
Oconee Nuclear Station, Units 1, 2, and 3
Subsequent License Renewal Application

Aging Management Regulatory Audit
May 17-18, 2022

Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Audit Plan
Oconee Nuclear Station, Units 1, 2, and 3
Subsequent License Renewal Application
Aging Management Regulatory Audit

1. Background

By letter dated June 7, 2021 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML21158A193), as supplemented by letters dated October 22, 2021 (ADAMS Accession No. ML21295A035), October 28, 2021 (ADAMS Accession No. ML21302A208), November 11, 2021 (ADAMS Accession No. ML21315A012), December 2, 2021 (ADAMS Accession No. ML21336A001), December 15, 2021 (ADAMS Accession No. ML21349A005), December 17, 2021 (ADAMS Accession No. ML21351A000), January 7, 2022 (ADAMS Accession No. ML22010A129), January 21, 2022 (ADAMS Accession No. ML22021A000), February 14, 2022 (ADAMS Accession No. ML22045A021), February 21, 2022 (ADAMS Accession No. ML22052A002), March 22, 2022 (ADAMS Accession No. ML22081A027), March 31, 2022 (ADAMS Accession No. ML22090A046), April 20, 2022 (ADAMS Accession No. ML22110A207), and April 22, 2022 (ADAMS Accession No. ML2212A016), Duke Energy Carolinas, LLC (Duke Energy or the applicant) submitted to the U.S. Nuclear Regulatory Commission (NRC or staff) an application to renew the Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 for Oconee Nuclear Station (ONS), Units 1, 2, and 3. The staff is reviewing this application in accordance with the guidance in NUREG-2192, "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants," (SRP-SLR).

In accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," the NRC staff will perform an aging management regulatory audit to gain a better understanding of (1) the applicant's methodology to identify the systems, structures, and components (SSCs) to be included within the scope of subsequent license renewal and subject to an aging management review (AMR), and (2) the applicant's aging management programs (AMPs), AMR items, time-limited aging analyses (TLAAs), and associated bases and documentation as applicable.

2. Regulatory Audit Bases

License renewal requirements are specified in 10 CFR Part 54. Guidance is provided in the SRP-SLR and NUREG-2191, Revision 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report," dated July 2017.

3. Regulatory Audit Scope of Review

Following review of Duke Energy responses to staff RAI Nos. B2.1.7-4 and B2.1.7-5 (ADAMS Accession No. ML22045A021) as related to aging management program (AMP) B2.1.7, "PWR Vessel Internals," the staff will conduct a limited audit to review the applicant's bases for its conclusion that the core barrel (CB) assembly vertical seams welds in the top and bottom CB cylinder segments at Oconee Units 1, 2, and 3, and the CB top flange-to-upper cylinder and upper cylinder-to-lower cylinder circumferential seam welds in Oconee Units 1 and 3 do not screen in for stress corrosion cracking (SCC) or fatigue type cracking mechanisms.

The scope of the audit does not include:

- anything related to the two Unit 2 CB circumferential welds being elevated up to Primary category status
- anything related to the applicant's statements on screening for irradiated-assisted stress corrosion cracking (IASCC) and neutron irradiation embrittlement (IE) mechanisms – in the response to RAI B2.1.7-4, the applicant states that all Oconee CB upper and lower cylinder vertical welds and upper cylinder-to-lower cylinder circumferential welds screen in for IASCC & IE.
- CB weld accessibility issues – 2nd round RAI B2.1.7-4a will address this issue

AUDIT ASSUMPTIONS:

- For the fatigue screening basis, the staff assumes that the supplemental cumulative usage factor (CUF) analysis for the CB welds discussed with the applicant during the early March 2022 teleconference with the applicant will be posted to the audit portal.
- For the SCC screening basis, the staff assumes that the applicant will have posted some sort of site-specific record or unit-specific records that contain the actual alloying ferrite contents for Type 308 or 308L stainless steel weld filler materials used in the fabrication of the CB weld types.

4. Audit Activities

Fatigue Screening Activities (assumes the supplemental CUF analysis is posted to the SLRA portal)

1. Determination and verification of CUF values for CB welds of reference or for the CB assembly as a whole commodity group-based component.
2. Comparison of component-specific CUF value or values to the EPRI MRP's eighty year threshold values for CUF parameters in MRP-189, Revision 3.
3. Determination whether the supplemental CUF analysis being referenced by the applicant is using and applying a CUF threshold on fatigue that is different than that used and cited in MRP-189, Revision 3 (which is referenced in the gap analysis basis of the PWR Vessel Internals AMP (SLRA B2.1.7)).

SCC Screening Activities (assumes that design records containing the CB weld ferrite contents will be posted onto the SLRA portal)

1. Determination and verification of ferrite alloying contents values for stainless steel CB welds of reference.
2. Comparison of component-specific ferrite values to the EPRI MRP's eighty year threshold value on minimal acceptable ferrite levels in MRP-189, Revision 3.

Currently, the staff does not have a sufficient basis to conclude that placing the referenced core barrel welds in the NAM category is a sufficient basis to manage cracking and irradiation embrittlement in the welds per the requirement in 10 CFR 54.21(a)(3). Under this type of risk-informed, sampling-based program basis, the Unit 2 CB circumferential seam weld types that have been elevated in inspection category status and placed into the program’s “Primary” inspection category do not have any Primary-to-Expansion category interrelationships to the remaining CB welds in Oconee Units 1, 2 and 3 that have been downgraded in inspection category status and placed in the NAM category of the program. Under this type of aging management basis, the referenced CB assembly welds being placed in the NAM category will not be subject to any Primary-based or Expansion-based I&E criteria during the subsequent period of extended operation; this is regardless of what occurs and may be detected in the Unit 2 Primary CB weld types or in other designated Primary category components of the program (including the Primary category core baffle plates, which were the original, linked Primary components for the designated inaccessible, Expansion category CB welds in MRP-227, Rev. 1-A). The perceived inaccuracy of the new SLRA Table 3.1.2-2 Footnote 3 that was included in the Response to RAI B2.1.7-5 complicates the staff’s review of the core barrel NAM inspection category basis. This is beyond scope of the initial issues that were perceived by the staff solely on the review of the applicant’s response to RAI B2.1.7-4.

5. Information and Other Material Necessary for the Regulatory Audit

Throughout the Aging Management Regulatory Audit, the staff will review the SLRA, as supplemented and revised, and other applicant supporting documents as appropriate and requested, on the ePortal.

The staff may request additional applicant documents to be added to the ePortal over the course of the audit. The staff requests for ePortal additions shall be made, as needed, to the NLRP safety project manager, who will provide the requests to the applicant.

6. Team Assignments

Team Member	Branch/Division
Jim Medoff	Vessels and Internals (NVIB)/DNRL
Angela Wu	License Renewal Projects Branch (NLRP)/DNRL
Marieliz Johnson	NLRP/DNRL

7. Logistics

The Aging Management Regulatory Audit will be conducted using telecommunications from May 17-18, 2022. Entrance and exit briefings will be held at the beginning and end of the audit.

8. Special Requests

The NRC staff requests the applicant to make available the SLRA program basis documentation and drawings, and other documents as requested.

9. Deliverables

An audit report should be issued to the applicant within 90 days from the end of the Aging Management Regulatory Audit.

Oconee Nuclear Station, Units 1, 2, and 3 Limited Aging Management Audit Plan Regarding the Subsequent License Renewal Application Review (EPID NO. L-2021-SLR-0000) DATE May 2, 2022

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ADAMS Accession No.: Memo ML22111A314

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NAME	AWu	AW	LGibson	LG
DATE	Apr 22, 2022		May 2, 2022	

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