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RA-24-0197
July 31, 2024

10 CFR 50.4
10 CFR Part 54

ATTN: NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke Energy)
Oconee Nuclear Station (ONS), Units 1, 2, and 3
Docket Numbers 50-269, 50-270, 50-287
Renewed License Numbers DPR-38, DPR-47, DPR-55
Subsequent License Renewal Application
Response to Request for Additional Information 2024 Annual update and Subsequent License Renewal Application Supplement 5 addition

References:

1. Duke Energy Letter (RA-21-0132) dated June 7, 2021, Application for Subsequent Renewed Operating Licenses, (ADAMS Accession Number ML21158A193)
2. NRC Letter dated July 22, 2021, Oconee Nuclear Station, Units 1, 2, and 3 - Determination of Acceptability and Sufficiency for Docketing, Proposed Review Schedule, and Opportunity for a Hearing Regarding Duke Energy Carolinas' Application for Subsequent License Renewal (ADAMS Accession Number ML21194A245)
3. Duke Energy Letter (RA-22-0157) dated June 7, 2022, First Annual Amendment to the License Renewal Application and Subsequent License Renewal Application Supplement 4 (ADAMS Accession Number ML22158A028)
4. Duke Energy Letter (RA-23-0099) dated April 25, 2023, Second Annual Amendment to the License Renewal Application (ADAMS Accession Number ML23115A050)
5. Duke Energy Letter (RA-24-0136) dated May 24, 2024, Third Annual Update to the License Renewal Application and Subsequent License Renewal Application Supplement 5, (ADAMS Accession Number ML24145A069)
6. NRC Email dated July 15, 2024, Request for Additional Information – Oconee SLRA – Annual update, (ADAMS Accession Number ML24197A229 and ML24197A230)

Ladies and Gentlemen:

By letter dated June 7, 2021 (Reference 1), Duke Energy Carolinas, LLC (Duke Energy) submitted an application for the subsequent license renewal of Renewed Facility Operating License Numbers DPR-38, DPR-47, and DPR-55 for the Oconee Nuclear Station (ONS), Units 1, 2, and 3 to the U.S. Nuclear Regulatory Commission (NRC). On July 22, 2021 (Reference 2), the NRC determined that ONS subsequent license renewal application (SLRA) was acceptable and sufficient for docketing.

10 CFR 54.21(b) requires Duke Energy to report changes to the Current Licensing Basis (CLB) that materially affect the contents of the SLRA, including the Updated Final Safety Analysis Report (UFSAR) supplement. These changes are required to be submitted each year and at least 3 months prior to the scheduled completion of NRC review of the SLRA.

The first annual review results were provided by letter dated June 7, 2022 (Reference 3). The second annual review results were provided by letter dated April 25, 2023 (Reference 4). By letter dated May 24, 2024 (Reference 5), the third annual review results were submitted.

By an email dated July 15, 2024 (Reference 6), NRC transmitted a Request for Additional Information (RAI) regarding the third annual review update. As stated in the NRC email, a response is to be provided within 30 days from the date of Reference 6.

Enclosure 1 contains the response to the RAI. As a result of response to the RAI, additional revisions to sections of the SLRA that were provided by reference 5 is provided in Enclosure 2. SLRA changes are described along with the affected SLRA sections, SLRA page numbers, and SLRA markups. For clarity, deletions are indicated by strikethrough and inserted text by red font.

There are no regulatory commitments within this letter.

Should you have any questions concerning this submittal, please contact Paul Guill by email at paul.guill@duke-energy.com.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 31, 2024.

Sincerely,

Steven M. Snider
Site Vice President
Oconee Nuclear Station

Enclosures:

Enclosure 1: Response to Request for Additional Information
Enclosure 2: SLRA Revisions

CC:

L. Dudes, USNRC, Region II Regional Administrator
S. Williams, USNRC NRR Project Manager for ONS
J. Nadel, USNRC Senior Resident Inspector for ONS
M. Yoo, USNRC SLR Project Manager for ONS
L. Rakovan, USNRC SLR Environmental Project Manager

A. Wilson, Attorney General (SC)
R. S. Mack, Assistant Bureau Chief, Bureau of Environmental Health Services (SC)
L. Garner, Manager, Radioactive and Infectious Waste Management Section (SC)

ENCLOSURE 1

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3
SUBSEQUENT LICENSE RENEWAL APPLICATION
RESPONSE TO REQUESTS FOR ADDITIONAL INFORMATION

RAI – 2024 Annual Update

Flow Blockage for Gray Cast Iron and Ductile Iron Fire Hydrants with Internal Coatings/Linings

Regulatory Basis:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the U.S. Nuclear Regulatory Commission (NRC) staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. In order to complete its review and enable making a finding under 10 CFR 54.29(a), the staff requires additional information in regard to the matters described in the requests for information.

Background:

Table 3.3-1, ID 063, in NUREG-2192, “Standard Review Plan for Review of Subsequent Licene Renewal Applications for Nuclear Power Plants” (ML17188A158), addresses managing loss of material and flow blockage [underline added for emphasis] of steel fire hydrants exposed to outdoor air, raw water, raw water (potable), and treated water by the Fire Water System program.

The third annual update to the Oconee Nuclear Station, Units 1, 2, and 3, Subsequent License Renewal Application, dated May 24, 2024 (ML24145A069), added gray cast iron and ductile iron fire hydrants with internal coatings/linings to SLRA Table 3.3.2-24, “Auxiliary Systems – High Pressure Service Water System – Aging Management Evaluation,” because an engineering change package approved replacement fire hydrants with an epoxy coating on the inside and outside surfaces.

Issue:

Flow blockage was not identified as an applicable aging effect for the ductile iron fire hydrants with internal coatings/linings exposed internally to raw water in SLRA Table 3.3.2-24. Regardless if the fire hydrant has an internal coating/lining, it could become blocked due to debris from the raw water source. The staff notes that flow blockage was identified as an applicable aging effect for the ductile iron fire hydrants without an internal coating/lining exposed internally to raw water in SLRA Table 3.3.2-24 (ML21158A194).

Gray cast iron and ductile iron fire hydrants with internal coatings/linings were not added to SLRA Table 3.3.2-26, “Auxiliary Systems – Keowee Fire Detection/Protection System – Aging Management Evaluation.” Nor were gray cast iron and ductile iron with internal coatings/linings added to SLRA Section 3.3.2.1.26 as materials in the Keowee Fire Detection/Protection System. The staff also notes that flow blockage was identified as an applicable aging effect for the ductile iron fire hydrants without an internal coating/lining exposed internally to raw water in SLRA Table 3.3.2-26 (ML21158A194).

Request:

1. Please discuss why flow blockage was not identified as an applicable aging effect for the ductile iron fire hydrants with internal coatings/linings exposed internally to raw water in SLRA Table 3.3.2-24.
2. Please discuss whether SLRA Section 3.3.2.1.26 should include materials gray cast iron and ductile iron with internal coatings/linings and SLRA Table 3.3.2-26 should include gray cast iron and ductile iron fire hydrants with internal coatings/linings, including flow blockage as an applicable aging effect for a raw water internal environment.

RESPONSE:

Response to Request 1

The internal coatings/linings of the ductile iron fire hydrants are intended to prevent corrosion and corrosion products. The fire hydrant is periodically subject to flow during testing and drained after use to prevent freezing, thereby removing materials that could lead to flow blockage. The lower portion of the fire hydrant up to the main valve, however, is a raw water environment and is potentially subject to fouling from the raw water source and system corrosion products. In consideration of the raw water environment, flow blockage due to fouling is added as an aging effect requiring management in SLRA Table 3.3.2-24 for the portion of the fire hydrant subject to a raw water environment. Revisions made to the SLRA are provided in Enclosure 2.

Response to Request 2

The annual update (ML24145A069) is intended to identify changes to the Oconee plant that materially affect the SLRA. As part of the annual update review an engineering change package was identified that approved the use of Mueller model A-421 6’6” as a replacement fire hydrant. The replacement fire hydrant was installed in the High-Pressure Service Water System which serves as the station fire protection system. The Keowee Fire Detection/Protection System provides fire suppression for the Keowee powerhouse and surrounding area. The new model fire hydrant was not installed in the Keowee Fire Detection/Protection System; therefore, SLRA Section 3.3.2.1.26 and SLRA Table 3.3.2-26 were not revised as part of the annual update.

No changes are required to SLRA Section 3.3.2.1.26, Keowee Fire Detection/Protection System, or to SLRA Table 3.3.2-26, Auxiliary Systems – Keowee Fire Detection/Protection System – Aging Management Evaluation, in conjunction with the annual update (ML24145A069).

ENCLOSURE 2

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3
SUBSEQUENT LICENSE RENEWAL APPLICATION
SLRA REVISIONS

Enclosure 2
Oconee Nuclear Station, Units 1, 2, and 3
Subsequent License Renewal Application
SLRA Revisions

The consolidated changes to SLRA Table 3.3.1 item 3.3.1-063, Table 3.3.2-24, and Section B2.1.16 (SLRA pages 3-462, 3-715, and B-123) are provided below:

SLRA Markup

SLRA Table 3.3.1 (page 3-462) is revised as follows:

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of the GALL-SLR Report

Item Number	Component	Aging Effect/ Mechanism	Aging Management Program	Further Evaluation Recommended	Discussion
3.3.1-063	Steel fire hydrants exposed to air - outdoor, raw water, raw water (potable), treated water	Loss of material due to general, pitting, crevice corrosion; flow blockage due to fouling (raw water, raw water (potable) only)	AMP XI.M27, "Fire Water System"	No	Consistent with NUREG-2191 with exceptions. Fire hydrants with internal coatings/linings are managed by the *Fire Water System* (B2.1.16) program only for flow blockage. For components with an internal coating/lining, loss of material is managed by the *Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks* (B2.1.27) program. Exceptions apply to the NUREG-2191 recommendations for the *Fire Water System* (B2.1.16) program implementation.

Enclosure 2
Oconee Nuclear Station, Units 1, 2, and 3
Subsequent License Renewal Application
SLRA Revisions

SLRA Table 3.3.2-24 (page 3-715), as amended by Duke Energy Letter RA-24-0136 dated May 24, 2024 (NRC Accession No. ML24145A069), is revised as follows:

Table 3.3.2-24 Auxiliary Systems – High Pressure Service Water System – Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect	Aging Management Program	NUREG-2191 Item	NUREG-2192 Table 1	Notes
Fire Hydrant	Pressure Boundary	Ductile Iron with Internal Coating/ Lining	Soil (External)	Loss of Material	Buried and Underground Piping and Tanks (B2.1.26)	VII.I.AP-198	3.3.1- 109	B
					Selective Leaching (B2.1.21)	VII.C1.A-02	3.3.1-072	B
			Raw Water (Internal)	Loss of Coating or Lining Integrity	Internal Coatings/ Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks (B2.1.27)	VII.G.A-416	3.3.1-138	D
				Loss of Material	Internal Coatings/ Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks (B2.1.27)	VII.G.A-414	3.3.1- 139	D
						VII.G.A-415	3.3.1-140	D
				Flow Blockage	Fire Water System (B2.1.16)	VII.G.AP-149	3.3.1- 063	B

SLRA Appendix B2.1.16 (page B-123), last paragraph on page under the *Program Description*, is revised as follows:

B2.1.16 FIRE WATER SYSTEM

Program Description

Age-related degradation of the external surfaces of underground fire main piping is managed by the *Buried and Underground Piping and Tanks* (B2.1.26) AMP. Age-related degradation of the internal surface of the cement-lined buried fire header and the internal surface of fire hydrants with an internal coating/lining is managed by the *Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks* (B2.1.27) AMP.