NRR-DRMAPEm Resource

From:	Mahoney, Michael
Sent:	Monday, June 17, 2019 4:30 PM
To:	'Nair-Gimmi, Anuradha'
Subject:	State Notification of Amendments to Oconee Nuclear Station, Units 1, 2, and 3 - Updated Final Safety Analysis Report Section for Fission Gas Gap Release Rates
Attachments:	2019-00358 - FRN 1-31-19 84 FR 811.pdf

Mrs. Nair-Gimmi,

We are near completion of amendments for the Oconee Nuclear Station (Oconee), Units 1, 2 and 3 (I am the backup project manager for Oconee, just working on this amendment), to revise their Updated Final Safety Analysis Report (UFSAR). Specifically, the amendments would revise the dose consequences for the facility, as described in the UFSAR, to provide fission gas gap release fractions for high-burnup fuel rods that exceed the linear heat generation rate limit detailed in Regulatory Guide (RG) 1.183, “Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors” (ADAMS Accession No. ML003716792), Table 3, Footnote 11. The amendments would allow a higher bounding rod power history and the removal of a restriction on the number of rods per assembly that can exceed the rod power burnup criteria of Footnote 11 in RG 1.183.

The application is dated November 1, 2018 as supplemented by letter dated March 7, 2019 (ADAMS Accession Nos. ML18318A320 and ML19066A316, respectively).

The no significant hazards consideration determination was noticed in the Federal Register on January 31, 2019 (84 FR 811), attached.

Please respond if you have any or no comments.

Thanks

Mike

Michael Mahoney

McGuire and Catawba Project Manager, Division of Operating Reactor Licensing

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Duke Energy Carolinas, LLC, Docket Nos. 50–269, 50–270, and 50–287, Oconee Nuclear Station, Units 1, 2, and 3, Oconee County, South Carolina

Date of amendment request: November 1, 2018. A publicly-available version is in ADAMS under Accession No. ML18318A320.

Description of amendment request: The amendments would revise the dose consequences for the facility, as described in the Updated Final Safety Analysis Report, to provide fission gas gap release fractions for high-burnup fuel rods that exceed the linear heat generation rate limit detailed in Regulatory Guide (RG) 1.183, ''Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors'' (ADAMS Accession No. ML003716792), Table 3, Footnote 11. The amendments would allow a higher bounding rod power history and the removal of a restriction on the number of rods per assembly that can exceed the rod power burnup criteria of Footnote 11 in RG 1.183.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), the licensee has provided its analysis of the issue of no significant hazards consideration, which is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change involves using gap release fractions for high-burnup fuel rods (*i.e.,* greater than 54 GWD/MTU [gigawatt days per metric ton of uranium]) that exceed the 6.3 kW/ft [kilowatt per foot] linear heat generation rate (LHGR) limit detailed in Table 3, Footnote 11 of RG 1.183. Increased gap release fractions were determined and accounted for in the dose analysis for ONS [Oconee Nuclear Station]. The dose consequences reported in the ONS Updated Final Safety Analysis Report (UFSAR) were reanalyzed for fuel handling accidents only. Dose consequences were not reanalyzed for other non-fuel-handling accidents since no fuel rod that is predicted to enter departure from nucleate boiling (DNB) will be permitted to operate beyond the limits of RG 1.183, Table 3, Footnote 11. The current NRC requirements, as described in 10 CFR 50.67, specifies *[sic]* dose acceptance criteria in terms of Total Effective Dose Equivalent (TEDE). The revised dose consequence analyses for the fuel handling events at ONS meet the applicable TEDE dose acceptance criteria (specified also in RG 1.183).

The changes proposed do not affect the precursors for fuel handling accidents analyzed in Chapter 15 of the ONS UFSAR. The probability remains unchanged since the accident analyses performed and discussed in the basis for the UFSAR changes involve no change to a system, structure or component that affects initiating events for any UFSAR Chapter 15 accident evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

The proposed change involves using gap release fractions for high-burnup fuel rods (*i.e.,* greater than 54 GWD/MTU) that exceed the 6.3 kW/ft LHGR limit detailed in Table 3, Footnote 11 of RG 1.183. Increased gap release fractions were determined for certain isotopes, and were accounted for in the dose analysis for ONS. The dose consequences reported in the ONS UFSAR were reanalyzed for fuel handling accidents only. Dose consequences were not reanalyzed for other non-fuel-handling accidents since no fuel rod that is predicted to enter departure from nucleate boiling (DNB) will be permitted to operate beyond the limits of RG 1.183, Table 3, Footnote 11.

The proposed change does not involve the addition or modification of any plant equipment. The proposed change has the potential to affect future core designs for ONS. However, the impact will not be beyond the standard function capabilities of the equipment. The proposed change involves using gap release fractions that would allow high-burnup fuel rods (*i.e.,* greater than 54 GWD/MTU) to exceed the 6.3 kW/ft LHGR limit detailed in Table 3, Footnote 11 of RG 1.183. Accounting for these new gap release fractions in the dose analysis for ONS does not create the possibility of a new accident.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

The proposed change involves using gap release fractions for high-burnup fuel rods (*i.e.,* greater than 54 GWD/MTU) that exceed the 6.3 kW/ft LHGR limit detailed in Table 3, Footnote 11 of RG 1.183. Increased gap release fractions were determined for certain isotopes, and were accounted for in the dose analysis for ONS. The dose consequences reported in the ONS UFSAR were reanalyzed for fuel handling accidents only. Dose consequences were not reanalyzed for other non-fuel-handling accidents since no fuel rod that is predicted to enter departure from nucleate boiling (DNB) will be permitted to operate beyond the limits of RG 1.183, Table 3, Footnote 11.

The proposed change has the potential for an increased postulated accident dose at ONS. However, the analysis demonstrates that the resultant doses are within the appropriate acceptance criteria. The margin of safety, as defined by 10 CFR 50.67 and Regulatory Guide 1.183, has been maintained. Furthermore, the assumptions and input used in the gap release and dose consequences calculations are conservative. These conservative assumptions ensure that the radiation doses calculated pursuant to Regulatory Guide 1.183 and cited in this LAR are the upper bounds to radiological consequences of the fuel handling accidents analyzed. The analysis shows that with increased gap release fractions accounted for in the dose consequences calculations there is margin between the offsite radiation doses calculated and the dose limits of 10 CFR 50.67 and acceptance criteria of Regulatory Guide 1.183. The proposed change will not degrade the plant protective boundaries, will not cause a release of fission products to the public, and will not degrade the performance of any structures, systems or components important to safety.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

The NRC staff has reviewed the licensee's analysis and, based on this review, it appears that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

Attorney for licensee: Kate Nolan, Deputy General Counsel, Duke Energy Carolinas, 550 South Tryon Street, Charlotte, NC 28202.

NRC Branch Chief: Michael T. Markley.

Duke Energy Progress, LLC, Docket Nos. 50–325 and 50–324, Brunswick Steam Electric Plant, Units 1 and 2, Brunswick County, North Carolina

Date of amendment request: October 18, 2018. A publicly-available version is in ADAMS under Accession No. ML18291A628.

Description of amendment request: The proposed amendments would revise the allowable value associated with Function 1.b (*i.e.,* 4.16 kiloVolt Emergency Bus Undervoltage (Loss of Voltage)—Time Delay) of Table 3.3.8.1–1, ''Loss of Power Instrumentation,'' in Technical Specification 3.3.8.1.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), the licensee has provided its analysis of the issue of no significant hazards consideration, which is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change does not involve a physical alteration of the plant (*i.e.,* no new or different type of equipment will be installed). The proposed change revises the Allowable Value for the Time Delay Loss of Voltage relays to resolve a design vulnerability potentially impacting the Emergency Diesel Generator (EDG) output