From:	Williams, Shawn
Sent:	Friday, July 10, 2020 10:45 AM
To:	Zaremba, Arthur H.
Cc:	'Christopher.wasik@duke-energy.com'
Subject:	Oconee Nuclear Station, Units 1, 2, and 3 - Request for Additional Information RE: Measurement Uncertainty Recapture Power Uprate (EPID L-2020-LLS-0000)
Attachments:	July 10, 2020, Oconee MUR RAIs.docx

Dear Mr. Zaremba,

By letter dated February 19, 2020, as supplemented by letter dated April 6, 2020, Duke Energy Carolinas, LLC, submitted a license amendment request for Oconee Nuclear Station, Units 1, 2, and 3 to revise technical specifications to support a measurement uncertainty recapture power uprate for each unit from 2568 megawatts thermal (MWt) to 2610 MWt, which is an increase of approximately 1.64% rated thermal power.

The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is needed as discussed in the Enclosure. A clarification call to ensure mutual understanding was conducted on July 10, 2020. Please respond within 30 days of the date of this e-mail. Please note that the NRC staff's review is continuing and further requests for information may be developed.

If you have any questions, please contact me at 301-415-1009 or via e-mail at Shawn.Williams@nrc.gov.

Sincerely,

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch, II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosure:
Request for Additional Information

cc w/encl: Listserv

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Subject: Oconee Nuclear Station, Units 1, 2, and 3 - Request for Additional Information RE: Measurement Uncertainty Recapture Power Uprate (EPID L-2020-LLS-0000)
Sent Date: 7/10/2020 10:44:55 AM
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From: Williams, Shawn

Created By: Shawn.Williams@nrc.gov

Recipients:
"'Christopher.wasik@duke-energy.com'" <Christopher.wasik@duke-energy.com>
Tracking Status: None
"Zaremba, Arthur H." <Arthur.Zaremba@duke-energy.com>
Tracking Status: None

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Options
Priority: Normal
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Reply Requested: No
Sensitivity: Normal
Expiration Date:

REQUEST FOR ADDITIONAL INFORMATION

REGARDING MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE (MUR-PU)

LICENSE AMENDMENT REQUEST

OCONEE NUCLEAR STATION UNITS 1, 2 AND 3

DUKE ENERGY CAROLINAS, LLC

DOCKET NOS. 50-269, 50-270 AND 50-287

NCSG RAI No. 1:

Section 5.4.2.1, “Steam Generator Materials and Design,” of NUREG-0800, “Standard Review Plan,” provides the NRC staff guidance to review steam generator (SG) designs with respect to potential degradation of the SG tubes. The staff review is focused on maintaining reasonable assurance of SG tube integrity as well as compliance with relevant General Design Criteria (GDC) such as GDCs 14, “Reactor Coolant Pressure Boundary,” and 31, “Fracture Prevention of Reactor Coolant Pressure Boundary.” This includes an evaluation of potential degradation mechanisms that may cause SG tube wear or fatigue of the SG tubes.

Section IV.1.A.vi of the license amendment request (LAR), “Steam generator tubes, secondary side internal support structures, shell, and nozzles,” states that “The MUR [measurement uncertainty recapture] conditions are bounded by the thermal hydraulic conditions used as the design basis for the Replacement Once-Through Steam Generators (ROTSGs).” The thermal hydraulic design parameters for the proposed MUR power uprate conditions are given in Table IV-1, “MUR Power Uprate Critical Parameters,” of the LAR. Updated Final Safety Analysis Report (UFSAR) Table 5-20, “Steam Generator Design Data (Data per Steam Generator),” also provides thermal hydraulic data for the Oconee ROTSGs.

It is unclear whether the thermal hydraulic design data in Table 5-20 of the UFSAR bound the proposed MUR-PU conditions for all parameters. The steam and reactor coolant flows in the UFSAR table appear to be lower than the values provided in the LAR.

Flow through SG tubes and through the tubesheet may impact potential degradation mechanisms of the SG tubes such as fluidelastic instability, vortex shedding, turbulence, tube wear, fatigue, and other flow-induced vibration degradation mechanisms.

Given the apparent discrepancies above, demonstrate that the proposed MUR-PU conditions are bounded by current ROTSG design for flow-induced vibration degradation mechanisms and SG tube wear. If the values are not bounded, explain how SG tube integrity will be maintained at the proposed MUR-PU conditions.

EMIB RAI No. 1

The LAR states that the inservice testing (IST) program does not require revision as a result of Oconee MUR-PU. In a previously submitted Oconee IST document for the fifth 10-year IST program interval (ADAMS Accession No. ML12195A321), the licensee states that the "Code of Record" for Oconee Units 1, 2 and 3 is the ASME Code for Operation and Readiness of Nuclear Power Plants (OM Code), 2004 Edition with 2006 Addenda. Please confirm that the current OM Code of record is the 2004 Edition through the 2006 Addenda for pumps, valves, and snubbers.

EMIB RAI No. 2

The LAR does not discuss the evaluation of dynamic restraints/snubbers in support of the proposed MUR-PU. Please describe the snubber evaluation and its results for the proposed Oconee MUR-PU.

EMIB RAI No. 3

The LAR, Table IV-1, "MUR Power Uprate Critical Parameters," shows an increase in reactor coolant and steam flow rate associated with the proposed MUR-PU. The LAR, Section IV.1.A.vi, states that the MUR-PU conditions are bounded by the thermal hydraulic conditions used as the design basis for the ROTSGs. However, the section does not describe an evaluation of the impact on safety-related components due to the increased reactor coolant and steam flow. Please explain how the potential adverse effects (such as flow-induced vibration) on the safety-related components (including pumps, valves, and snubbers) were evaluated for the increased flow associated with the proposed Oconee MUR-PU.

EMIB RAI No. 4

The LAR, Section IV.1.B.iii, states that flow-induced vibration concerns are limited to the reactor vessel internals and the steam generator tubes. In light of operating experience related to adverse effects from flow-induced vibration of safety-related components at nuclear power plants, please describe the evaluation of potential vibration effects that could be caused by acoustic resonance created by the increased flow in plant systems from the proposed MUR-PU.