



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

September 24, 2015

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

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3— INTERIM STAFF  
RESPONSE TO REEVALUATED FLOOD HAZARDS SUBMITTED IN  
RESPONSE TO 10 CFR 50.54(f) INFORMATION REQUEST –  
FLOOD-CAUSING MECHANISM REEVALUATION (TAC NOS. MF1012,  
MF1013, AND MF1014)

Dear Mr. Batson:

The purpose of this letter is to provide a summary of the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of the re-evaluated flood-causing mechanisms described in the March 12, 2013 (Agencywide Document Access and Management System (ADAMS) Accession No. ML13079A227), flood hazard reevaluation report (FHRR) submitted by Duke Energy Carolinas, LLC (Duke, the licensee) for Oconee Nuclear Station Units 1, 2 and 3 (Oconee), as well as supplemental information resulting from requests for additional information and audits. This supplemental information included the licensee's revised FHRR for Oconee, submitted on March 6, 2015 (ADAMS Accession No. ML15072A099)

By letter dated March 12, 2012, the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) (ADAMS Accession No. ML12053A340). The request was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 2 to the 50.54(f) letter requested licensees to re-evaluate flood-causing mechanisms using present-day methodologies and guidance. Concurrently, with the reevaluation of flooding hazards, licensees were required to develop and implement mitigating strategies in accordance with NRC Order EA-12-049, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735). On March 30, 2015, the Commission provided Staff Requirements Memorandum (SRM) (ADAMS Accession No. ML15089A236) to COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," dated November 21, 2014 (ADAMS Accession No. ML14309A256), affirming that licensees need to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events.

**Enclosure 2 transmitted herewith contains Security-Related Information. When separated from the Enclosure, this document is decontrolled.**

S. Batson

-2-

The NRC staff has reviewed the information submitted by the licensee and has summarized the results of the review in the tables provided as Enclosure 1 to this letter. Table 1 provides the current design-basis flood hazard mechanisms.

Table 2 provides reevaluated flood hazard mechanisms; however, reevaluated hazard mechanisms bounded by the current design-basis (Table 1) are not included. Because Table 2 includes security-related information, Enclosure 1 contains the redacted version of Table 2. Enclosure 2 is withheld from public disclosure and restores the security-related information to Table 2.

The NRC staff has concluded that the licensee's reevaluated flood hazards information, as summarized in the Enclosure, is suitable for the assessment of mitigating strategies developed in response to Order EA-12-049 (i.e., defines the mitigating strategies flood hazard information described in guidance documents currently being finalized by the industry and NRC staff), for Oconee. Further, the NRC staff has concluded that the licensee's reevaluated flood hazard information is a suitable input for other assessments associated with Near-Term Task Force Recommendation 2.1 "Flooding". The NRC staff plans to issue a staff assessment documenting the basis for these conclusions in the near future. The staff also intends to address the impact of this reevaluated flood hazard review on the previous Oconee flooding analyses submitted in response to the NRC's Confirmatory Action Letter, dated June 22, 2010 (ADAMS Accession No. ML101730329).

In addition, NEI 12-06 "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" is currently being revised. This revision will include a methodology to perform a Mitigating Strategies Assessment (MSA) with respect to the reevaluated flood hazards. Once this methodology is endorsed by the NRC, flood event duration parameters and applicable flood associated effects should be considered as part of the Oconee MSA. The NRC staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood-related associated effects developed by the licensee during the NRC staff's review of the MSA.

As stated above, Table 2 of the enclosure to this letter describes the reevaluated flood hazards that exceed the current design-basis. In order to complete its response to the information requested by Enclosure 2 to the 50.54(f) letter, the licensee is expected to submit an integrated assessment or a focused evaluation, as appropriate, to address these reevaluated flood hazards, as described in the NRC letter, "Coordination of Request for Information Regarding Flooding Hazard Reevaluation and Mitigating Strategies for Beyond-Design-Basis External Events," dated September 1, 2015 (ADAMS Accession No. ML15174A257). This letter describes the changes in the NRC's approach to the flood hazard reevaluations that were approved by the Commission in its SRM to COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15209A682).

S. Batson

-3-

If you have any questions, please contact me at (301) 415-3809 or e-mail at Juan.Uribe@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Juan F. Uribe', written in a cursive style.

Juan F. Uribe, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

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

Enclosures:

1. Summary of Results of Flooding  
Hazard Re-Evaluation Report (Redacted Version)
2. Summary of Results of Flooding  
Hazard Re-Evaluation Report (Non-Public Version)

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ENCLOSURE 1:  
SUMMARY TABLES OF  
REEVALUATED FLOOD HAZARD LEVELS  
(REDACTED VERSION)

**Table 1. Current Design Basis Flood Hazards for Use in the MSA**

<b>Mechanism</b>	<b>Stillwater Elevation</b>	<b>Waves/ Runup</b>	<b>Design Basis Hazard Elevation</b>	<b>Reference</b>
<b>Local Intense Precipitation</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Streams and Rivers</b> Flooding in Reservoirs - Keowee Reservoir (not calculated at Power Block)	808.0 ft MSL	Not applicable	808.0 ft MSL	Staff Assessment
<b>Failure of Dams and Onsite Water Control/Storage Structures</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Storm Surge</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Seiche</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Tsunami</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Ice-Induced Flooding</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment
<b>Channel Migrations/Diversions</b>	Not included in DB	Not included in DB	Not included in DB	Staff Assessment

Note 1: Reported values are rounded to the nearest one-tenth of a foot.

**Table 2. Reevaluated Flood Hazards for Flood-Causing Mechanisms for Use in the MSA**

<b>Mechanism</b>	<b>Stillwater Elevation</b>	<b>Waves/ Runup</b>	<b>Reevaluated Hazard Elevation</b>	<b>Reference</b>
<b>Local Intense Precipitation</b>	800.4 ft MSL	Minimal	800.4 ft MSL	FHRR Section 3.1
<b>Streams and Rivers</b> Streams and Rivers (Flooding in Reservoirs, Keowee)	808.9 ft MSL	3.3 ft	812.2 ft MSL	FHRR Section 3.2
<b>Failure of Dams and Onsite Water Control/Storage Structures</b> [Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Note 1: The licensee is expected to develop flood event duration parameters and applicable flood associated effects to conduct the MSA consistent with the guidance. The NRC staff has reviewed information related to flood event duration parameters (including warning time and period of inundation).

Note 2: Reevaluated hazard mechanisms bounded by the current design basis (see Table 1) are not included in this table.

Note 3: Reported values are rounded to the nearest one-tenth of a foot.

S. Baston

- 3 -

If you have any questions, please contact me at (301) 415-3809 or e-mail at Juan.Uribe@nrc.gov.

Sincerely,

Juan F. Uribe, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

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

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1. Summary of Results of Flooding Hazard Re-Evaluation Report (Redacted Version)
2. Summary of Results of Flooding Hazard Re-Evaluation Report (Non-Public Version)

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ADAMS Accession Nos.: PKG ML15239B243 LTR: ML15239B261; ENCL1: ML15238B723 (PUBLIC)  
ENCL 2: ML15222B209 (NON-PUBLIC) \*via email

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