

November 30, 2021

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

DUKE ENERGY CAROLINAS, LLC

(Oconee Nuclear Station, Units 1, 2, and 3)

Docket No. 50-269, 50-270,
and 50-287-SLR

NRC STAFF RESPONSE TO THE ATOMIC SAFETY AND LICENSING BOARD'S NOVEMBER
22, 2021 MEMORANDUM AND ORDER

On November 22, 2021, the Atomic Safety and Licensing Board issued a Memorandum and Order requesting the supporting basis for the following statement in the Nuclear Regulatory Commission (NRC) Staff's letter dated January 28, 2011, where Staff closed issues associated with a 2010 Confirmatory Action Letter regarding the mitigation of external flooding hazards at Oconee resulting from the postulated failure of the Jocassee Dam: "The random sunny-day failure scenario was selected after evaluation of the failure modes determined that the potential failure of the Jocassee Dam from either an overtopping event or seismic event was not credible."¹ The supporting bases for the NRC Staff's findings and conclusions as stated in its January 28, 2011, letter are provided in the January 28, 2011 Safety Evaluation as well as the supporting documents cited within the evaluation.²

Additional details beyond those identified within the NRC Staff's January 28, 2011, letter and Safety Evaluation may be found in the "Non-Concurrence on Oconee Assessment Letter,"

¹ Staff Assessment of Duke's Response to Confirmatory Action Letter Regarding Duke's Commitments to Address External Flooding Concerns at the Oconee Nuclear Station, Units 1, 2, and 3 (ONS) (TAC NOS. ME3065, ME3066, AND ME3067) (Jan. 28, 2011) (Agencywide Documents Access Management System (ADAMS) Accession No. ML110280153) (2011 Safety Evaluation).

² See 2011 Safety Evaluation, Section 5.0, "References" at 13.

which was used to inform the January 28, 2011, letter and Safety Evaluation.³ Notably, the “Non-Concurrence on Oconee Assessment Letter” includes, among other things, the “Staff Response To Non-Concurrence On The Initial Starting Reservoir Level Of The Jocassee Dam For The Flooding Inundation Study Of The Oconee Nuclear Site For Demonstrating Reasonable Assurance,” dated January 25, 2011, which provides the Staff’s detailed assessment and finding that the overtopping event and the seismic event failure modes were deemed to be not credible.⁴ Concerning overtopping, the January 25, 2011, Staff Response states in part that:

[A] failure of a saddle dike would avert an overtopping failure of the Jocassee Dam. Failure of a single saddle dike would drain the lake down to an elevation of approximately 1090 ft msl, fully averting a catastrophic draining of the entire lake, thereby protecting the Keowee Dam and [Oconee] from damage. Based on the discussion above, the NRC staff concluded that overtopping of the Jocassee Dam is not a credible event.⁵

Addressing seismic event failure, the January 25, 2011, Staff Response describes how “the seismic attributes of the Jocassee Dam were analyzed by the NRC staff experts, and they have determined that a seismic failure of the Jocassee Dam is not a credible event,”⁶ and further describes how the

NRC staff, consisting of subject matter experts in geotechnical engineering and geology, performed a qualitative evaluation of the seismic stability of the Jocassee Dam. The qualitative evaluation was based on the following: a review of the available information in the technical literature pertaining to the performance of rock filled dams; the review and certification by Duke’s Consulting Board of the quality control performed during construction; and finally based on the overall condition of the Jocassee Dam as certified by [the Federal Energy Regulatory Commission] FERC’s annual inspections. The NRC staff verified that the original construction

³ Non-Concurrence on Oconee Assessment Letter (Jan. 2011) (ADAMS Accession No. ML110260443) (Non-Concurrence on Oconee Assessment Letter).

⁴ Staff Response To Non-Concurrence On The Initial Starting Reservoir Level Of The Jocassee Dam For The Flooding Inundation Study Of The Oconee Nuclear Site For Demonstrating Reasonable Assurance (Jan. 25, 2011) (ADAMS Accession No. ML110260443) (January 25, 2011, Staff Response).

⁵ *Id.* at 5.

⁶ *Id.* at 6.

data, including the compaction data, were reviewed and approved by FERC at the time of construction.⁷

Finally, the Staff notes that, in 2016, the NRC Chairman issued an Investigative Report reaffirming the January 25, 2011, Staff Response that overtopping and seismic failures of the Jocassee Dam are not credible.⁸ The 2016 Investigative Report addressed, in part, a whistleblower's allegations that "NRC has failed to require [that] [Oconee] [] take corrective measures to safeguard the plant from potential flooding should the Lake Jocassee Dam fail."⁹ Notably, the Investigative Report reaffirmed the Staff's prior conclusion that the failure modes of seismic and overtopping of the Jocassee Dam were not credible, stating:

The NRC staff documented its acceptance ... in a January 28, 2011, safety evaluation.^[10] ... An NRC staff member did not agree with the NRC staff evaluation of the licensee's response to the Confirmatory Action Letter and documented the concerns in a detailed non-concurrence.^[11] The non-concurring individual specifically noted that the reservoir levels used by the licensee were based on normal operating limits, rather than bounding values. If higher starting reservoir levels were used, the effects of the dam failure would be greater. The non-concurring individual proposed that the licensee be required to perform a sensitivity analysis that used a "technically defensible most severe limit." The NRC staff response to this concern noted that these reservoirs were evaluated by NRC staff hydrologists, as well as consultants from the U.S. Bureau of Reclamation, and determined to be appropriate for a sunny-day failure of the dam. This sunny-day scenario that was selected after NRC technical experts determined that overtopping and seismic failures were not credible; the NRC staff response also included the basis for excluding these other failure modes. The NRC staff clarified that its use of the word "bounded" in the Confirmatory Action Letter was meant to be in reference to conditions that bound the sunny-day failure of the Jocassee Dam, not the absolute worst case. Some clarifications were made to the

⁷ *Id.* at 5.

⁸ Investigative Report to the Chairman of the U.S. NRC RE: OSC [U.S. Office of Special Counsel] File No. 01-15-5254 (June 2016) (2016 Investigative Report) (available at: <https://osc.gov/Documents/Public%20Files/FY17/DI-15-5254/DI-15-5254%20Agency%20Report.pdf>).

⁹ *Id.* at 1.

¹⁰ 2011 Safety Evaluation.

¹¹ Non-Concurrence on Oconee Assessment Letter.

assessment letter as a result of the non-concurrence, and it was issued as noted above.¹²

/Signed (electronically) by/

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Dated in Rockville, MD
this 30th day of November 2021

¹² 2016 Investigative Report, Appendix B, "Additional Detail on Actions Taken at Sites" at 88.

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Certificate of Service

Pursuant to 10 C.F.R § 2.305, I hereby certify that copies of the foregoing "NRC STAFF RESPONSE TO THE ATOMIC SAFETY AND LICENSING BOARD'S NOVEMBER 22, 2021 MEMORANDUM AND ORDER," dated November 30, 2021, have been served upon the Electronic Information Exchange (the NRC's E-Filing System), in the captioned proceeding, this 30th day of November 2021.

/Signed (electronically) by/

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Dated in Rockville, MD
this 30th day of November 2021