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> 10 CFR 50.46 RA-13-1002

October 10, 2013

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

Duke Energy Carolinas, LLC (Duke Energy) Oconee Nuclear Station, Units 1, 2, and 3 Docket Nos. 50-269, 50-270, and 50-287 Renewed Op. License Nos. DPR-38, DPR-47, and DPR-55

Subject: Response to Supplemental NRC RAI regarding 10 CFR 50.46 Notification of Change in Peak Cladding Temperature for Large Break Loss of Coolant Accident

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References:

- Letter, D. C. Culp (Duke Energy) to USNRC, Subject: Oconee Nuclear Station - 30- Day Report Pursuant to 10 CFR 50.46, Changes to or Errors in an Evaluation Model, March 9, 2012. [ADAMS Accession No. ML12073A354]
- Email correspondence, John Boska (USNRC) to Kent R. Alter (Duke Energy), Subject: Oconee Units 1, 2, and 3, NRC Request for Additional Information on Errors Reported per 10 CFR 50.46, ME9119, October 26, 2012. [ADAMS Accession No. ML12300A201]
- Letter, Pedro Salas, Director, Regulatory Affairs (AREVA NP Inc.) to USNRC, Subject: Generic RAI Response to a 30-day 10 CFR 50.46 Report of Significant PCT Change, December 6, 2012. [ADAMS Accession No. ML12342A381]
- Letter, Garry D. Miller (Duke Energy) to USNRC, Subject: Response to NRC RAI regarding 10 CFR 50.46 Notification of Change in Peak Cladding Temperature for Large Break Loss of Coolant Accident Analysis, December 7, 2012. [ADAMS Accession No. ML12348A055]
- Letter, Pedro Salas, Director, Regulatory Affairs (AREVA NP Inc.) to USNRC, Subject: Generic RAI Response to a 30-day 50.46 Report of Significant PCT Change, March 28, 2013. [ADAMS Accession No. ML13091A075]

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US Nuclear Regulatory Commission October 10, 2013 Page 2

- Email correspondence, V. Sreenivas (USNRC) to Kent R. Alter (Duke Energy), Subject: Oconee Units 1, 2, and 3, NRC Request for Additional Information on Errors Reported per 10 CFR 50.46, (TACs ME9119, ME9120, ME9121), August 23, 2013. [ADAMS Accession No. ML13237A002]
- 7) Email correspondence, Richard Guzman (USNRC) to Tom R. Byrne (Duke Energy), Subject: Oconee Units 1, 2, and 3, NRC Request for Additional Information on Errors Reported per 10 CFR 50.46 (TACs ME9119, ME9120, ME9121), September 12, 2013.

On March 9, 2012, (Reference 1) Duke Energy submitted a 30-day report pursuant to 10 CFR 50.46(a)(3)(ii) regarding the impact on Peak Cladding Temperature (PCT) from two errors in the Emergency Core Cooling System (ECCS) evaluation model used to assess a postulated Large Break Loss of Coolant Accident (LBLOCA) for Oconee Nuclear Station. This information is specific to the application of the AREVA ECCS evaluation model for B&W plants, as applied to Oconee Nuclear Station.

The NRC transmitted, via email (Reference 2), Requests for Additional Information (RAIs) regarding the Reference 1 letter, concerning the 30-day report pursuant to 10 CFR 50.46(a)(3)(ii). References 3, 4, and 5 provided the response to the RAIs of Reference 2.

Subsequently, the NRC transmitted, via email (References 6 and 7) Requests for Additional Information (RAIs) regarding the Reference 1 and 4 letters. The purpose of this letter is to provide a response to the RAIs.

There are no regulatory commitments contained in this letter.

Please address any comments or questions regarding this matter to Thomas R. Byrne at (980) 373-3249 (Tom.Byrne@duke-energy.com).

Sincerely,

And day

Joseph Frisco, Jr. Vice President Nuclear Design Engineering

US Nuclear Regulatory Commission October 10, 2013 Page 3

Enclosure

xc (with enclosure):

V. M. McCree, Region II Administrator U.S. Nuclear Regulatory Commission Marquis One Tower 245 Peachtree Center Avenue NE, Suite 1200 Atlanta, GA 30303-1257

R. V. Guzman, Acting Project Manager (ONS) U. S. Nuclear Regulatory Commission 11555 Rockville Pike Mail Stop 0-8 C2 Rockville, MD 20852-2738

NRC Senior Resident Inspector Oconee Nuclear Station **DUKE ENERGY CAROLINAS, LLC**

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

ENCLOSURE

RESPONSE TO SUPPLEMENTAL NRC RAI REGARDING 10 CFR 50.46 NOTIFICATION OF CHANGE IN PEAK CLADDING TEMPERATURE FOR LARGE BREAK LOSS OF COOLANT ACCIDENT ANALYSIS

2 total pages to follow

Response to NRC Request for Additional Information:

NRC RAI Question 1

On October 26, 2012, the staff issued a Request for Additional Information (RAI) to the licensee (ADAMS Accession Number ML12300A201) regarding the 30-day report which stated the following:

10 CFR 50.46(a)(3)(ii) states: " ... If the change or error is significant, the applicant or licensee shall provide this report within 30 days and include with the report a proposed schedule for providing a reanalysis or taking other action as may be needed to show compliance with 50.46 requirements ... "

The PCT for LBLOCA for Oconee has changed by an absolute value of 160°F since the analysis was performed. Simply reporting the changes and errors in the methodology does not satisfy the intent of the regulation.

Justify not providing a schedule for reanalysis or taking other action to show compliance with Section 50.46.

The licensee responded to the RAI on December 7, 2012 (ADAMS Accession Number ML12348A055).

The RAI response does not include a proposed schedule for providing a reanalysis. In the response, the licensee states that the PCT error evaluations are supported by explicit analyses using the B&W plant ECCS evaluation model. Since a schedule for reanalysis was not provided, justify how generic analysis for the B&W plant ECCS evaluation model constitutes "taking other action" to show compliance with Section 50.46. In particular, while the submitted RAI response addresses the acceptance criteria contained in 10 CFR 50.46(b), the response does not address the requirement, at 10 CFR 50.46(a)(1)(i), to calculate "ECCS cooling performance..." "in accordance with an acceptable evaluation model."

In light of the presently reported, significant, estimated effects of errors and changes, explain how the present ECCS cooling performance has been calculated in accordance with an acceptable evaluation model, such that any other action, as provided in 10 CFR 50.46(a)(3), has been taken to show compliance with 10 CFR 50.46 requirements, including those contained in 10 CFR 50.46(a)(1). Alternatively, submit a schedule for providing a reanalysis or taking other action as may be necessary to show compliance with 10 CFR 50.46 requirements.

Duke Energy Carolinas Response to NRC RAI Question 1

The evaluation that supports the 2012 10 CFR 50.46 LOCA Report for B&W Plants denotes other actions taken to show compliance with 10 CFR 50.46 requirements. The evaluation demonstrated the requirements of 10 CFR 50, Appendix K for a conservative model were fully met based on a reported estimated net zero change in peak clad temperature (PCT). The evaluation concluded the actual net PCT would decrease, therefore, the existing model results remain conservative and acceptable. As the reported net PCT did not change, local oxidation and whole core hydrogen generation from the original model are unaffected and remain in compliance. In addition, the coolable core geometry and long-term cooling impacts remain unchanged and fully meet 10 CFR 50.46(b) requirements. ECCS cooling performance was calculated with the errors corrected and this result comes from an acceptable evaluation model that complies with 10 CFR 50.46(a)(1)(i) and 50.46(a)(1)(ii). The analytical technique used approximates realistically the behavior of the reactor system during a lossof-coolant accident. As such, there is a high level of probability that the criteria will not be exceeded.

In lieu of submitting a proposed schedule for providing a reanalysis, the actions already taken as described above are considered sufficient to satisfy the intent of 10 CFR 50.46(a)(3)(ii), specifically "or taking other action as may be needed to show compliance with § 50.46 requirements".