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ONS-2017-041

November 15, 2017

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

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station, Units 1, 2, and 3
Docket Numbers 50-269, 50-270, and 50-287,
Renewed Operating Licenses DPR-38, DPR-47, and DPR-55
Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments

References:

1. Letter to the Nuclear Regulatory Commission from Henry B. Barron (Duke Energy) dated November 30, 2006, "Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML070290328
2. Letter to the Nuclear Regulatory Commission from Bruce H. Hamilton (Duke Energy) dated June 28, 2007, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML071910259
3. Letter to the Nuclear Regulatory Commission from Henry B. Barron (Duke Energy) dated January 25, 2008, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML080390239
4. Letter to the Nuclear Regulatory Commission from David A. Baxter (Duke Energy) dated June 26, 2008, "License Amendment Request to Revise Portions of the Updated Final Safety Analysis Report Related to the Tornado Licensing Basis" ML081840371
5. Letter to the Nuclear Regulatory Commission from David A. Baxter (Duke Energy) dated November 18, 2008, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML083330276

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6. Letter to the Nuclear Regulatory Commission from David A. Baxter (Duke Energy) dated May 18, 2010, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML101400144

7. Letter to the Nuclear Regulatory Commission from T. Preston Gillespie, Jr. (Duke Energy) dated July 29, 2011, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML11222A045

8. Letter to the Nuclear Regulatory Commission from T. Preston Gillespie, Jr. (Duke Energy) dated December 16, 2011, "Tornado and High Energy Line Break Mitigation License Amendment Request - Responses to Request for Additional Information" ML12003A070, ML12003A063, ML12003A067, ML12003A068, ML12003A069

9. Letter to the Nuclear Regulatory Commission from T. Preston Gillespie, Jr. (Duke Energy) dated February 21, 2012, "Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitments" ML12066A037

10. Letter to the Nuclear Regulatory Commission from Scott L. Batson (Duke Energy) dated December 19, 2013, "Revision to Tornado/HELB Mitigation Strategy Regulatory Commitments 8T, 10T, 17T, and 25H" ML13358A044

11. Letter to the Nuclear Regulatory Commission from Scott L. Batson (Duke Energy) dated September 29, 2015, "Tornado Regulatory Commitments 15T and 17T - Due Date Revision" ML15278A019

This letter documents Duke Energy Carolinas, LLC (Duke Energy) notification to the Nuclear Regulatory Commission (NRC) of a revision to the Tornado and High Energy Line Break (HELB) mitigation strategy commitments. Duke Energy has recently completed an extensive review of these regulatory commitments, and to that end, an updated mitigation strategies and regulatory commitments table is being provided to the NRC.

Duke Energy's initial commitments related to tornado and HELB mitigation strategies are documented in a submittal dated November 30, 2006 (Reference 1). The due date for various commitments were revised on several occasions and the staff was notified in the following submittals dated June 28, 2007, November 18, 2008, May 18, 2010, July 29, 2011, December 16, 2011, February 21, 2012, and December 19, 2013 (References 2 and 5 through 10). Additional commitments, specifically the Main Steam Isolation Valves (MSIVs) and protection of the atmospheric dump valves (ADVs), were added to the commitment table by the submittals dated January 25, 2008 (Reference 3) and June 26, 2008 (Reference 4), respectively. This commitment table was most recently updated in a submittal dated September 29, 2015 (Reference 11), which is the commitment table used as a starting point for the updates in Attachments 1 and 2 to this letter.

The Protected Service Water (PSW) System provided a number of lessons learned associated with the implementation of complex modifications and resulted in reconsideration of the commitments to install MSIV's and to tornado protect the ADVs. This review has determined that the complexity of these modifications, the technical challenges associated with the installation, and the prohibitive cost of the project are not offset with a commensurate gain in nuclear safety or reduction in plant risk. This

extensive study included a review of alternatives to mitigate the effects of a postulated tornado or HELB in the Turbine Building. The study has concluded that enhancing the capabilities of the Standby Shutdown Facility (SSF) to mitigate tornados and HELBs in the turbine building in lieu of installing MSIVs and protecting ADVs will provide an acceptable alternative solution. Therefore, Duke Energy will not install MSIVs or tornado protect the ADVs (Tornado Commitments 11T, 12T, 13T and 16T). Commitments 11T, 12T, 13T and 16T are being withdrawn.

Commitment 32H is also being re-opened to evaluate use of the SSF to mitigate certain HELBs. This evaluation will assist in clarifying the SSF licensing basis for Tornado and HELB mitigation.

The revised strategies and supporting analysis that demonstrate the ability of the SSF to mitigate potential damage in the turbine building following postulated tornados and HELBs will be documented in the supplemented Tornado license amendment request (LAR) and the supplemented HELB LAR. The supplemented Tornado LAR is scheduled to be submitted by December 31, 2018 and the supplemented HELB LAR is scheduled to be submitted by December 31, 2019. Commitments 7T and 24H are being re-opened to track supplementing both LARs.

Commitments associated with tornado mitigation and HELB mitigation will be incorporated into the respective LARs. The scheduled supplement dates are considered appropriate based on current Oconee regulatory priorities and the low safety significance of these submittals. Supplementing the tornado and HELB mitigation LARs will serve as a way to clarify and strengthen the Tornado and HELB licensing basis.

Until the existing LARs are supplemented, Duke Energy will continue to maintain the table of tornado and HELB Commitments and update the NRC staff on any revisions. As described in Attachment 1, many of the original Tornado and HELB commitments have been completed. Additionally, with the revision of the overall strategies to mitigate tornado and HELBs, several original commitments are re-opened. A roadmap is provided in Attachment 1 for the original commitments and the status of each commitment. A revised Tornado and HELB commitment table is provided in Attachment 2.

Inquiries concerning this matter should be directed to Dave Baxter, Regulatory Special Projects, at (864) 873-4460.

Sincerely,

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Thomas D. Ray
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Oconee Nuclear Station

Attachments

Attachment 1	Tornado/High Energy Line Break Commitments Roadmap
Attachment 2	Tornado/High Energy Line Break Commitments

cc:

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ATTACHMENT 1
TORNADO/HIGH ENERGY LINE BREAK COMMITMENTS ROADMAP

(2 pages attached)

ATTACHMENT 1
TORNADO/HIGH ENERGY LINE BREAK COMMITMENTS ROADMAP

PREVIOUSLY COMPLETED COMMITMENTS:

The following commitments are considered complete and were reported as complete in the last tornado/High Energy Line Break (HELB) Mitigation strategy and commitment letter dated September 29, 2015 (Reference 11):

1T - 6T, 9T, 14T, 20T - 30T, 1H - 23H, 28H - 29H, 33H, 37H, 39H, 42H - 43H, and 45H.

These commitments are removed from the Tornado/HELB commitment tables in Attachment 2.

COMPLETED COMMITMENTS SINCE SEPTEMBER 29, 2015:

The following commitments for modifications have been completed since the last tornado/HELB mitigation strategy and commitment letter submitted September 29, 2015 (Reference 11):

Commitment 8T - Protected Service Water/High Pressure Injection Modifications.

Commitment 15T - Analyze the double column set which support each unit's Main Steam lines outside of the containment building, and provide modifications, as necessary, to meet tornado criteria.

Commitment 17T - Improve protection of the Standby Shutdown Facility (SSF) double doors (large 8' X 12' doors located on the south side of the SSF structure) per UFSAR SSF tornado criteria.

Commitments 34H and 40H - The Unit 2 and Unit 3 inlet isolation valves to the Letdown Coolers on the Letdown Line (HP-1 & HP-2) will be upgraded to permit their use following a postulated HELB on the Letdown Line at Containment Penetration No. 6.

These commitments are considered closed and removed from the Tornado/HELB commitment tables in Attachment 2.

COMMITTMENTS RE-OPENED:

The following commitments are being re-opened due to a revision in the tornado/HELB licensing strategy that requires the license amendment requests (LARs) be supplemented:

Commitment 7T - Tornado Mitigation Strategy License Amendment Request.

The Tornado Mitigation Strategy LAR was submitted to the NRC on June 26, 2008. However, Duke Energy is revising commitments that were initially credited by this LAR which will change the Tornado Mitigation Strategy. The LAR will be supplemented to reflect incorporation of the requests for additional information that have occurred to date, the revised strategy, and additional enhancements that will occur as a result of revising commitments. This commitment will be re-opened to track supplementing the LAR by December 31, 2018.

Commitments 24H - HELB LB and Mitigation Strategy LARs.

The HELB Mitigation Strategy LARs were repackaged into one LAR for all three Oconee Units at the request of the NRC project manager and submitted to the NRC on December 16, 2011 (Reference 8). However, Duke Energy is revising commitments that

were initially credited by this LAR which will change the HELB Mitigation Strategy. The LAR will be supplemented to reflect incorporation of the requests for additional information that have occurred to date, the revised strategy, and additional enhancements that will occur as a result of revising commitments. Commitment 24H will be re-opened to track supplementing the LAR for all three units by December 31, 2019. Commitment 24H will incorporate Commitments 22H and 23H, which were unit specific and will remain closed.

Commitment 32H - Evaluate the ability of the SSF to perform its safety functions with a compromised main steam pressure boundary due to potential breaks in the main steam system and other HELBs.

The Tornado/HELB licensing strategy has changed requiring that the ability of the SSF to perform its safety functions with a compromised main steam pressure boundary be re-evaluated. Commitment 32H will be re-opened and will track this effort to closure. This date will be tied to supplementing the HELB LAR by December 31, 2019.

COMMITTMENTS TO BE CLOSED:

Duke Energy controls commitments through administrative procedure, AD-LS-ALL-0010, "Commitment Management." The procedure contains guidance for commitment initiation, tracking, change and formal or informal communications with the NRC. Therefore, the following commitments are being removed from the commitment tables:

Commitments 10T and 25H - Verbally notify in advance the Deputy Director, Division of Reactor Licensing of the NRC, followed by a written communication, of significant changes in the scope and/or completion dates of the commitments. The notification will include the reason for the changes and the modified commitments and/or schedule.

The following commitments to install Main Steam Isolation Valves and protect the Atmospheric Dump Valves are being withdrawn and closed as discussed in the cover letter:

Commitments 11T, 12T and 13T - Installation of Main Steam Isolation Valves and Commitment 16T - Physically protect the Atmospheric Dump Valve's (ADVs) function per RG 1.76, Rev. 1.

COMMITMENTS TO BE REVISED:

Commitment 31H - CCW Discharge Stop Gates

Commitment 31H is being revised to allow for flexibility and an optimal solution to be reached to solve this problem. It will state the following:

Provide a solution to terminate reverse flow through HELB damaged LPSW and CCW piping to recover from Turbine Building Flooding caused by a postulated HELB therein.

ATTACHMENT 2
TORNADO/HIGH ENERGY LINE BREAK COMMITMENTS

(3 pages attached)

ATTACHMENT 2
TORNADO COMMITMENTS

No.	Tornado Commitment	Due Date	Complete (Y/N)
7T	Submit supplemented Tornado Mitigation Strategy LAR	12-31-2018	N
18T	Revise and clarify the tornado LB description as documented in UFSAR section 3.2.2; add the TORMIS methodology results to UFSAR section 3.5.1.3, and correct inaccurate tornado design information for the Auxiliary Building Cable and Electrical Equipment Rooms as described in UFSAR Table 3-23.	Six months after issuance of the SER.	N
19T	The SSF BASES for TS 3.10.1 will be clarified to address degradation of passive civil features as not applying to operability under Technical Specifications Limiting Condition of Operation (TS LCO) 3.10.1, "Standby Shutdown Facility," but rather as UFSAR commitments outside of the ONS TS.	Six months after issuance of the SER.	N

ATTACHMENT 2
HIGH ENERGY LINE BREAK COMMITMENTS

No.	HELB Commitment	Due Date	Complete (Y/N)
24H	Submit supplemental HELB LB and Mitigation Strategy LAR.	12-31-2019	N
26H	The inlet isolation valves to the Unit 1 Letdown Coolers on the letdown line (1HP-1 & 1HP-2) will be upgraded to permit their use following a postulated HELB on the letdown line at Containment Penetration No. 6. With these valves upgraded, either could then be closed if either of the inboard containment isolation valves (1HP-3 & 1HP-4) fails to close in order to mitigate the postulated HELB on the letdown line.	Two refueling outages after issuance of SER.	N
27H	The Unit 1 HVAC ducting near the Control Complex is being upgraded with duct registers or cover plates to prevent the potential propagation of the HELB generated environment in the East Penetration Room to the control complex.	Two refueling outages after issuance of SER.	N
30H	Turbine Building structural support columns D-24 and D-26 will be modified by adding a brace to the column. This brace is necessary to prevent potential failure of the column, when subjected to a pipe whip load. This upgrade prevents the loss of the routing to get temporary cabling to the LPI and LPSW pump motors.	Two refueling outages after issuance of SER.	N
31H	Provide a solution to terminate reverse flow through HELB damaged LPSW and CCW piping to recover from Turbine Building Flooding caused by a postulated HELB therein.	Two refueling outages after issuance of SER.	N
32H	Evaluate the ability of the SSF to perform its safety functions with a compromised main steam pressure boundary due to potential breaks in the main steam system and other HELBs.	12-31-2019	N
35H	The Unit 2 HVAC ducting near the control complex is being upgraded with duct registers or cover plates to prevent the potential propagation of the HELB generated environment in the EPR to the control complex.	Two refueling outages after issuance of SER.	N

No.	HELB Commitment	Due Date	Complete (Y/N)
36H	The valves (2HP-103 & 2HP-107) on the individual suction lines to the Unit 2 "A" & "B" High Pressure Injection (HPI) pumps are being upgraded to allow the remote operation (operated outside the HPI pump room) of these valves. The remote operation of these valves allow the isolation of postulated HELBs on the discharge side of the HPI pumps without compromising the availability of the other HPI Pumps and the need to maintain the Letdown Storage Tank aligned to the HPI Pump suction piping. For a single active failure of either valve 2HP-103 or 2HP-107 to close, a redundant, remotely operated valve is provided on each of the HPI Pumps "A" and "B" to assure HELB mitigation.	Two refueling outages after issuance of SER.	N
38H	Turbine Building structural support Column D-29 & D-31 will be modified by adding a brace to the column. This brace is necessary to prevent potential failure of the column, when subjected to a pipe whip load.	Two refueling outages after issuance of SER.	N
41H	The Unit 3 Auxiliary Building HVAC ducting near the Unit 3 Control Complex is being upgraded with duct registers or cover plates to prevent the potential propagation of the HELB generated environment in the East Penetration Room to the Unit 3 Control Complex.	Two refueling outages after issuance of SER.	N
44H	Turbine Building structural support Columns M-20 (Unit 1), M-35 (Unit 2), D-43 & D-45 (Unit 3), M-49 (Unit 3), and L-47 (Unit 3) will be modified by adding a brace or reinforcement to each column. These modifications are necessary to prevent potential failure of the column(s), when subjected to a pipe whip load.	Two refueling outages after issuance of SER.	N