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

Subject: Tornado Regulatory Commitments 15T and 17T - Due Date Revision

References:

1. Duke Energy Letter, *"Tornado/HELB Mitigation Strategies and Regulatory Commitments,"* dated November 30, 2006.
2. Duke Energy Letter, *"Revision to Tornado/HELB Mitigation Strategies and Regulatory Commitment 17T,"* dated December 19, 2014.

Duke Energy's initial commitments related to tornado mitigation strategies are documented in a November 30, 2006 submittal (Ref. 1). This commitment list was most recently updated in a Duke Energy submittal dated December 19, 2014 (Ref. 2). As contained in that December 19, 2014 letter, Duke Energy was to provide a completion date for tornado commitment 17T. Commitment 17T is to improve the tornado protection of the Standby Shutdown Facility (SSF) double doors.

The SSF Double Door is an 8 foot wide by 12-foot high opening in the SSF building at the south end that is surrounded by a protective concrete enclosure on all sides except toward the east. In order to provide enhanced protection of the double doors, a robust steel enclosure structure will be built, consisting of a passive design founded on an independent foundation system located immediately adjacent to the SSF Patio/Flood wall. This modification will be completed by March 31, 2017, and will improve the station's ability to withstand a damaging tornado missile. The attachment to this submittal contains the complete Tornado and High Energy Line Break (HELB) commitment list and status.

In addition, tornado commitment 15T, which analyzes the double column set outside the containment building supporting each unit's Main Steam lines and provides modifications to meet tornado protection criteria, was inadvertently marked as complete on the list. Specifically, although the analyses had been completed, the associated modifications remain to be implemented. Consequently, Duke Energy has revised the list to show the commitment open with a due date of December 7, 2017.

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In accordance with tornado commitment 10T, Duke Energy has verbally notified James M. Trapp, Deputy Director, Division of Operating Reactor Licensing, of this commitment change via telephone on September 29, 2015.

If you have any questions in regard to this letter, please contact Stephen C. Newman, Oconee Nuclear Station, Regulatory Affairs Group at (864) 873-4388.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Batson", with a long horizontal flourish extending to the right.

Scott Batson
Vice President,
Oconee Nuclear Station

attachment

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cc (w/attachment):

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Attachment

Tornado and HELB Commitment List

No.	Tornado Commitments	Due Date	Complete (Y/N)
1T	U3 Control Room North Wall Modification.	-	Y
2T	SSF Diesel Fuel Vent Modification.	-	Y
3T	SSF and CT-5 Trenches Intersection Modification SSF Trench at north end of SSF (TORMIS).	-	Y
4T	Borated Water Storage Tank Modifications.	-	Y
5T	West Penetration Room (WPR) and Cask Decontamination Tank Room (CDTR) Wall Modifications.	-	Y
6T	Fiber Reinforced Polymer (FRP) LAR for strengthening selected masonry walls for tornado wind and ΔP.	-	Y
7T	Tornado Mitigation Strategy LAR.	-	Y
8T	PSW/HPI modifications.	2-4-2016	N
9T	Missile inventory program developed.		Y
10T	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.	2022	N
11T 12T 13T	Installation of MSIVs.	U1: 2020 U2: 2021 U3: 2022	N
14T	Fiber Reinforced Polymer (FRP) LAR for strengthening selected "brick" masonry walls for tornado wind and ΔP.	-	Y
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	12-7-2017	N
16T	Physically protect the Atmospheric Dump Valve's (ADV's) function per RG 1.76, Rev. 1.	U1: 2020 U2: 2021 U3: 2022	N
17T	Improve protection of the Standby Shutdown Facility (SSF) double doors (large 8'x12' doors located on the south side of the SSF structure) per UFSAR SSF tornado criteria.	3-31-2017	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.	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 for Operation (TS LCO) 3.10.1, "Standby Shutdown Facility," but rather as UFSAR commitments outside of the ONS TS.	After issuance of the SER.	N

No.	Tornado Commitments	Due Date	Complete (Y/N)
20T ¹	Duke Energy will perform qualification testing and reporting in accordance with ICC AC125 [Reference 5 of Enclosure 2] for the selected FRP System.	-	Y
21T	<p>Duke Energy will perform and document a technical evaluation of the FRP system (fibers and polymeric resin) in accordance with Duke Energy's Supply Chain Directive SCD230 [Reference 7 of Enclosure 2] to demonstrate that:</p> <ol style="list-style-type: none"> 1. The item qualifies as a commercial grade item. 2. The supplier is capable of supplying a quality product. 3. The quality of the item can be reasonably assured. 	-	Y
22T	Duke Energy will utilize technical procedures to control testing of concrete substrate and installation and inspection of the FRP system in accordance with ICC AC125 [Reference 5 of Enclosure 2], ACI 440.2R-02 [Reference 6 of Enclosure 2], and ICC AC178 [Reference 8 of Enclosure 2].	-	Y
23T	<p>Duke Energy will perform long-term inspection of the FRP system as described in UFSAR Section 18.3.13 and EDM-410, and in accordance with ICC AC125 [Reference 5 of Enclosure 2], ACI 440.2R-02 [Reference 6 of Enclosure 2], and ICC AC178 [Reference 8 of Enclosure 2], on a nominal 5 year interval. This inspection frequency may be reduced to a nominal 10 year interval with appropriate justification based on the structure, environment, and previous long-term inspection results. Inspections of the installed FRP system will include:</p> <ul style="list-style-type: none"> • visual inspections of test walls and selected portions of WPR walls for changes in color, debonding, peeling, blistering, cracking, crazing, deflections and other anomalies; and, • tension adhesion testing of cored samples taken from test walls using methods specified in ASTM D4541 [Reference 9 of Enclosure 2] or ACI 530R-02 [Reference 16 of Enclosure 2]. 	-	Y
24T ²	Duke Energy will perform qualification testing and reporting in accordance with ICC AC125 [Approved 10/2006, Effective 1/1/2007] for the selected FRP System.	-	Y
25T	<p>Duke Energy will perform and document a technical evaluation of the FRP system (fibers and polymeric resin) in accordance with Duke Energy's Supply Chain Directive SCD230 [Reference 7 of Enclosure 2] to demonstrate that:</p> <ul style="list-style-type: none"> • The item qualifies as a commercial grade item. • The supplier is capable of supplying a quality product. • The quality of the item can be reasonably assured. 	-	Y
26T	Duke Energy will utilize technical procedures to control testing of concrete substrate and installation and inspection of the FRP system in accordance with ICC AC125 [Approved 10/2006, Effective 1/1/2007], ACI 440.2R-02 [Effective 7/1/2002], and ICC AC178 [Approved 6/2003, Effective 7/1/2003, editorially revised 6/2008].	-	Y

¹ Tornado commitments 20-23 originate from the FRP LAR dated 6-1-2006 (NRC SER dated 2-21-2008).

² Tornado commitments 20-26 are addressed in the NRC's FRP SER for brick masonry dated 6-27-2011.

No.	Tornado Commitments	Due Date	Complete (Y/N)
27T	<p>Duke Energy will implement a long-term inspection program of the FRP system that will be described in UFSAR Section 18.3.13 and EDM-410, meet the requirements of ICC AC125 [Approved 10/2006, Effective 1/1/2007], ACI 440.2R-02 [Effective 7/1/2002], and ICC AC178 [Approved 6/2003, Effective 7/1/2003, editorially revised 6/2008], on the following schedule: at each unit's outage cycle for the first six years from 2012 through 2017, then, if justified based on no observed FRP degradation, transition to every-other outage cycle for the next four years from 2018 through 2021, then, if justified based on continued no observed FRP degradation, transition to every third outage cycle thereafter from 2022 until end of license in July 2034. Inspections of the installed FRP system will include:</p> <ul style="list-style-type: none"> • visual inspections of test walls and portions (both random and controlled locations) of WPR in-service walls for changes in color, debonding, peeling, blistering, cracking, crazing, deflections and other anomalies; • tension adhesion testing of cored samples taken from designated test walls using methods specified in ASTM D7234; and, • visual inspections of mortar joints located along the bottom edge of FRP-strengthened masonry walls. <p>For each inspection interval, the portions of FRP-strengthened masonry walls to be inspected will be chosen in accordance with a sampling plan developed from guidance provided by a) Draft Regulatory Guide DG-1070, "Sampling Plans Used for Dedicating Simple Metallic Commercial Grade Items for use in Nuclear Power Plants", and b) EPRI NP-7218 document "Guidelines for the Utilization of Sampling Plans for Commercial Grade Item Acceptance" (NCIG-19), as implemented at ONS by Supply Chain Directive SCD-290 [(new) Reference 21 of Enclosure 2].</p> <p>Note: This response replaces the five (5) year inspection commitment made in FRP LAR (No. 2009-05) dated June 29, 2009, and will apply to the FRP application for both block and brick.</p>	-	Y
28T	<p>Duke Energy will install mechanical shear restraints along the brick masonry wall perimeter (top and sides only) and block masonry wall perimeter (top only) to remediate potentially limiting conditions of construction.</p>	-	Y
29T	<p>Duke Energy will incorporate the FRP testing and inspection program into Oconee Nuclear Station's Aging Management Program.</p>	-	Y
30T	<p>As discussed with the Staff, Fyfe Company, LLC, the manufacturer of the FRP products, will provide Duke Energy with a Certificate of Compliance certifying that both the FRP product and its installation meet all applicable requirements.</p>	-	Y

No.	HELB Commitments	Due Date	Complete (Y/N)
1H	Implement an inspection program for the Aux Bldg MS and FW girth and accessible attachment welds.	-	Y
2H	Implement an inspection program for other Aux. Bldg high energy piping critical crack locations at welds.	-	Y
3H	Initial ASME Section XI ISI interval UT of the Aux. Bldg MS and FW girth welds and accessible attachment welds.	-	Y
4H	Initial ASME Section XI ISI interval UT of other Aux. Bldg high energy piping critical crack locations at welds.	-	Y
5H	Implement an inspection program for accessible piping base metal downstream of the FW isolation valves located in the EPR.	-	Y
6H	Implement an inspection program for accessible piping base metal of other Aux. Bldg high energy piping critical crack locations not at welds.	-	Y
7H	Initial ASME Section XI ISI interval UT inspection of piping base metal downstream of FW isolation valves located in the EPR.	-	Y
8H	Initial ASME Section XI ISI interval UT inspection for accessible piping base metal of other Aux. Bldg high energy piping critical crack locations not at welds.	-	Y
9H	Implement an inspection program of accessible attachment welds at the terminal ends inside the FW guard pipe.	-	Y
10H	Initial visual inspections of accessible attachment welds at the terminal ends inside the FW guard pipe.	-	Y
11H	Inspect and repair the Unit 2 East Penetration Room electrical penetration termination enclosures to their correct configuration. Missing and/or damaged covers, gaskets, and fasteners will be repaired or replaced.	-	Y
12H	Inspect and repair the Unit 1 East Penetration Room electrical penetration termination enclosures to their correct configuration. Missing and/or damaged covers, gaskets, and fasteners will be repaired or replaced.	-	Y
13H	Inspect and repair the Unit 3 East Penetration Room electrical penetration termination enclosures to their correct configuration. Missing and/or damaged covers, gaskets, and fasteners will be repaired or replaced.	-	Y
14H	Create an inspection plan to select a portion of Units 1, 2 and 3 enclosures to open and inspect for signs of internal debris and corrosion.	-	Y
15H	Revise station procedures and processes as needed to ensure penetration termination enclosures are maintained in their correct configurations.	-	Y
16H	Complete the design and installation of flood outlet devices for the Unit 1 East Penetration Room.	-	Y

No.	HELB Commitments	Due Date	Complete (Y/N)
17H	Complete the design and installation of flood outlet devices for the Unit 2 East Penetration Room.	-	Y
18H	Complete the design and installation of flood outlet devices for the Unit 3 East Penetration Room.	-	Y
19H	Complete the design and installation of flood impoundment and exterior door flood improvement features for the Unit 1 East Penetration Room	-	Y
20H	Complete the design and installation of flood impoundment and exterior door flood improvement features for the Unit 2 East Penetration Room.	-	Y
21H	Complete the design and installation of flood impoundment and exterior door flood improvement features for the Unit 3 East Penetration Room.	-	Y
22H 23H 24H	HELB LB and Mitigation Strategy LARs.	-	Y
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.	2022	N
26H	The inlet isolation valves to the 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.	To be provided to the Staff upon issuance of the SER.	N
27H	The 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.	To be provided to the Staff upon issuance of the SER.	N
28H	The valves (1HP-103 & 1HP-107) on the individual suction lines to the "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 for maintaining the Letdown Storage Tank aligned to the HPI Pump suction piping. For a single active failure of either valve 1HP-103 or 1HP-107 to close, a redundant, remotely operated valve is provided on each of the HPI Pumps "A" and "B" to assure HELB mitigation.	-	Y

No.	HELB Commitments	Due Date	Complete (Y/N)
29H	The position of several Plant Heating System isolation valves is being changed from "OPEN" to "CLOSED." This position change will eliminate the need to postulate Plant Heating System HELBs in the East Penetration Room and West Penetration Room, because these piping lines will be isolated during normal plant conditions of the station.	-	Y
30H	Turbine Building structural support column 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 Low Pressure Injection and Low Pressure Service Water pump motors.	To be provided to the Staff upon issuance of the SER.	N
31H	The existing Condenser Circulating Water (CCW) discharge stop gates will be replaced and four (4) new stop gates will be obtained. These stop gates will be used to terminate all reverse flow through HELB damaged Low Pressure Service Water and CCW piping. This modification is required, in order to recover from a Turbine Building flood event caused by a postulated HELB therein.	To be provided to the Staff upon issuance of the SER.	N
32H	Evaluate the ability of the Standby Shutdown Facility to perform its safety functions with a compromised main steam pressure boundary due to potential breaks in the main steam system and other HELBs.	-	Y
33H	Weep holes will be installed in the bottom of the outside-containment junction box enclosures for the Viking Electrical Penetrations. Also, the electrical penetration inspection procedure is being amended to inspect the weep holes for blockage	-	Y
34H	The inlet isolation valves to the Letdown Coolers on the Letdown Line (2HP-1 & 2HP-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 (2HP-3 & 2HP-4) fails to close in order to mitigate the postulated HELB on the Letdown line.	To be provided to the Staff upon issuance of the SER.	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 East Penetration Room to the Control Complex.	To be provided to the Staff upon issuance of the SER.	N

No.	HELB Commitments	Due Date	Complete (Y/N)
36H	The valves (2HP-103 & 2HP-107) on the individual suction lines to the "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 for maintain the Letdown Storage Tank aligned to the HPI Pump suction piping. For a single active failure of either valves 2HP-103 or 2HP-107 to close, a redundant, remotely operated valves is provided on each of the HPI Pumps "A" and "B" to assure HELB mitigation.	To be provided to the Staff upon issuance of the SER.	N
37H	The position of several Unit 2 Plant Heating System isolation valves is being changed from "OPEN" to "CLOSED." This position change will eliminate the need to postulate Plant Heating System HELBs in the East Penetration Room and West Penetration Room, because these piping lines will be isolated during normal plant conditions of the station.	-	Y
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.	To be provided to the Staff upon issuance of the SER.	N
39H	Weep holes will be installed in the bottom of the Unit 2 outside-containment junction box enclosures for the Viking Electrical Penetrations. Also, the electrical penetration inspection procedure is being amended to inspect the weep holes for blockage.	-	Y
40H	The inlet isolation valves to the Letdown Coolers on the Letdown Line (3HP-1 and 3HP-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 (3HP-3 and 3HP-4) fails to close in order to mitigate the postulated HELB on the Letdown Line.	To be provided to the Staff upon issuance of the 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.	To be provided to the Staff upon issuance of the SER.	N

No.	HELB Commitments	Due Date	Complete (Y/N)
42H	The valves (3HP-103 and 3HP-107) on the individual suction lines to the "A" and "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 for maintaining the Letdown Storage Tank aligned to the HPI Pump suction piping. For a single active failure of either valve 3HP-103 or 3HP-107 to close, a redundant, remotely operated valve is provided on each of the HPI Pumps "A" and "B" to assure HELB mitigation.	-	Y
43H	The position of the Unit 3 Plant Heating System isolation valve 3AS-182 being changed from "OPEN" to "CLOSED." This position change will eliminate the need to postulate Plant Heating System HELBs in the East Penetration Room and West Penetration Room, because these piping lines will be isolated during Normal Plant Conditions of the station.	-	Y
44H	Turbine Building structural support columns M-20 (Unit 1), M-35 (Unit 2), D-43 and 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.	To be provided to the Staff upon issuance of the SER.	N
45H	Weep holes will be installed in the bottom of the Unit 3 outside-containment junction box enclosures for the Viking Electrical Penetrations. Also, the electrical penetration inspection procedure is being amended to inspect the weep holes for blockage.	-	Y