DUKE ENERGY.

Scott L. Batson
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP | 7800 Rochester Hwy
Seneca, SC 29672

o: 864.873.3274
f: 864.873. 4208
Scott.Batson@duke-energy.com

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10 CFR 50.4

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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: Third Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

References:

1. Nuclear Regulatory Commission (NRC) Order Number EA-12-049, Order Modifying Licensees With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012, (Accession No. ML12054A735).
2. Oconee Nuclear Station's Overall Integrated Plan in Response to March 12, 2012, Commission Order to Modify Licenses With Regard To Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order EA-12-049), dated February 28, 2013.
3. Oconee Nuclear Station's Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-basis External Events (Order Number EA-12-049), dated August 29, 2013.

Ladies and Gentlemen,

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 (Reference 1) to direct Duke Energy to develop guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event. The Order required that, after NRC's issued its final Interim Staff Guidance (ISG), Duke Energy would submit an Overall Integrated Plan (OIP), followed by status reports at six-month intervals.

Duke Energy has submitted the OIP (Reference 2) and two six-month reports (Reference 3) for Oconee Nuclear Station. The purpose of this letter is to provide the third six-month status report. The enclosure provides updates related to OIP changes, if any, for the six-month period following the second six-month reporting period.

This letter contains no new Regulatory Commitments and no revision to existing Regulatory Commitments.

Should you have any questions regarding this submittal, please contact David Haile with Oconee Regulatory Affairs, at (864) 873-4742.

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NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 27, 2014.

Sincerely,

Scott L. Batson
Vice President
Oconee Nuclear Station

Enclosure:

Oconee Nuclear Station, Third Six-Month Status Report for Order EA-12-049 (FLEX), Units 1, 2, and 3.

cc:
Mr. Victor McCree, Regional Administrator
U.S. Nuclear Regulatory Commission – Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

Mr. Daniel Dorman, (Acting) Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
One White Flint North,
11555 Rockville Pike, M/S 13-H16M
Rockville, MD 20852-2738

Mr. James R. Hall, Project Manager (ONS)
(by electronic mail only)
U.S. Nuclear Regulatory Commission
11555 Rockville Pike, M/S O-8G9A
Rockville, MD 20852-2746

Mr. Eddy Crowe
NRC Senior Resident Inspector
Oconee Nuclear Station

ENCLOSURE

[9 pages including cover]

Oconee Nuclear Station (ONS)
Third Six Month Status Report for Order EA-12-049 (FLEX),
Units 1, 2, and 3

1) Introduction

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 (Reference E1) to Duke Energy which required the development of guidance and strategies related to mitigation of a beyond-design-basis external event. The Order required each plant to issue an Overall Integrated Plan (OIP) pursuant to the NRC's Interim Staff Guidance (ISG) (Reference E2) which endorsed, with clarifications and exceptions, the industry guidance document, NEI 12-06 (Reference E3). The Order also required that update reports on progress or change to the OIP be submitted every six months.

An Overall Integrated Plan (Reference E4) was developed based on the diverse and flexible strategies (FLEX) from NEI 12-06 and was submitted to the NRC on February 28, 2013. The first six-month update was provided to the NRC on August 29, 2013 (Reference E5). The second six-month update was provided to the NRC on February 28, 2014 (Reference E19). This report constitutes the third six-month update, and reports milestone accomplishments, changes to the compliance method or schedule, or any need for relief/relaxation, and the basis, which occurred during the period from January 29, 2014 to July 28, 2014 (hereafter referred to as "the update period").

2) Milestone Accomplishments (during the update period)

The following milestone(s) were completed:

1. The second six month status report was submitted February 28, 2014.
2. Based on current strategies, the N-1 Outage Walkdowns for Oconee Unit 3 were deemed as not necessary. Thus, that milestone is considered to have been completed.

3) Milestone Schedule Status

The following represents the milestone status at the end of the update period. The table reflects updates to the milestone table in Attachment 2 of the Overall Integrated Plan. It provides the status of each activity, and whether the target completion date has changed.

Note: The dates are planning dates, and are subject to change as design and implementation details are developed. Revised target completion dates are not expected to impact the implementation date(s) of the Order.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Licensing Actions:			
Submit Overall Integrated Plan	Feb 2013	Complete	Date Not Revised
Submit 6 Month Update 1	Aug 2013	Complete	Date Not Revised
Submit 6 Month Update 2	Feb 2014	Complete	Date Not Revised
Submit 6 Month Update 3	Aug 2014	This Submittal	Date Not Revised
Submit 6 Month Update 4	Feb 2015	Not Started	Date Not Revised
Submit 6 Month Update 5	Aug 2015	Not Started	Date Not Revised
Submit 6 Month Update 6	Feb 2016	Not Started	Date Not Revised
Submit 6 Month Update 7	Aug 2016	Not Started	Date Not Revised
Modifications:			
Develop Modifications	Aug 2016	Started	Date Not Revised

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Procurement:			
Identify Significant Material/Equipment	Sept 2013	Complete	Date Not Revised
Material/Equipment Procurement/Delivery	May 2015	Started	Date Not Revised
Implementation Walkdowns:			
Conduct N-1 Outage Walkdowns – U1	Nov 2014	Not Started	Date Not Revised
Conduct N-1 Outage Walkdowns – U2	Nov 2013	Complete	Date Not Revised
Conduct N-1 Outage Walkdowns – U3	May 2014	Complete	Date Not Revised
Conduct Implementation Walkdowns – U1	Oct 2016	Not Started	Date Not Revised
Conduct Implementation Walkdowns – U2	Oct 2015	Not Started	Date Not Revised
Conduct Implementation Walkdowns – U3	April 2016	Not Started	Date Not Revised
Staffing:			
Conduct Staffing Analysis	July 2016	Started	Date Not Revised
Training:			
Develop Training program – U1	July 2016	Not Started	Date Not Revised
Develop Training program – U2	July 2015	Not Started	Date Not Revised
Develop Training program – U3	Jan 2016	Not Started	Date Not Revised
Implement Training – U1	Oct 2016	Not Started	Date Not Revised
Implement Training – U2	Oct 2015	Not Started	Date Not Revised
Implement Training – U3	April 2016	Not Started	Date Not Revised
Procedures:			
Develop FLEX Supporting Guidelines (FSGs)	June 2016	Started	Date Not Revised
Develop Maintenance Procedures	June 2016	Not Started	Date Not Revised
Regional Response Centers:			
Develop Strategies/Playbook with RRC	April 2015	Started	Date Not Revised
Install Offsite Delivery Pad	March 2015	Not Started	Date Not Revised
Implementation:			
Implement Modifications – U1	Nov 2016	Started	Date Not Revised
Implement Modifications – U2	Nov 2015	Started	Date Not Revised
Implement Modifications – U3	May 2016	Started	Date Not Revised

4) Changes to Compliance Method

No changes to compliance methods that are alternatives to NEI 12-06 were made.

5) Need for Relief and Basis for the Relief

Duke Energy Carolinas, LLC (Duke Energy), Oconee Nuclear Station, Units 1, 2, and 3 anticipates meeting the Order implementation date and no relief is required at this time.

6) Open Items from Overall Integrated Plan and Draft Safety Evaluation

The following tables provide a summary status of the Open Items. The table under Section 6.a. provides the open items identified in the original OIP submitted on February 28, 2013. The table under Section 6.b. provides a list of open items that were added after February 28, 2013 and in the first and second six-month status reports submitted by Reference E5 & Reference E19 respectively. The table under Section 6.c. provides a list of open items related to the Interim Staff Evaluation (ISE) (Reference E20). Section 6.d. addresses any generic concerns.

a) Open Items Documented in the Overall Integrated Plan

Overall Integrated Plan Open Items	Status
1. Revised PMP HMR51 Analysis	In Progress: 2.1 Flood Re-analysis Completed - Pending NRC Approval
2. Max flood level on site 'after modifications'	In Progress: 2.1 Flood Re-analysis Completed - Pending NRC Approval
3. Deployment Path Program	Not Started
4. Procedures and FSGs	Started
5. FLEX Equipment Programmatic Control	Started
6. Personnel Training	Not Started
7. FLEX Basis Document	Started
8. Configuration Control	Not Started
9. RRC	Started
10. Cooldown Analysis	Started
11. ADV Survivability and Accessibility	Started
12. Load Shed Analysis	Not Started
13. Hydraulic Analysis for Pump Flow (Intake Canal to SGs)	Completed. Analysis results are acceptable. (Reference E23)
14. Fuel Oil Consumption	Started
15. Hydraulic Analysis for Pump Flow (CTP-1 to SGs)	Completed. Analysis results are acceptable. (Reference E23)
16. Water in embedded CCW lines & Hydraulic Analysis for Pumping Configuration	Started
17. PSW Modification (EC 91877)	Started
18. Alternate FLEX Connections Modification (SG Makeup)	Completed. (Reference E24)
19. Breaking Siphons in Embedded CCW Piping	Started
20. Instrumentation Repower (Alternate Repower Strategy)	Started
21. FLEX Equipment Storage	Started
22. Portable Power Distribution (Primary Repower Strategy)	Started
23. Long term SG and SFP Makeup	Started

Overall Integrated Plan Open Items	Status
24. Hydrogen Buildup Analysis	Started
25. BWST Tap Analysis and Modification (RCS Makeup)	Started
26. Containment Analysis	Started
27. Hydraulic Analysis for Pump Flow (CTP-1 to SFPs & Intake Canal to SFPs)	Not Started
28. Robustness of SFP Refill Lines	Completed: Validated SFP Refill Lines are installed as QA-1 and are seismically robust. (References E6 & E7)
29. Lighting Evaluation	Not Started
30. Communication Assessment	Started
31. NEI 12-01 Staffing Study	Started
32. HVAC Analysis	Started

b) Open Items added after February 28th, 2013

Open Items	Status
33. Evaluate changes to the RCSMU FLEX Strategy recommended by independent audit to eliminate the SSF RCMUP repower strategy and implement train specific diesel powered pump strategies (primary and alternate).	Started
34. Evaluate changing the alternate repower FLEX strategy to enhance deployment times by utilizing a small 120 VAC portable diesel generator (approximately 6000 watts) deployed on the Turbine Building deck to provide 120 VAC feeds to connections in the control room and cable room to repower the key instrumentation parameters.	Started
35. Validate the 10' assumed inundation level discussed in the OIP [Assumption #8] is still conservative with respect to the Defense in Depth Modifications analyzed in OIP reference 48 (which used a slightly modified model run) and the credited CAL model run in OIP reference 14.	Completed: CAP (Reference E8)
36. Perform raw water fouling analysis for core cooling and heat removal.	Started
37. Evaluate freeze protection requirements in areas of the plant that contain equipment used in FLEX strategies.	Not Started
38. Evaluate and establish a technical basis for use of non-safety related, installed equipment credited for mitigating an ELAP event.	Started
39. FLEX Strategy for Shutdown Modes: Determine what mods, procedures, equipment, etc. is needed to support a Shutdown Modes FLEX Strategy.	Started

c) Interim Staff Evaluation (ISE)

Open Items	Status
1. Provide a description and justification for the specific evaluation model(s) used in the ELAP analyses for Oconee (ISE Open Item # 3.2.1.1.A).	Not Started
2. The licensee should either (1) develop a successful mitigating strategy that does not rely on repowering the SSF RCMU pumps following recession of floodwaters or (2) provide adequate justification that the SSF RCMU pumps can reliably be repowered following recession of floodwaters (ISE Open Item # 3.2.1.6.A).	Not Started
3. Provide adequate basis that nitrogen from the core flood tanks will not be injected into the reactor coolant system (ISE Open Item # 3.2.1.6.B).	Not Started
4. When further analyses are completed, the licensee should provide additional information that either supports a conclusion that pressurizer relief or safety valves do not lift during the ELAP event or that lifting of the valve(s), if it occurs, is acceptable (ISE Open Item # 3.2.1.6.C).	Not Started
5. Provide additional information demonstrating successful mitigation of an ELAP event involving an uncontrolled cooldown resulting from consequential damage to the main steam system due to the severe natural hazard that initiates the ELAP event (ISE Open Item # 3.2.1.6.D).	Not Started
6. Demonstrate that Oconee's approach for modeling boric acid mixing is consistent with a generically acceptable methodology or develop a plant-specific technical basis to support the modeling assumptions for boric acid mixing in the ELAP analysis for Oconee (ISE Open Item # 3.2.1.8.B).	Not Started

d) Generic Concerns

The following summarizes ONS's review of six (6) generic issues:

1. **Electric Power Research Institute (EPRI) Report 3002001785, *Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications* and NRC endorsement (Reference E9 & Reference E18).**
   - The Oconee mitigating strategy is evaluated using RELAP5 and RETRAN for the NSSS response, and FATHOMS and GOTHIC for the containment response.

2. **Electric Power Research Institute (EPRI) Report 3002000623, *Nuclear Maintenance Applications Center: Preventive Maintenance Basis for FLEX Equipment* and NRC endorsement (Reference E10 & Reference E11).**
   - ONS intends to follow EPRI Report 30002000623 in the development of maintenance and testing programs for equipment acquired in response to Mitigation Strategies Order EA-12-049 unless otherwise justified.

3. **Westinghouse report, *Westinghouse Response to NRC Generic Request for Additional Information (RAI) on CENTS Code in Support of the Pressurized Water reactor Owners Group (PWROG)* and NRC endorsement (Reference E12 & Reference E13).**
   - The Oconee mitigating strategy is evaluated using RELAP5 and RETRAN for the NSSS response, and FATHOMS and GOTHIC for the containment response.

4. **Nuclear Energy Institute (NEI) position paper, *Position Paper: Shutdown/Refueling Modes* and NRC endorsement (Reference E14 & Reference E15).**
   - It is Oconee's intent to abide by the NEI position paper for shutdown and refueling modes.

5. **Nuclear Energy Institute (NEI) white paper, *Battery Life Issue* and NRC endorsement (Reference E16 & Reference E17).**
   - For FLEX strategy planning purposes (resource allocation, debris removal, Phase 2 deployment, etc.) for T=0 events , the SSF will be relied on for approximately 24 hours for Phase 1 or one third of the 72 hour SSF design mission time. All instrument readings required to support the ELAP cool down are available in the SSF during this Phase 1 time period. This will allow time to deploy the primary repower strategy to repower the vital battery chargers and associated busses without performing additional load shedding. This approach eliminates resources required to perform additional load shedding activities on all 3 units in the T+2, to T+3 hour timeframe in which many critical activities are underway and eliminates potential unanticipated interactions created by load shed activities. Based on the above, the station vital batteries will be available for approximately 4 hours after loss of power.

6. **Westinghouse position paper, *Westinghouse Response to NRC Generic Request for Additional information (RAI) on Boron Mixing in support of the Pressurizer Water Reactor Owners Group (PWROG)* and NRC endorsement (Reference E21 & Reference E22).**
   - Oconee Nuclear Station will address this generic issue in the ISE Open Item # 3.2.1.8.B.

7) Potential Interim Staff Evaluation Impacts

There are no potential impacts from the Interim Staff Evaluation identified.

8) References

The following references support the updates to the Overall Integrated Plan described in this enclosure:

E1. NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012 (Accession No. ML12054A735).

E2. NRC Interim Staff Guidance JLD-ISG-2012-01, *Compliance with Order EA-2-049, Order Modifying Licenses with Regard to Requirements for Mitigation strategies for Beyond-Design-Basis External Events*, dated August 29, 2012 (Accession No. ML12229A174).

E3. NEI 12-06, Revision 0, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide,* dated August 2012 (Accession No. ML12242A378).

E4. Duke Energy Letter, *Oconee Nuclear Station, Units 1 ,2 and 3 Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28th, 2013.

E5. Duke Energy Letter, *First Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049),* dated August 29, 2013.

E6. Flow Diagram - Unit 1 & 2 Spent Fuel Cooling System (104A-1.1, Revision 53).

E7. Flow Diagram - Unit 3 Spent Fuel Cooling System (104A-3.1, Revision 48).

E8. ONS 2013 Corrective Action Program document - 8140.

E9. EPRI Report 3002001785, *Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications*, dated June 2013 (Accession No. ML13190A201).

E10. EPRI Report 3002000623, Nuclear Maintenance Applications Center: Preventive Maintenance Basis for FLEX Equipment, dated September 2013 (Accession No. ML13276A573).

E11. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Nuclear Energy Institute, Mr. Joseph E. Pollock Vice President Nuclear Operations, dated October 7, 2013 (Accession No. ML13276A224).

E12. Westinghouse Report, Westinghouse Response to NRC Generic Request for Additional Information (RAI) on CENTS Code in Support of the Pressurized Water reactor Owners Group (PWROG), dated September 25, 2013 (Withheld from public disclosure).

E13. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Jack Stringfellow, PWR Owners Group, Program Management - Westinghouse, October 7, 2013 (Accession No. ML13276A555).

E14. NEI Position Paper, Shutdown/Refueling Modes, dated September 18, 2013 (Accession No. ML13273A514).

E15. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Nuclear Energy Institute, Mr. Joseph E. Pollock, Vice President Nuclear Operations, dated September 30, 2013 (Accession No. ML13267A382).

E16. NEI White Paper, Battery Life Issues, dated August 21, 2013 (Accession No. ML13241A186).

E17. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Nuclear Energy Institute, Mr. Joseph E. Pollock, Vice President Nuclear Operations, dated September 16, 2013 (Accession No. ML13241A188).

E18. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Nuclear Energy Institute, Mr. Joseph E. Pollock, Vice President Nuclear Operations, dated October 3, 2013 (Accession No. ML13275A318).

E19. Duke Energy Letter, Second Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2014.

E20. NRC letter from Jeremy S. Bowen, Mitigating Strategies Directorate (NRR), Mr. Scott Batson, Site Vice President Oconee Nuclear Station, dated February 10, 2014 (Accession No. ML 13365A258).

E21. Westinghouse Position Paper, Westinghouse Response to NRC Generic Request for Additional Information (RAI) on Boron Mixing in support of the Pressurizer Water Reactor Owners Group (PWROG), dated August 16, 2013 (Accession No. ML13235A135).

E22. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate (NRR), to Jack Stringfellow, PWR Owners Group, Program Management - Westinghouse, dated January 8, 2014 (Accession No. ML13276A183).

E23. ONS Hydraulic Analysis Calculation - 11232.

E24. ONS Engineering Change Document - 113065.