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ONS-2014-029

February 28, 2014
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Washington, DC 20555

10 CFR 50.4

Duke Energy Carolina, 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: 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)

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 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.

Ladies and Gentlemen,

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 (Reference 1) to Duke Energy which was immediately effective and directed 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, following NRC's issuance of its final Interim Staff Guidance (ISG), Duke Energy would submit an Overall Integrated Plan (OIP), followed by a status report at six-month intervals following the OIP submittal.

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

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

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

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 28, 2014.

Sincerely,



Scott L. Batson
Vice President
Oconee Nuclear Station

Enclosure:

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

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ENCLOSURE

[8 pages including cover]

**Oconee Nuclear Station (ONS)
Second 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 (Reference E3) in response to NRC Order EA-12-049 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). This report constitutes the second 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 July 31, 2013 to January 28, 2014 (hereafter referred to as "the update period").

2) Milestone Accomplishments (during the update period)

The following milestone(s) were completed:

1. The first six month status report was submitted August 29, 2013.
2. Significant Materials/Equipment necessary to implement current strategies have been identified. Thus, completing this milestone.
3. Based on current strategies, the N-1 Outage Walkdowns for Oconee Unit 2 were deemed as not necessary. Thus, that milestone is considered to have been completed.

3) Milestone Schedule Status

The following represents the milestone status for 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	Was Target Completion Date Revised
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	This Submittal	Date Not Revised
Submit 6 Month Update 3	Aug 2014	Not Started	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

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(Note: The references for this Enclosure are listed in Section 8)

Milestone	Target Completion Date	Activity Status	Was Target Completion Date Revised
Modifications:			
Develop Modifications	Aug 2016	Started	Date Not Revised
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	Not Started	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	Not 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

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 (Note: The references for this Enclosure are listed in Section 8)

Milestone	Target Completion Date	Activity Status	Was Target Completion Date Revised
Implementation:			
Implement Modifications – U1	Nov 2016	Not Started	Date Not Revised
Implement Modifications – U2	Nov 2015	Not Started	Date Not Revised
Implement Modifications – U3	May 2016	Not 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. The table under 6.c. provides a list of open items related to the Interim Staff Evaluation (ISE).

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	Not Started
12. Load Shed Analysis	Not Started
13. Hydraulic Analysis for Pump Flow (Intake Canal to SGs)	Not Started

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 (Note: The references for this Enclosure are listed in Section 8)

Overall Integrated Plan Open Items	Status
14. Fuel Oil Consumption	Not Started
15. Hydraulic Analysis for Pump Flow (CTP-1 to SGs)	Not Started
16. Water in embedded CCW lines & Hydraulic Analysis for Pumping Configuration	Not Started
17. PSW Modification (EC 91877)	Started
18. Alternate FLEX Connections Modification (SG Makeup)	Started
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
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

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Open Items	Status
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

c) Interim Staff Evaluation

Open Items	Status
The NRC's Interim Staff Evaluation was not issued during the update period.	N/A

d) Generic Concerns

The following summarizes ONS's review of five generic issues:

1. **Electric Power Research Institute (EPRI) Report 3002001785, *Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications* (Reference E9).**
 - 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 entitled "Nuclear Maintenance Applications Center: Preventive Maintenance Basis for FLEX Equipment" (Reference E10).**
 - ONS intends to follow EPRI Report 3002000623 in the development of maintenance and testing programs for equipment acquired in response to Mitigation Strategies Order EA-12-049 unless otherwise justified.

(Note: The references for this Enclosure are listed in Section 8)

3. **Westinghouse report entitled “Westinghouse Response to NRC Generic Request for Additional Information (RAI) on CENTS Code in Support of the Pressurized Water reactor Owners Group (PWROG)” (Reference E12).**
 - 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 on mitigation strategies in shutdown and refueling modes (Reference E14).**
 - It is Oconee’s intent to abide by the NEI position paper for shutdown and refueling modes.
5. **Nuclear Energy Institute (NEI) position paper addressing battery life which has been endorsed by the NRC staff (Reference E16).**
 - 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.

7) Potential Interim Staff Evaluation Impacts

There are no potential impacts to the Interim Staff Evaluation identified at this time.

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 Licensees 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-12-049, 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*

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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 endorsing EPRI Report 3002000623, dated October 7, 2013 (Accession No. ML 13276A224)
- 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 for proprietary reasons).
- E13. NRC Letter endorsing 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 October 7, 2013 (Accession No. ML13276A555)
- E14. Nuclear Energy Institute (NEI) position paper entitled "*Position Paper: Shutdown/Refueling Modes*," dated September 18, 2013 (Accession No. ML13273A514)
- E15. NRC Letter endorsing NEI Position Paper "*Shutdown/Refueling Modes*," dated September 30, 2013 (Accession No. ML13267A382)
- E16. Nuclear Energy Institute (NEI) White Paper entitled "*Battery Life Issue*," dated August 21, 2013 (Accession No. ML13241A186)
- E17. NRC Letter - "Battery Life White Paper Endorsement," dated September 16, 2013 (Accession No. ML13241A188).