Exelon Generation®

Order No. EA-12-049

RS-14-211
RA-14-053

August 28, 2014

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

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket No. 50-219

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. NRC Order Number EA-12-049, " Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012
2. 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," Revision 0, dated August 29, 2012
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012
4. Exelon Generation Company, LLC's Initial 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 October 25, 2012
5. Exelon Generation Company, LLC 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 28, 2013 (RS-13-023)
6. Exelon Generation Company, LLC 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 28, 2013 (RS-13-125)
7. Exelon Generation Company, LLC 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 (RS-14-013)
8. NRC letter to Exelon Generation Company, LLC, Oyster Creek Nuclear Generating Station – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC No. MF0824), dated February 19, 2014

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Exelon Generation Company, LLC (EGC). Reference 1 was immediately effective and directs EGC to develop, implement, and maintain 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. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the EGC initial status report regarding mitigation strategies. Reference 5 provided the Oyster Creek Nuclear Generating Station overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. References 6 and 7 provided the first and second six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Oyster Creek Nuclear Generating Station. The purpose of this letter is to provide the third six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The enclosed report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any. The enclosed report also addresses the NRC Interim Staff Evaluation Open and Confirmatory Items contained in Reference 8.

This letter contains no new regulatory commitments. If you have any questions regarding this report, please contact David P. Helker at 610-765-5525.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of August 2014.

Respectfully submitted,

James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure:

1. Oyster Creek Nuclear Generating Station Third Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator - Region I
NRC Senior Resident Inspector – Oyster Creek Nuclear Generating Station
NRC Project Manager, NRR – Oyster Creek Nuclear Generating Station
Ms. Jessica A. Kratchman, NRR/JLD/PMB, NRC
Mr. Jack R. Davis, NRR/DPR/MSD, NRC
Mr. Eric E. Bowman, NRR/DPR/MSD, NRC
Mr. Jeremy S. Bowen, NRR/DPR/MSD/MSPB, NRC
Mr. Robert L. Dennig, NRR/DSS/SCVB, NRC
Mr. John D. Hughey, NRR/DPR/MSD/MSPB, NRC
Manager, Bureau of Nuclear Engineering – New Jersey Department of Environmental Protection
Mayor of Lacey Township, Forked River, NJ

Enclosure

Oyster Creek Nuclear Generating Station

Third Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

(9 pages)

Enclosure

Oyster Creek Nuclear Generating Third Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

1. Introduction

Oyster Creek Nuclear Generating Station developed an Overall Integrated Plan (OIP) (Reference 1), documenting the diverse and flexible strategies (FLEX), in response to NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Reference 2). This enclosure provides an update of milestone accomplishments since submittal of the last status report including any changes to the compliance method, schedule, or need for relief / relaxation and the basis, if any.

2. Milestone Accomplishments

The second 6-Month Update was submitted in February 2014.

3. Milestone Schedule Status

The following provides an update to Attachment 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

The revised milestone target completion dates do not impact the order implementation date.

Milestone Schedule

Activity	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Plan	February 2013	Complete	
Contract with National SAFER Response Center		Complete	
Submit 6 Month Updates:			
Update 1	August 2013	Complete	
Update 2	February 2014	Complete	
Update 3	August 2014	Complete with this submittal	
Update 4	February 2015	Not Started	No Change
Update 5	August 2015	Not Started	No Change
Update 6	February 2016	Not Started	No Change
Update 7	August 2016	Not Started	No Change

Activity	Target Completion Date	Activity Status	Revised Target Completion Date
Submit Completion Report	October 2016	Not Started	No Change

Activity	Target Completion Date	Activity Status	Revised Target Completion Date
Modification Development			
Modification Development (All FLEX Phases)	August 2016	Started	Revised in August 2013 update
Modification Implementation (All FLEX Phases)	October 2016	Not Started	No Change
Procedures:			
Create Site-Specific Procedures	October 2016	Started	No Change
Validate Procedures (NEI 12-06, Sect. 11.4.3)	October 2016	Not Started	No Change
Create Maintenance Procedures	October 2016	Started	No Change
Perform Staffing Analysis	June 2016	Not Started	No Change
Storage Plan and Construction	October 2016	Started	No Change
FLEX Equipment Acquisition	October 2016	Started	No Change
Training Completion	October 2016	Not Started	No Change
National SAFER Response Center Operational	December 2014	Started	December 2015
Unit 1 FLEX Implementation	October 2016	Not Started	No Change
Full Site FLEX Implementation	October 2016	Not Started	No Change

4. Changes to Compliance Method

The following changes are based on Oyster Creeks Letter, Request for Extension to Comply with NRC Order EA-13-109, "Order Modifying Licenses With Regard To Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Condition. (Reference 3)

The Changes to Compliance Method as described in the OIP are as follows:

1. Changed name of system from Reliable Hardened Vent System (RHVS) to Hardened Vent System (HVS)
2. Remove statement "The Hardened Vent Containment Isolation valves will be operated by an independent DC system to ensure reliability."
3. Added description of the HVS capabilities as currently installed.
4. Remove the paragraph "BWROG EOP Revision EPG/SAG Rev.3, containing items such as guidance to allow early venting and to maintain steam driven injection equipment available during emergency depressurization, is approved and will be implemented in time to support the Oyster Creek compliance date." This paragraph incorrectly implies that Oyster Creek has steam driven injection equipment.

Maintain Containment (Phase 1)

OIP Page 27 of 64

Replace paragraphs three and four with the following:

Hardened Vent System (HVS) will be available for use to vent containment. The Hardened Vent Containment Isolation valves will be operated using station batteries and air accumulators currently installed in the system. Valve Position indication for the HVS will be partially lost and secondary means of valve position will need to be used if venting is required. Monitoring of containment (drywell) pressure and temperature will be available via normal plant instrumentation. Early venting of the containment (BWROG EOP Revision EPG/SAG Rev.3 (Reference 1)) will serve to limit containment pressure rise and Torus temperature rise. In response to NRC Order EA-12-049 and implementation of EPG/SAG Rev.3, containment venting will be part of the strategies.

As part of the B.5.b (Reference 2) response Oyster Creek incorporated Extensive Damage Mitigation Guidelines and developed procedure EDMG-SPX9 "Manually Opening Containment Vent Valves in a B.5.b Event". This procedure is designed to allow operation of the HVS vents with no AC / DC power or station air supply available. This procedure will be incorporated into a Field Support Guideline (FSG) procedure. The extension request for NRC Order EA-13-109 is pending approval. Any additions, modifications, or procedural improvements to the HVS capabilities will be included in future six month updates.

References

1. NTTF Recommendation 8 Onsite Emergency Response Capabilities ML12332A328
2. NEI 06-12, "B.5.b Phase 2 & 3 Submittal Guideline," Revision 2, December 2006

Maintain Containment (Phase 1)

OIP Page 28 of 64

Remove Reference under "Identify modifications":

Modification per NRC Order EA-12-050, Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents.

Maintain Containment (Phase 2)
OIP Page 29 of 64
Remove Reference under "Identify modifications":
NRC Order EA-12-050, Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents.

5. Need for Relief/Relaxation and Basis for the Relief/Relaxation

None

6. Open Items and Confirmatory items from Overall Integrated Plan and Interim Safety Evaluation

The following tables provide a summary of the open and confirmatory items documented in the Overall Integrated Plan or the Draft Safety Evaluation and the status of each item.

Section Reference	Overall Integrated Plan Open Items	Status
Sequence of events (p. 10-12)	The times to complete actions in the Events Timeline are based on operating judgment, conceptual designs, and the current supporting analyses. The final timeline will be time validated once detailed designs are completed and procedures developed.	Not Started
Sequence of events (p. 11-12)	Initial calculations were used to determine the fuel pool timelines. Formal calculations will be performed to validate this information during development of the spent fuel pool cooling strategy detailed design.	Not Started
Identify how strategies will be deployed in all modes (p. 13)	1. Transportation routes will be developed from the equipment storage area to the FLEX staging areas. 2. Identification of storage areas is an open item. 3. An administrative program will be developed to ensure pathways remain clear or compensatory actions will be implemented to ensure all strategies can be deployed during all modes of operation.	1. Started 2. Tracked in Interim Safety Evaluation Confirmatory Items reference section 3.1.3.1.A, and 3.1.3.1.B. 3. Oyster Creek will incorporate the supplemental guidance provided in the NEI position paper entitled 'Shutdown/Refueling Modes' to enhance the shutdown risk process and procedures.

Identify how the programmatic controls will be met (p. 14)	An administrative program for FLEX to establish responsibilities, and testing & maintenance requirements will be implemented.	Started
Maintain Spent Fuel Pool Cooling (p.36)	Complete an evaluation of the spent fuel pool area for steam and condensation.	Not Started
Safety Functions Support (p. 44)	Evaluate the habitability conditions for the Main Control Room and develop a strategy to maintain habitability.	Started
Safety Functions Support (p. 44)	Develop a procedure to prop open battery room doors upon energizing the battery chargers to prevent a buildup of hydrogen in the battery rooms.	Tracked in Interim Safety Evaluation Confirmatory Items reference section 3.2.4.2.A.
Sequence of events (p. 10)	Issuance of BWROG document NEDC-33771P, "GEH Evaluation of FLEX Implementation Guidelines" on 01/31/2013 did not allow sufficient time to perform the analysis of the deviations between Exelon's engineering analyses and the analyses contained in the BWROG document prior to commencing regulatory reviews of the Integrated Plan.	Completed.
Baseline coping capability (p. 27)	In response to NRC Order EA-12-049 and implementation of EPG Rev 3, containment venting will be part of the strategies. As part of the B.5.b response Oyster Creek incorporated Extensive Damage Mitigation Guidelines and developed procedure EDMG-SPX9 Manually Opening Containment Vent Valves in a B.5.b Event. This procedure is designed to allow operation of the Hardened Vents with no air supply, AC or DC power available. Convert EDMG-SPX9 Manually Opening Containment Vent Valves to FSG procedure.	Not Started

Section Reference	Interim Safety Evaluation Open Items	Status
None	None	NA

Section Reference	Interim Safety Evaluation Confirmatory Items	Status
3.1.1.3.A	Confirm that the licensee develops a reference source describing what actions should be taken if instruments were lost due to a seismic event.	Not Started
3.1.1.4.A	Confirm the location of the off-site staging area(s) and acceptability of the access routes considering the seismic, flooding, high wind and snow, ice and extreme cold hazard.	Not Started
3.1.2.2.A	Confirm that if temporary flood barriers are used, they are stored such that they can be easily deployed.	Procedure OP-OC-108-109-1001, Severe Weather Preparation T&RM for Oyster Creek was revised to credit sandbags as the temporary flood barriers for the Near Term Task Force (NTTF) 2.1 (Reference 4) reevaluated results. These sandbags are pre-made and stacked on pallets. The procedure directs the site preparation requirements for impending storms. The procedure also directs the site staff to deploy the sandbags and place them in the flood barrier locations prior to the flood. The sandbag deployment location and quantity required for each barrier have been identified in the revised procedure. The storage locations for the sandbags are the sea land container located next to the maintenance building, the material warehouse, and building 4. OP-OC-108-109-1001 Severe Weather has been posted on the ePortal site.

3.1.3.1.A	Verify that the separation of the planned outdoor storage areas is sufficient to preclude damage of both sets of FLEX equipment.	Started
3.1.3.1.B	Confirm qualified storage locations for the hurricane and extreme snow and icing hazards are identified.	Started
3.1.3.2.A	Confirm that the licensee's evaluation of water quality and resulting action are sufficient to preclude blockage of flow to the core or SFP.	Started
3.2.1.1.A	Confirm that benchmarks are identified and discussed that demonstrate that MAAP is an appropriate code for the simulation of an ELAP event at your facility.	Started
3.2.1.1.B	Confirm that the collapsed level remains above Top of Active Fuel (TAF) and the cool down rate remains within technical specifications limits.	Started
3.2.1.1.C	Confirm that MAAP is used in accordance with Sections 4.1, 4.2, 4.3, 4.4, and 4.5 of the June 2013 position paper.	Started
3.2.1.1.D	Confirm that the licensee identifies and justifies the subset of key modeling parameters cited from Tables 4-1 through 4-6 of the "MAAP Application Guidance, Desktop Reference for Using MAAP Software, Revision 2" (Electric Power Research Institute Report 1020236). This should include response at a plant-specific level regarding specific modeling options and parameter choices for key models that would be expected to substantially affect the ELAP analysis performed for that licensee's plant. Although some suggested key phenomena are identified below, other parameters considered important in the simulation of the ELAP event by the vendor / licensee should also be included. a. Nodalization b. General two-phase flow modeling c. Modeling of heat transfer and losses d. Choked flow e. Vent line pressure losses f. Decay heat (fission products / actinides / etc.)	Started

3.2.1.1.E	Confirm that the specific MAAP analysis case that was used to validate the timing of mitigating strategies in the Integrated Plan is identified and available on the ePortal for NRC staff to view. Alternately, a comparable level of information may be included in the supplemental response. In either case, the analysis should include a plot of the collapsed vessel level to confirm that TAF is not reached (the elevation of the TAF should be provided) and a plot of the temperature cool down to confirm that the cool down is within technical specifications limits.	Started
3.2.1.3.A	The SOE final timeline will be time validated once detailed designs are completed and procedures are developed. The licensee should provide the results for NRC staff review.	Not Started
3.2.4.2.A	The licensee stated that battery room ventilation to address high/low temperatures and prevention of hydrogen buildup will be addressed through procedure changes and that the proposed methods of ventilation, open doors and fans, will be confirmed during the detailed design process.	Not Started
3.2.4.4.A	The NRC staff has reviewed the licensee communications assessment (ADAMS Accession Nos. ML12306A199 and ML13056A135) in response to the March 12, 2012 50.54(f) request for information letter for OCNGS and, as documented in the staff analysis (ADAMS Accession No. ML13114A067) has determined that the assessment for communications is reasonable, and the analyzed existing systems, proposed enhancements, and interim measures will help to ensure that communications are maintained. Verification of required upgrades has been identified as a confirmatory item.	Started
3.2.4.8.A	1. Confirm the procedures to isolate the vital USS's from the generator. 2. Ensure that the diesel generator is equipped with overload protection in the generator skid.	1. Not Started 2. Started
3.2.4.8.B	Confirm/review technical basis and/or calculations provided as basis for the generator sizing.	Started

3.2.4.10.A	Confirm completion of analysis to determine battery coping time with no actions and with battery load shed.	Not Started
3.4.A	NEI 12-06, Section 12.2 lists minimum capabilities for offsite resources for which each Licensee should establish the availability. Confirm implementation of Guidelines 2 through 10 in NEI 12-06, Section 12.2.	Not Started

7. Potential Draft Safety Evaluation Impacts

There are no potential impacts to the Draft Safety Evaluation identified at this time.

8. References

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

1. Oyster Creek Nuclear Generating Station's 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 28, 2013.
2. 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.
3. Letter from Exelon Generation Company, LLC, Request for Extension to Comply with NRC Order EA-13-109, "Order Modifying Licenses With Regard To Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions" dated June 2, 2014
4. Recommendation 2.1 Flooding ML12056A048

9. Attachments

None