



Order No. EA-12-049

RS-18-012

February 28, 2018

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

Limerick Generating Station, Unit 1  
Renewed Facility Operating License No. NPF-39  
NRC Docket No. 50-352

Subject: Tenth 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-13-022)
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-13-123)
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-14-012)

8. Exelon Generation Company, LLC 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), dated August 28, 2014 (RS-14-210)
9. Exelon Generation Company, LLC Fourth 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 27, 2015 (RS-15-021)
10. Exelon Generation Company, LLC Fifth 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, 2015 (RS-15-212)
11. Exelon Generation Company, LLC Sixth 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 26, 2016 (RS-16-024)
12. Exelon Generation Company, LLC Seventh 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 26, 2016 (RS-16-147)
13. Exelon Generation Company, LLC Eighth 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, 2017 (RS-17-020)
14. Exelon Generation Company, LLC Ninth 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, 2017 (RS-17-095)
15. NRC letter to Exelon Generation Company, LLC, Limerick Generating Station, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF0847 and MF0848), dated January 10, 2014
16. NRC letter to Exelon Generation Company, LLC, Limerick Generating Station, Units 1 and 2 – Report for the Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0847, MF0848, MF0854, and MF0855), dated March 17, 2015
17. Exelon Generation Company, LLC, Report of Full Compliance with 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 July 20, 2017 (RS-17-062)

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 Limerick Generating Station, Units 1 and 2 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, 7, 8, 9, 10, 11, 12, 13, and 14 provided the first, second, third, fourth, fifth, sixth, seventh, eighth, and ninth six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Limerick Generating Station. The purpose of this letter is to provide the tenth 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 15, and any NRC Audit Report open items contained in Reference 16.

The Limerick Generating Station, Unit 2 HCVS Phase 1 installation was complete at the end of the Li2R14 refuel outage in May 2017. Limerick Generating Station, Unit 2 is now in full compliance with NRC Order EA-12-049 as described in Reference 17.

This letter contains no new regulatory commitments. If you have any questions regarding this report, please contact David J. Distel at 610-765-5517.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28<sup>th</sup> day of February 2018.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James Barstow", with a stylized flourish at the end.

---

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

Enclosure: Limerick Generating Station, Unit 1 Tenth 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: NRC Regional Administrator - Region I  
NRC Senior Resident Inspector – Limerick Generating Station  
NRC Project Manager, NRR – Limerick Generating Station  
Mr. Jason C. Paige, NRR/JLD/JOMB, NRC  
Director, Bureau of Radiation Protection – Pennsylvania Department of Environmental  
Resources  
R. R. Janati, Chief, Division of Nuclear Safety, Pennsylvania Department of Environmental  
Protection, Bureau of Radiation Protection

**Enclosure**

**Limerick Generating Station, Unit 1**

**Tenth 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**

(13 pages)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

**Enclosure**

**Limerick Generating Station, Unit 1 Tenth Six Month Status Report for the Implementation of Order EA-12-049, Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events**

**1 Introduction**

Limerick Generating Station, Units 1 and 2 developed an Overall Integrated Plan (Reference 1 in Section 8), documenting the diverse and flexible strategies (FLEX), in response to NRC Order EA-12-049 (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.

With the report of Unit 2 full compliance (Reference 21) on July 20, 2017, this six-month update provides the status of Limerick Generating Station, Unit 1 mitigating strategies implementation.

**2 Milestone Accomplishments**

The following milestone(s) have been completed since the August 28, 2017 status report (Reference 22) and are current as of February 15, 2018.

- None

**3 Milestone Schedule Status**

The following provides an update to Attachment 2 of the Overall Integrated Plan (Reference 1). 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 need for relief/ relaxation on site implementation of Order EA-12-049 is provided in Section 5 of this enclosure.

**Milestone Schedule**

**Site: Limerick Generating Station**

<b>Activity</b>	<b>Target Completion Date</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Plan	February 2013	Complete	
Contract with RRC	October 2012	Complete	
<b>Submit 6 Month Updates:</b>			
Update 1	August 2013	Complete	

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Activity	Target Completion Date	Activity Status	Revised Target Completion Date
Update 2	February 2014	Complete	
Update 3	August 2014	Complete	
Update 4	February 2015	Complete	
Update 5	August 2015	Complete	
Update 6	February 2016	Complete	
Update 7	August 2016	Complete	
Update 8	February 2017	Complete	
Update 9	August 2017	Complete	
Update 10	February 2018	Complete with this submittal	
Submit Completion Report	June 2018	Not Started	Date change aligns with completion of Refuel Outage (Li1R17)
<b>Modification Development &amp; Implementation:</b>			
Unit 1 Modification Development (All FLEX Phases)	September 2015	Complete	
Unit 1 Modification Implementation (All FLEX Phases)	April 2016	Complete	
Unit 2 Modification Development (All FLEX Phases)	November 2014	Complete	
Unit 2 Modification Implementation (All FLEX Phases)	April 2015	Complete	
<b>Procedures:</b>			
Create Site-Specific Procedures	April 2015	Complete	
Validate Procedures (NEI 12-06, Sect. 11.4.3)	March 2015	Complete	
Create Maintenance Procedures	April 2015	Complete	
Perform Staffing Analysis	November 2014	Complete	
Storage Plan and Construction	October 2015	Complete	



Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Activity	Target Completion Date	Activity Status	Revised Target Completion Date
FLEX Equipment Acquisition	April 2015	Complete	
Training Completion	April 2015	Complete	
Regional Response Center Operational	December 2014	Complete	
Unit 1 FLEX Implementation	April 2018 See Section 5	Started	
Unit 2 FLEX Implementation	May 2017 See Section 5	Complete	
Full Site FLEX Implementation	April 2018 See Section 5	Started	

#### **4 Changes to Compliance Method**

None

#### **5 Need for Relief/Relaxation and Basis for the Relief/Relaxation**

This section provides a summary of needed relief/relaxation only.

Limerick Generating Station is in compliance with the aspects of the Reference 1, Unit 1 and Unit 2 Mitigation Strategies that do not rely upon a Hardened Containment Vent System. Limerick Generating Station submitted the request for relaxation to the NRC by letter dated February 26, 2014 (Reference 8). The NRC approved the Limerick relaxation request for full compliance of NRC Order EA-12-049 by letter dated April 15, 2014 (Reference 9).

The Limerick Generating Station, Unit 2 HCVS Order Phase 1 installation was complete at the end of the Li2R14 refuel outage in May 2017. Limerick Generating Station, Unit 2 is now in full compliance with NRC Order EA-12-049 as described in Reference 21.

#### **6 Open Items from Overall Integrated Plan and Draft Safety Evaluation**

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



Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Section Reference	Overall Integrated Plan Open Item	Status
Sequence of Events (p. 8)	The times to complete actions in the Events Timeline are based on operating judgment, conceptual designs, and current supporting analyses. The final timeline will be time validated once detailed designs are completed and procedures developed.	Complete (Reference 17)
Sequence of Events (p. 7) Installed Phase 1 Equipment (p.37)	Initial evaluations 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.	Complete (Reference 10)
Sequence of Events (p. 7)	Analysis of deviations between Exelon's engineering analyses and the analyses contained in BWROG Document NEDC-33771P, "GEH Evaluation of FLEX Implementation Guidelines" and documentation of results was not completed and submitted with the Overall Integrated Plan (Reference 1).	Complete (Reference 4)
Identify how strategies will be deployed in all modes (p. 11)	<p>Transportation routes will be developed from the equipment storage area to the FLEX staging areas. 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.</p> <p>Identification of storage areas and creation of the administrative program are open items.</p>	Complete (Reference 17)
Identify how the programmatic controls will be met (p. 12)	An administrative program for FLEX to establish responsibilities, and testing & maintenance requirements will be implemented.	Complete (Reference 17)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Section Reference	Overall Integrated Plan Open Item	Status
Sequence of Events (p. 9)	Additional work will be performed during detailed design development to ensure Suppression Pool temperature will support RCIC operation, in accordance with approved BWROG analysis, throughout the event.	Complete (Reference 17)
Portable Equip Phase 2 (p. 50)	Complete an evaluation of the spent fuel pool area for steam and condensation.	Complete (Reference 11)
Installed Equip Phase 1 (p.47) Portable Equip Phase 2 (p. 49)	Evaluate the habitability conditions for the Main Control Room and develop a strategy to maintain habitability.	Complete (Reference 17)
Installed Equip Phase 1 (p.47) Portable Equip Phase 2 (p. 50)	Develop a procedure to prop open battery room doors upon energizing the battery chargers to prevent a buildup of hydrogen in the battery rooms.	Complete (Reference 17)

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Open Item 3.1.1.2.A	NEI 12-06 states that if power is required to move or deploy the equipment (e.g., to open the door from a storage location), then power supplies should be provided as part of the deployment. The Integrated Plan did not address whether or not power would be required to move or deploy equipment and thus this evaluation must be completed satisfactorily.	Complete (Reference 10)
Open Item 3.1.1.3.A	The licensee did not address actions to be taken if key instruments were lost due to a seismic event, as specified in NEI 12-06, section 5.3.3. Verify that this activity is completed satisfactorily.	Complete (Reference 17)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Open Item 3.1.2.2.A  NRC Audit Open Item	Further review is required regarding how the licensee will address NEI 12-06 Section 6.2.3.2 deployment considerations 2, 4, 5, and 8 with respect to transient floods. This review shall include an applicable procedure review.	Complete (Reference 7) Complete (Reference 17)
Open Item 3.2.3.A	With regard to maintaining containment, the implementation of Boiling Water Reactor Owners Group (BWROG) Emergency Procedure Guideline (EPG)/Severe Accident Guideline (SAG), Revision 3, including any associated plant-specific evaluations, must be completed in accordance with the provisions of NRC letter dated January 9, 2014.	Complete (Reference 17)
Open Item 3.2.4.2.C	With regard to elevated temperatures in general, the licensee should provide an evaluation of the impact of elevated temperatures, as a result of loss of ventilation and/or cooling, on electrical equipment being credited as part of the ELAP strategies (e.g., electrical equipment in the RCIC pump rooms).	Complete (Reference 10)
Open Item 3.4.A	The licensee should provide details that demonstrate the minimum capabilities for offsite resources will be met, per NEI 12-06 Section 12.2.	Complete (Reference 11)
Confirmatory Item 3.1.1.4.A	With regard to offsite resources, confirm that the licensee develops a plan that will address the logistics for equipment transportation, area set up, and other needs for ensuring the equipment and commodities to sustain the site's coping strategies.	Complete (Reference 17)
Confirmatory Item 3.1.5.2.A	The licensee stated that the design of the storage facilities will include provisions to ensure the equipment storage facilities are not impacted by high temperatures. Confirm that this is evaluated appropriately.	Complete (Reference 11)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Confirmatory Item 3.2.1.1.A	Benchmarks must be identified and discussed which demonstrate that Modular Accident Analysis Program (MAAP) is an appropriate code for the simulation of an ELAP event at LGS, consistent with the NRC endorsement of the industry position paper on MAAP.	Complete (Reference 10)
Confirmatory Item 3.2.1.1.8	Confirm that the collapsed reactor pressure vessel level remains above Top of Active Fuel and the reactor coolant system cool down rate is within technical specifications limits.	Complete (Reference 10)
Confirmatory Item 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.	Complete (Reference 10)
Confirmatory Item 3.2.1.1.D	Confirm that, in using MAAP, 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 1 020236).	Complete (Reference 10)
Confirmatory Item 3.2.1.3.A  NRC Audit Open Item	The licensee stated that the "times to complete actions in the events timeline are based on ... current supporting analyses." Confirm that the final timeline is validated once detailed designs are completed and procedures are developed.	Complete (Reference 17)
Confirmatory Item 3.2.1.4.A	The licensee stated that the detailed design will determine containment heat-up rate and the subsequent impacts on RCIC operation and the need for any modifications. Confirm that this evaluation is completed satisfactorily.	Complete (Reference 17)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Confirmatory Item 3.2.1.4.B	The licensee identified two RCIC room switch set points that were above the predicted maximum temperature but pointed out that the "RCIC Equipment Room Delta Temperature High" setpoint was below that temperature at 109 °F. It is not clear whether or not any of the setpoints would have an adverse impact on the planned use of the RCIC as a mitigation strategy. Thus, further clarification is needed for this issue.	Complete (Reference 7)
Confirmatory Item 3.2.1.4.C	Because the Integrated Plan makes reference to use of the Phase 3 equipment as backup, the Integrated Plan should address the guidance of NEI 12-06 regarding site procedures for Phase 3 implementation. The licensee addressed this concern during the audit response and stated that LGS would ensure connection capabilities of the Phase 3 offsite equipment to site systems and would develop any procedural guidance required for those connections. Confirm that the connections for the Phase 3 equipment have been properly determined, once the details are finalized.	Complete (Reference 10)
Confirmatory Item 3.2.1.7.A	The licensee stated that LGS plans to abide by the generic resolution for refueling and cold shutdown conditions. The licensee stated that a review is in progress to develop a plan to address potential plant specific issues associated with implementing the generic approach. Confirm that this evaluation is completed satisfactorily.	Complete (Reference 12) Complete (Reference 17)
Confirmatory Item 3.2.1.8.A	The licensee stated that the final design of the FLEX pump suction will determine if additional screens are required. Confirm that the potential for entrained debris as a result of extreme external hazards (e.g., suspended solids especially during flood conditions, or from high wind debris) in the cooling water from the spray pond is addressed.	Complete (Reference 10)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Confirmatory Item 3.2.1.8.B	Insufficient technical information is presented or referenced in the Integrated Plan to confirm the ability of the portable FLEX pumps to deliver the required flow through the system of FLEX hoses, couplings, valves, elevation changes, etc. for the configurations described. Confirm that these evaluations are completed and documented.	Complete (Reference 10)
Confirmatory Item 3.2.2.A	The licensee stated that formal calculations will be performed to validate the timing required for supplying cooling water to the spent fuel pool. Confirm that these calculations are performed, with acceptable results.	Complete (Reference 10)
Confirmatory Item 3.2.4.2.A  NRC Audit Open Item	It was not clear from the information presented in the Integrated Plan what analysis or technical basis was used to conclude that the battery room temperature rise is inconsequential. Also, no discussion was presented to address possible low temperature effects. Confirm the adequacy of the battery room ventilation to protect the batteries from the effects of elevated or lowered temperatures.	Complete (Reference 11)
Confirmatory Item 3.2.4.2.B	The licensee stated that battery room ventilation 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. Confirm that this is completed satisfactorily.	Complete (Reference 17)
Confirmatory Item 3.2.4.4.A  NRC Audit Open Item	Confirm that the proposed communications upgrades in the licensee's communications assessment are completed as planned.	Complete (Reference 19)

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	Interim Staff Evaluation (ISE) Open Items / Confirmatory Actions	Status
Confirmatory Item 3.2.4.5.A	The licensee stated that keys for access to the plant are available to security, the shift manager and to the radiation protection group. The licensee further stated that plant areas requiring access as part of the FLEX response, will be evaluated to determine if sufficient keys are available or if additional keys will be required. Confirm that this evaluation is completed.	Complete (Reference 11)
Confirmatory Item 3.2.4.6.A	According to the licensee, habitability conditions will be evaluated and a strategy will be developed for the main control room. Confirm that the strategy and associated support analyses are completed.	Complete (Reference 17)
Confirmatory Item 3.2.4.6.B  NRC Audit Open Item	With regard to the fuel building habitability, the licensee acknowledged that the evaluation of the spent fuel pool area for steam and condensation has not yet been performed. Confirm that this evaluation is completed, and its resulting conclusions satisfactorily addressed.	Complete (Reference 17)
Confirmatory Item 3.2.4.8.A	The Integrated Plan did not provide information regarding the technical basis for the selection and size of the FLEX generators to be used in support of the coping strategies. Confirm that this evaluation is satisfactorily completed.	Complete (Reference 10)
Confirmatory Item 3.2.4.10.B	The licensee stated minimum limit for the dc bus voltage is 105 volts. More information is needed to understand if this minimum voltage provides for sufficient operating voltages at the device terminals to ensure proper operation in support of the strategies.	Complete (Reference 7)
Confirmatory Item 3.2.4.10.C	Although the licensee addressed the potential adverse impact from load shedding on main generator hydrogen control, the licensee needs to address any other potential adverse impacts to mitigation strategies resulting from the load shed plan.	Complete (Reference 12)



Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

Item Number	NRC Audit Open Items (Reference 12)	Status
AQ-22	049-RAI- Limerick-22: Support Systems Ventilation – Battery Room. Provide a discussion of battery room ventilation to prevent hydrogen accumulation while recharging the batteries in phase 2 or 3. In your response, include a description of the exhaust path if it is different than the design basis. Also provide information on the adequacy of the ventilation provided in the battery room to protect the batteries from the effects of extreme high and low temperatures.	Complete (Reference 17)
OIP-4	Identify how strategies will be deployed in all modes (OIP p. 11)  Transportation routes will be developed from the equipment storage area to the FLEX staging areas. 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.  Identification of storage areas and creation of the administrative program are open items.	Complete (Reference 17)

## 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. 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-13-022)
2. 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

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

3. NRC Order EA-13-109, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013
4. Exelon Generation Company, LLC, First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated August 28, 2013 (RIS 13-123)
5. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station Units 1 and 2, Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigating Strategies) dated January 10, 2014
6. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012
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 Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated February 28, 2014 (RIS 14-012)
8. Exelon Generation Company, LLC, Limerick Generating Station Units 1 and 2, "Request for Relaxation from NRC Order EA-12-049, "Order Modifying Licenses With Regard To Requirements For Mitigation Strategies For Beyond-Design-Basis External Events." Dated February 26, 2014 (RS-14-044)
9. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station, Units 1 and 2 - Relaxation of Certain Scheduler Requirements for Order EA-12-049 "Issuance of Order to Modify Licenses with regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events." Dated April 15, 2014
10. Exelon Generation Company, LLC, Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated August 28, 2014 (RS-14-210)
11. Exelon Generation Company, LLC, Fourth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated February 27, 2015 (RS-15-021)
12. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station, Units 1 and 2 – Report for the Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051, dated March 17, 2015
13. Exelon Generation Company, LLC letter to USNRC, Request for Schedule Relaxation from NRC Order EA-12-049, "Order Modifying Licenses With Regard To Requirements For Mitigation Strategies For Beyond-Design-Basis External Events" dated April 2, 2015 (RS-15-101)
14. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station, Unit 2, Relaxation of Certain Schedule Requirements for Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events," dated April 29, 2015
15. Exelon Generation Company, LLC letter to USNRC, Request for Second Schedule Relaxation from NRC Order EA-12-049, "Order Modifying Licenses With Regard To Requirements For Mitigation Strategies For Beyond-Design-Basis External Events" dated July 9, 2015 (RS-15-183)
16. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station, Unit 2 - 180 day Relaxation of Certain Schedule Requirements for Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events," dated July 20, 2015

Limerick Generating Station, Unit 1  
Tenth Six Month Status Report for the Implementation of FLEX  
February 28, 2018

17. Exelon Generation Company, LLC, Fifth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated August 28, 2015 (RS-15-212)
18. Exelon Generation Company, LLC, Sixth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated February 26, 2016 (RS-16-024)
19. Exelon Generation Company, LLC, Seventh Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated August 26, 2016 (RS-16-147)
20. Exelon Generation Company, LLC, Eight Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated February 28, 2017 (RS-17-020)
21. Exelon Generation Company, LLC, Report of Full Compliance with 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), July 20, 2017 (RS-17-062)
22. Exelon Generation Company, LLC, Ninth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design Basis External Events (Order Number EA-12-049), dated August 28, 2017 (RS-17-095)

## 9 Attachments

1. None