



Order No. EA-12-049

RS-17-062

July 20, 2017

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

Limerick Generating Station, Unit 2
Renewed Facility Operating License No. NPF-85
NRC Docket No. 50-353

Subject: 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)

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. 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
15. NRC Letter, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012
16. Exelon Generation Company, LLC letter to USNRC, Response to March 12, 2012, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, Enclosure 5, Recommendation 9.3, Emergency Preparedness – Staffing, Requested Information Items 1, 2, and 6 - Phase 2 Staffing Assessment, dated December 5, 2014 (RS-14-325)
17. 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, MF0855), dated March 17, 2015

On March 12, 2012, the Nuclear Regulatory Commission (“NRC” or “Commission”) issued Order EA-12-049, “Order Modifying Licenses with Regard to Requirements For Mitigation Strategies For Beyond-Design-Basis External Events,” (Reference 1) to Exelon Generation Company, LLC (EGC). Reference 1 was immediately effective and directed 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 (OIP) pursuant to Section IV, Condition C. Reference 2 endorsed 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, Unit 2 OIP.

Reference 1 required submission of a status report at six-month intervals following submittal of the OIP. References 6, 7, 8, 9, 10, 11, 12, and 13 provided the first, second, third, fourth, fifth, sixth, seventh, and eighth six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Limerick Generating Station, Unit 2.

The purpose of this letter is to provide the report of full compliance with the 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) (Reference 1) pursuant to Section IV, Condition C.3 of the Order for Limerick Generating Station, Unit 2.

Limerick Generating Station, Unit 2 has developed, implemented, and will maintain the 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 in response to Order EA-12-049. The information provided herein documents full compliance for Limerick Generating Station, Unit 2 with Reference 1.

OIP open items have been addressed and closed as documented in References 6, 8, 9, and 10 and are considered complete pending NRC closure. EGC's response to the NRC Interim Staff Evaluation (ISE) open and confirmatory items identified in Reference 14 have been addressed and closed as documented in References 7, 8, 9, 10, and 12 and are considered closed. EGC's response to the NRC ISE confirmatory items identified as open in Reference 17 are addressed in References 7, 9, 10, and 12, and are considered complete pending NRC closure. EGC's response to the NRC audit questions and additional audit open items have been addressed and closed as documented in Reference 10, and are considered complete pending NRC closure. The following tables provide completion references for each OIP open item and NRC ISE open or confirmatory item, and NRC Audit Report open items.

Overall Integrated Plan Open Items

Section Reference	Overall Integrated Plan Open Item	Completion Response Reference
Sequence of Events (p.8)	The times to complete actions in the Events Timeline are based on operating judgment, conceptual designs, and current supporting	Reference 10

Section Reference	Overall Integrated Plan Open Item	Completion Response Reference
	analyses. The final timeline will be time validated once detailed designs are completed and procedures developed.	
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.	Reference 8
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).	Reference 6
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>	Reference 10
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.	Reference 10
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.	Reference 10
Portable Equip Phase 2 (p. 50)	Complete an evaluation of the spent fuel pool area for steam and condensation.	Reference 9

Section Reference	Overall Integrated Plan Open Item	Completion Response Reference
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.	Reference 10
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.	Reference 10

Interim Staff Evaluation Open Items

Open Item	Completion Response Reference
Item No. 3.1.1.2.A	Reference 8
Item No. 3.1.1.3.A	Reference 10
Item No. 3.1.2.2.A NRC Audit Open Item	References 7 and 10
Item No. 3.2.3.A	Reference 10
Item No. 3.2.4.2.C	Reference 8
Item No. 3.4.A	Reference 9

Interim Staff Evaluation Confirmatory Items

Confirmatory Item	Completion Response Reference
Item No. 3.1.1.4.A	Reference 10
Item No. 3.1.5.2.A	Reference 9
Item No. 3.2.1.1.A	Reference 8
Item No. 3.2.1.1.B	Reference 8
Item No. 3.2.1.1.C	Reference 8
Item No. 3.2.1.1.D	Reference 8
Item No. 3.2.1.3.A NRC Audit Open Item	Reference 10
Item No. 3.2.1.4.A	Reference 10
Item No. 3.2.1.4.B	Reference 7
Item No. 3.2.1.4.C	Reference 8
Item No. 3.2.1.7.A	References 10 and 17
Item No. 3.2.1.8.A	Reference 8
Item No. 3.2.1.8.B	Reference 8

Confirmatory Item	Completion Response Reference
Item No. 3.2.2.A	Reference 8
Item No. 3.2.4.2.A NRC Audit Open Item	Reference 9
Item No. 3.2.4.2.B	Reference 10
Item No. 3.2.4.4.A NRC Audit Open Item	Reference 12
Item No. 3.2.4.5.A	Reference 9
Item No. 3.2.4.6.A	Reference 10
Item No. 3.2.4.6.B NRC Audit Open Item	Reference 10
Item No. 3.2.4.8.A	Reference 8
Item No. 3.2.4.10.B	Reference 7
Item No. 3.2.4.10.C	Reference 17

NRC Audit Report Open Items

Audit Open Item	Completion Response Reference
AQ-22	Reference 10
OIP-4	Reference 10

MILESTONE SCHEDULE – ITEMS COMPLETE

Milestone	Completion Date
Submit 60 Day Status Report	October 25, 2012
Submit Overall Integrated Plan	February 28, 2013
Contract with National SAFER Response Center	November 29, 2012
Submit 6 Month Updates:	
Update 1	August 28, 2013
Update 2	February 28, 2014
Update 3	August 28, 2014
Update 4	February 27, 2015
Update 5	August 28, 2015
Update 6	February 26, 2016
Update 7	August 26, 2016
Update 8	February 28, 2017
Modification Development:	
Phases 1 and 2 modifications	February 27, 2015
National SAFER Response Center Operational	April 6, 2015
Procedure Development:	
Strategy procedures	May 4, 2015

Milestone	Completion Date
Validate Procedures (NEI 12-06, Sect. 11.4.3)	April 12, 2015
Maintenance procedures	May 4, 2015
Staffing analysis	December 5, 2014
Modification Implementation:	
Phases 1 and 2 modifications	April 30, 2015
Storage plan and construction	October 29, 2015
FLEX equipment acquisition	April 9, 2015
Training completion	April 12, 2015
Unit 2 implementation date	May 25, 2017

ORDER EA-12-049 COMPLIANCE ELEMENTS SUMMARY

The elements identified below for Limerick Generating Station, Unit 2 as well as the site OIP response submittal (Reference 5), the 6-Month Status Reports (References 6, 7, 8, 9, 10, 11, 12, and 13), and any additional docketed correspondence, demonstrate compliance with Order EA-12-049.

Strategies - Complete

Limerick Generating Station, Unit 2 strategies are in compliance with Order EA-12-049. There are no strategy related Open Items, Confirmatory Items, or Audit Questions/Audit Report Open Items. The Limerick Generating Station, Units 1 and 2, Final Integrated Plan for mitigating strategies will be provided upon full compliance for Limerick Generating Station, Unit 1 (Spring 2018).

Modifications - Complete

The modifications required to support the FLEX strategies for Limerick Generating Station, Unit 2 have been fully implemented in accordance with the station design control process.

Equipment – Procured and Maintenance & Testing – Complete

The equipment required to implement the FLEX strategies for Limerick Generating Station, Unit 2 has been procured in accordance with NEI 12-06, Sections 11.1 and 11.2, and has been received at Limerick Generating Station, Unit 2; and initially tested/performance verified as identified in NEI 12-06, Section 11.5, and is available for use.

Periodic maintenance and testing will be conducted through the use of the Limerick Generating Station, Unit 2 Preventative Maintenance program such that equipment reliability is achieved.

Protected Storage – Complete

The storage facilities required to implement the FLEX strategies for Limerick Generating Station, Unit 2 have been completed and provide protection from the applicable site hazards. The

equipment required to implement the FLEX strategies for Limerick Generating Station, Unit 2 is stored in its protected configuration.

Procedures – Complete

FLEX Support Guidelines (FSGs) for Limerick Generating Station, Unit 2 have been developed and integrated with existing procedures. The FSGs and affected existing procedures have been verified and are available for use in accordance with the site procedure control program.

Training – Complete

Training for Limerick Generating Station, Unit 2 has been completed in accordance with an accepted training process as recommended in NEI 12-06, Section 11.6.

Staffing – Complete

The Phase 2 staffing study for Limerick Generating Station, Unit 2 has been completed in accordance with 10CFR50.54(f), "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," Recommendation 9.3, dated March 12, 2012 (Reference 15), as documented in Reference 16.

National SAFER Response Center – Complete

EGC has established a contract with Pooled Equipment Inventory Company (PEICo) and has joined the Strategic Alliance for FLEX Emergency Response (SAFER) Team Equipment Committee for off-site facility coordination. It has been confirmed that PEICo is ready to support Limerick Generating Station, Unit 2 with Phase 3 equipment stored in the National SAFER Response Centers in accordance with the site specific SAFER Response Plan.

Validation – Complete

EGC has completed the performance of validation in accordance with industry developed guidance to assure required tasks, manual actions and decisions for FLEX strategies are feasible and may be executed within the constraints identified in the Overall Integrated Plan (OIP) for Order EA-12-049.

FLEX Program Document - Established

The Limerick Generating Station, Unit 2 FLEX Program Document has been developed in accordance with the requirements of NEI 12-06.

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 20th day of July 2017.

Respectfully submitted,



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cc: Director, Office of Nuclear Reactor Regulation
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