



Order No. EA-12-049

RS-17-001

January 6, 2017

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

Peach Bottom Atomic Power Station, Unit 2
Renewed Facility Operating License No. DPR-44
NRC Docket No. 50-277

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-13-024)
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-13-127)
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-14-014)

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-14-212)
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-15-023)
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-15-214)
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-16-026)
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-16-149)
13. NRC letter to Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049, (Mitigation Strategies) (TAC Nos. MF0845 and MF0846), dated November 22, 2013
14. 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
15. 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 May 8, 2015 (RS-15-114)
16. NRC letter to Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3 – 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. MF0845, MF0846, MF0849, MF0850), dated September 23, 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 Peach Bottom Atomic Power 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, and 12 provided the first, second, third, fourth, fifth, sixth, and seventh six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Peach Bottom Atomic Power 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 Peach Bottom Atomic Power Station, Unit 2.

Peach Bottom Atomic Power 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 Peach Bottom Atomic Power Station, Unit 2 with Reference 1.

OIP open items have been addressed and closed as documented in References 6, 7, 8, 9, 10, 11, and 12, and are considered complete pending NRC closure. EGC's response to the NRC Interim Staff Evaluation (ISE) open and confirmatory items identified in Reference 13 have been addressed and closed as documented in References 7, 8, 9, 10, 11, and 12, and below, and are considered closed as documented in Reference 16. EGC's response to the NRC ISE confirmatory items identified as open in Reference 16 are addressed in Reference 12, and below, 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 References 6, 10, and 12, 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 |
|-------------------|--|-------------------------------|
| Multiple Sections | Item 1) 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. The location of the storage areas, identification of the travel paths and | Reference 11 |

| Section Reference | Overall Integrated Plan Open Item | Completion Response Reference |
|--|---|-------------------------------|
| | creation of the administrative program are open items. | |
| Programmatic Controls (p. 7) | Item 2) An administrative program for FLEX to establish responsibilities, testing and maintenance requirements will be implemented. | Reference 11 |
| Describe Training Plan (p. 8) | Item 3) Training materials for FLEX will be developed for all station staff involved in implementing FLEX strategies. | Reference 10 |
| Maintain Spent Fuel Pool Cooling (p. 30) | Item 4) Complete an evaluation of the spent fuel pool area for steam and condensation to determine vent path strategy requirements. | Reference 10 |
| Safety Function Support (p. 38) | Item 5) RCIC room temperature analysis is still in progress. | Reference 11 |
| Safety Function Support (p.38) | Item 6) Evaluate the habitability of the Main Control Room and develop a strategy to maintain habitability. | Reference 10 |
| Safety Function Support (p. 38) | Item 7) Develop a procedure to prop open battery room doors and utilize portable fans or utilize installed room supply and exhaust fans upon energizing the battery chargers to prevent a buildup of hydrogen in the battery rooms. | Reference 10 |
| Sequence of Events (p. 4) | Item 8) Timeline walk through will be completed for the FLEX generator installations when the detailed design and site strategy is finalized. The final timeline will be validated once the detailed designs are developed. | Reference 11 |
| Sequence of Events (p. 4) | Item 9) Timeline walk through will be completed for the FLEX pump installations when the detailed design and site strategy is finalized. The final timeline will be validated once the detailed designs are developed. The results will be provided in a future 6-month update. | Reference 10 |
| Sequence of Events (p. 5) | Item 10) Additional analysis 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 11 |
| Sequence of Events (p. 5) | Item 11) 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 on Att. 1B, "NSSS Significant | Reference 10 |

| Section Reference | Overall Integrated Plan Open Item | Completion Response Reference |
|---------------------------------|---|-------------------------------|
| | Reference Analysis Deviation Table." Planned to be completed and submitted with August 2013 Six Month Update. | |
| Safety Function Support (p. 38) | Item 12) Evaluate the effect of additional load shed on the battery coping time. | Reference 11 |

Interim Staff Evaluation Open Items

| Open Item | Completion Response Reference |
|--------------------|-------------------------------|
| Item No. 3.2.3.A | Reference 10 |
| Item No. 3.2.4.3.A | Reference 10 |
| Item No. 3.2.4.4.A | Reference 10 |
| Item No. 3.2.4.5.A | Reference 10 |

Interim Staff Evaluation Confirmatory Items

| Open Item | Completion Response Reference |
|--------------------|-------------------------------|
| Item No. 3.1.1.1.A | Reference 12 |
| Item No. 3.1.1.2.A | Reference 11 |
| Item No. 3.1.1.2.C | Reference 10 |
| Item No. 3.1.1.3.A | Reference 10 |
| Item No. 3.1.1.3.B | Reference 10 |
| Item No. 3.1.1.4.A | Reference 11 |
| Item No. 3.1.2.A | Reference 12 |
| Item No. 3.1.2.1.A | Reference 11 |
| Item No. 3.1.2.2.A | Reference 10 |
| Item No. 3.1.3.2.A | Reference 10 |
| Item No. 3.1.4.2.A | Reference 11 |
| Item No. 3.2.1.1.A | Reference 10 |
| Item No. 3.2.1.1.B | Reference 10 |
| Item No. 3.2.1.1.C | Reference 10 |
| Item No. 3.2.1.1.D | Reference 10 |
| Item No. 3.2.1.1.E | Reference 10 |
| Item No. 3.2.1.2.A | Reference 10 |
| Item No. 3.2.1.4.A | Reference 12 |
| Item No. 3.2.1.4.B | Reference 11 |
| Item No. 3.2.1.4.C | Reference 11 |
| Item No. 3.2.1.4.D | Reference 10 |
| Item No. 3.2.2.A | Reference 10 |
| Item No. 3.2.4.2.A | Reference 11 |

| Open Item | Completion Response Reference |
|--------------------|--|
| Item No. 3.2.4.2.B | Reference 10 |
| Item No. 3.2.4.4.B | Reference 12 and updated with this submittal as provided below |
| Item No. 3.2.4.6.A | Reference 11 |
| Item No. 3.2.4.7.A | Reference 10 |
| Item No. 3.2.4.8.A | Reference 10 |
| Item No. 3.2.4.9.A | Reference 10 |
| Item No. 3.4.A | Reference 10 |
| Item No. 3.4.B | Reference 10 |

NRC Audit Report Open Items

| Audit Open Item | Completion Response Reference |
|------------------------|--|
| ISE CI 3.1.2.A | Reference 12 |
| ISE CI 3.1.1.1.A | Reference 12 |
| ISE CI 3.2.1.4.A | Reference 12 |
| ISE CI 3.2.4.4.B | Reference 12 and updated with this submittal as provided below |
| AQ 40 | Reference 12 |
| OIP.9 | References 10 and 12 |
| OIP.11 | References 6 and 12 |
| SE.10 | Reference 12 |
| SE.12 | Reference 12 |

The following table documents completion of the final remaining open items. As previously stated, EGC provides the response for the following items and considers them to be complete for Peach Bottom Atomic Power Station, Unit 2.

| <u>Item</u> | <u>Description</u> | <u>Reference</u> |
|---|--|-------------------------|
| ISE CI 3.2.4.4.B Communications System Upgrades | The PBAPS plan provides for the installation and connection of EMNet Voice over IP (VoIP) phones and new network switches (Power over Ethernet (PoE) capable) for the MCR to an existing Level 2 network. Four EMNet phone connections have been installed to replace Emergency Response | <u>Complete</u> |

| | | |
|--|---|--|
| | <p>Organization (ERO) hotlines, Nuclear Accident Reporting System (NARS) or dedicated ring downs in the MCR. These phones are located on the Control Room Supervisor's desk, the Plant Reactor Operator's desk with one each on the Unit 2 and Unit 3 Reactor Operators' desks. A network cable has been run to the MCR north office area that can be the location of the temporary TSC when the current TSC, Unit 1 control room, is unavailable. The satellite system uses a fixed mount dish that is installed on the Radwaste building roof. This dish is reasonably protected from winds with mounting designed for 150 mph. The dish can survive winds up to 125 mph. If the permanently mounted dish is damaged during the event, a portable satellite dish is available for setup and use which is stored in the FLEX storage building which is protected. In-plant communications utilizes a duplicate radio repeater system located inside of the Unit 3 reactor building with a deployable antenna to allow operators to use their radios for communication after a BDBEE. The plant radio "Talk Around" is adequate for line of sight communications and extra batteries and chargers are available and stored in the FLEX Robust Building. Three portable satellite phones are available for offsite communications.</p> | |
|--|---|--|

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 | February 14, 2013 |
| 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 |
| Modification Development: | |
| Phases 1 and 2 modifications | November 11, 2016 |
| National SAFER Response Center Operational | September 30, 2014 |
| Procedure Development: | |
| Strategy procedures | October 21, 2016 |

| Milestone | Completion Date |
|---|------------------------|
| Validate Procedures (NEI 12-06, Sect. 11.4.3) | October 30, 2016 |
| Maintenance procedures | October 21, 2016 |
| Staffing analysis | May 8, 2015 |
| Modification Implementation | |
| Phases 1 and 2 modifications | November 11, 2016 |
| Storage plan and construction | October 21, 2015 |
| FLEX equipment acquisition | October 21 2015 |
| Training completion | October 14, 2015 |
| Unit 2 implementation date | November 10, 2016 |

ORDER EA-12-049 COMPLIANCE ELEMENTS SUMMARY

The elements identified below for Peach Bottom Atomic Power 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, and 12), and any additional docketed correspondence, demonstrate compliance with Order EA-12-049.

Strategies - Complete

Peach Bottom Atomic Power 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 Peach Bottom Atomic Power Station, Units 2 and 3, Final Integrated Plan for mitigating strategies will be provided upon full compliance for Peach Bottom Atomic Power Station, Unit 3 (Fall 2017).

Modifications - Complete

The modifications required to support the FLEX strategies for Peach Bottom Atomic Power 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 Peach Bottom Atomic Power Station, Unit 2 has been procured in accordance with NEI 12-06, Sections 11.1 and 11.2, and has been received at Peach Bottom Atomic Power 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 Peach Bottom Atomic Power 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 Peach Bottom Atomic Power Station, Unit 2 have been completed and provide protection from the applicable site hazards. The equipment required to implement the FLEX strategies for Peach Bottom Atomic Power Station, Unit 2 is stored in its protected configuration.

Procedures – Complete

FLEX Support Guidelines (FSGs) for Peach Bottom Atomic Power 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 Peach Bottom Atomic Power 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 Peach Bottom Atomic Power 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 14), as documented in Reference 15.

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 Peach Bottom Atomic Power 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.

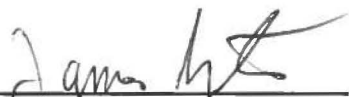
FLEX Program Document - Established

The Peach Bottom Atomic Power 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 P. Helker at 610-765-5525.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 6th day of January 2017.

Respectfully submitted,



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

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator - Region I
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Project Manager, NRR – Peach Bottom Atomic Power Station
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