



Order No. EA-12-049

RS-15-183
July 9, 2015

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: 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"

References:

1. NRC Order 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. Exelon Generation Company, LLC letter to USNRC, 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 EA-12-049), dated February 28, 2013 (RS-13-022)
3. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station Units 1 and 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 15, 2014
4. NRC Order EA-13-109, "Order Modifying Licenses With Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013
5. 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)
6. 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

This letter transmits a request for additional schedule relaxation of the requirements contained in Nuclear Regulatory Commission ("NRC" or "Commission") Order EA-12-049. On March 12, 2012, the NRC 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. Reference 2 provides the Mitigating Strategies Overall Integrated Plan for Limerick Generating Station, Units 1 and 2. In Reference 3, the NRC granted relaxation of certain schedule requirements of Order EA-12-049 related to full containment wetwell venting capability until completion of the Spring 2017 refueling outage for Limerick Generating Station, Unit 2, consistent with the requirements of NRC Order EA-13-109 (Reference 4). Reference 3 identified that the equipment and modifications required to implement the mitigating strategies required by Order EA-12-049 were to be completed and available for use in accordance with the original implementation schedule requirements, except for the primary containment venting strategy. In Reference 5, EGC requested schedule relaxation from compliance with Order EA-12-049 for Limerick Generating Station, Unit 2, for no more than 90 days following restart from the Spring 2015 refueling outage to allow completion of two FLEX storage robust buildings. In Reference 6, the NRC granted the requested relaxation of the requirement for implementation of mitigating strategies for Limerick Generating Station, Unit 2, associated with Order EA-12-049.

The purpose of this letter is to request additional schedule relaxation from NRC Order EA-12-049 for Limerick Generating Station, Unit 2, to 180 days following restart from the Li2R13 refueling outage (Spring 2015); an additional 90 days of relaxation, to allow completion of construction of the two FLEX Storage Robust Buildings. Significant construction delays have been encountered and include: construction quality issues causing significant engineering redesign and construction rework, rebar fabrication contractor supplying incorrect and out of tolerance material, and construction manpower issues causing construction activities to take significantly longer than scheduled.

At this time, Limerick Generating Station, Unit 2, has implemented the mitigating strategies required by Order EA-12-049, except for the primary containment venting strategy and the completion of the two FLEX Storage Robust Buildings. FLEX equipment is currently stored and staged for deployment and use as outlined in Reference 5.

Section IV of NRC Order EA-12-049 (Reference 1) states that licensees proposing to deviate from requirements contained in NRC Order EA-12-049 may request that the Director, Office of Nuclear Reactor Regulation, relax those requirements.

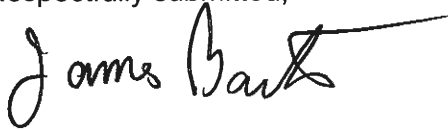
In accordance with Section IV of NRC Order EA-12-049, EGC is requesting that the Director, Office of Nuclear Reactor Regulation, relax the requirement for completion of full implementation as prescribed in Section IV.A.2 of NRC Order EA-12-049 as described in the attachment to this letter.

EGC considers that, upon approval by the NRC, the alternative implementation date regarding NRC Order EA-12-049 proposed in the attachment will constitute a condition of the NRC Order EA-12-049 for Limerick Generating Station, Unit 2. Therefore, there are no new regulatory commitments contained in this letter.

If you have any questions regarding this request, 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 9th day of July 2015.

Respectfully submitted,



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

Attachment: Request for Schedule Relaxation of NRC Order EA-12-049
Requirement IV.A.2 for Limerick Generating Station, Unit 2

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator - Region I
NRC Senior Resident Inspector – Limerick Generating Station
NRC Project Manager, NRR – Limerick Generating Station
Ms. Jessica Kratchman, NRR/JLD/JPMB, NRC
Mr. Jeremy Bowen, NRR/JLD/MSPB, NRC
Ms. Mandy K. Halter, NRR/JLD/JOMB, NRC
Mr. John D. Hughey, 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

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REQUEST FOR SCHEDULE RELAXATION OF NRC ORDER EA-12-049 REQUIREMENT IV.A.2 FOR LIMERICK GENERATING STATION, UNIT 2

Relaxation Request:

Pursuant to the procedure specified in Section IV of Nuclear Regulatory Commission (NRC) Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (Reference 1), Exelon Generation Company, LLC (EGC) hereby submits a second request for schedule relaxation (for Limerick Generating Station, Unit 2) from the Order requirements for completion of implementation currently required to be no later than two (2) refueling cycles after submittal of the overall integrated plan, as required in Condition C.1.a of the Order, or December 31, 2016, whichever occurs first. In Reference 3, the NRC previously granted relaxation of the Order requirement for full implementation until completion of the Spring 2017 refueling outage until the full containment wetwell venting capability required by Order EA-13-109 (Reference 4) is implemented. As stated in Reference 3, Limerick Generating Station, Unit 2, committed to complete installation of equipment and modifications required to implement the mitigating strategies required by Order EA-12-049 in accordance with the original implementation schedule requirements, except for the primary containment venting strategy. In Reference 6, the NRC previously granted relaxation of the requirement for implementation of mitigating strategies for 90 days following the restart of the Limerick Generating Station, Unit 2, from the Li2R13 refueling outage (Spring 2015) to allow the construction of the two FLEX Storage Robust Buildings to be completed as requested by EGC in Reference 7.

Order Requirement from Which Relaxation is Requested:

NRC Order EA-12-049, Section IV.A.2 requires completion of full implementation of the Order requirements to be no later than two (2) refueling cycles after submittal of the overall integrated plan, as required by Condition C.1.a or December 31, 2016, whichever comes first. In accordance with the requirements of the Order, EGC submitted the Limerick Generating Station, Units 1 and 2, Mitigation Strategies Overall Integrated Plan (Reference 2) on February 28, 2013. The Limerick Generating Station, Units 1 and 2, Mitigation Strategies Overall Integrated Plan milestone schedule identified the completion date for full implementation of NRC Order EA-12-049 as May 2015 for Unit 2, in order to satisfy the requirements of NRC Order EA-12-049.

In Reference 3, the NRC granted relaxation of certain schedule requirements of Order EA-12-049 related to full containment wetwell venting capability until completion of the Spring 2017 refueling outage for Limerick Generating Station, Unit 2, consistent with the requirements of NRC Order EA-13-109 (Reference 4). The schedule for implementation of full containment wetwell venting capability is not changed. Reference 3 identified that the equipment and modifications required to implement the mitigating strategies required by Order EA-12-049 were to be completed and available for use in accordance with the original implementation schedule requirements, except for the primary containment venting strategy.

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In Reference 6, the NRC previously granted relaxation of the requirement for implementation of mitigating strategies for 90 days following the restart of the Limerick Generating Station, Unit 2, from Li2R13 refueling outage (Spring 2015) to allow the construction of the two FLEX Storage Robust Buildings to be completed.

As described in Reference 2, Limerick Generating Station has elected to build two FLEX Storage Robust Buildings. The first building is constructed of reinforced concrete approximately 40' wide x 75' long x 21' high and located inside the Protected Area. The second building is constructed of reinforced concrete approximately 60' wide x 90' long x 21' high and located outside the Protected Area. Limerick Generating Station, Unit 2, will be unable to demonstrate compliance to NRC Order EA-12-049 until such time that both FLEX Storage Robust Buildings are completed and the FLEX equipment required to support the mitigation strategies is stored in these buildings.

The current schedule requirement for Limerick Generating Station, Unit 2, implementation of NRC Order EA-12-049, with the exception of the primary containment venting strategy, is 90 days following startup from the Limerick Generating Station, Unit 2, Li2R13 (Spring 2015) refueling outage. The requested additional relaxation would defer the compliance schedule date of NRC Order EA-12-049, with the exception of the primary containment venting strategy, to no later than 180 days following restart from the Li2R13 refueling outage; this is an extension of an additional 90 days. The requested relaxation would enable EGC to complete construction of both FLEX Storage Robust Buildings.

At this time, Limerick Generating Station, Unit 2, has implemented the mitigating strategies required by Order EA-12-049, except for the primary containment venting strategy and the completion of the two FLEX Storage Robust Buildings. FLEX equipment is currently stored and staged for deployment and use as outlined in Reference 7.

Justification for Relaxation Request:

EGC's work in developing, implementing, and maintaining guidance and strategies to maintain or restore core cooling, containment cooling, and spent fuel pool cooling was performed following the NRC-endorsed guidance in Nuclear Energy Institute (NEI) 12-06 (Reference 5), including the selection of type and location of the two FLEX Storage Robust Buildings which are presently under construction. Due to the site configuration and to improve the site's response strategy, two FLEX Storage Robust Buildings are required to be constructed. The first building is constructed of reinforced concrete approximately 40' wide x 75' long x 21' high and is located inside the Protected Area. The second building is constructed of reinforced concrete approximately 60' wide x 90' long x 21' high and is located outside the Protected Area. These buildings have been designed for seismic, wind, tornado and tornado missiles, and flooding conditions. The buildings will store the equipment needed to support the FLEX mitigation strategies and the buildings will be equipped with heating and fans for internal environmental control. The equipment will be stored in a manner to prevent seismic interaction.

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The initial 90-day relaxation of the implementation of the Order EA-12-049 was based on the construction schedule contractor estimates. Significant construction delays have been encountered, which will extend completion of the two buildings beyond the 90-day relaxation period provided in Reference 6. These delays include: construction quality issues causing significant engineering redesign and construction rework, rebar fabrication contractor supplying incorrect and out of tolerance material, and construction manpower issues causing construction activities to take significantly longer than scheduled/estimated.

The first request for schedule relaxation was driven by delays in building design, permitting, and winter construction due to adverse weather conditions. Limerick Generating Station's second request is prompted by challenges and resulting delays for issues that had not been identified or were not fully understood at the time the first relief request was submitted. While significant construction progress has been made on both FLEX Storage Robust Buildings, EGC has determined the original 90-day schedule relief granted is insufficient due to the additional challenges and delays described below.

In late March 2015, after the concrete foundations of both buildings had been poured, the station identified that the foundation-to-wall dowels were not installed in accordance with the design drawings. This installation error eliminated the ability to construct the building as originally designed and resulted in significant engineering redesign and construction rework. The implication of this error propagated throughout the recovery effort and extent of condition was not determined for a period of approximately two months. During this time, significant design reanalysis was required by EGC's building engineer-of-record, and construction work was significantly delayed throughout April and May until the extent of condition was determined and reanalysis was completed.

Upon completion of the reanalysis, it was determined that much of the prefabricated specialty rebar onsite was no longer the correct size due to the required design changes. The rebar fabrication contractor incorrectly interpreted the revised design requirements and deviated from the design without communication and verification of the changes with the station. These deviations were identified after the replacement rebar had been fabricated, delivered to the site, and installation attempted. Replacement rebar was determined to be fabricated to incorrect dimensions or to be out of tolerance, and on multiple occasions, rebar had to be reordered, fabricated, and shipped to the site. These continued problems with the rebar vendor caused significant delays throughout May 2015.

In late May 2015, during final rebar installation for the walls, additional problems were identified with the installation of the wall-to-roof dowels. Corrective actions required engineering evaluations to assess these conditions and significant rework of the roof dowels. These issues along with the continuing problems with the rebar fabrication contractor resulted in additional construction delays through early June 2015. In total, construction and rebar fabrication errors delayed construction approximately two months.

As a result of these construction delays, the previously staggered construction schedules for the two FLEX Storage Robust Buildings became parallel critical paths and the construction crew resource levels were not adequate to build both buildings simultaneously and meet the

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aggressive schedule. The EGC construction contractor experienced difficulties in obtaining qualified/trained craft resources in a timely manner due to the high demand during the peak construction season. These resource limitations also drove longer than scheduled durations for construction activities. Additional schedule slippage has occurred as a result of the re-sequencing of parallel construction activities to series, and the late identification of needed activities by the construction contractor.

Despite the challenges and delays noted above, significant construction progress has been accomplished on both FLEX Storage Robust Buildings. EGC has continued to work two (2) 10-hour shifts per day, 6 days per week on each FLEX Storage Robust Building. The current status of the two (2) FLEX Storage Robust Buildings is as follows:

- 1) The 60'x90' (OCA) building is approximately 50% complete, having poured concrete for all walls as of July 2, 2015. Major milestones remaining include placement of roof steel beams and decking, rebar for roof mats and mechanical hoods, pouring the roof, mechanical hoods and vestibule concrete, installation of two (2) missile barrier doors, and the installation of electrical, mechanical and fire protection systems.
- 2) The 40'x75' (PA) building is approximately 60% complete, having poured all walls/vestibules and completed placement of the roof steel girders as of July 2, 2015. Major milestones remaining include placement of roof steel decking, rebar for roof mats and mechanical opening hoods, pouring the roof and mechanical hoods concrete, installation of two (2) missile barrier doors, and the installation of electrical, mechanical and fire protection systems.

The current construction schedule reflects that both FLEX Storage Robust Buildings will be complete by September 4, 2015; however, a number of significant risks exist that could potentially impact this schedule. These risks include delays due to weather, heat stress limitations, material/equipment availability, and engineering and installation challenges. Recognizing these potential risks and the historical/current productivity levels, EGC believes that an additional 90-day extension request is required.

To address the challenges described above, mitigate additional risks, and ensure that both FLEX Storage Robust Buildings are completed within the requested extension period, the following corrective actions have been implemented:

- 1) Two (2) independent third party quality assurance firms have been retained for verification of construction activities in accordance with design.
- 2) Dedicated engineering resources (including building engineer-of-record) are engaged to develop/review design changes and shop drawings to mitigate errors.
- 3) Additional craft resources have been allocated to support construction of both buildings on each shift.
- 4) Additional supervision has been allocated to support construction of both buildings on each shift.
- 5) Additional engineering hold points have been added to the work activities to verify compliance with the design.

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The completion of the two FLEX Storage Robust Buildings is the only item affecting the compliance schedule. Other FLEX equipment and modifications required to implement the mitigation strategies required by NRC Order EA-12-049, except for primary containment venting strategies, have been completed and are available for use in accordance with the implementation schedule requirements specified in the Order.

Based on the negative impact on the construction progress of the two FLEX Storage Robust Buildings and the possibility of further delays, EGC is requesting that the Director, Office of Nuclear Reactor Regulation, relax the requirement for the schedule of compliance implementation for Unit 2, as prescribed in Section IV.A.2 of the Order. Presently, the Unit 2 FLEX Order compliance date is 90 days following startup from the Limerick Generating Station, Unit 2, Li2R13 (Spring 2015) refueling outage, except for the primary containment venting strategy. EGC requests a relaxation of the Limerick Generating Station, Unit 2, FLEX compliance date to no later than 180 days following restart from the Li2R13 refueling outage; this is an extension of an additional 90 days.

The requested relaxation of an additional 90 days has been determined to be adequate to recover from the identified delays. This will allow the station to safely finish construction activities in support of implementation of the FLEX mitigation strategies for Limerick Generating Station, Unit 2. EGC is confident that the two FLEX Storage Robust Buildings will be completed and become operational within the additional 90-day extension.

The mitigation strategy requirements imposed by NRC Order EA-12-049 provide additional defense-in-depth measures for mitigating consequences of a beyond-design-basis external event. A sequence of events such as the Fukushima Dai-ichi accident is unlikely to occur in the United States based on current regulatory requirements and existing plant capabilities. Therefore, allowing additional time for completion of the FLEX Storage Robust Buildings is not a significant increase in plant risk. At this time, Limerick Generating Station, Unit 2, has implemented the mitigating strategies required by Order EA-12-049, except for the primary containment venting strategy and the completion of the two FLEX Storage Robust Buildings. As previously committed to in the first relaxation request (Reference 7), during the extension period, until the equipment can be moved into the FLEX Storage Robust Buildings, the key equipment (large generators and pumps) will be stored in locations which provide physical separation, while maintaining post event deployment capability. This minimizes the likelihood of one event impacting both sets of equipment. The locations are not susceptible to flooding events or the impact of a building collapse. In the case of a predicted hurricane, one set of equipment will be moved to a protected location. These strategies provide enhanced plant capability to mitigate beyond-design-basis external events. Therefore, the requested relaxation does not reduce nuclear safety or safe plant operations.

Conclusion:

As described above, compliance with the NRC Order EA-12-049 schedule required for completion of implementation of mitigation strategies and equipment would result in significant hardship and unusual difficulty without a compensating increase in the level of safety. An

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additional 90 days is required in order to allow completion of construction of the two FLEX Storage Robust Buildings identified above. Therefore, in accordance with the provisions of Section IV of the Order, we request relaxation of the requirement described in Section IV.A.2.

References:

1. NRC Order 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. Exelon Generation Company, LLC letter to USNRC, "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 EA-12-049)," dated February 28, 2013 (RS-13-022)
3. NRC Letter to Exelon Generation Company, LLC, Limerick Generating Station Units 1 and 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 15, 2014
4. NRC Order EA-13-109, "Order Modifying Licenses With Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013
5. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012
6. 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
7. Exelon Generation Company, LLC letter to USNRC, Request for Schedule Relaxation form 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)