Exelon Generation®

Order No. EA-12-049

RS-13-121

August 28, 2013

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

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: 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)

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-13-021)
6. NRC Order Number EA-12-050, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents," dated March 12, 2012
7. NRC Order Number 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

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 LaSalle County 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. The purpose of this letter is to provide the first 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.

As described in Reference 5, full implementation of NRC Order EA-12-049 required mitigation strategies is dependent upon implementation of reliable hardened containment venting capability established in accordance with NRC Order EA-12-050 (Reference 6). NRC Order EA-13-109 (Reference 7) issued by the NRC on June 6, 2013, rescinded the requirements of Order EA-12-050 and established revised schedule timelines and implementation dates for reliable hardened containment vents capable of operation under severe accident conditions. The revised schedule and implementation timeline contained in Order EA-13-109 delays the ability to achieve full implementation of the mitigation strategy requirements of Order EA-12-049. This need for relaxation from the implementation requirements of Order EA-12-049 is described in Section 5 of the enclosed update report. The request for relaxation of the full implementation schedule requirements of Order EA-12-049 will be submitted separately.

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

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of August 2013.

Respectfully submitted,

Glen T. Kaegi
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure:

1. LaSalle County Station, Units 1 and 2 First Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

cc: Director, Office of Nuclear Reactor Regulation
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# Enclosure

## LaSalle County Station, Units 1 and 2

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

(9 pages)

## Enclosure

# LaSalle County Station, Units 1 and 2 First Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

## 1 Introduction

LaSalle County 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 Reference 2. This enclosure provides an update of milestone accomplishments since submittal of the Overall Integrated Plan, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

## 2 Milestone Accomplishments

None

## 3 Milestone Schedule Status

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

The revised target completion dates impact the order implementation date. An explanation of the impact of these changes is provided in Section 5 of this enclosure.

**Milestone Schedule**

**Site: LaSalle**

| Activity | Target Completion Date | Activity Status | Revised Target Completion Date |
|---|---|---|---|
| Submit 60 Day Status Report | Oct 2012 | Complete | |
| Submit Overall Integrated Plan | Feb 2013 | Complete | |
| Contract with Regional Response Center (RRC) | | Complete | |
| **Submit 6 Month Updates:** | | | |
| Update 1 | Aug 2013 | Complete with this submittal | |
| Update 2 | Feb 2014 | Not Started | |
| Update 3 | Aug 2014 | Not Started | |

| Activity | Target Completion Date | Activity Status | Revised Target Completion Date |
|---|---|---|---|
| Update 4 | Feb 2015 | Not Started | |
| Update 5 | Aug 2015 | Not Started | |
| Update 6 | Feb 2016 | Not Started | |
| Update 7 | Aug 2016 | Not Started | |
| Submit Completion Report | Sep 2017 | Not Started | See Section 5 of this enclosure |
| **Modification Development & Implementation:** | | | |
| Unit 1 Modification Development (All FLEX Phases) | Jan 2015 | Started | |
| Unit 1 Modification Implementation (All FLEX Phases) | Mar 2016 | Not Started | |
| Unit 2 Modification Development (All FLEX Phases) | Jan 2014 | Started | |
| Unit 2 Modification Implementation (All FLEX Phases) | Feb 2015 | Not Started | |
| **Procedures:** | | | |
| Create Site-Specific Procedures | Feb 2015 | Not Started | |
| Validate Procedures (NEI 12-06, Sect. 11.4.3) | Feb 2015 | Not Started | |
| Create Maintenance Procedures | Feb 2015 | Not Started | |
| Perform Staffing Analysis | Oct 2014 | Not Started | |
| Storage Plan and Construction | Feb 2015 | Started | |
| FLEX Equipment Acquisition | Feb 2015 | Started | |
| Training Completion | Feb 2015 | Not Started | |
| Regional Response Center Operational | Dec 2014 | Started | |
| Unit 1 FLEX Implementation | Mar 2016 | Started | See Section 5 of this enclosure |
| Unit 2 FLEX Implementation | Feb 2015 | Started | See Section 5 of this enclosure |
| Full Site FLEX Implementation | Mar 2016 | Started | See Section 5 of this enclosure |

# 4 Changes to Compliance Method

Attachment 3 of Reference 1 contained conceptual sketches of the water supply and electrical power supply strategies. On the electrical sketch, a power supply route from 480V SWGR 135Y was shown to the pre-staged FLEX pump. After further evaluation, it has been determined that this power supply route is not required since the pre-staged FLEX pump will have one power supply path through 480V SWGR 136Y (Primary Strategy) and another possible power supply route directly from the 480VAC FLEX Generator via the Mobile Distribution Panel (Alternate Strategy). The conceptual electrical power supply sketch has been marked up to show the deletion of the power supply path from 480V SWGR 135Y and is attached (Attachment 1).

In addition, Reference 1 contained descriptions of the alternate FLEX water supply strategy in the "Identify Modifications" section of various functions that stated, "*...install water piping in hardened vent pipe chase on east side of reactor buildings with external connection at ground elevations and internal connections at 761 feet elevation...and 843 feet elevation for injection to the spent fuel pools...*" After further review, the conceptual design has moved the upper penetration from 843 feet to 820 feet elevation for the spent fuel pool connection point. It is planned that hoses, vice piping, would be run from the 761 ft elevation and 820 ft elevation connection points to the existing B.5.b RHR connections and the spent fuel pools, respectively.

No other changes to the FLEX strategies have been identified at this time.

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

This section provides a summary of needed relief/relaxation only. The specific details will be submitted in a separate document at a later date.

NRC Order EA-12-049 requires implementation of Mitigation Strategies to include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies. Reference 1 provided the LaSalle County Station response to NRC Order EA-12-049. The cover letter to this enclosure identifies that delays in implementing the Hardened Containment Vent System as required by NRC order EA-12-050 will also affect implementation of the Mitigation Strategies Order EA-12-049 actions.

The Reference 1 enclosure describes the LaSalle County Station Mitigation Strategies that are based on venting the containment using the Hardened Containment Vent System. It also describes that a modification to install a Hardened Containment Vent System (HCVS) is required. Thus, the LaSalle County Station NRC Order EA-12-049 response provided in Reference 1 was premised on installation and use of a Hardened Containment Vent System as required by NRC Order EA-12-050.

Upon issuance of NRC Order EA-13-109 on June 6, 2013, the NRC revised the technical and schedule requirements applicable to the Hardened Containment Vent System and rescinded the requirements of NRC Order EA-12-050.

As a result, full compliance to the Mitigation Strategies required by NRC Order EA-12-049 and described in Reference 1 for LaSalle County Station Units 1 and 2 will not be achieved until compliance to NRC Order EA-13-109 is achieved. Compliance with NRC Order EA-13-109 wetwell vent requirements is

required by startup from the U2 refuel outage in the Spring of 2017 and by startup from the U1 refuel outage in the Spring of 2018. Compliance with NRC Order EA-13-109 drywell vent requirements is required by startup from the U2 refuel outage in the Spring of 2019 and by startup from the U1 refuel outage in the Spring of 2018. Relief/relaxation from the NRC Order 12-049 IV.A.2 requirements is required.

LaSalle County Station will be 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 unless otherwise described.

# 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.

| Section Reference | Overall Integrated Plan Open Item | Status |
|---|---|---|
| Sequence of Events (p.5) | 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. | Not Started |
| Sequence of Events (p.10) | 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. | Not Started |
| Sequence of Events (p.10) | 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 Analysis Deviation Table." Planned to be completed and submitted with August 2013 Six Month Update. | Completed. Attached to this 6-Month Update (Attachment 2). |
| Strategy Deployment (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 | Started |

| | | |
|---|---|---|
| | actions will be implemented to ensure all strategies can be deployed during all modes of operation.<br><br>Identification of storage areas and creation of the administrative program are open items. | |
| Programmatic Controls (p.12) | An administrative program for FLEX to establish responsibilities, and testing & maintenance requirements will be implemented. | Not Started |
| Core Cooling Phase 1 (p.17) | 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. | Not Started |
| Fuel Pool Cooling Phase 1 (p.35) | Complete an evaluation of the spent fuel pool area for steam and condensation. | Not Started |
| Safety Functions Support Phase 1 (p.44) | Evaluate the habitability conditions for the Main Control Room and develop a strategy to maintain habitability. | Not Started |
| Safety Functions Support Phase 1 (p.44) | Evaluate the habitability conditions for the Auxiliary Electric Equipment Room (AEER) and develop a strategy to maintain habitability. | Not Started |
| Safety Functions Support Phase 2 (p.48) | Develop a procedure to prop open battery room doors upon energizing the battery chargers to prevent a buildup of hydrogen in the battery rooms. | Not Started |
| | | |
| | **Draft Safety Evaluation Open Item** | **Status** |
| | N/A | N/A |

# 7 Potential Draft Safety Evaluation Impacts

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

# 8 References

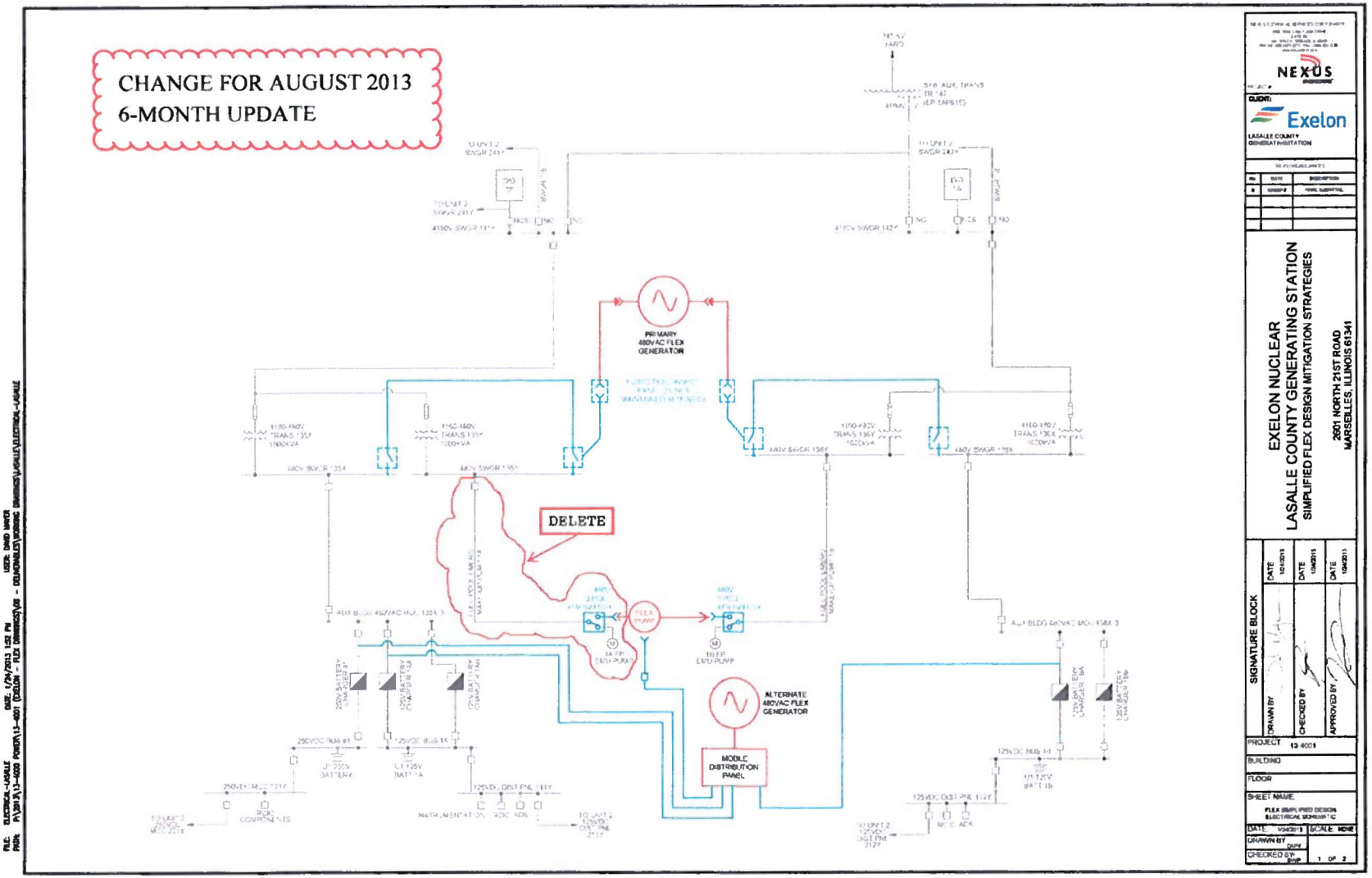
The following references support the updates to the Overall Integrated Plan described in this enclosure.

1. LaSalle County Station's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013.
2. NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
3. 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. LS-MISC-017, Rev. 1, "MAAP Analysis to Support Initial FLEX Strategy," LaSalle Units 1 and 2.
5. Proprietary NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Revision 1, January 2013.
6. NRC Order EA-12-050, "Order to Modify Licenses with Regard to Reliable Hardened Containment Vents," dated March 12, 2012.

# 9 Attachments

1. FLEX Simplified Design Electrical Schematic
2. NSSS Significant Reference Analysis Deviation Table

## Attachment 1



**Attachment 2**

**NSSS Significant Reference Analysis Deviation Table**

**(Attachment 1B in the Overall Integrated Plan Report)**

| Item | Parameter of Interest | NEDC-33771P Value | NEDC-33771P Page | Plant Applied Value | Gap and Discussion |
|---|---|---|---|---|---|
| **NOTE**<br>NEDC-33771P Rev 1 Table 4.5.2-4b (Containment WW Venting, BWR/5, RCIC Suction from CST) is closest to the LaSalle strategy for Maintaining Containment Integrity. The "Plant Applied Value" column is from LaSalle evaluation LS-MISC-017, Rev. 1 (Reference 4 to this Enclosure). Differences between the GEH SHEX case and the MAAP analysis of the LaSalle strategy are listed below. | | | | | |
| **Input Parameter Values** | | | | | |
| 1 | Core thermal power | Note 1 | 18 | 3546 MWT | The GEH analysis used a higher core thermal power level. The LaSalle analysis used the current licensed thermal power level. |
| 2 | Primary System Leakage | Note 1 | 7 | 100 gpm | The LaSalle analysis used 100 gpm primary system leakage to account for reactor recirc pump seal leakage. |
| 3 | RPV Depressurization Rate | Note 1 | 8 | 20°F/hr | LaSalle procedure LOA-AP-101(201) specifies a less than or equal to 20°F/hr cooldown rate in the SBO response section (Attachment K). |
| 4 | Drywell Free Volume | Note 1 | 11 | 220402.4 $ft^3$ | The differences in model plant structural design and minor differences in assumed parameter values at time zero should have a negligible effect on the progression of the event after a few hours. |
| 5 | Initial Drywell Temperature | Note 1 | 11 | 105°F | |
| 6 | Initial Drywell Pressure | Note 1 | 11 | 14.32 psia | |
| 7 | Initial Drywell Humidity | Note 1 | 11 | 45% | |
| 8 | Wetwell Free Volume | Note 1 | 9 | 165100 $ft^3$ | |
| 9 | Initial Wetwell Pressure | Note 1 | 9 | 14.32 psia | The differences in model plant structural design and |

| | | | | | |
|---|---|---|---|---|---|
| 10 | Suppression Pool Volume | Note 1 | 10 | 130657 $ft^3$ | minor differences in assumed parameter values at time zero should have a negligible effect on the progression of the event after a few hours. |
| 11 | Suppression Pool Temperature | Note 1 | 10 | 105°F | |
| 12 | RCIC Suction Source | Note 1 | | Suppression Pool | |
| **Resultant Parameter Values** | | | | | |
| 13 | Maximum Suppression Pool Temperature | Note 1 | 39 | 234°F | In the LaSalle strategy, containment venting starts at 12 psig (then maintained at 8 psig) in the suppression chamber using a 10" vent pipe. These results are from Case 3.e in Reference 4. |
| 14 | Maximum Wetwell Temperature | Note 1 | 39 | 245°F | |
| 15 | Peak Wetwell Pressure | Note 1 | 39 | 26.32 psia | |
| 16 | Maximum Drywell Temperature | Note 1 | 39 | 261°F | |
| 17 | Maximum Drywell Pressure | Note 1 | 39 | 31.22 psia | |

Note 1: The values are GEH proprietary values and have been excluded from this report. The values can be found in NEDC-33771P.