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AUG 26 2015

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

10 CFR 2.202

**SUSQUEHANNA STEAM ELECTRIC STATION
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 (NRC ORDER EA-12-049)
PLA-7377**

**Docket No. 50-387
and No. 50-388**

- References:
1. NRC Order EA-12-049, "Order Modifying 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. PPL Letter (PLA-6923), "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 29, 2012
 5. PPL Letter (PLA-6981), "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 (NRC Order EA-12-049)," dated February 28, 2013
 6. PPL Letter (PLA-7072), "Request for Implementation Date Relief in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (NRC Order EA-12-049)," dated August 26, 2013
 7. NRC Order EA-13-109, "Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," dated June 6, 2013
 8. PPL Letter (PLA-7071), "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 26, 2013
 9. PPL Letter (PLA-7134), "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 20, 2014
 10. NRC Letter from J. S. Bowen to T. S. Rausch, "Susquehanna Steam Electric Station, Units 1 and 2-Interim Staff Evaluation Relating To Overall Integrated Plan In Response To Order EA-12-049 (Mitigation Strategies) (TAC NOS. MF0888 and MF0889)," dated January 24, 2014 (ADAMS # ML13339A764)

11. PPL Letter (PLA-7137), "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 (NRC Order EA-12-049)," dated February 28, 2014
12. NRC Letter from E. J. Leeds to T. S. Rausch, "Susquehanna Steam Electric 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
13. PPL Letter (PLA-7204), "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 (NRC Order EA-12-049)," dated August 28, 2014
14. PPL Letter (PLA-7295), "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 (NRC Order EA-12-049)," dated February 25, 2015

The purpose of this letter is to provide Susquehanna Nuclear, LLC's (Susquehanna) Fifth 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. Enclosure 1 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. Enclosure 2 is a revision of the Mitigation Strategies Overall Integrated Plan that includes several updates. The information provided in Enclosure 2 is considered to contain information concerning physical protection not otherwise designated as Safeguards Information and is designated "Security Sensitive Information" as defined in 10 CFR 2.390 (d)(1). Accordingly, Susquehanna requests that the information provided in Enclosure 2 to the letter be withheld from public disclosure.

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Susquehanna. Reference 1 was immediately effective and directs Susquehanna to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment cooling, 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 Susquehanna's initial status report regarding Mitigation Strategies. Reference 5 provided Susquehanna's initial Mitigation Strategies 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 Request for Relaxation contained in Reference 9 supersedes the Request for Relief made in Reference 6. The Request for Relaxation is based on NRC mandated changes to the Hardened Containment Vent System implementation dates that impact the Mitigation Strategy Overall Integrated Plan. Specifically, the change in implementation dates for the Hardened Containment Vent Order (NRC Order EA-12-050 was rescinded and superseded by NRC Order EA-13-109) impacts the Mitigation Strategy Overall Integrated Plan and implementation timeline. The NRC approved this relaxation in Reference 12.

Enclosure 1 to this letter documents that Susquehanna Unit 2 has implemented all the necessary aspects of the Overall Implementation Plan in Enclosure 2 to this letter to be considered in compliance with the requirements of NRC Order EA-12-049, except for the NRC approved Request for Relaxation (Reference 12) regarding implementation of a Severe Accident Capable Hardened Containment Vent System per NRC Order EA-13-109.

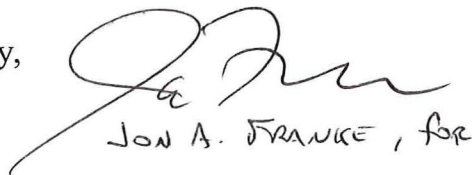
This letter contains no new or revised regulatory commitments.

If you have any questions regarding this report, please contact Mr. Jeffery N. Grisewood, Manager – Nuclear Regulatory Affairs, at (570) 542-1330.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: August 26, 2015

Sincerely,


Jon A. Franke, for

T. S. Rausch

Enclosure 1: Susquehanna Nuclear, LLC's Fifth Six Month Status Report for the Implementation of NRC Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

Enclosure 2: Susquehanna'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), (August 2015) Security-Related Information - Withhold from Public Disclosure Under 10 CFR 2.390

Copy: NRC Region I

Mr. J. E. Greives, NRC Sr. Resident Inspector

Ms. Jessica A. Kratchman, NRR/JLD/PMB, NRC

Mr. M. Shields, PA DEP/BRP

Mr. J. A. Whited, NRC Project Manager

Enclosure 1 to PLA-7377

**Susquehanna Nuclear, LLC's Fifth Six Month
Status Report for the Implementation of NRC
Order EA-12-049, Order Modifying Licenses
with Regard to Requirements for Mitigation
Strategies for Beyond-Design-Basis External
Events**

Susquehanna Nuclear, LLC's Fifth Six Month Status Report for the Implementation of NRC Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

1. Introduction

Susquehanna Nuclear, LLC (Susquehanna) developed an Overall Integrated Plan (Reference 8.1) documenting the diverse and flexible strategies (FLEX), in response to Reference 8.2. This Fifth Six Month Status Report provides an update of milestone accomplishments since submittal of the Third Six Month Status Report (Reference 8.12) related to the Overall Integrated Plan, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

[NOTE: References cited in this enclosure are contained in Section 8.]

2. Milestone Accomplishments

The following milestone(s) have been completed since the development of the Overall Integrated Plan (Reference 8.1), and are current as of July 31, 2015.

- Open Items 2, 3 have been completed.
- All Open Items are now complete.
- The remaining Unit 1 milestones are in progress as listed on the Section 3, Milestone Schedule Status table, for example - modification installation, procedures, and training.

3. Milestone Schedule Status

The following table provides an update to Attachment 2, Milestone Schedule, 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 milestone target completion dates do not impact the Order implementation date at this time. The Interim Staff Evaluation (ISE) from the NRC (Reference 8.9) has been received in time to support implementation of the Mitigation Strategies. The Open Item and Confirmatory Items identified in the ISE were addressed by the Regulatory Audit Process. The NRC performed the Mitigation Strategies and Spent Fuel Pool Level Instrumentation Audit at Susquehanna the week of December 8th, 2014. During the Audit Exit meeting the NRC considered all Mitigation Strategies related items to be closed. The NRC's Audit Report documented the closure status of the Mitigation Strategies issues.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Plan	February 2013	Complete	
Expected receipt of draft SER from NRC (or ISE)	September 2013	Complete	January 2014
Submit 6 Month Updates:			
Update 1	August 2013	Complete	
Update 2	February 2014	Complete	
Update 3	August 2014	Complete	
Update 4	February 2015	Complete	
Update 5	August 2015	Complete	
Update 6	February 2016	Not Started	
Update 7	August 2016	Not Started	
Update 8	February 2017	Not Started	
Update 9	August 2017	Not Started	
Update 10	February 2018	Not Started	
FLEX Strategy Evaluation Unit 2	April 2015	Complete*	May 2015*
FLEX Strategy Evaluation Unit 1	April 2016	Started	
Validation by Walk-throughs or Demonstration(s):			
Walk-throughs or Demonstrations Unit 2	April 2015	Complete*	May 2015*
Walk-throughs or Demonstrations Unit 1	April 2016	Started	
Perform Staffing Analysis	October 2014	Complete	
Modifications:			

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Modifications Evaluation	June 2015	Started	August 2015*
Unit 2 Design Engineering - Issue Unit 2 Design Change Documents (for all Phases)	June 2014	Complete (except HCVS, see Ref. 11)	
Unit 2 Implementation Outage	April 2015	Complete*	May 2015*
Unit 1 Design Engineering - Issue Unit 1 Design Change Documents (for all Phases)	June 2015	Started (except HCVS, see Ref. 11)	August 2015*
Unit 1 Implementation Outage	March 2016*	Not Started	
Storage:			
Storage Design Engineering	May 2014	Complete	
Storage Implementation - Equipment storage (reasonable protection) ready for operation with required FLEX equipment available for use	April 2015	Complete*	May 2015*
FLEX Equipment:			
Procure On-Site Equipment	April 2015	Complete*	May 2015*
Contract with Vendor for National SAFER Response Center (NSRCs) established	March 2013	Complete	
Develop Strategies with NSRC	April 2015	Complete*	Feb 2015*

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Establish offsite staging location [Install Off-Site Delivery Station (if Necessary)]	May 2015	Complete	
National SAFER Response Centers in service for Susquehanna	December 2014	Complete*	Feb 2015*
Procedures:			
BWROG issue Emergency Procedure and Severe Accident Guidelines (EPGs/SAGs) Rev. 3	February 2013	Complete	
Procedures Complete Unit 2 FLEX Implementation (including FSGs and maintenance)	April 2015	Complete*	May 2015*
Procedures Complete Unit 1 FLEX Implementation (including FSGs and maintenance)	April 2016	Started	
Training:			
Develop Training Plan	May 2014	Complete	
Training Complete	February 2016	Started Complete for Unit 2 and Common, Unit 1 planned for Feb 2016	
Unit 2 FLEX Implementation	April 2015	Complete*	May 2015*
Unit 1 FLEX Implementation	April 2016	Started	

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Full Site FLEX Implementation	April 2016	Started	
Submit Completion Report	August 2019 (after HCVS Order actions are complete per Ref 8.11)*	Not Started	
* Revised since the six month update submitted February 25, 2015 (Reference 8.13)			

4. Changes to Compliance Method

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 8.1 provided Susquehanna's response to the NRC Order EA-12-049. The cover letter identifies that delays in implementing the Hardened Containment Vent System as required by NRC Order EA-12-050 will affect implementation of the Mitigation Strategies NRC Order EA-12-049 actions.

The Reference 8.1 enclosure describes Susquehanna's Mitigation Strategies that are based on venting the containment using the Hardened Containment Vent System. It also describes that a modification is required to install a Hardened Containment Vent System.

Thus the Susquehanna response to NRC Order EA-12-049 provided in Reference 8.1 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, the NRC staff changed technical and schedule requirements applicable to the Hardened Containment Vent System and rescinded the requirements of the 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 8.1 for Susquehanna Units 1 and 2 will not be achieved until compliance with NRC Order EA-13-109 is achieved as described in Reference 8.8. This relaxation was granted in Reference 8.11.

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

Susquehanna expects to comply with NRC Order EA-12-049, but needs relaxation of the implementation dates. The specific details have been submitted in a separate document (Reference 8.8).

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 8.1 provided Susquehanna's response to the NRC Order EA-12-049. The cover letter 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 NRC Order EA-12-049 actions.

The Reference 8.1 enclosure describes the Susquehanna Mitigation Strategies that is based on venting the containment using the Hardened Containment

Vent System. It also describes that a modification to install a Hardened Containment Vent System is required.

Thus Susquehanna's NRC Order EA-12-049 response provided in Reference 8.1 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, the NRC staff changed technical and schedule requirements applicable to the Hardened Containment Vent System and rescinded the requirements of the 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 8.1 for Susquehanna Units 1 and 2 will not be achieved until compliance with NRC Order EA-13-109 is achieved.

Relaxation of the NRC Order EA-12-049 IV.A.2 requirements is required and has been requested (Reference 8.8). This relaxation was granted in Reference 8.11.

6. Open Items from Overall Integrated Plan and Draft Safety Evaluation

The following tables provide a summary and status as of July 31, 2015 of the open items documented in the Overall Integrated Plan and ISE. The Open Item and Confirmatory Items identified in the ISE will be addressed by the Regulatory Audit Process. The NRC performed the Mitigation Strategies and Spent Fuel Pool Level Instrumentation Audit at Susquehanna the week of December 8th, 2014. During the Audit Exit meeting the NRC considered all Mitigation Strategies related items to be closed. The NRC's Audit Report documented the closure status of the Mitigation Strategies issues.

Overall Integrated Plan Open Item	Status
1. Phase 3 Shutdown Cooling Capability	Complete
2. EOP changes required to support Mitigation Strategies.	Complete*
3. Develop SSES "Response Plan" for use of the National SAFER Response Centers (NSRC).	Complete*
4. FLEX Equipment Storage	Complete

Overall Integrated Plan Open Item	Status
5. Review GEH Report NEDC 33771P, GEH Evaluation of FLEX Implementation Guidelines and identify exceptions to the report as required in Attachment 1B.	Complete
6. Determine appropriate use of RCIC or FLEX pump mitigation strategy if ELAP occurs when operating in Mode 4 and when transitioning to mode 3.	Complete
7. Evaluate the impact of RCIC pump seal failures. EC-050-1034, Rev. 0 approved 12/13/2013	Complete
8. Evaluate potential RCIC pump modifications.	Complete
9. Establish method of venting the Refuel Floor. EC-012-6122, Rev 0 approved on 4/29/2014.	Complete
10. Evaluate means to assure continued long term gas supply for ADS/SRVs.	Complete
11. Evaluate means to transfer diesel fuel oil from storage tanks to the diesel fueled equipment.	Complete
12. Evaluate the effects of injecting Spray Pond water (UHS) to the RPV over a long period of time of 72 hours or longer.	Complete
13. The calculation EC-030-1006, Rev 14, Control Structure Temperature Response to a Station Blackout or Fire Induced Loss of Control Structure HVAC was performed. However, final review and approval of the calculation EC-030-1006, Rev 14, have not been performed. The calculation has now been reviewed and approved.	Complete

Overall Integrated Plan Open Item	Status
<p>14. The calculation EC-SBOR-0504, Rev 6, Reactor Building Heatup Analysis during Station Blackout was performed. However, final review and approval of the calculation EC-SBOR-0504, Rev 6 have not been performed. Revision 7 of this calculation was approved on 3/20/2014. Appendix O was added to identify and evaluate mitigating measures that could be implemented to enhance Switchgear and Load Center Room cooling, as needed, for time > 72 hours.</p>	Complete
<p>15. Fuel consumption and refuel intervals will be determined during the procurement process for the 4160VAC generators.</p>	Complete
<p>* Revised since the six month update submitted February 25, 2015 (Reference 8.13)</p>	

7. Potential Draft Safety Evaluation Impacts

None - Susquehanna received the ISE and closed the Open Item and Confirmatory Items via the audit process. The NRC performed the Mitigation Strategies and Spent Fuel Pool Level Instrumentation Audit at Susquehanna the week of December 8th, 2014. During the Audit Exit meeting the NRC considered all Mitigation Strategies related items to be closed. The NRC's Audit Report documented the closure status of the Mitigation Strategies issues.

8. References

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

- 8.1 PLA-6981, "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 (NRC Order EA-12-049)," dated February 28, 2013.
- 8.2 NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
- 8.3 NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August, 2012.
- 8.4 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.
- 8.5 PLA-7072, "Request for Implementation Date Relief in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (NRC Order EA-12-049)," dated August 26, 2013.
- 8.6 NRC Order EA-13-109, "Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013.
- 8.7 PLA-7071, "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 26, 2013.
- 8.8 PLA-7134, "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 20, 2014.
- 8.9 NRC Letter from J. S. Bowen to T. S. Rausch, "Susquehanna Steam Electric Station, Units 1 And 2 –Interim Staff Evaluation Relating To Overall Integrated Plan In Response To Order EA-12-049 (Mitigation Strategies) (TAC NOS. MF0888 and MF0889)," dated January 24, 2014 (ADAMS # ML13339A764).

- 8.10 PLA-7137, "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 (NRC Order EA-12-049)," dated February 28, 2014.
- 8.11 NRC Letter from E. J. Leeds to T. S. Rausch, "Susquehanna Steam Electric 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.
- 8.12 PLA-7204, "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 (NRC Order EA-12-049)," dated August 28, 2014.
- 8.13 PLA-7295, "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 (NRC Order EA-12-049)," dated February 25, 2015.