

Order No. EA-12-051

RS-15-207

August 28, 2015

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

> Nine Mile Point Nuclear Station, Unit 2 Renewed Facility Operating License No. NPF-69 NRC Docket No. 50-410

Subject: Fifth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

References:

- 1. NRC Order Number EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012
- 2. NRC Interim Staff Guidance JLD-ISG-2012-03, "Compliance with Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," Revision 0, dated August 29, 2012
- 3. NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," Revision 1, dated August 2012
- 4. Constellation Energy Nuclear Group, LLC letter to NRC, Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated October 26, 2012
- Constellation Energy Nuclear Group, LLC letter to NRC, Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 28, 2013
- Constellation Energy Nuclear Group, LLC letter to NRC, Supplement to Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated March 8, 2013
- 7. Constellation Energy Nuclear Group, LLC letter to NRC, First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 27, 2013 (Nine Mile Point Nuclear Station, Unit 2)

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- 8. Constellation Energy Nuclear Group, LLC letter to NRC, Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 24, 2014 (Nine Mile Point Nuclear Station, Unit 2)
- 9. Exelon Generation Company, LLC letter to NRC, Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 26, 2014 (Nine Mile Point Nuclear Station, Unit 2)
- Exelon Generation Company, LLC letter to NRC, Fourth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 19, 2015 (RS-15-058)
- 11. NRC letter to Constellation Energy Nuclear Group, LLC, Nine Mile Point Nuclear Station, Unit 2 Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC No. MF1141), dated November 15, 2013
- 12. Letter from J. Paige (NRC) to P. M. Orphanos (EGC), Nine Mile Point Nuclear 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. MF1129, MF1130, MF1131, and MF1132), dated April 28, 2015

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Exelon Generation Company, LLC (EGC), previously Constellation Energy Nuclear Group, LLC (Exelon, the licensee). Reference 1 was immediately effective and directs EGC to install reliable spent fuel pool level instrumentation. 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 12-02, Revision 1 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the EGC initial status report regarding reliable spent fuel pool instrumentation. References 5 and 6 provided the Nine Mile Point Nuclear Station, Unit 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. References 7, 8, 9, and 10 provided the first, second, third, and fourth six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for the Nine Mile Point Nuclear Station, Unit 2. The purpose of this letter is to provide the 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. 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. The enclosed report also addresses the NRC Interim Staff Evaluation Request for Additional Information Items contained in Reference 11, and any NRC Audit Report open items contained in Reference 12.

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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 2015.

Respectfully submitted,

James Barstow

Director - Licensing & Regulatory Affairs Exelon Generation Company, LLC

Enclosure:

Nine Mile Point Nuclear Station, Unit 2 Fifth Six-Month Status Report for the Implementation of Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator - Region I
NRC Senior Resident Inspector – Nine Mile Point Nuclear Station
NRC Project Manager, NRR – Nine Mile Point Nuclear Station
Ms. Jessica A. Kratchman, NRR/JLD/PMB, NRC
Mr. Jason C. Paige, NRR/JLD/JOMB, NRC

Enclosure

Nine Mile Point Nuclear Station, Unit 2

Fifth Six-Month Status Report for the Implementation of Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation

(8 pages)

1 Introduction

The Nine Mile Point Unit 2 (NMP2) Overall Integrated Plan (OIP) was submitted to the Nuclear Regulatory Commission (NRC) in February 2013 (Reference 1), documenting the requirements to install reliable spent fuel pool level instrumentation (SFPLI), in response to Reference 2. Subsequently, a supplement to the OIP for SFPLI was submitted to the NRC in March 2013 (Reference 3). By letter dated June 5, 2013 (Reference 4), the NRC requested that NMP respond to a request for additional information (RAI) regarding the NMP2 OIP for Reliable Spent Fuel Pool Instrumentation. By letter dated July 5, 2013 (Reference 5), NMP2 responded to the June 5, 2013 RAI. By letter dated Aug 27, 2013 (Reference 6), NMP2 provided the first Six Month Update. By letter dated November 15, 2013 (Reference 7), the NRC provided NMP with its Interim Staff Evaluation (ISE) and RAI regarding the OIP for Reliable Spent Fuel Pool Instrumentation. By letter dated February 24, 2014 (Reference 10), NMP2 provided the second Six Month Update. By letter dated August 26, 2014 (Reference 11), NMP2 provided the third Six Month Update. By letter dated February 19, 2015 (Reference 12), NMP2 provided the fourth Six Month Update. Installation is complete up to the final power supply tie-in, which requires a refueling outage.

By letter dated April 28, 2015 the NRC issued to Nine Mile Point the report for the on-site audit conducted at NMP in November 2014 regarding Mitigating Strategies and Reliable Spent Fuel Instrumentation related to Orders EA-12-049 and EA-12-051, which provided a status of all open audit review items that the NRC staff is evaluating in anticipation of issuance of a combined Safety Evaluation for both the Mitigating Strategies and Spent Fuel Instrumentation orders (Reference 13). The Audit Report contained no open items related to Spent Fuel Instrumentation at NMP.

This enclosure provides an update of milestone accomplishments since submittal of the OIP, including any changes to the compliance method, schedule, or need for relief/relaxation and associated basis (if applicable). NMP2 has completed detailed design for the SFPLI System and completed Site Acceptance Testing.

2 Milestone Accomplishments

The following milestones have been completed since the development of the OIP (Reference 1), and are current as of August 6, 2015.

•	Submitted Overall Integrated Plan	1Q2013
•	Issued Purchase Order for Instrumentation	2Q2013
•	Commenced Engineering and Design	2Q2013
•	Selected Instrumentation and Technology	2Q2013
•	Received Spent Fuel Pool Instrumentation	2Q2014
•	Completed Detailed Design	2Q2014
•	Commenced installation of SFPLI System	4Q2014

3 Milestone Schedule Status

Table 1 provides an update to the milestone schedule to support the OIP (References 1 and 3). It provides the activity status of each item and the expected completion date, noting any change. The dates are planning dates subject to change as design and implementation details are developed. Any changes to the following target completion dates will be reflected in future six month updates.

Table 1
Status of Reliable Spent Fuel Pool Instrumentation OIP Milestones

Milestone	Target Completion Date	Status	Revised Target Completion Date
Commence Engineering and Design	2Q2013	Complete	
Complete Engineering and Design	1Q2014	Complete	2Q2014
Respond to NRC ISE RAIs	3Q2014	Complete	
Receipt of SFP Instruments	4Q2014	Complete	2Q2014
Commence Installation of SFP Instruments	4Q2014	Complete	
Close out Project/Plant Turnover	2Q2016	Started	

4 Changes to Compliance Method

One change has been made to the compliance methods described in the NMP2 Overall Integrated Plant (Reference 1). This change is related to the method used to determine the Level 2 Water Level and was described in the February 2015 Six Month Update (Reference 12). No additional changes have been made.

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

NMP2 expects to comply with the order implementation date and no relief/relaxation is required at this time.

6 Open Items from Overall Integrated Plan and Interim Safety Evaluation

Table 2 provides a status of the OIP open items documented in the August 2014 Six Month Update (Reference 11). These open items include previous regulatory commitments made in the July 2013 RAI Response (Reference 5). As noted in the memorandum from C.A. Hunt (NRC) to M.A. Mitchell (NRC), Summary of the November 26, 2013 Public Meeting to Discuss Industry Responses to Staff Interim Evaluations for Spent Fuel Pool Instrumentation (Reference 9), the ISE questions supersede any previous requests for information issued by the staff concerning the spent fuel pool instrumentation.

Table 2
Status of NMP2 Reliable Spent Fuel Pool Instrumentation OIP Open Items

	NMP2 Open Items	Status
1.	Provide specific requirements of the procedure controlling irradiated equipment or materials stored in the SFP, including details of the analysis to be performed, to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
2.	The final system component locations and wire routings will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
3.	The full hydrodynamic/seismic qualification details will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
4.	The final mounting details for the horn antenna and waveguide assembly will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
5.	Further details of the qualification and test program used to confirm the reliability of the permanently installed equipment during and following Beyond Design Bases Events will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
6.	Further details on independence and channel separation of the permanently installed equipment will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
7.	Further details on the AC and DC power supplies of the permanently installed equipment will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
8.	The final calibration methodology will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
9.	Specific details of the functional and calibration test program, including frequencies, will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs

Table 2
Status of NMP2 Reliable Spent Fuel Pool Instrumentation OIP Open Items (cont'd)

10. The preventive maintenance, test and calibration program will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
11. The compensatory actions to take when both channels are out of service, and the applicable administrative requirements and implementation procedures will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs
12. The compensatory actions to take when a channel is not restored within 90 days, and the applicable administrative requirements and implementation procedures will be forwarded to the NRC on February 28, 2014 with the second NMPNS Overall Integrated Plan status update.	Deleted (2/2014) Superseded by ISE RAIs

Table 3 provides a status of the NRC ISE RAIs.

Table 3
Status of NMP2 Reliable Spent Fuel Pool Instrumentation ISE RAIs

	NMP2 NRC ISE RAIs	Status
1.	Confirm that the correct elevation for Level 2 at NMP2 is 335 ft. 11.9 in. and provide the information regarding specific requirements of the procedure controlling irradiated equipment or materials stored in the SFP, including details of the analysis to be performed to determine the projected dose rate impact and the appropriate Level 2 value as a result of the potential for irradiated material to be stored in the SPF in the future.	Complete (Reference 12)
2.	Provide a final labeled sketch or marked-up plant drawing of the plan view of the SFP, depicting the SFP inside dimensions, the planned locations/placement of the primary and back-up SFP level sensor, and the proposed routing of the cables that will extend from these sensors toward the location of the read-out/display device.	Complete (Reference 12)
3.	Provide the results of the analyses used to verify the design criteria and methodology for seismic testing of the SFP instrumentation and the electronics units, including, design basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seismic forces.	Complete (Reference 12)
4.	For each of the mounting attachments required to attach SFP Level equipment to plant structures, please describe the design inputs, and the methodology that was used to qualify the structural integrity of the affected structures/equipment.	Complete (Reference 12)

Table 3 Status of NMP2 Reliable Spent Fuel Pool Instrumentation ISE RAIs (cont'd)

e n s is	Provide information indicating (a) whether the 80c rating for the sensor electronics is a continuous duty rating; and, (b) what will be the naximum expected ambient temperature in the room in which the sensor electronics will be located under BDB conditions in which there is no ac power available to run Heating Ventilation and Air Conditioning (HVAC) systems.	Complete (Reference 12)
ir c s	Provide information indicating the maximum expected relative humidity in the room in which the sensor electronics will be located under BDB conditions, in which there is no ac power available to run HVAC systems, and whether the sensor electronics is capable of continuously performing its required functions under this expected numidity condition.	Complete (Reference 12)
a p th ir	Provide analysis of the maximum expected radiological conditions dose rate and total integrated dose) to which the sensor and associated co-located electronic equipment will be exposed. Also, blease provide documentation indicating how it was determined that he electronics for this equipment is capable of withstanding a total integrated dose of 1X103 Rads. Please discuss the time period over which the analyzed total integrated dose was applied.	Complete (Reference 12)
to re	Provide information describing the evaluation of the comparative sensor design, the shock test method, test results, and forces applied to the sensor applicable to its successful tests demonstrating that the eferenced previous testing provides an appropriate means to demonstrate reliability of the sensor under the effects of severe shock.	Complete (Reference 12)
s a a p	Provide information describing the evaluation of the comparative sensor design, the vibration test method, test results, and the forces and their frequency ranges and directions applied to the sensor applicable to its successful tests, demonstrating that the referenced previous testing provides an appropriate means to demonstrate eliability of the sensor under the effects of high vibration.	Complete (Reference 12)
re	Provide information describing the evaluation of the comparative display panel ratings against postulated plant conditions. Also provide esults of the manufacturer's shock and vibration test methods, test esults, and the forces and their frequency ranges and directions applied to the display panel associated with its successful tests.	Complete (Reference 12)
d	Provide the results of seismic testing per IEEE 344-2004, to demonstrate the reliability of the components within the power and control panel with regard to shock and vibration effects.	Complete (Reference 12)
ir s t	Provide analysis of the seismic testing results and show that the instrument performance reliability, following exposure to simulated seismic conditions representative of the environment anticipated for the SFP structures at Nine Mile Point, has been adequately demonstrated.	Complete (Reference 12)

Table 3
Status of NMP2 Reliable Spent Fuel Pool Instrumentation ISE RAIs (cont'd)

13. Provide the final configuration of the power supply source for each	Started
channel so that the staff may conclude that the two channels are independent from a power supply assignment perspective.	(Reference 12)
14. Provide the results of the calculation depicting the battery backup duty cycle requirements demonstrating that its capacity is sufficient to maintain the level indication function until offsite resource availability is reasonably assured.	Complete (Reference 12)
15. Provide analysis verifying that the proposed instrument performance is consistent with these estimated accuracy normal and BDB values. Please demonstrate that the channels will retain these accuracy performance values following a loss of power and subsequent restoration of power.	Complete (Reference 12)
16. Provide a list of the procedures addressing operation (both normal and abnormal response), calibration, test, maintenance, and inspection procedures that will be developed for use of the spent SFP instrumentation. The licensee is requested to include a brief description of the specific technical objectives to be achieved within each procedure.	Complete (Reference 12)
 17. Provide the following: a. Further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Please include a description of the plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment. b. Information describing compensatory actions when both channels are out-of-order, and the implementation procedures c. Additional information describing expedited and compensatory actions in the maintenance procedure to address when one of the instrument channels cannot be restored to functional status within 90 days 	Complete (Reference 12)
18. Provide a description of the in-situ calibration process at the SFP location that will result in the channel calibration being maintained at its design accuracy.	Complete (Reference 12)

7 Potential Interim Safety Evaluation Impacts

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

8 References

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

- 1. Letter from M.G. Korsnick (CENG) to Document Control Desk (NRC), Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 28, 2013 (ML13066A172)
- 2. NRC Order Number EA-12-051, Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ML12054A679)
- 3. Letter from M.G. Korsnick (CENG) to Document Control Desk (NRC), Supplement to Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation, dated March 8, 2013 (ML13073A155)
- 4. Letter from M. C. Thadani (NRC) to M. G. Korsnick (CENG), Nine Mile Point Nuclear Station, Units 1 and 2 Request for Additional Information Re: Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation (Order EA-12-051)(TAC Nos. MF1131 and MF1132), dated June 5, 2013 (ML13154A399)
- 5. Letter from P. M. Swift (CENG) to Document Control Desk (NRC), Response to Request for Additional Information Re: Overall integrated Plan for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) (TAC Nos. MF1131 and MF1132), dated July 5, 2013 (ML13197A220)
- 6. Letter from E. D. Dean (CENG) to Document Control Desk (NRC), Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 27, 2013 (ML13254A279)
- Letter from M.C. Thadani (NRC) to J.A. Spina (CENG), Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, and Nine Mile Point Nuclear Station, Unit Nos. 1 and 2, Interim Staff Evaluation and Request for Additional Information Regarding The Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC NOS. MF1131, MF1132, MF1140, and MF1141), dated November 15, 2013 (ML13281A205)
- 8. NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," Revision 1, August 2012 (ML12240A307)
- Memorandum from C.A. Hunt (NRC) to M.A. Mitchell (NRC), Summary of the November 26, 2013 Public Meeting to Discuss Industry Responses to Staff Interim Evaluations for Spent Fuel Pool Instrumentation, dated December 26, 2013 (ML13347B030)
- Letter from M.G. Korsnick (CENG) to Document Control Desk (NRC), February 2014 Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 24, 2014 (ML14069A180)
- 11. Letter from M.G. Korsnick (CENG) to Document Control Desk (NRC), August 2014 Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 26, 2014 (ML14241A016)

- 12. Letter from M.G. Korsnick (CENG) to Document Control Desk (NRC), February 2015 Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 19, 2015
- 13. Letter from Jason Paige (NRC) to Peter Orphanos (NMP) dated April 28, 2015 containing the Nine Mile Point Nuclear Station, Units 1 and 2 Report for the On-site Audit Regarding Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051 (ML15110A026)