



Order No. EA-12-051

RS-16-004

January 12, 2016

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

Dresden Nuclear Power Station, Units 2 and 3  
Renewed Facility Operating License Nos. DPR-19 and DPR-25  
NRC Docket Nos. 50-237 and 50-249

Subject: Report of Full Compliance with 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, 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. Exelon Generation Company, LLC's 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 25, 2012
5. Exelon Generation Company, LLC 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 (RS-13-030)
6. NRC letter to Exelon Generation Company, LLC, Request for Additional Information Regarding Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation, dated June 26, 2013
7. Exelon Generation Company, LLC letter to NRC, Response to Request For Additional Information - Overall Integrated Plan in Response to Commission Order Modifying License Requirements for Reliable Spent Fuel Pool Instrumentation (Order EA-12-051), dated July 18, 2013 (RS-13-176)
8. Exelon Generation Company, LLC 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 28, 2013 (RS-13-118)

9. Exelon Generation Company, LLC 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 28, 2014 (RS-14-020)
10. Exelon Generation Company, LLC 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 28, 2014 (RS-14-198)
11. Exelon Generation Company, LLC 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 27, 2015 (RS-15-028)
12. Exelon Generation Company, LLC 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), dated August 28, 2015 (RS-15-202)
13. NRC letter to Exelon Generation Company, LLC, Dresden Nuclear Power Station, Units 2 and 3 – 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. MF1050 and MF1051), dated October 29, 2013
14. NRC letter to Exelon Generation Company, LLC, Dresden Nuclear Power Station, Units 2 and 3 – Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF1046, MF1047, MF1050, MF1051), dated October 9, 2015

On March 12, 2012, the Nuclear Regulatory Commission (“NRC” or “Commission”) issued Order EA-12-051, “Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,” (Reference 1) to Exelon Generation Company, LLC (EGC). Reference 1 was immediately effective and directed 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 (OIP) pursuant to Section IV, Condition C. Reference 2 endorsed 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. Reference 5 provided the Dresden Nuclear Power Station, Units 2 and 3 OIP.

Reference 1 required submission of a status report at six-month intervals following submittal of the OIP. References 8, 9, 10, 11, and 12 provided the first, second, third, fourth, and fifth six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Dresden Nuclear Power Station, Units 2 and 3.

The purpose of this letter is to provide the report of full compliance with the March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) (Reference 1) pursuant to Section IV, Condition C.3 of the Order for Dresden Nuclear Power Station, Units 2 and 3.

Dresden Nuclear Power Station, Units 2 and 3 have installed two independent full scale level monitors for each Spent Fuel Pool (SFP) in response to Order EA-12-051. Dresden Nuclear

Power Station, Units 2 and 3 OIP Open Items have been addressed and closed as documented in References 8, 9, 10, 11, and 12, and are considered complete pending NRC closure. The information provided herein documents full compliance for Dresden Nuclear Power Station, Units 2 and 3 with Reference 1.

EGC's response to the NRC OIP Requests for Additional Information (OIP RAIs), and the NRC Interim Staff Evaluation (ISE) Open Items (ISE RAIs) identified in References 6 and 13 have been addressed and closed as documented in References 7, 8, 9, 10, 11, 12, and below, and are considered complete pending NRC closure. The following table provides completion references for each NRC OIP RAI and ISE RAI.

OIP Open Item No. 1	Reference 8
OIP RAI No. 1	Reference 7
OIP RAI Nos. 2, 3, 4, 5, 6b, and 7	Reference 12
OIP RAI Nos. 6a, 8 ISE RAI No. 8a	Reference 12 and updated with this submittal as provided below
OIP RAI No. 11	Reference 12
ISE RAI Nos. 3, 4, 6, 8b, 11 (replaces OIP RAI 9), and 12 (replaces OIP RAI 10)	Reference 12

Table Notes:

- ISE RAIs are not duplicated in the table above if previously issued as OIP RAIs in Reference 6.

EGC's response to the NRC audit questions and additional audit open items have been addressed as documented in the NRC Site Audit Report (Reference 14). Reference 14 contains no remaining audit open items regarding Dresden Nuclear Power Station, Units 2 and 3 compliance with NRC Order EA-12-051.

The table below documents the completion of the final remaining open actions as identified in Reference 12. As stated above, EGC provides the response for the following items and considers them to be complete for Dresden Nuclear Power Station, Units 2 and 3.

Item	Description	Reference
<b>OIP Item 7 (RAI-6a, Ref. 6)</b>  <u>RAI Question:</u> <b>Please provide the following:</b>  <b>a) A description of the electrical ac power sources and capacities for the primary and backup channels.</b>	a) The primary and backup SFPLI instrument channels will be normally powered from 120 VAC. Upon loss of normal AC power, individual batteries installed in each channel's electronics / UPS enclosure will automatically maintain continuous channel operation for at least (3) days. The power cables will be routed so that spatial and physical separation is maintained between	<u>Complete.</u>  With this Compliance submittal.

	<p>the primary and backup channels. Additionally, a receptacle and a selector switch are installed in each channel electronics / UPS enclosure to directly connect emergency power to the SFPLI.</p> <p>The U2 secondary SFPI AC power supply required an interim power source configuration between November 18, 2015 and December 4, 2015 due to elevated plant risks involved with the power connection to the permanent power source. The interim power source configuration was reviewed and is compliant with References 1 and 3.</p>	
<p><b>OIP Item 9 (RAI-8, Ref. 6)</b></p> <p><u>RAI Question:</u>  <b>Please provide the following:</b></p> <p><b>a) A description of the capability and provisions the proposed level sensing equipment will have to enable periodic testing and calibration, including how this capability enables the equipment to be tested in-situ.</b></p> <p><b>b) A description of how such testing and calibration will enable the conduct of regular channel checks of each independent channel against the other, and against any other permanently-installed SFP level instrumentation.</b></p> <p><b>c) A description of how calibration tests and functional checks will be performed, and the frequency at which they will</b></p>	<p>a) Westinghouse calibration procedure WNA-TP-04709-GEN and functional test procedure WNA-TP-04613-GEN describe the capabilities and provisions of SFPI periodic testing and calibration, including in-situ testing. Westinghouse calibration and functional test procedures are acceptable for Dresden Station. Dresden Station has reviewed the procedures to ensure the instrument can be calibrated, functionally tested, and in-situ tested per the Order requirements.</p> <p>b) The level displayed by the channels has been verified per the Dresden Station administrative and operating procedures, as recommended by Westinghouse vendor technical manual WNA-GO-00127-GEN. If the level is not within the required accuracy per Westinghouse recommended tolerances in WNA-TP-04709-GEN, channel calibration will be performed.</p> <p>c) Functional checks will be performed per Westinghouse functionality test procedure WNA-TP-04613-GEN at the frequency determined by Dresden Station maintenance and operating programs based on the Westinghouse recommended</p>	<p><u>Complete.</u>        With this Compliance submittal.</p>

<p><b>be conducted. Discuss how these surveillances will be incorporated into the plant surveillance program.</b></p> <p><b>d) A description of what preventive maintenance tasks are required to be performed during normal operation, and the planned maximum surveillance interval that is necessary to ensure that the channels are fully conditioned to accurately and reliably perform their functions when needed.</b></p>	<p>frequency. Calibration tests will be performed per Westinghouse calibration procedure WNA-TP-04709-GEN at the frequency determined by Dresden Station maintenance and operating programs based on the Westinghouse recommended frequency. In accordance with Dresden Station maintenance and operating programs, Dresden Station has developed calibration, functional test, and channel verification procedures per Westinghouse recommendations to ensure reliable, accurate and continuous SFPI functionality.</p> <p>d) Dresden Station has developed preventive maintenance tasks for the SFPI per Westinghouse recommendation identified in the technical manual WNA-GO-00127-GEN to assure that the channels are fully conditioned to accurately and reliably perform their functions when needed.</p>	
<p><b>ISE Item 4 (RAI-8a, Ref. 13)</b></p> <p><b>RAI Question: Please provide the following:</b></p> <p><b>a) A description of the electrical ac power sources and capacities for the primary and backup channels.</b></p>	<p>a) The primary and backup SFPLI instrument channels will be normally powered from 120 VAC. Upon loss of normal AC power, individual batteries installed in each channel's electronics / UPS enclosure will automatically maintain continuous channel operation for at least (3) days. The power cables will be routed so that spatial and physical separation is maintained between the primary and backup channels. Additionally, a receptacle and a selector switch are installed in each channel electronics / UPS enclosure to directly connect emergency power to the SFPLI.</p> <p>The U2 secondary SFPI AC power supply required an interim power source configuration between November 18, 2015 and December 4, 2015 due to elevated plant risks involved with the power connection</p>	<p><u>Complete.</u></p> <p>With this Compliance submittal.</p>

	to the permanent power source. The interim power source configuration was reviewed and is compliant with References 1 and 3.	
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**MILESTONE SCHEDULE – ITEMS COMPLETE**

Milestone	Completion Date
Submit 60 Day Status Report	October 25, 2012
Submit Overall Integrated Plan	February 28, 2013
Submit Responses to RAIs	July 18, 2013
<b>Submit 6 Month Updates:</b>	
Update 1	August 28, 2013
Update 2	February 28, 2014
Update 3	August 28, 2014
Update 4	February 27, 2015
Update 5	August 28, 2015
<b>Modifications:</b>	
Conceptual Design	3Q2012
Issue Exelon Fleet contract to procure SFPI Equipment	2Q2013
Begin Detailed Engineering Design for Unit 2	3Q2014
Complete and Issue SFPI Modification Package for Unit 2	1Q2015
Begin Detailed Engineering Design for Unit 3	3Q2014
Complete and Issue SFPI Modification Package for Unit 3	1Q2015
Begin SFPI Installation for Unit 2	2Q2015
Complete SFPI Installation for Unit 2 and Put Into Service	November 18, 2015
Begin SFPI Installation for Unit 3	2Q2015
Complete SFPI Installation for Unit 3 and Put Into Service	December 4, 2015

**ORDER EA-12-051 COMPLIANCE ELEMENTS SUMMARY**

The elements identified below for Dresden Nuclear Power Station, Units 2 and 3, as well as the site overall integrated plan response submittal (Reference 5), and the 6-Month Status Reports (References 8, 9, 10, 11, and 12), demonstrate compliance with Order EA-12-051.

**IDENTIFICATION OF LEVELS OF REQUIRED MONITORING - COMPLETE**

Dresden Nuclear Power Station, Units 2 and 3 have identified the three required levels for monitoring SFP level in compliance with Order EA-12-051. These levels have been integrated into the site processes for monitoring level during events and responding to loss of SFP inventory.

#### **INSTRUMENT DESIGN FEATURES - COMPLETE**

The design of the instruments installed at Dresden Nuclear Power Station, Units 2 and 3 complies with the requirements specified in the Order and described in NEI 12-02 "Industry Guidance for Compliance with NRC Order EA-12-051". The instruments have been installed in accordance with the station design control process.

The instruments have been arranged to provide reasonable protection against missiles. The instruments have been mounted to retain design configuration during and following the maximum expected ground motion. The instruments will be reliable during expected environmental and radiological conditions when the SFP is at saturation for extended periods. The instruments are independent of each other and have separate and diverse power supplies. The instruments will maintain their design accuracy following a power interruption and are designed to allow for routine testing and calibration.

The instrument display is readily accessible during postulated events and allows for SFP level information to be promptly available to decision makers.

#### **PROGRAM FEATURES - COMPLETE**

Training for Dresden Nuclear Power Station, Units 2 and 3 has been completed in accordance with an accepted training process as recommended in NEI 12-02, Section 4.1.

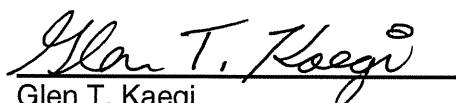
Operating and maintenance procedures for Dresden Nuclear Power Station, Units 2 and 3 have been developed and integrated with existing procedures. Procedures have been verified and are available for use in accordance with the site procedure control program.

Site processes have been established to ensure the instruments are maintained at their design accuracy.

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 12<sup>th</sup> day of January 2016.

Respectfully submitted,



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

cc: Director, Office of Nuclear Reactor Regulation  
NRC Regional Administrator - Region III  
NRC Senior Resident Inspector – Dresden Nuclear Power Station  
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