



Order No. EA-12-051

RS-14-347

December 8, 2014

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

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Revised 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-13-028)
6. NRC letter to Exelon Generation Company, LLC, Request for Additional Information Regarding Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation, dated June 7, 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 3, 2013
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-13-114)

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-14-018)
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-14-196)
11. NRC letter to Exelon Generation Company, LLC, Byron Station, Units 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. MF0872 and MF0873), dated November 4, 2013
12. Exelon Generation Company, LLC 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), dated December 5, 2014

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 Byron Station, Units 1 and 2 OIP.

Reference 1 required submission of a status report at six-month intervals following submittal of the OIP. References 8, 9, and 10 provided the first, second, and third six-month status reports, respectively, pursuant to Section IV, Condition C.2, of Reference 1 for Byron Station.

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 Byron Station, Units 1 and 2. This letter is also submitted to correct an administrative error identified in Reference 12 and replace Reference 12 in its entirety.

Byron Station has installed two independent full scale level monitors for the Spent Fuel Pool (SFP) in response to Order EA-12-051. Byron Station OIP Open Items have been addressed and closed as documented in References 8, 9, and 10, and are considered complete pending NRC Closure. The information provided herein documents full compliance for Byron Station, Units 1 and 2 with Reference 1.

EGC 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 11 have been addressed and closed as documented in References 7, 8, 9, and 10, and below, and are considered complete pending NRC Closure. The following table provides completion references for each NRC OIP RAI and ISE RAI.

OIP RAI Nos. 1a, 2, 5, 10, 11	Reference 9
OIP RAI No. 1b	Reference 7
OIP RAI Nos. 3, 4, 6	Reference 10
OIP RAI Nos. 7, 8	With this submittal as provided below
OIP RAI No. 9	Reference 8
ISE RAI Nos. 1, 5, 12	Reference 9
ISE RAI No. 4	Reference 10
ISE RAI No. 7	With this submittal as provided below

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

It is EGC's understanding that the NRC Site Audit Report contains no remaining audit open items regarding Byron Station compliance with NRC Order EA-12-051.

The table below documents the completion of the final remaining open actions as identified in Reference 10. OIP Item 13 in the table below provides a revised response to RAI No. 11.

As stated above, EGC provides the response for the following items and considers them to be complete for Byron Station.

Item	Description	Reference
<p>ISE Item 4 (RAI-7, Ref. 11): For RAI No. 6 above, please provide the results for the selected methods, tests and analyses utilized to demonstrate the qualification and reliability of the installed equipment in accordance with the Order requirements.</p>	<p>Westinghouse documents EQ-QR-269, EQ-TP-354, WNA-TR-03149-GEN (Attachment 2, item 6) provide thermal and radiation aging program details for the SFPI components. Westinghouse completed their thermal and radiation aging testing programs to qualify the SFPI components to 1.25 years. Exelon has reviewed the documents and found them acceptable.</p> <p>Additionally, Westinghouse has completed their aging tests to age the system components to 10 years. The tests were completed satisfactorily for Byron's configuration and the final test reports were reviewed and found acceptable by Exelon.</p>	<p><u>Complete</u> Byron Station has completed receipt, review, and acceptance of WEC 10-yr aging reports.</p>

<p>OIP Item 9 (RAI-7, Ref. 6): a) An estimate of the expected instrument channel accuracy performance under both (a) normal SFP level conditions (approximately Level 1 or higher) and (b) at the beyond design-basis conditions (i.e., radiation, temperature, humidity, post-seismic and post-shock conditions) that would be present if the SFP level were at the Level 2 and Level 3 datum points.</p>	<p>a) The Westinghouse documents WNA-CN-00301 (Attachment 2, item 17) and WNA-DS-02957-GEN (Attachment 2, item 1) describe the channel accuracy under both (a) normal SFP level conditions and (b) at the Beyond Design Basis (BDB) conditions that would be present if SFP level were at Level 2 and Level 3 datum points. Each instrument channel will be accurate to within $\pm 3''$ during normal spent fuel pool level conditions (local display). The instrument channels will retain this accuracy after BDB conditions, in accordance with the above Westinghouse documents. The same channel accuracy requirements are applicable to the readout display in the main control room as the display enclosures are installed locally in the Electrical Penetration Area. Byron Station has analyzed the channel accuracy to the main control room indicators in the calculation BYR-14-137 for the normal and BDB operating conditions and determined the displayed level is accurate to within $\pm 5''$. The accuracy is within the channel accuracy requirements of the Order (± 1 foot) for BDB conditions and meets the NEI 12-02 requirements.</p>	<p><u>Complete</u> Byron Station has completed the evaluation of the completed uncertainty calculations and channel accuracy requirements to the Main Control Room for both design basis and BDB conditions.</p>
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<p>OIP Item 13 (RAI-11, Ref. 6): c) A description of what compensatory actions are planned in the event that one of the instrument channels cannot be restored to functional status within 90 days.</p>	<p>Planned compensatory actions for unlikely extended out-of-service events are summarized as follows:</p> <table border="1" data-bbox="541 474 1187 1553"> <thead> <tr> <th data-bbox="541 474 728 740"># Channel(s) Out-of-Service</th> <th data-bbox="728 474 959 740">Required Restoration Action</th> <th data-bbox="959 474 1187 740">Compensatory Action if Required Restoration Action not completed within Specified Time</th> </tr> </thead> <tbody> <tr> <td data-bbox="541 740 728 1178">1</td> <td data-bbox="728 740 959 1178">Restore channel to functional status within 90 days (or if channel restoration not expected within 90 days, then proceed to Compensatory Action)</td> <td data-bbox="959 740 1187 1178">Immediately initiate action in accordance with Note below</td> </tr> <tr> <td data-bbox="541 1178 728 1553">2</td> <td data-bbox="728 1178 959 1553">Initiate action within 24 hours to restore one channel to functional status and restore one channel to functional status within 72 hours</td> <td data-bbox="959 1178 1187 1553">Immediately initiate action in accordance with Note below</td> </tr> </tbody> </table> <p>Note: Initiate an Issue Report to enter the condition into the Corrective Action Program. Identify the equipment out of service time is greater than the specified allowed out of service time, develop and implement an alternate method of monitoring, determine the cause of the non-functionality, and the plans and schedule for restoring the instrumentation channel(s) to functional status.</p>	# Channel(s) Out-of-Service	Required Restoration Action	Compensatory Action if Required Restoration Action not completed within Specified Time	1	Restore channel to functional status within 90 days (or if channel restoration not expected within 90 days, then proceed to Compensatory Action)	Immediately initiate action in accordance with Note below	2	Initiate action within 24 hours to restore one channel to functional status and restore one channel to functional status within 72 hours	Immediately initiate action in accordance with Note below	<p><u>Complete</u> Byron Station revised the compensatory action plan requirements applicable to conditions where the instrument channel(s) are not restored to functional status within the specified time, as specified in the Note. The condition will be entered into the corrective action program in lieu of a report to PORC.</p>
# Channel(s) Out-of-Service	Required Restoration Action	Compensatory Action if Required Restoration Action not completed within Specified Time									
1	Restore channel to functional status within 90 days (or if channel restoration not expected within 90 days, then proceed to Compensatory Action)	Immediately initiate action in accordance with Note below									
2	Initiate action within 24 hours to restore one channel to functional status and restore one channel to functional status within 72 hours	Immediately initiate action in accordance with Note below									

<p>OIP Item 10 (RAI-8, Ref. 6) e) 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.</p>	<p>Byron Station has developed preventive maintenance tasks for the SFPI per Westinghouse recommendation identified in the technical manual WNA-GO-00127-GEN (Attachment 2, item 19) to assure that the channels are fully conditioned to accurately and reliably perform their functions when needed.</p>	<p><u>Complete</u> Byron Station has completed the development of the preventive maintenance tasks.</p>

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 5, 2013
Submit 6 Month Updates:	
Update 1	August 28, 2013
Update 2	February 28, 2014
Provide Final Safety Evaluation (SE) Information	March 31, 2014
Update 3	August 28, 2014
Modifications:	
Conceptual Design	3Q2012
Begin Detailed Design Engineering	1Q2013
Issue Exelon Fleet contract to procure SFPI Equipment	2Q2013
Complete and Issue SFPI Modification Package	2Q2014
Begin Installation	2Q2014
Complete SFPI Installation and Put Into Service	October 3, 2014

ORDER EA-12-051 COMPLIANCE ELEMENTS SUMMARY

The elements identified below for Byron Station, as well as the site overall integrated plan response submittal (Reference 5), the 6-Month Status Reports (References 8, 9, and 10), and any additional docketed correspondence, demonstrate compliance with Order EA-12-051.

IDENTIFICATION OF LEVELS OF REQUIRED MONITORING - COMPLETE

Byron Station has 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 Byron Station 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 Byron Station, Units 1 and 2 has been completed in accordance with an accepted training process as recommended in NEI 12-02, Section 4.1.

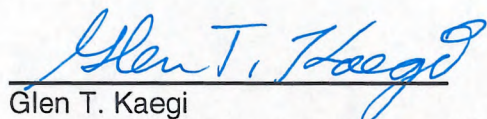
Operating and maintenance procedures for Byron Station have been developed and integrated with existing procedures. Procedures have been verified and are available for use in accordance with the site procedure control program.

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 8th day of December 2014.

Respectfully submitted,



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Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

cc: Director, Office of Nuclear Reactor Regulation
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