



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

December 12, 2014

Mr. Michael J. Pacilio  
Senior Vice President  
Exelon Generation Company, LLC  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - PLAN FOR THE  
ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING  
STRATEGIES AND RELIABLE SPENT FUEL INSTRUMENTATION RELATED  
TO ORDERS EA-12-049 AND EA-12-051 (TAC NOS. MF1048, MF1049,  
MF1052, AND MF1053)

Dear Mr. Pacilio:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A420), Exelon Generation Company, LLC (the licensee or Exelon) submitted its OIP for Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014, and August 28, 2014 (ADAMS Accession Nos. ML13241A287, ML14059A432, and ML14248A240, respectively), Exelon submitted its first three six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the Quad Cities interim staff evaluation (ISE) and audit report dated November 22, 2013 (ADAMS Accession No. ML13220A351) and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A447), the licensee submitted its OIP for Quad Cities in response to Order EA-12-051. By letters dated June 7, 2013 (ADAMS Accession No. ML13134A093) and November 26, 2013 (ADAMS Accession No. ML13318A953), the NRC staff sent requests for additional information (RAIs) to the licensee. By letters dated July 3, 2013, August 28, 2013, February 28, 2014, and August 28, 2014 (ADAMS Accession Nos. ML13186A003, ML13241A243, ML14062A063, and ML14248A217,

respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP. The NRC staff's review led to the issuance of the Quad Cities ISE and RAI dated October 9, 2013 (ADAMS Accession No. ML13275A121). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

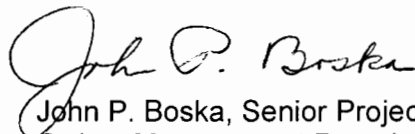
The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the on-site audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents/Final Integrated Plans, and continue in-office audit communications with staff while proceeding towards compliance with the orders.

The staff plans to conduct an onsite audit at Quad Cities in accordance with the enclosed audit plan from January 26-29, 2015.

If you have any questions, please contact me at 301-415-2901 or by e-mail at [John.Boska@nrc.gov](mailto:John.Boska@nrc.gov).

Sincerely,



John P. Boska, Senior Project Manager  
Orders Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos.: 50-254 and 50-265

Enclosure:  
Audit plan

cc w/encl: Distribution via Listserv

**Audit Plan**  
**Quad Cities Nuclear Power Station, Units 1 and 2**

BACKGROUND AND AUDIT BASIS

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). Order EA-12-049 directs licensees to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event (BDBEE). Order EA-12-051 requires, in part, that all operating reactor sites have a reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a BDBEE. The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 to submit for review their Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

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Enclosure

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This document outlines the onsite audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs), and continue in-office audit communications with staff while proceeding towards compliance with the orders.

Following the licensee's declarations of order compliance, the NRC staff will evaluate the OIPs as supplemented, the resulting site-specific OPDs/FIPs, and, as appropriate, other licensee submittals based on the requirements in the orders. For Order EA-12-049, the staff will make a safety determination regarding order compliance using the Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" issued in August 2012 (ADAMS Accession No. ML12242A378), as endorsed by NRC Japan Lessons-Learned Project Directorate (JLD) interim staff guidance (ISG) 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'" (ADAMS Accession No. ML12229A174) as providing one acceptable means of meeting the order requirements. For Order EA-12-051, the staff will make a safety determination regarding order compliance using the NEI guidance document NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12240A307), as endorsed, with exceptions and clarifications, by NRC ISG JLD-ISG-2012-03 "Compliance with Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12221A339) as providing one acceptable means of meeting the order requirements. Should the licensee propose an alternative strategy or other method deviating from the guidance, additional staff review will be required to evaluate if the alternative strategy complies with the applicable order.

#### AUDIT SCOPE

As discussed, onsite audits will be performed per NRR Office Instruction LIC-111, "Regulatory Audits," to support the development of safety evaluations. Site-specific OIPs and OPDs/FIPs rely on equipment and procedures that apply to all units at a site, therefore, audits will be planned to support the "first unit at each site." On-site audits for subsequent units at a site will be on an as-needed basis.

The purpose of the audits is to obtain and review information responsive to the Quad Cities OIPs, as supplemented, open and confirmatory items from the mitigation strategies ISE, RAI responses from the SFPI ISE, and to observe and gain a better understanding of the basis for the site's overall programs to ensure the licensee is on the correct path for compliance with the Mitigation Strategies and SFPI orders. These may include, but are not limited to:

- Onsite review and discussion for the basis and approach for detailed analysis and calculations (Orders EA-12-049, EA-12-051);
- Walk-throughs of strategies and laydown of equipment to assess feasibility, timing, and effectiveness of a given mitigating strategy or integration of several strategies (Order EA-12-049);
- Storage, protection, access, and deployment feasibility and practicality for onsite portable equipment (Order EA-12-049);
- Evaluation of staging, access, and deployment of offsite resources to include National SAFER Response Center (NSRC) provided equipment (Order EA-12-049); and
- Review dimensions and sizing of the SFP area, placement of the SFP level instrumentation, and applicable mounting methods and design criteria (Order EA-12-051).

NRC AUDIT TEAM

<b>Title</b>	<b>Team Member</b>
Team Lead and Project Manager	John Boska
Project Manager	Charles Norton
Technical Support	Matthew McConnell
Technical Support	Brian Lee
Technical Support	Michael Levine
Technical Support	Khoi Nguyen
Technical Support	Joshua Miller

LOGISTICS

The audit will be conducted onsite at Quad Cities on January 26-29, 2015. Entrance and exit briefings will be held with the licensee at the beginning and end of the audit, respectively, as well as daily briefings of team activities. Additional details will be addressed over the phone. A more detailed schedule is provided below.

A private conference room is requested for NRC audit team use with access to audit documentation upon arrival and as needed.

DELIVERABLES

An audit report/summary will be issued to the licensee within 90 days from the end of the audit.

## INFORMATION NEEDS

- Materials/documentation provided in responses to open or confirmatory items and RAIs in the ISEs;
- OPD/FIP (current version), operator procedures, FLEX Support Guidelines (FSGs), operator training plans, NSRC (SAFER) Quad Cities Response Plan; and
- Materials/documentation for staff audit questions and/or licensee OIP identified open items as listed in Part 2 below

To provide supplemental input to the ongoing audit of documents submitted to the NRC and made available via e-portal, the onsite audit will have three components: 1) a review of the overall mitigating strategies for the site, including, if needed, walk-throughs of strategies and equipment laydown of select portions; 2) a review of material relating to open or confirmatory items and RAIs from the ISEs, staff audit questions, and licensee open items; and 3) additional specific issues requested by NRC technical reviewers related to preparation of a safety evaluation. Each part is described in more detail below:

### Part 1 - Overall Mitigating Strategies and Program Review:

During the onsite audit, please be prepared to conduct a tabletop discussion of the site's integrated mitigating strategies and SFPI compliance program. This discussion should address the individual components of the plans, as well as the integrated implementation of the strategies including a timeline. The licensee team presenting this should include necessary representatives from site management, engineering, training, and operations that were responsible for program development, and will be responsible for training and execution.

Following the tabletop discussion, please be prepared to conduct walk-throughs of procedures and demonstrations of equipment as deemed necessary by NRC audit team members. Include representatives from engineering and operations that will be responsible for training and execution. At this time we expect, at a minimum, to walk-through the items below. Based on the tabletop presentations and audit activities, this list may change.

WALK-THROUGH LIST:

1. Walk-through a sample of strategies that will be delineated by specific NRC technical staff audit team members
2. Walk-through of portable (FLEX) diesel generator (DG) procedures, to include power supply pathways, areas where manual actions are required, and electrical isolation
3. Walk-through of building access procedures, to include any unique access control devices
4. Strategy walk-through of transfer routes from staging and storage areas to deployment locations for both onsite and offsite equipment
5. Strategy walk-through for core cooling and reactor coolant system (RCS) inventory, to include portable pumping equipment, flow paths, and water storage locations and the related reactor systems analysis and calculations
6. Walk-through of communications enhancements
7. Walk-through of SFP area, SFPI locations, and related equipment mounting areas
8. Walk-through of procedure FSG-4 for load shed, with an operator who may perform this procedure during an event demonstrating the steps needed to perform the load shed.

Part 2 – Specific Technical Review Items:

During the visit, audit items will be addressed from the licensee's ISEs (open items (OI), confirmatory items (CI), and SFPI RAIs); audit question list (AQ); licensee OIP, as supplemented, open items; and draft safety evaluation (SE) additional questions. Please provide documents or demonstrations as needed to respond to each item.

Part 3 – Specific Topics for Discussion:

1. Draft of Quad Cities OPD/FIP
2. Reactor systems analyses
3. Training
4. Portable (FLEX) equipment maintenance and testing
5. NSRC (SAFER) Response Plan for Quad Cities
6. The licensee's plan for coordination with State authorities for delivery of Phase 3 FLEX equipment.

### **Proposed Schedule**

#### **Onsite Day 1, Monday, January 26, 2015**

0800 NRC team arrives at site; Badging; Technical discussions

1000 Entrance Meeting

1200 Lunch

1300 Licensee presentation of strategies

#### **Onsite Day 2, Tuesday, January 27, 2015**

0800 NRC Mitigating Strategies/SFPI walk-throughs with licensee

1200 Lunch

1300 NRC Audit Team Activities:

- Technical area break-out discussions between NRC and licensee staff in the areas of reactor systems, electrical, balance-of-plant/structures, SFPI, and others
- Review documents relating to open or confirmatory items, RAIs, codes, analyses, etc.
- Plant walkdowns

1600 NRC Audit Team meeting

1630 Team lead daily debrief/next day planning with licensee

#### **Onsite Day 3, Wednesday, January 28, 2015**

0800 Check in at site; meet with Senior Resident/Resident

0900 NRC Mitigating Strategies/SFPI walk-throughs with licensee:

1200 Lunch

1300 Continue NRC Audit Team Activities

1600 NRC Audit Team meeting

1630 Team lead daily debrief/next day planning with licensee



**Onsite Day 4, Thursday, January 29, 2015**

0800 Continue NRC Audit Team Activities

1200 Lunch

1300 NRC Audit Team meeting

1400 NRC/Licensee pre-exit meeting

1500 NRC/Licensee exit meeting

1600 Audit closeout/departure

respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP. The NRC staff's review led to the issuance of the Quad Cities ISE and RAI dated October 9, 2013 (ADAMS Accession No. ML13275A121). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

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If you have any questions, please contact me at 301-415-2901 or by e-mail at [John.Boska@nrc.gov](mailto:John.Boska@nrc.gov).

Sincerely,  
**/RA/**  
 John Boska, Senior Project Manager  
 Orders Management Branch  
 Japan Lessons-Learned Division  
 Office of Nuclear Reactor Regulation

Docket Nos.: 50-254 and 50-265

Enclosure:

Audit plan

cc w/encl: Distribution via Listserv

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**ADAMS Accession No. ML14339A838**

\* via email

OFFICE	NRR/JLD/JOMB/PM	NRR/JLD/LA	NRR/JLD/JCBB/BC*	NRR/JLD/JERB/BC*
NAME	JBoska	SLent	SBailey	BPham
DATE	12/08/14	12/08/14	12/08/14	12/08/14
OFFICE	NRR/JLD/JOMB/BC(A)*	NRR/DORL/LPL3-2/PM	NRR/JLD/JOMB/PM	
NAME	CRoque-Cruz	BMozafari	JBoska	
DATE	12/08/14	12/09/14	12/12/14	