



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

May 4, 2022

Mr. David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 – REGULATORY
AUDIT REPORT REGARDING LICENSE AMENDMENT REQUEST TO
TRANSITION TO GNF3 FUEL (EPID L-2021-LLA-0159)

Dear Mr. Rhoades:

By letter dated September 14, 2021 (Agencywide Documents Access Management System (ADAMS) Accession No. ML21257A420), as supplemented by letter dated November 3, 2021 (ADAMS Accession No. ML21307A444), Exelon Generation Company, LLC (the licensee) submitted a request for review and approval a license amendment request (LAR) for Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities), focused on the transition to Global Nuclear Fuel, GNF3 fuel. On February 1, 2022 (ADAMS Accession No. ML22032A333), Exelon Generation Company, LLC was renamed Constellation Energy Generation, LLC on February 1, 2022.

The U.S. Nuclear Regulatory Commission's (NRC's) Office of Nuclear Reactor Regulation staff conducted an audit of the information related to environmental qualification (EQ) of relevant electrical equipment to support its review of the amendment request. The audit plan is available in ADAMS at Accession No. ML22032A125.

The audit was conducted virtually through conference calls and the use of an online portal. The NRC staff held a teleconference on March 10, 2022, with the licensee to discuss the documents on the portal.

The purpose of the audit was to gain understanding, to verify information, and to identify information that will require docketing to support the proposed licensing action. The enclosure to this letter provides a report of the NRC staff's audit.

D.Rhodes

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If you have any questions, please contact me by telephone at (301) 415-3733 or by e-mail at Robert.Kuntz@nrc.gov.

Sincerely,

/RA/

Robert Kuntz, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-254 and 50-265

Enclosure:
Audit Report

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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REGULATORY AUDIT REPORT
TO SUPPORT REVIEW OF ENVIRONMENTAL QUALIFICATION
OF ELECTRICAL EQUIPMENT RELATED TO THE LICENSE AMENDMENT REQUEST
REGARDING TRANSITION TO GNF3 FUEL
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
DOCKET NO. 50-254 AND 50-265

1.0 BACKGROUND

By letter dated September 14, 2021 (Agencywide Documents Access Management System (ADAMS) Accession No. ML21257A420), as supplemented by letter dated November 3, 2021 (ADAMS Accession No. ML21307A444), Exelon Generation Company, LLC (the licensee) submitted a license amendment request (LAR) for Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities), focused on the transition to Global Nuclear Fuel-Americas, LLC, (GNF3) fuel. On February 1, 2022 (ADAMS Accession No. ML22032A333), Exelon Generation Company, LLC was renamed Constellation Energy Generation, LLC. Part of the LAR included information related to environmental qualification (EQ) of electrical equipment. The U.S. Nuclear Regulatory Commission (NRC) staff conducted a regulatory audit in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195), to support its EQ review of this LAR. LIC-111 states that a regulatory audit is a planned, licensed or regulation-related activity, that includes the examination of primarily non-docketed information with the intent to gain understanding, to verify information, or to identify information that will require docketing to support the basis of the licensing or regulatory decision.

2.0 SCOPE AND PURPOSE

The audit was held from February 14 to March 11, 2022. The purpose of the audit was to help the NRC staff better understand the licensee's EQ documentation and analyses through interaction with the licensee's staff and to help focus the NRC staff's request for additional information on those questions where docketed information is needed to complete the review.

3.0 AUDIT TEAM

The following NRC staff members participated in the audit:

- Robert Kuntz, Senior Project Manager
- Sheila Ray, Senior Electrical Engineer
- Matthew McConnell, Senior Electrical Engineer

4.0 AUDIT SUMMARY

Technical discussions focused on EQ of electrical equipment as a result of the proposed change in nuclear fuel design. During the audit, the NRC staff discussed questions associated with the LAR.

NRC staff audited the information related to the EQ of electrical equipment to better understand how the licensee evaluated the potential effects of the proposed changes on the EQ of electrical equipment because of the proposed transition to GNF3 fuel. During the audit, the staff verified key assumptions and reviewed the licensee's technical analyses used to support the basis for the LAR. Section 3.4 of the LAR stated that the change in core inventory has no impact on normal or post-accident temperature, pressure, or humidity. The LAR further noted that the effects of the revised total integrated dose (TID), which is inclusive of the normal and accident dose, was reviewed. Specifically, for the electrical equipment affected, the NRC staff reviewed the assumptions and analyses as well as supporting documents to verify that the required EQ electrical equipment remains qualified because of the proposed change in nuclear fuel design. During the audit, the NRC staff reviewed the licensee's EQ evaluation of the electrical equipment impacted by the proposed changes for the TID. The NRC staff observed that qualification of some equipment was not affected by the proposed changes. For other equipment, the licensee used analysis to demonstrate that the equipment would remain qualified. The NRC staff reviewed the licensee's documents listed below.

5.0 DOCUMENTS REVIEWED

The following documents were reviewed by the NRC staff during the audit:

Document Identifier	Description
006N6473 (Revision 0, June 2021)	Quad Cities Nuclear Power Station Units 1 and 2 Long-Term Containment Analyses for Design Basis Accident (DBA) Loss of Coolant Accident (LOCA) Net Positive Suction Head (NPSH) and Small Steam Line Break for Equipment Qualification
Engineering Change 0000634190 (9/28/2021)	EQ 2021 – GNF3 Fuel Change – EQ Review

6.0 AUDIT CONCLUSION

There were no regulatory decisions made during the audit. There were no open items needing further clarification and no deviation from the audit plan.

Date: May 4, 2022

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 AUDIT REPORT REGARDING LICENSE AMENDMENT REQUEST TO
 TRANSITION TO GNF3 FUEL (EPID L-2021-LLA-0159) DATED MAY 4, 2022

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 MMcConnell, NRR

ADAMS Accession No. ML22098A083

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DEX/EENB/BC
NAME	RKuntz	SRohrer	JJohnston
DATE	4/10/22	4/11/22	3/30/2022
OFFICE	NRR/DORL/LPL3/BC	NRR/DORL/LPL3/PM	
NAME	NSalgado SWall for	RKuntz	
DATE	5/3/22	5/4/22	

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