



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

May 24, 2018

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – AUDIT PLAN
IN SUPPORT OF THE REVIEW OF THE LICENSE AMENDMENT REQUEST TO
ALLOW THE USE OF RISK-INFORMED COMPLETION TIMES (CAC NOS.
MF7415 AND MF7416; EPID L-2016-LLA-0001)

Dear Mr. Hanson:

By letter dated February 25, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16060A223), as supplemented by letters dated April 3, 2017 (ADAMS Accession No. ML17094A591), January 11, 2018 (ADAMS Accession No. ML18011A665), and January 18, 2018 (ADAMS Accession No. ML18018B340), Exelon Generation Company, LLC submitted a license amendment request to the U.S. Nuclear Regulatory Commission (NRC) proposing to modify the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Technical Specification (TS) requirements to permit the use of risk-informed completion times. The proposed changes would impact the following electrical power systems TS: TS 3.8.1, "AC Sources – Operating," TS 3.8.4, "DC Sources – Operating," TS 3.8.7, "Inverters – Operating," and TS 3.8.9, "Distribution Systems – Operating."

The NRC staff will conduct a regulatory audit to support its review of the license amendment request. The audit will be conducted at Calvert Cliffs Nuclear Power Plant in Lusby, MD on May 25, 2018. The audit plan is enclosed. The logistics and scope of the audit was discussed with your staff on May 23, 2018.

B. Hanson

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If you have any questions, please contact me by telephone at 301-415-2871 or by e-mail at Michael.Marshall@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael L. Marshall, Jr.", written in a cursive style.

Michael L. Marshall, Jr., Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosure:
Audit Plan

cc: Listserv

AUDIT PLAN

REGARDING RISK-INFORMED TECHNICAL SPECIFICATION COMPLETION TIMES

EXELON GENERATION COMPANY, LLC

CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-317 AND 50-318

I. BACKGROUND

By letter dated February 25, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16060A223), as supplemented by letters dated April 3, 2017 (ADAMS Accession No. ML17094A591), January 11, 2018 (ADAMS Accession No. ML18011A665), and January 18, 2018 (ADAMS Accession No. ML18018B340), Exelon Generation Company, LLC submitted a license amendment request (LAR) to the U.S. Nuclear Regulatory Commission (NRC) proposing to modify the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs), Technical Specification (TS) requirements to permit the use of risk-informed completion times (RICTs). The proposed changes would impact the following electrical power systems TS: TS 3.8.1, "AC Sources – Operating," TS 3.8.4, "DC Sources - Operating," TS 3.8.7, "Inverters – Operating," and TS 3.8.9, "Distribution Systems - Operating."

II. REGULATORY AUDIT BASES

Section 36(c)(2) of Title 10 of *Code of Federal Regulation* Part 50 requires in part that limiting conditions of operations be included in TSs and that licensees shall follow any remedial action permitted by the TS until the condition can be met. The TSs for Calvert Cliffs, Units 1 and 2, contain limiting conditions of operations (LCOs) that prescribe completion times for remedial actions. The licensee has proposed using its probabilistic risk assessment to determine risk-informed completion times that may be used in lieu of the prescribed completion times. Regulatory Guide (RG) 1.174, Revision 3, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," January 2018 (ADAMS Accession No. ML17317A256), describes an acceptable risk-informed approach for assessing the nature and impact of proposed permanent licensing basis changes by considering engineering issues and applying risk insights. One of the principles of risk-informed decisionmaking, as described in the RG, is for the change to be consistent with the defense-in-depth philosophy.

The NRC staff reviewed the defense-in-depth of the electrical power systems for the TS conditions that would be impacted by the proposed RICT program with respect to the following description of defense-in-depth:

Defense-in-depth is an approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials. The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer,

no matter how robust, is exclusively relied upon. Defense-in-depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.

The defense-in-depth philosophy is incorporated into the design of the electrical power systems by having multiple or redundant and independent layers of electrical power sources or subsystems to ensure power to equipment required to prevent and mitigate postulated design basis accidents, events, transients, and abnormal occurrences assuming a single failure. The LCOs for the electrical power systems TS (in operating modes) require redundant electrical power sources or equipment that are capable of performing necessary safety functions assuming a single failure to be operable. If an electrical power source or equipment required by a TS LCO is inoperable, the required redundancy (i.e., defense-in-depth) will be reduced or lost, the LCO will not be met, and an applicable TS condition will be entered for remedial actions.

The NRC staff is evaluating the proposed change to confirm that sufficient defense-in-depth associated with each electrical TS condition is maintained during the RICT program entry for the specific TS condition. As part of evaluation, the NRC staff is considering supplemental electrical power sources or equipment (not necessarily required by the LCOs) that are available at Calvert Cliffs and capable of performing the same safety function of the inoperable electrical power source or equipment.

III. REGULATORY AUDIT SCOPE AND METHODOLOGY

The scope of the audit includes the following to support the defense-in-depth evaluation:

- Identification of equipment or power sources that can provide the same function as the equipment or power source credited in the LAR design success criteria. These equipment or power sources (1) can be either safety or non-safety related and (2) have not been identified or credited either in the plant's licensing basis, the LAR design success criteria, or the LCO required equipment or power sources.
- Identification of additional Risk Management Actions (RMAs) for TS conditions considered low defense-in-depth.
- Approaches to address the time dependency (e.g., how the battery's capacity during discharge is monitored) for TS conditions that may have time dependency.

IV. INFORMATION AND OTHER MATERIAL NECESSARY FOR THE REGULATORY AUDIT

Documentation

A hardcopy or electronic copy of the following documents should be available to the audit team:

- Procedure(s) or other document(s) that contain information related to the operation of the SMECO line.
- Procedure(s) or other document(s) that contain information related to station slackout (SBO) diesel generator (DG).

- Procedure(s) or other document(s) that contain information related to FLEX DGs.
- Procedure(s) or other document(s) that contain information related to the monitoring of battery's capacity during discharge.

Discussion Topics

1. How much time is required to connect the SMECO line to the 13 kV busses? Does this timeline meet the Chapter 14 timeline for the design basis accident?
2. Given the timeline to start the SBO DG is within one hour, as specified in Calvert Cliffs updated final safety analysis report, Chapter 14, prior to an entry of TS 3.8.1, Condition B or H, can the SBO DG be ready, as a RMA, to accept loads within 10 seconds as the emergency DGs?
3. For the following TS conditions, please provide the other available equipment or power sources that can provide the same function as the equipment/power source credited in the LAR design success criteria. These equipment or power sources (1) can be either safety or non-safety related and (2) should not be credited either in the LAR design success criteria or the LCO required equipment/power sources:
 - TS 3.8.1 Conditions B and H
 - TS 3.8.4 Condition B
 - TS 3.8.9 Conditions A, B, and C
4. For each of the TS conditions listed in question #3 above, which the defense-in-depth found to be low, please provide RMAs specifically addressing additional measures that need to be in place.
5. For TS conditions that may have time dependency (e.g., batteries), please describe how the proposed RICT address the time dependency (e.g., how the battery's capacity during discharge is monitored).

V. AUDIT TEAM ASSIGNMENTS

The members of the audit team will be:

- Khoi Nguyen, technical reviewer, NRR
- Michael Marshall, project manager and team lead, NRR

VI. LOGISTICS

The audit will be conducted at Calvert Cliffs Nuclear Power Plant in Lusby, MD on May 25, 2018. The audit entrance is scheduled to start at 10:00 am. The NRC project manager will coordinate any changes to the audit schedule and location with the licensee.

VII. SPECIAL REQUESTS

The NRC staff would like access to the following equipment and services:

- Enclosed room (or comparable space) with a table, chairs, and white board.

VIII. DELIVERABLES

An audit summary, which may be non-public, will be prepared within 90 days of the completion of the audit.

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ADAMS Accession No. ML18143A310

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