From:	Marshall, Michael
To:	Villar, Enrique:(GenCo-Nuc); "Mascitelli, Francis J:(GenCo-Nuc)"
Cc:	James Danna (James.Danna@nrc.gov)
Subject:	CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING EXTENDING COMPLETION TIMES TO 14 DAYS (EPID L-2018-LLA-0229)
Date:	Monday, October 29, 2018 1:26:00 PM

Hello Rick and Frank,

By letter dated August 23, 2018 (Agencywide Document Access Management System (ADAMS) Accession No. ML18235A199), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) proposing to revise Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs) Technical Specifications (TS) to permit one-time extension to the completion times (CTs) for two required actions in Section 3.8.1, "AC [Alternating Current] Sources-Operating," of the Calvert Cliffs TS. The one-time extensions up to 14 days would apply to Required Action A.3, "Restore required offsite circuit to OPERABLE status," and Required Action D.3, "Declare CREVS [Control Room Emergency Ventilation System] and CRETS [Control Room Emergency Temperature Control System] supported by the inoperable offsite circuit inoperable."

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in the LAR and has determined that additional information is needed to complete its review. Below is the NRC staff's request for additional information. The request for additional information was discussed with you and other representatives of Exelon on October 17 and 29, 2018, and it was agreed that your response would be provided within 20 days from the date of this email.

REQUEST FOR ADDITIONAL INFORMATION

The requirements in Title 10 of the Code of Federal Regulations (10 CFR), Section 50.63, "Loss of All Alternating Current Power," requires that each light-water-cooled nuclear power plant to be able to withstand and recover from a station blackout (SBO) (i.e., loss of the offsite electric power system concurrent with reactor trip and unavailability of the onsite emergency alternating current electric power system) of a specified duration. The 10 CFR 50.63 requirements provide assurance that necessary operator actions can be performed and that necessary control room –area equipment will be functional under the expected environmental conditions during and following a station blackout, thereby ensuring that the core will be cooled and appropriate containment integrity will be maintained.

In its LAR, the licensee states that overall configuration changes to the plant electrical systems have been evaluated in accordance with the guidance of, NUREG-0800 Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," (ADAMS Accession No. ML113640138). Also, the licensee evaluated the additional effects to CREVS and CRETS from one inoperable offsite source.

1. Section B of BTP 8-8 states, in part:

> Multi-unit sites that have installed a single AAC [alternate alternating current] power source for SBO cannot substitute it for the inoperable diesel when requesting AOT [allowed outage time] extensions unless the AAC source has

> enough capacity to carry all LOOP [loss of offsite power] loads to bring the unit to a cold shutdown as a substitute for the EDG [emergency diesel generator] in an extended AOT and carry all SBO loads for the unit that has an SBO event without any load shedding.

Subsection 4.2c of the LAR, which provides the explanation of how Calvert Cliffs meets the above BTP 8-8 requirements, but does not appear to discuss whether the AAC power source requires load shedding described in BTP 8-8.

Please provide a discussion of whether the AAC power source requires load shedding.

2. Section B of BTP 8-8 states, in part that "The TS must contain Required Actions and CTS to verify that the supplemental AC [alternating current] source is available before entering extended AOT." Section 4.1 of the LAR states, in part, that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line."

   In the LAR, the proposed change for TS 3.8.1 Action D.3 does not appear to include the required action(s) and CT(s) to verify that the AAC sources (i.e., SMECO line and SBO DG) are available before entering extended CT.

   Please provide a discussion of how the proposed change is consistent with above BTP 8-8 guidance.

3. Section 4.1, "Station Electrical Power Configuration during the 14-day CT Period," of the LAR states, in part that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line." Section B of BTP 8-8 states, in part:

   > Multi-unit sites that have installed a single AAC power source for SBO cannot substitute it for the inoperable diesel when requesting AOT extensions unless the AAC source has enough capacity to carry all LOOP loads to bring the unit to a cold shutdown as a substitute for the EDG in an extended AOT and carry all SBO loads for the unit that has an SBO event without any load shedding.

   Subsection 4.2c of the LAR, which provides the explanation of how Calvert Cliffs meets the above BTP 8-8 guidance, further states, in part:

   > It is noted that the SBO Diesel currently has an equipment issue with its 0C2 turbocharger. A special test run and Technical Evaluation (Reference 24) concluded that the SBO Diesel will maintain greater than continuous 4,766.3 kW load with engine room temperatures averaging 75.4 °F, as would be expected during the months of January through March, based upon historical ambient (outside) and engine room temperatures.

   Please provide a summary description of the special test run and the technical evaluation. In the summary description include the following:

a. 0C2 turbo exhaust temperature alarm setpoint.

b. 0C2 turbo exhaust temperature during the special test run.

c. Average 0C2 turbo exhaust temperature for the months of January to March from 2014 to present.

d. 0C2 cylinder temperature alarm setpoint.

e. 0C2 cylinder temperature during the special test run.

f. Average 0C2 cylinder temperature for the months of January to March from 2014 to present.

g. Discuss whether the 0C2 turbo exhaust or 0C2 cylinder temperatures exceed alarm setpoint during the special test run or for the months of January to March from 2014 to present.

4. Section 4.1, "Station Electrical Power Configuration during the 14-day CT Period," of the LAR states, in part that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line." Subsection 4.2c of the LAR further states, in part "It is noted that the SBO Diesel currently has an equipment issue with its 0C2 turbo charger."

   Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," (ADAMS Accession No. ML070380553) in describing the reliability of the EDGs (including, the SBO diesel generator (DG)), states, in part:

   > The design of the emergency diesel generators (EDGs) should also incorporate high operational reliability, and this high reliability should be maintained throughout their lifetime by initiating a reliability program that is designed to monitor, improve, and maintain reliability. Increased operational reliability can be achieved through appropriate testing and maintenance, as well as an effective root cause analysis of all emergency diesel generator failures.

   The NRC staff notes that the SBO DG is proposed to be an alternate power supply for the CREVS and CRETS if the EDG is inoperable. As part of reviewing the power supply for the CREVS and CRETS, the staff notes that there is no information describing the impact of the equipment issue with respect to its the reliability of the SBO DG. This impact may affect whether the SBO DG is an adequate alternate power source for the CREVS and CRETS when the EDG inoperable.

   Please provide a description of how equipment issue impacts the SBO DG reliability with respect to the power source to the CREVS and CRETS.

The NRC staff reviews the human performance aspects of LARs using the guidance in Standard Review Plan Chapter 18 and NUREG-1764 Rev. 1, "Guidance for the Review of Changes to Human Actions" (ADAMS Accession No. ML072640413). In accordance with the generic risk categories established in Appendix A to NUREG-1764, actions to recover

offsite power after a LOOP and actions involving risk-important systems are potentially risk-important. Due to the risk importance, the NRC staff will perform a Level II human factors review per the guidance in Section 4 of NUREG-1764, Rev. 1.

The LAR states that the FLEX DGs will be used as additional defense-in-depth to support the proposed 14 day CT. However, the LAR does not state how the FLEX DGs will be used to support the proposed 14 day CT in relation to how the FLEX DGs were designed to support mitigation of beyond design-basis external events (BDBEEs) in accordance with Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond Design-Basis External Events," (ADAMS Accession No. ML12054A735). The NRC staff requests the following information to determine whether the use of the FLEX DGs to support the proposed CT is feasible and reliable.

5. Describe any differences between deployment, staging, timing, and use of the FLEX DGs to support the proposed 14 day CT and to meet the requirements of Mitigating Strategies Order EA-12-049?

6. If the FLEX DGs will used differently to support the proposed CT than to support Mitigating Strategies Order EA-12-049, answer the following:

    a. Will the FLEX DGs remain available and protected from all BDBEEs while being used to support the proposed 14 day CT? If the FLEX DGs will not remain available and protected from all BDBEEs, how will the site meet its allowed unavailability times for FLEX (NEI 12-06, Rev. 0 or Rev. 2 or exception taken in FLEX Implementation Plan and evaluated in FLEX SE)?

    b. What procedural and administrative control(s) changes were made to direct staging and use of the FLEX DGs in support of the proposed 14 day CT as opposed to the mitigation of BDBEEs?

    c. How was training modified to address the use of the FLEX DGs in the context of supporting the proposed 14 day CT as opposed to the mitigation of BDBEEs?

    d. What validation was performed to ensure that the administrative controls are effective and that the FLEX DGs can be connected in the time required to support the proposed 14 day CT as opposed to the mitigation of BDBEEs?

Best Regards,
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Plant Licensing Branch I
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301-415-2871

Docket No. 50-317 and 50-318