From:	Nick Smith (He/Him/His)
To:	[Licensee] Mascitelli, Francis; Rickey, Ashley:(Constellation Nuclear)
Cc:	Michael Marshall; Hipo Gonzalez; Carla Roque-Cruz
Subject:	Additional RAIs for Limerick Generation Station, Units 1 and 2 - LAR and Exemption Request for Digital I&C Installation Support (EPID L-2023-LLA-0025 and L-2023-LLE-0005)
Date:	Tuesday, July 18, 2023 11:12:00 AM

Hello Frank and Ashley,

By letter dated February 17, 2023 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23052A022), Constellation Energy Generation, LLC (Constellation) submitted to the U.S. Nuclear Regulatory Commission (NRC) a license amendment request (LAR) to revise technical specifications and request an exemption from requirements of Sections 50.62(c)(3), (4) and (5) of Title 10 of the *Code of Federal Regulation* (10 CFR) to support a digital modernization project installation.

The proposed amendment would revise the technical specifications to adopt features from NUREG-1433, Revision 5, "Standard Technical Specifications for General Electric BWR/4 Plants," and revise instrumentation requirements to support the installation of a digital modification during upcoming refueling outages.

The proposed amendment is not a risk-informed amendment submitted in accordance with Regulatory Guide 1.174. Therefore, the NRC staff does not review the licensee's probabilistic risk assessment models to determine their technical acceptability. However, the NRC staff considers the licensee-provided qualitative risk insights and associated compensatory measures in its decision on the proposed change.

The NRC staff has determined that additional information is needed to complete its review of the request.

Please provide your responses to these information requests within 30 calendar days.

Draft Requests for Additional Information

Regulatory Basis for RAIs 10 and 11

Paragraph 50.62(c)(3) of 10 CFR contains boiling water reactor (BWR) requirements for reduction of risk from anticipated transient without scram (ATWS) events for light water cooled nuclear power plants regarding the alternate rod insertion (ARI) function.

Paragraph 50.62(c)(4) of 10 CFR contains BWR requirements for reduction of risk from ATWS events for light water cooled nuclear power plants regarding the SLCS function, its automatic capabilities, and specifics related to the concentration of boron in the liquid.

Paragraph 50.62(c)(5) of 10 CFR contains BWR requirements for reduction of risk from ATWS events for light water cooled reactors regarding the recirculation pump trip function and its automatic capabilities.

RAI 10

Technical Basis

Per Attachment 1, Section 3.5.4, last paragraph, a new time critical manual operator action is created to start the SLCS within 5 minutes upon an ATWS and failed subsequent manual SCRAM attempt. Attachment 1, Section 3.5.5 describe irreversible damage occurring at 6 minutes. The license application does not include the expected ATWS response timing with detailed impacts on the individual ATWS acceptance criteria parameters. This is of even greater significance since ARI will not be available under the conditions proposed by the amendment and local manual actuation of SLCS is the only means of shutting down the reactor in the event of an ATWS.

Information Needed

a. Provide details for the time critical operator action timeline margin with regards to the irreversible damages to acceptance criteria parameters, that is the expected timeline of completion, and by contrast the times of the individual acceptance criteria limits in Attachment 4 being exceeded if the time critical operator action is not performed for vessel pressure, suppression pool temperature, containment pressure, clad temperature, and clad oxidation respectively.

b. Please address the significance of local manual SLCS actuation and any increased effort to maintain the SLCS in a fully operable state during the "period of 30 days preceding exit from OPERATIONAL CONDITION 1 at the start of the 2024 refueling outage (Unit 1) and 2025 refueling outage (Unit 2)" (i.e., RRCS demotion 30-day period). Provide a full list of compensatory measures, if any, that will be implemented to manage the risk or ensure the availability of SLCS during the RRCS demotion 30-day period.

RAI 11

Technical Basis

Per the exemption request in Attachment 7 of the letter dated February 17, 2023, the licensee is seeking exemption from 50.62(c)(3), (4), and (5). In Sections I and II of the exemption request, the licensee is requesting a "full" exemption from all of the requirements in Sections (3), (4), and (5) of 10 CFR 50.62(c). However, the justification provided by Constellations in the amendment request and exemption request appears to be limited to an exemption from all the requirements in Section (3) of 10 CFR 50.62(c) and exemptions from only the requirements for automatic initiation and trip in Sections (4) and (5), respectively.

Information Needed

a. Please clarify whether the exemption for each section of 10 CFR 50.62(c)(3), (4), and (5) are either "full" or "partial" exemption. Specifically, is the exemption request for Sections (4) and (5) of 10 CFR 50.62(c) limited to the requirements for automatic initiation or trip mentioned in those sections.

b. If the exemption request for Sections (4) and (5) of 10 CFR 50.62(c) is not limited to the

requirements for automatic initiation or trip mentioned in those sections, please provide (or identify in the LAR and exemption request) the justification, including the special circumstance, for exemption from all the requirements in Sections (4) and (5) of 10 CFR 50.62(c).

RAI 12

Regulatory Basis

Paragraph 50.36(c)(3) of 10 CFR requires that technical specifications document the surveillance requirements for testing, calibration, or inspection of systems to maintain quality of operations.

Technical Basis

1) SR 4.8.1.1.2.h states:

> In accordance with the Surveillance Frequency Control Program the diesel generator shall be started* and verified to accelerate to synchronous speed in less than or equal to 10 seconds. The generator voltage and frequency shall reach ≥ 4160 V and ≤ 4400 V and ≥ 58.8 Hz and ≤ 61.2 Hz within 10 seconds after the start signal. After steady-state conditions are reached, voltage is maintained ≥ 4160 V and ≤ 4400 V and frequency is maintained ≥ 59.8 Hz and ≤ 60.8 Hz. The diesel generator shall be started for this test **by using one of the following signals**:
>
> a) Manual***
>
> b) Simulated loss-of-offsite power by itself.
>
> c) Simulated loss-of-offsite power in conjunction with an ECCS actuation test signal.
>
> d) An ECCS actuation test signal by itself.
>
> The generator shall be manually synchronized to its appropriate emergency bus, loaded to an indicated 2700-2800 KW** and operate for at least 60 minutes. **This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5, may also serve to concurrently meet those requirements as well**.

As part of the requested changes related to Technical Specification Task Force (TSTF) Travelers 582 (TSTF-582) and 583-T (TSTF-583-T), the licensee proposes to exclude SR 4.8.1.1.2.h from being required to be performed when shutdown based on saying the test is equivalent to four STS surveillance requirements (SRs) that are not required to be performed during shutdown: specifically, SRs 3.8.1.7, 3.8.1.11, 3.8.1.12 and 3.8.1.19. However, none of these tests require running the generator for greater than 5 minutes, so they are not equivalent to LGS SR 4.8.1.1.2.h which requires the generator to be run for at least 60 minutes. Additionally, as noted in the bold text above, this SR is equivalent to LGS SRs 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5, which, as shown in Table 1, are equivalent to STS SRs 3.8.1.2 and 3.8.1.3. STS SRs 3.8.1.2 and 3.8.1.3 are both required to be performed during shutdown as shown in TSTF 583-T. Therefore, the

technical basis for excluding this SR is inconsistent with TSTF-582 and TSTF-583-T.

Information Needed

Please provide a revised technical basis for excluding SR 4.8.1.1.2.h from being required during shutdown or revise the LAR to require its performance during shutdown.

RAI 13

Regulatory Basis

Paragraph 50.36(c)(3) of 10 CFR requires that technical specifications document the SRs for testing, calibration, or inspection of systems to maintain quality of operations.

Technical Basis

Table 1 in the LAR provides a list of equivalent SRs between LGS and the STS. The table indicates that the equivalent STS SR for LGS SR 4.8.1.1.2.e.12 is STS SR 3.8.1.8. This appears to be a typographical error.

Information Needed

Please confirm the correct STS equivalent SR is SR 3.8.1.18 or provide an explanation of how the two SRs (LGS SR 4.8.1.1.2.e.12 and STS SR 3.8.1.8) are equivalent.

RAI 14

Regulatory Basis

Paragraph 50.36(c)(2) of 10 CFR states that tech specs shall contain limiting conditions for operation (LCOs). It states that "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or **follow any remedial action permitted by the technical specifications until the condition can be met.**" **[Emphasis added]**

Technical Basis

The LAR proposes to revise technical specification 3.9.1, Action b to delete the option of locking the reactor mode switch in the Shutdown mode position. Action b provides the actions to be taken with the one-rod-out interlock inoperable. In this condition, the current technical specification action requires licensee to either: 1) verify that all control rods are fully inserted and disable withdraw capabilities, or 2) lock the reactor mode switch in the Shutdown position. The technical basis for this change stated in the LAR is:

> The purpose of the Functional Unit 11, "Reactor Mode Switch - Shutdown," and Functional Unit 12, "Manual Scram," in OPCON 5 is to provide a means for the reactor operator to rapidly insert all control rods into the reactor core. **However, if all control rods are already inserted in all core cells that contain fuel assemblies, this function is not necessary**. [**Emphasis added**]

However, as stated in the Limerick UFSAR, Section 7.2.2.1.2.3.1.17:

> Four manual scram push button controls are provided on one control room panel to permit manual initiation of reactor scram at the system level. Failure of an automatic reactor protection system (RPS) function cannot prevent the manual portions of the system from initiating the protective action. The manual scram push buttons are wired as close as is practicable to the scram contactor coil circuits to minimize the dependence of manual scram capability on other equipment. **Additional backup to these manual controls is provided by the shutdown position of the reactor system mode switch**. [**Emphasis added**]

Placement of the mode switch in the Shutdown position appears to be an appropriate action in this condition as the necessary action is being taken to ensure all rods are in the core.

Information Needed

Provide the basis for eliminating this option as a potential action of operators to take in this condition.

RAI 15

Regulatory Basis

Per Part 50 of 10 CFR, the NRC will not consider granting an exemption to its regulation unless special circumstances are present. One of the special circumstances in 10 CFR 50.12(a)(2) states, in part, that application of the regulation under particular circumstances is not necessary to achieve the underlying purpose of the rule.

Technical Basis

In section II.D of the exemption request, the licensee states:

> With the additional compensatory measures being taken, the same level ATWS mitigation protection will be achieved during the 30-day RRCS demolition period when the automatic systems designed to meet compliance with 10 CFR 50.62 ATWS requirements are out of service.

The additional compensatory measures being taken when the automatic systems designed to comply with 10 CFR 50.62 are taken out of service are not explicitly identified in either the

exemption request or related LAR as additional compensatory measures. The licensee appears to be relying on these additional compensatory measures as part of its particular circumstances to demonstrate that the automatic functions are not needed to achieve the underlying purpose of the rule during the RRCS demotion 30-day period.

Information Needed

List and describe the additional compensatory measures being taken when the automatic systems designed to comply with 10 CFR 50.62 are taken out of service.

Best Regards,
-Nick Smith-
Project Manager

Licensing Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

301-415-2509