



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

December 9, 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: LIMERICK GENERATION STATION, UNIT NOS. 1 AND 2 – ACCEPTANCE OF REQUESTED LICENSING ACTION RE: REPLACEMENT OF EXISTING SAFETY-RELATED ANALOG CONTROL SYSTEMS WITH A SINGLE DIGITAL PLANT PROTECTION SYSTEM (EPID L-2022-LLA-0140)

Dear Mr. Rhoades:

By letter dated September 26, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22269A569), as supplemented by letters dated August 12, 2022 (ML22224A149), and November 29, 2022 (ML22333A817), Constellation Energy Generation, LLC (Constellation), submitted license amendment requests (LARs) for Limerick Generation Station, Units 1 and 2 (Limerick). The proposed amendment requests would change both the design and technical specifications to permit the use of a new single digital instrumentation and controls system to replace analog instrumentation of reactor protection system, analog nuclear steam supply shutoff system, emergency core cooling system, reactor core isolation cooling system, and end-of-cycle recirculation pump trip at Limerick. In addition, the proposed amendments would change the classification of the redundant reactivity control system from safety-related to non-safety-related, eliminate the automatic redundant reactivity control system feedwater runback function, eliminate the automatic isolation function for the turbine enclosure main steam line tunnel temperature high indication, eliminate several surveillance requirements, and allow the use of automated operator aids (or automated controls) from main control room.

The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff (staff) acceptance review of these amendment requests. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an application for an amendment to a license (including the technical specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

The staff is accepting your application for docketing. While the staff has concluded that it does not include sufficient technical information in certain limited areas identified by Constellation (discussed further below), it is accepting the application for docketing because Constellation has: 1) provided a sufficiently detailed description of the supplemental information and a schedule for when the supplemental information will be provided to the NRC; and 2) provided sufficient information in the remaining areas.

Supplemental Information Identified by Constellation Necessary to Complete Review

In its LAR, Constellation described supplemental information in certain limited areas that either was not included in the LAR or needed to be updated at a later time. Constellation also identified the schedule for submission of this supplemental information. The table below lists this supplemental information and the submission schedule proposed by Constellation.

| Supplemental Information | Date of Submittal |
|---|--------------------------|
| Human Factors Engineering Conceptual Verification Results Summary Report | February 9, 2023 |
| HFE Preliminary Verification Results Summary Report | March 30, 2023 |
| Seismic Equipment Qualification Summary Report, Revision 0 | April 18, 2023 |
| Environmental Equipment Qualification Summary Report, Revision 1 | May 3, 2023 |
| Electromagnetic Compatibility Equipment Qualification Summary Report, Revision 2 | June 16, 2023 |
| Updated WNA-DS-04900-GLIM-P, LGS PPS System Design Specification (SyDS), Revision 3 | February 17, 2023 |

Other Potential Information Insufficiencies Identified by the Staff During its Acceptance Review and their Resolution

The staff identified three potential information insufficiencies during its acceptance review and discussed them at a public meeting on November 10, 2022 (ML22327A019):

- 1) the available information explaining the design and use of the component interface module (CIM) priority module
- 2) the basis for an exception identified by Constellation to Clause 5.6.1 in Institute of Electrical and Electronics Engineers Standard 603-1991 (IEEE-606-1991) regarding independence between redundant portions of a safety system for the plant protection system; and
- 3) the basis for an exception identified by Constellation to IEEE-603-1991 Clauses 6.6 and 7.4 regarding operating bypasses.

Item 1: CIM Priority Module

After the public meeting, the staff concluded that item 1 was an information insufficiency that needed to be addressed before the staff could accept the LAR. In a letter dated November 21, 2022 (ML22320A113), the staff requested that Constellation supplement the application with information on the CIM. Constellation submitted a letter dated November 29, 2022 (ML22333A817), to provide a technical description of the CIM design for the priority functions being used in the proposed plant protection system.

This letter transmitted the Westinghouse Technical Report WCAP-17179, Revision 6, and identified the section applicable to the Limerick LAR. Based on this information, the staff has concluded that this information is sufficient to support acceptance of the LAR.

Items 2 and 3: Exceptions to IEEE-603-1991

At the public meeting, the staff noted that the IEEE-603-1991 clauses that Constellation is taking exception to correspond to similar requirements in IEEE Standard 279-1968 that are required to be met for proposed protection systems at Limerick in accordance with 10 CFR 55.55a(h)(2). Taking exception to the clauses in IEEE-603-1991 would seem to indicate that the system planned for Limerick would not comply with 10 CFR 55.55 a(h)(2), in which case the system could not be approved without additional licensing actions (e.g., requesting an exemption or alternative request). As justification for the exception, the LAR references, and Constellation discussed at the public meeting, Limerick's updated final safety analysis report (UFSAR) and emergency operating procedures. However, the staff could not identify a clear regulatory basis for the exceptions in these references during the acceptance review period. While follow up is necessary to determine if the licensing basis documents provide sufficient justification, the staff concluded that resolution of these issues was not necessary to support acceptance of the LAR because Constellation had provided a justification for the exceptions. Because the staff has not been able to verify the adequacy of the justification through its review of the information provided to date, this issue is a high priority licensing concern that needs to be addressed by Constellation. The staff will discuss this issue further at the public meeting with Constellation scheduled for December 15, 2022, to identify an appropriate regulatory path forward. Possible paths include the staff issuing a request for additional information as part of its detailed review of the LAR, or Constellation providing supplemental information or an additional licensing action requesting an exemption or alternative request.

Review Schedule and Level of Effort

Based on the information provided in your license amendment requests, including the schedule for when supplemental information will be provided, the NRC staff has estimated that these licensing requests will take approximately 7000 hours to complete. The NRC staff expects to complete this review by March 11, 2024. The estimated completion date accounts for briefings to the Advisory Committee on Reactors Safeguards (ACRS) on the NRC staff review of the amendment requests. If there are emergent complexities or challenges in the NRC staff's review that would cause changes to the initial forecasted completion date or significant changes in the forecasted hours, the reasons for the changes, along with new estimates, will be communicated during the routine interactions with the assigned NRC project manager and documented in subsequent correspondence to Constellation.

The estimates for level of effort and completion schedule are based on the NRC staff's initial review of the application and the licensee's schedule for providing the information missing from the initial application. These estimates are subject to change if there are delays in submitting the information described in Constellation's letter dated September 26, 2022, or significant changes in the proposed digital system described in the initial application. Additionally, the estimates could change due to other factors including requests for additional information (especially, second round requests for additional information), unanticipated addition of scope to the review, and hearing-related activities or additional reviews by the ACRS.

Lastly, NRC staff cannot complete its review of the Limerick license amendment request without receiving the remaining supplemental information that Constellation has identified and indicated that it would provide.

If you have any questions, please contact the NRC Project Managers for these license amendment requests, Michael Marshall at Michael.Marshall@nrc.gov or (301) 415-2871, and Bhagwat "BP" Jain at Bhagwat.Jain@nrc.gov or (301) 415-6303.

Sincerely,

/RA/

Bhagwat P Jain, Senior Project Manager
Plant Licensing Branch 4
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

cc: Listserv

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