Constellation

Proposed License Condition for Limerick DMP

November 8, 2024

Proposed License Condition (DRAFT)

- To help facilitate NRC review and approval of LAR prior to completion of Equipment Qualification testing
- Transmittal to NRC will consist of:
  - Cover letter
  - Attachment 1 – License Conditions (LCs) for Unit 1 and Unit 2.
    - The LCs will require completion of testing of components listed in Attachment 2, of the installed equipment, prior to startup.
  - Attachment 2
    - Describes the required testing by referencing the applicable Regulatory Guides, EPRI Technical Report, and previously submitted EQ Summary Report, and RAI response.
    - Includes two tables that list the components and test procedures/reports.

Attachment 1
Proposed License Condition(*)

(21) Equipment Qualification Testing and Analysis – Plant Protection System Components

Prior to startup following the first refueling outage during which the digital instrumentation and control (DI&C) Plant Protection System (PPS) at the Limerick Generating Station, Unit 1 (LGS) is installed, Constellation Energy Generation, LLC (CEG) shall complete seismic, environmental, and electromagnetic capability (EMC) testing and analysis of critical hardware components, as described in CEG letter to the U.S. Nuclear Regulatory Commission (NRC), "Proposed License Condition – Qualification of Components – Limerick Generating Station Digital Plant Protection System," dated November XX, 2024, Attachment 2, "Equipment Qualification of Critical Hardware Components." To satisfy this License Condition, CEG will formally document the successful completion of the required EQ testing and analyses.

(*) Attachment 1 will also include specific License Condition for Unit 2

Attachment 2
Equipment Qualification of Critical Hardware Components

Constellation Energy Generation, LLC (CEG) will conduct seismic, environmental, and electromagnetic capability (EMC) equipment qualification (EQ) testing and analysis of the critical hardware components that will be installed as part of Limerick Generating Station, Unit 1 and Unit 2 (LGS) Plant Protection System (PPS) modification. Critical hardware components are those components that will perform processing functions, communication functions, analog-to-digital or digital-to-analog conversions, or other similar complex functions to achieve the safety functions required of the PPS. These critical hardware components, and the associated EQ test status are listed in Table 1 below.

EQ testing and analysis of the listed critical hardware components will be conducted in accordance with NRC Regulatory Guide (RG) 1.100, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants," Revision 2; RG 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," Revision 1; and RG 1.180, "Guidelines for Evaluation Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems," Revision 2. CEG will review and determine EQ testing and analysis requirements for all additional or different critical hardware components that are incorporated into the LGS PPS design, subsequent to the date of this letter in accordance with RG 1.100, Revision 2, RG 1.89, Revision 1, and RG 1.180, Revision 2.

Attachment 2 (cont.)
Equipment Qualification of Critical Hardware Components

The EQ testing and analysis process for critical hardware components is described in EQ-QR-433-GLIM-P, "Qualification Summary Report for the Plant Protection System Upgrade for Limerick Units 1 & 2," Revision 4, which was submitted by CEG letter dated June 28, 2024 (ADAMS Accession No. ML24180A157). Seismic, environmental, and EMC testing is described in Sections 3.1.1, "Component Seismic Testing," 3.2.1, "Component Environmental Testing," and 3.3.1, "Component EMC Testing," respectively.

The seismic qualification testing will verify that the critical hardware components listed in Table 1 will be capable of operation without loss of safety function or physical integrity, as defined in the applicable test procedures listed in Table 2, when subjected to the seismic conditions specified in the applicable Table 2 test procedures.

The environmental qualification testing will verify that the critical hardware components listed in Table 1 will be capable of operation without loss of safety functions, as defined in the applicable test procedures listed in Table 2, when subjected to the environmental parameters specified in EQ-QR-433-GLIM-P, Revision 4, Figure 3.2-1, "Environmental Test Profile for Component Level Testing."

The EMC qualification testing will verify that the critical hardware components listed in Table 1 will meet the requirements specified in RG 1.180 Revision 2, and Electric Power Research Institute (EPRI) Technical Report TR-102323, Revision 4, "Guidelines for Electromagnetic Interference Testing in Power Plants," as defined in the applicable test procedures listed in Table 2.

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Attachment 2 (cont.)
Critical Hardware Components – Test Status
Table 1

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Attachment 2 (cont.)
Critical Hardware Components – Test Procedures and Test Reports
Table 2

Test Description	EQ and Functional Test Procedures	EQ Test Reports
Seismic	EQ-TP-562-GLIM, Rev. 1, "Seismic Test Procedure for the Limerick Generating Station Reconciliation Components" *WNA-TP-07651-GEN*	*EQLR-529*
Environmental	*EQ-TP-538-GLIM* *WNA-TP-07651-GEN*	*EQLR-536*
EMC	*EQ-TP-528-GEN* *EQ-TP-517-GEN* *WNA-TP-07651-GEN*	*EQLR-522*