




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

March 24, 2016

MEMORANDUM TO: Douglas A. Broaddus, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager 
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2, DRAFT
REQUEST FOR ADDITIONAL INFORMATION (CAC NOS. MF7263
AND MF7264)

The attached draft request for additional information (RAI) was transmitted on March 10, 2016, to Mr. Glenn Stewart of Exelon Generation Company, LLC (Exelon, the licensee). This information was transmitted in order to clarify the licensee's amendment request dated January 15, 2016, for Limerick Generating Station (LGS), Units 1 and 2. The proposed amendment would reduce the reactor vessel steam dome pressure associated with the Technical Specification (TS) Safety Limits (SLs) specified in TS 2.1.1 and TS 2.1.2. The amendment would also revise the setpoint and allowable value for the main steam line low pressure isolation function in TS Table 3.3.2-2. The proposed changes address a 10 CFR Part 21 issue concerning the potential to violate the SLs limits during a pressure regulator failure maximum demand (open) (PRFO) transient.

The draft RAI was sent to Exelon to ensure that the questions are understandable, the regulatory basis for the questions is clear, and to determine if the information was previously docketed. A conference call was held to discuss the questions on March 24, 2016. Following the call, the licensee agreed to provide a response by April 25, 2016.

This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket Nos. 50-352 and 50-353

Attachment: Draft RAI

DRAFT REQUEST FOR ADDITIONAL INFORMATION
REGARDING PROPOSED LICENSE AMENDMENT
REDUCE STEAM DOME PRESSURE IN SAFETY LIMITS
EXELON GENERATION COMPANY, LLC
LIMERICK GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. 50-352 AND 50-353

By letter dated January 15, 2015 (ADAMS Accession No. ML16015A316), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) for Limerick Generating Station (LGS), Units 1 and 2. The proposed amendment would reduce the reactor vessel steam dome pressure associated with the Technical Specification (TS) Safety Limits (SLs) specified in TS 2.1.1 and TS 2.1.2. The amendment would also revise the setpoint and allowable value for the main steam line low pressure isolation function in TS Table 3.3.2-2. The proposed changes address a 10 CFR Part 21 issue concerning the potential to violate the SLs limits during a pressure regulator failure maximum demand (open) (PRFO) transient.

The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal.

Reactor Systems Branch (SRXB)

Reviewer: Matthew Hardgrove

SRXB-RAI-1

The current LGS TS 2.1.2 requires that the minimum critical power ratio (MCPR) be ≥ 1.09 for two recirculation loop operation and ≥ 1.12 for single recirculation loop operation with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10% of rated flow.

An LAR dated November 19, 2015 (ADAMS Accession No. ML15323A257), for LGS Unit 1, was submitted to the NRC regarding TS 2.1, "Safety Limits," to revise Safety Limit Minimum Critical Power Ratios (SLMCPRs) due to the cycle specific analysis performed by Global Nuclear Fuel for the upcoming Cycle 17. The proposed change to the SLMCPR values are from ≥ 1.09 to ≥ 1.10 for two loop operation and from ≥ 1.12 to ≥ 1.14 for single loop operation. The NRC staff requests that the licensee clarify whether the proposed steam dome pressure change considered the SLMCPR change for TS 2.1.2 in the referenced LGS Unit 1 LAR.

SRXB-RAI-2

The LAR states that main steam isolation valve (MSIV) low pressure isolation setpoint (LPIS) setting, calculated at 840 pounds per square inch gauge (psig), is based on the new analytical limit of 805 psig. The NRC staff requests that the licensee (1) provide a description of how the new analytical limit of 805 psig was arrived at, and (2) how the proposed MSIV LPIS setting of 840 psig is based on this new analytical limit.

SRXB-RAI-3

The NRC staff requests that the licensee discuss the impact of this Main Steam Line Pressure – Low allowable value change, primarily focusing on the PRFO transient.

SRXB-RAI-4

The licensee proposes to reduce the reactor steam dome pressure specified in TS 2.1.1 and TS 2.1.2 from 785 psig to 685 psig based on the lower-bound pressure for the critical power correlation for the fuel currently used in the LGS, Units 1 and 2 cores. The licensee's application references Global Nuclear Fuel (GNF) reports NEDC-33270P, NEDC-33292P and NEDC-32851P-A as the basis supporting the proposed change. The LGS Unit 1 core currently consists of GE14 and GNF2 fuel types and LGS Unit 2 uses GNF2 fuel.

Section 3.8.3 of GNF report NEDC-33270P discusses the critical power correlation for GNF2 fuel (i.e., GEXL17 correlation). This section includes the pressure range over which the GEXL17 correlation is valid for GNF2 fuel consistent with the information provided in Table 5-4 of GNF2 report NEDC-33292P. As discussed in Section 3.0 of Attachment 1 of the licensee's application, the lower bound pressure limit for the GEXL17 correlation is 700 pounds per square inch atmospheric (psia).

GNF report NEDC-32851P-A discusses the critical power correlation for GE14 fuel (i.e., GEXL14 correlation). Similar to the GEXL17 correlation, Section 5.2 of the report states that the lower bound pressure limit for the GEXL14 correlation is 700 psia.

Converting 700 psia to psig, the lower bound pressure for the GEXL17 and GEXL14 correlations is approximately 685.3 psig. As such, the 685 psig value specified in the proposed TS change is slightly outside the pressure range in which the GEXL17 and GEXL14 correlations are valid for GNF2 and GE14 fuel. Please provide further justification for the proposed 685 psig value or propose a revised pressure value for this TS change that is supported by the GEXL17 and GEXL14 correlations (e.g., 700 psia).

Instrumentation and Controls Branch (EICB)

Reviewer: Gush Singh

EICB-RAI-1

The proposed amendment request entails changes to TS Table 3.3.2-2 and revises the trip setpoint and the allowable value for the main steam line low pressure isolation function. In order for the NRC staff to verify compliance to the regulations and the guidance pertaining to setpoint changes, the staff requests the licensee to submit the calculation for staff review. The calculation will be used to assess the methodology, the changes in assumptions, calculation of total loop uncertainty, and other pertinent information in the calculation.

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