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

March 1, 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: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 – SUPPLEMENTAL INFORMATION NEEDED FOR ACCEPTANCE OF REQUESTED LICENSING ACTION RE: AMENDMENT TO IMPLEMENT PRIME METHODOLOGIES FOR EVALUATING THERMAL OVERPOWER AND MECHANICAL OVERPOWER LIMITS FOR NON-GLOBAL NUCLEAR FUELS FUEL (EPID L-2022-LLA-0014)

Dear Mr. Rhoades:

By letter dated January 20, 2022 (Agencywide Document Access and Management System (ADAMS) Package Accession No. ML22020A398), Exelon Generation Company, LLC, submitted a license amendment request for Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities). On February 1, 2022 (ADAMS Accession No. ML22032A333), Exelon Generation Company, LLC was renamed Constellation Energy Generation, LLC. (Constellation). The proposed amendment would add a reference to Report 006N8642-P, Revision 1, "Justification of PRIME Methodologies for Evaluating TOP [Thermal Overpower] and MOP [Mechanical Overpower] Compliance for non-GNF [Global Nuclear Fuels] Fuels," to Technical Specification 5.6.5.b, the core operating limits report (COLR) references. The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC 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.

In order to make the application complete, the NRC staff requests that Constellation supplement the application to address the information requested in the enclosure by March 17, 2022. This will enable the NRC staff to begin its detailed technical review. If the information responsive to the NRC staff's request is not received by the above date, the application will not be accepted

for review pursuant to 10 CFR 2.101, and the NRC will cease its activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated time frame in this letter were discussed with Rebecca Steinman of your staff on February 28, 2022.

If you have any questions, please contact me at (301) 415-3733.

Sincerely,

/RA/

Robert Kuntz, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-254 and 50-265

Enclosure:
Supplemental Information Needed

cc: Listserv

SUPPLEMENTAL INFORMATION NEEDED

AMENDMENT REQUEST TO IMPLEMENT PRIME METHODOLOGIES FOR EVALUATING THERMAL OVERPOWER AND MECHANICAL OVERPOWER LIMITS FOR NON-GLOBAL NUCLEAR FUELS FUEL

CONSTELLATION ENERGY GENERATION, LLC

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-254 and 50-265

1. In Section 1 of Attachment 1 to the January 20, 2022 (Agencywide Document Access and Management System (ADAMS) Package Accession No. ML22020A398), license amendment request for Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities), stated that the proposed methodology would be used as an alternative to or in conjunction with the currently approved approach of using overpower limits as provided by the non-Global Nuclear Fuels (GNF) fuel manufacturing vendor. Meanwhile, the U.S. Nuclear Regulatory Commission (NRC) staff is presently reviewing additional fuel thermal-mechanical limits contained in ANP-3198P, Revision 0, "ATRIUM 10XM Fuel Rod Thermal-Mechanical Evaluation with RODEX2A for Quad Cities and Dresden," in concert with a license amendment requested by letter dated September 14, 2021 (ADAMS Package Accession No. ML21257A419).

   a. It is not clear whether "currently approved approach" would include that described in ANP-3198P, or whether approval would be needed for the thermal-mechanical limits provided in ANP-3198P to approve those described in Report 006N8642-P, "Justification of PRIME Methodologies for Evaluating TOP [Thermal Overpower] and MOP [Mechanical Overpower] Compliance for non-GNF Fuels." Explain whether limits developed using the methods and empirical basis in Report 006N8642-P require the use of the limits described in ANP-3198P, e.g., potentially as input.

   b. The January 20, 2022, request, states that Report 006N8642-P would be used "as an alternative to or in conjunction with the currently approved approach of using overpower limits." Explain how the report and the methods described therein would be used in either case, in a level of detail that would support a comparison of the RLA to existing processes for developing thermal-mechanical limits for the fuel.

2. While Report 006N8642-P appears to provide a basis for determining the mechanical and thermal overpower limits for CWSR Zircaloy-2 fuel, the demonstration included in Chapter 4 is for an unspecified plant, meaning that it is unclear whether the analyses demonstrate compliance with the applicable design limits for Quad Cities using the methodology. Justify the applicability of the analysis included in Chapter 4 or provide an analysis and set of mechanical and thermal overpower limits that are based on Quad Cities.

3. The amendment request proposed a change to Quad Cities Technical Specification (TS) 5.6.5.b to add a core operating limit report (COLR) reference to Report 006N8642-P. The guidance provided in NRC Generic Letter 88-16, “Removal of Cycle-Specific Parameter Limits from Technical Specifications” (ADAMS Accession No. ML031130447), recommends that the NRC staff safety evaluation (SE) for a plant-specific methodology by NRC letter and date be included in the citation of plant-specific methodology. This formatting would also be consistent with TS 5.6.5 and the guidance provided in NUREG-1433, Revision 5, “Standard Technical Specifications - General Electric BWR [boiling-water reactor]/4 Plants.” Therefore, describe how the proposed TS change would ensure that the NRC staff SE is considered in COLR revisions or revise the citation similar to the following (as underlined):

> Report 006N8642-P, Revision 1, “Justification of PRIME Methodologies for Evaluating TOP and MOP Compliance for non-GNF Fuels” January 2022, <u>as approved by NRC staff SE dated XXX XX, 20XX</u>.

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 – SUPPLEMENTAL INFORMATION NEEDED FOR ACCEPTANCE OF REQUESTED LICENSING ACTION RE: AMENDMENT TO IMPLEMENT PRIME METHODOLOGIES FOR EVALUATING THERMAL OVERPOWER AND MECHANICAL OVERPOWER LIMITS FOR NON-GLOBAL NUCLEAR FUELS FUEL (EPID L-2022-LLA-0014) DATED MARCH 1, 2022

DISTRIBUTION:
PUBLIC
PM File Copy
RidsACRS_MailCTR Resource
RidsNrrDssSfnb Resource
RidsNrrDorl Resource
RidsNrrDorlLpl3 Resource
RidsNrrLASRohrer Resource
RidsNrrPMQuadCities Resource
RidsRgn3MailCenter Resource

ADAMS Accession No. ML22059A990

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DSS/SFNB/BC
NAME	RKuntz	SRohrer	RLukes
DATE	2/28/2022	3/1/22	3/1/22
OFFICE	NRR/DORL/LPL3/BC	NRR/DORL/LPL3/PM	
NAME	NSalgado	RKuntz	
DATE	3/1/22	3/1/22	

OFFICIAL RECORD COPY