NRR-PMDAPEm Resource

From: Regner, Lisa
Sent: Thursday, November 16, 2017 10:08 AM
To: Paul.Duke@pseg.com; Thomas, Brian J.
Cc: Regner, Lisa
Subject: HCGS MUR - Final Request for Additional Information Electrical Engineering (EEOB)
Attachments: MUR EEOB RAIs rev2.docx

Final Request for Additional Information (L-2017-LLS-0002)

On November 14, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff sent PSEG (the licensee) a draft Request for Additional Information (RAI) as provided in the attached document (questions have been re-numbered). These RAI questions relate to a license amendment request (LAR) that proposes to increase the rated thermal power level from 3840 megawatts thermal to 3902 megawatts thermal, and make technical specification changes as necessary to support operation at the uprated power level. This is referred to as a measurement uncertainty recapture (MUR) uprate.

PSEG subsequently informed the NRC staff that the questions were understood and additional clarification was not necessary. Mr. Brian Thomas agreed to provide a response to this final RAI within 30 days from the date of this correspondence. Please note that if PSEG does not respond by this date, the requested completion date for the MUR decision may not be met by the NRC.

The NRC staff also informed the licensee that a publicly available version of this final RAI would be placed in the NRC's Agencywide Documents Access and Management System (ADAMS).

By letter dated July 7, 2017, (ADAMS package Accession No. ML17188A259), the licensee requested an amendment to the Operating License for Hope Creek Generating Station. The proposed amendment requests a MUR uprate for Hope Creek. The NRC staff requires additional information to complete its review of this request as detailed in the attached document.

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REQUEST FOR ADDITIONAL INFORMATION
REGARDING HOPE CREEK GENERATING STATION PROPOSED MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE
DOCKET NO. 50-354
(CAC NO. MF9930)

By application dated July 7, 2017, Public Service Enterprise Group (PSEG), submitted a license amendment request (LAR) for Hope Creek Generating Station (HCGS). The proposed amendment would revise the Operating Licenses and Technical Specifications (TS) to implement a measurement uncertainty recapture (MUR) power uprate or thermal power optimization (TPO). Specifically, the proposed changes would increase the maximum licensed thermal power level from 3,840 megawatts thermal (MWt) to 3,902 MWt, which is an increase of approximately 1.6 percent.

The Electrical Engineering Operating Branch staff has reviewed the information provided by the licensee in the LAR. The following additional information is needed to complete our review of the LAR.

Regulatory Requirements: 10 CFR, Appendix A of Part 50, General Design Criterion (GDC) 17, "Electric Power Systems," requires, in part, that an onsite electric power system and an offsite electric power system be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. The onsite electric power supplies shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

EEOB-1

Section 6.1.2, "On-Site Power," of Enclosure 8 of the LAR states:

> The only identifiable change in electrical load demand is associated with the condensate pumps. These pumps experience increased flow and a small change in horsepower duty due to the TPO uprate conditions. Accordingly, there are negligible changes in the on-site distribution system design basis loads or voltages due to the TPO conditions.

Section 6.2, "DC Power," of Enclosure 8 of the LAR states:

> The changes to the auxiliary power system as a result of the TPO uprate are small increases in the horsepower of the condensate pump and the reactor recirculation (RRC) pump motors.

The NRC staff notes that the TPO-related change in electrical load demand is identified as the increase in horsepower of the condensate pumps in Section 6.1.2. However, the change in electrical load demand is identified as the increase in horsepower of both the condensate pumps and the RRC pumps in Section 6.2. The NRC staff also noted that the licensee did not

discuss the change in horsepower for these pumps due to the TPO uprate and the resulting change in the on-site distribution system design basis loads or voltages.

Provide a reason for this discrepancy and clarify which pumps that are impacted by the TPO uprate. Also provide the value or percentage increase in horsepower for the pumps impacted by the TPO uprate and discuss the effects of the increased horsepower on the associated safety-related and/or non-safety-related buses as a result of the TPO uprate.

EEOB-2

Section 10.3.1.1, "Inside Containment," of Enclosure 8 of the LAR states:

> EQ [environmental qualification] for safety-related electrical equipment located inside the containment is based on DBA-LOCA conditions and their resultant temperature, pressure, humidity and radiation consequences, and includes the environments expected to exist during normal plant operation. The current accident conditions for temperature and pressure are based on analyses initiated from at least 102% of CLTP. Normal temperatures may increase slightly near the FW and RRC lines and will be evaluated through Section A.3.1.2 of UFSAR Appendix A, which addresses the existing program that manages the aging (EQ) of electrical equipment. The current radiation levels under normal plant conditions also increase slightly. The current plant environmental envelope for radiation is not exceeded by the changes resulting from the TPO uprate.

The licensee does not appear to have discussed the impact of the TPO uprate on all the environmental parameters for the safety-related equipment, and has not clearly stated whether the EQ electrical equipment remains qualified for the TPO uprate conditions.

Confirm that all existing environmentally qualified electrical equipment located inside and outside containment remain qualified for TPO uprate conditions during normal and accidents conditions. Include a basis for this response.

EEOB-3

Section 3.4.5, "Grid Stability Studies," of Enclosure 1 of the LAR states:

> Grid stability studies were performed for Hope Creek operation at a bounding electrical power output of 1320 [Megawatts electrical] MWe. These results bound operation at the proposed MUR power level of 3902 [Megawatts thermal] MWt."

The licensee has not provided the proposed MUR power level in MWe to allow the staff to verify that the MWe used for the grid studies is bounding for the TPO uprate.

Provide the value of the MWe power corresponding to the proposed MUR power level of 3902 MWt and include uncertainties, if any.