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PSEG Nuclear LLC

February 1, 2022

10 CFR 50.90

LR-N22-0011
LAR H21-01

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Hope Creek Generating Station
Renewed Facility Operating License Nos. NPF-57
NRC Docket No. 50-354

Subject: Response to Request for Additional Information for License Amendment Request to Revise Technical Specification Limits for Ultimate Heat Sink

References

1. PSEG letter to NRC, "License Amendment Request to Revise Technical Specification Limits for Ultimate Heat Sink," dated May 7, 2021 (ADAMS Accession No. ML21127A085)

2. NRC e-mail to PSEG, " Hope Creek – Final RAI Re: Revise TS Limits for Ultimate Heat Sink (EPID L-2021-LLA-0083)," dated January 6, 2022 (ADAMS Accession No. ML22006A321)

In the Reference 1 letter, PSEG Nuclear LLC (PSEG) submitted a license amendment request for Hope Creek Generating Station (HCGS). The proposed amendment requested to revise the Technical Specification limits associated with the ultimate heat sink.

In Reference 2, the U.S. Nuclear Regulatory Commission staff provided PSEG a Request for Additional Information (RAI) to support the NRC staff's technical review of Reference 1. Attachment 1 to this submittal provides the response to the RAI.

PSEG has determined that the information provided in this submittal does not alter the conclusions reached in the 10 CFR 50.92 no significant hazards determination previously submitted. In addition, the information provided in this submittal does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

No new regulatory commitments are established by this submittal. If you have any questions or require additional information, please do not hesitate to contact Mr. Brian Thomas at (856) 339-2022.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 2/1/22
(Date)

Respectfully,

Edward T. Casulli
Site Vice President
Hope Creek Generating Station

Attachment 1: Response to Request for Additional Information for License Amendment Request to Revise Technical Specification Limits for Ultimate Heat Sink

cc: Administrator, Region I, NRC
Project Manager, NRC
NRC Senior Resident Inspector, Hope Creek
Ms. A. Pfaff, Manager, NJBNE
PSEG Corporate Commitment Tracking Coordinator
Site Commitment Tracking Coordinator

Response to Request for Additional Information for License Amendment Request to Revise Technical Specification Limits for Ultimate Heat Sink

By application dated May 7, 2021 (Agencywide Documents Access and Management System Accession No. ML21127A085), PSEG Nuclear LLC, the licensee, submitted a license request to revise Hope Creek Generating Station (HCGS) Technical Specification (TS) 3/4.7.1.3, Ultimate Heat Sink (UHS), to modify the Limiting Condition for Operation (LCO) river temperature, increase the temperature in the action statement for opening the emergency discharge valves, add a new 72 hour allowed outage time for one Station Service Water System (SSWS) pump or one Safety Auxiliary Cooling System (SACS) pump or one Emergency Diesel Generator (EDG) inoperable with UHS temperature above 88°F, and revise the UHS average temperature limit and maximum temperature.

The NRC staff reviewed the proposed change and determined that additional information is required to complete the review.

Regulatory Requirement

10 CFR 50.36(c)(2) states that limiting conditions for operation (LCOs) are the lowest functional capability or performance levels of equipment required for safe operation of the facility, and when an LCO is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TS until the LCO can be met.

Background

The licensee already adopted the UHS temperature averaging methodology outlined in TSTF-330 Rev. 3 as documented in the Safety Evaluation dated August 1, 2006 (ADAMS Accession No. ML062130012). That amendment request approved the UHS temperature averaged over the previous 24-hour period to be less than or equal to 89°F and the maximum UHS temperature of 91.4°F.

The current amendment request proposed new temperature limits of UHS temperature averaged over the previous 24-hour period to be less than or equal to 91.0°F and the maximum UHS temperature of 93.0°F.

TSTF-330 lists 4 Conditions that a licensee must satisfy in the amendment request. Condition (a) states that licensees wishing to adopt the change must either confirm that the following condition is satisfied (or provide justification for any exceptions):

> The UHS is not relied upon for immediate heat removal (such as to prevent containment overpressurization) but is relied upon for longer-term cooling such that the temperature averaging approach continues to satisfy the accident analysis assumptions for heat removal over time.

The licensee's response to Condition (a) states in part:

> The EDGs rely on the UHS (via SACS) to immediately remove heat from the engine cylinder jackets, turbocharger, combustion air, generator outboard bearings, speed governor oil, and the lubricating oil. As discussed above, the SACS heat exchanger outlet temperature of 100ºF is maintained for continuous UHS temperatures up to 91.3ºF.

The licensee's response does not discuss the continuous immediate cooling of the various EDG components by SACS up to the proposed UHS temperature of 93.0°. A justification is required

by TSTF-330 Rev. 3 to address the effects of a 91.4ºF to 93.0ºF UHS temperature increase upon the steady state operating temperatures of the jacket water, lube oil, and intercooler respectively to ensure that the elevated temperature conditions remain within design basis limits.

Request

The NRC staff requests that the licensee provide adequate justification regarding the immediate cooling requirements of the EDGs in order to ensure the requirements of 10 CFR 50.36(c)(2) are met.

PSEG Response:

The response to condition (a) of TSTF-330 of Reference 1 states that the SACS heat exchanger outlet temperature of 100ºF is maintained for continuous UHS temperatures up to 91.3ºF. The statement is associated with the long term cooling capability and addressed the limiting design basis assumptions and worst-case single failures to determine the average UHS temperature.

An evaluation of the immediate cooling capability was performed (Reference 2) using the same conservative assumptions and methodologies in calculation EG-0047 (Reference 3). This evaluation demonstrates that in the short term, all EDGs receive sufficient cooling with a peak UHS temperature of 93ºF. The immediate cooling requirements of the EDGs are not exceeded by the proposed peak temperature of 93ºF.

References:

1. PSEG letter to NRC, "License Amendment Request to Revise Technical Specification Limits for Ultimate Heat Sink," dated May 7, 2021 (ADAMS Accession No. ML21127A085)
2. Technical Evaluation 70214210-0230, "Hope Creek Heat Sink Temperature Limits (LAR H21-01) – NRC RAI for Immediate EDG Cooling"
3. EG-0047, Rev 8, "HCGS Ultimate Heat Sink Temperature Limits – EPU"