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PSEG Nuclear LLC

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LR-N06-0031
LCR H05-12

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

SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENT
ULTIMATE HEAT SINK
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354

Reference: 1. LR-N05-0402, "Request for Change to Technical Specifications: Ultimate Heat Sink," dated August 4, 2005

By the referenced letter, PSEG Nuclear LLC (PSEG) requested a change to the Technical Specifications (TS) for the Hope Creek Generating Station to allow a 24-hour average temperature to be used if ultimate heat sink (UHS) temperature exceeds 89.5 degrees F, provided the UHS temperature and safety auxiliary cooling system (SACS) temperature do not exceed 95 degrees F.

In a communication from Mr. S. Bailey, Licensing Project Manager - Hope Creek, on November 18, 2005, and in a telephone conference on December 6, 2005, the NRC staff requested additional information concerning the proposed change. The requested information is provided in Attachments 1 and 2 to this letter. In accordance with 10 CFR 50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey.

PSEG has determined that the information contained in this letter and attachments does not alter the conclusions reached in the 10CFR50.92 no significant hazards analysis previously submitted.

There are no regulatory commitments contained within this letter.

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If you have any questions or require additional information, please contact Mr. Paul Duke at (856) 339-1466.

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

Executed on 2/9/06
(date)

George P. Barnes
Site Vice President - Hope Creek

Attachments (2)

C: Mr. S. Collins, Administrator – Region I
U. S. Nuclear Regulatory Commission
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King of Prussia, PA 19406

Mr. S. Bailey, Project Manager - Hope Creek
U. S. Nuclear Regulatory Commission
Mail Stop 08B1
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USNRC Senior Resident Inspector – Hope Creek (X24)

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HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENT
ULTIMATE HEAT SINK

By letter dated August 4, 2005, PSEG Nuclear LLC (PSEG) requested a change to the Technical Specifications (TS) for the Hope Creek Generating Station to allow a 24-hour average temperature to be used if ultimate heat sink (UHS) temperature exceeds 89.5°F, provided the UHS temperature and safety auxiliary cooling system (SACS) temperature do not exceed 95°F.

In a communication from Mr. S. Bailey on November 18, 2005, and in a telephone conference on December 6, 2005, the NRC staff requested additional information concerning the proposed change. The requested information is provided below.

NRC Questions
The application did not provide an adequate discussion of the changes to allow the NRC staff to perform a detailed technical review. In particular, the application did not address the changes to the Hope Creek licensing basis that was approved in Amendment 120, or the basis for the changes. Please supplement the application with the following information:

1. The application states that the allowable ultimate heat sink (UHS) temperature is increased from 89 to 89.5 degrees F; however, the application provides little information on the basis for the higher temperature limit. Provide a more complete discussion of the basis for the 89.5 degree limit, including the changes since Amendment 120.

   PSEG Response:
   The basis for the current TS limits approved in Amendment No. 120 was established in two engineering evaluations. Engineering evaluation H-0-EG-MEE-1206, now voided, was based on a SACS temperature of 95°F for all accident cases. Engineering evaluation H-1-EG-MEE-1301, submitted in Reference 1, was the UHS analysis of record for a SACS temperature of 100°F. It re-ran the limiting cases of H-0-EG-MEE-1206 to determine the UHS temperature limits for SACS at 100°F. For the design basis case (LOCA/LOP/Single Failure), H-1-EG-MEE-1301 demonstrated that the UHS temperature limit could be raised to 89°F for an indefinite period of time. This was based on the limiting case of a single failure of an Emergency Diesel Generator (EDG) from H-0-EG-MEE-1206.

   The current design calculation for UHS temperature limits, EG-0047, Revision 3, demonstrates that the UHS temperature limit can be increased to 90.1°F with a

single failure of an EDG. This is same scenario used in H-1-EG-MEE-1301 for the 89°F limit. The containment response analysis is unchanged from the analysis performed in support of the TS limits approved in Amendment No. 120.

The major differences between H-1-EG-MEE-1301 and EG-0047 are as follows:

- The RHR heat load in EG-0047 is based on a suppression pool temperature referenced in GE calculation GE-NE-T2300759-00-02, "HCGS Containment Analysis with 100°F SACS Temperature" and a benchmarked RHR heat exchanger thermal model. The heat load in H-1-EG-MEE-1301 was considered a fixed heat load. The RHR heat load is now based on the heat exchanger model with supplied inputs from design analyses (i.e., GE and PSEG calculations).

- The Filtration, Recirculation, and Ventilation System (FRVS) and Emergency Core Cooling System (ECCS) cooler heat loads in EG-0047 are based on an updated Reactor Building GOTHIC model analysis. These loads in H-1-EG-MEE-1301 were based on a Reactor Building model that was built in a spreadsheet. The GOTHIC model provides a more accurate representation of actual conditions.

Design calculation EG-0047, Rev. 3, is provided in Attachment 2.

2. The application does not address the impact of the UHS temperature change on the safety auxiliaries cooling system (SACS) heat exchanger (HX) outlet temperature limits. Discuss the SACS HX outlet temperatures during normal operation and following a design basis event, what functional capabilities were evaluated for these SACS HX outlet temperatures, and the extend to which the current safety margin is reduced.

PSEG Response:
There are no changes to the SACS heat exchanger outlet temperature limits associated with the proposed change to the UHS temperature limit.

Design calculation EG-0047 is performed for design bases accidents and normal operation as follows. During normal operation, the SACS heat exchanger (supplying TACS) outlet temperature is maintained at a constant 95°F with an UHS temperature of 88.7°F. By procedure, Operators can choose to reduce heat load and / or reduce reactor power as needed to maintain SACS temperatures less than 95°F. During accident conditions, the SACS heat exchanger outlet temperature is maintained at a constant 100°F with various UHS temperatures depending on the component alignment. Therefore, the UHS temperatures indicated in EG-0047 maintain SACS at either 95°F (normal operations) or 100°F (accident conditions).

With respect to functional capabilities, in addition to periodic inspection and cleaning activities, periodic pressure drop testing is performed on the SACS heat exchangers to monitor for the onset of macrofouling. Design calculation EA-0033, Revision 0, provides the acceptance criteria for biofouling and trending under procedure HC.OP-FT.EA-0001. The biofouling and trending procedure will ensure the results of EG-0047 remain valid.

3. Describe how instrument uncertainty is (or has been) accounted for when confirming that the measured value does not exceed the proposed TS limit.

PSEG Response:
Design calculation EG-0047 accounts for instrumentation inaccuracies, model uncertainty, heat load uncertainty and pump degradation to ensure the TS limits are not exceeded. The inaccuracy of the temperature indication, model uncertainty and heat load uncertainty are treated as precision errors and are totaled using the SRSS method. A bias error is introduced to account for SACS pump degradation. This yields an overall temperature uncertainty of 1.5°F.

The assumed SSWS temperature measurement uncertainty (0.79°F) is based on the evaluated total loop tolerance for the computer points used to measure SSWS pump discharge header temperature.

References

1. LR-N98274, "Request for Change to Technical Specifications: Ultimate Heat Sink, Temperature Limits" dated June 12, 1998