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

**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
ULTIMATE HEAT SINK
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354**

In accordance with the provisions of 10CFR50.90, PSEG Nuclear, LLC (PSEG) hereby transmits a request for amendment of the Technical Specifications (TS) for Hope Creek Generating Station. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

The proposed change will revise TS 3.7.1.3, "Ultimate Heat Sink" to allow a 24-hour average temperature to be used if ultimate heat sink (UHS) temperature exceeds 89.5°F temperature provided the UHS temperature or safety auxiliary cooling system (SACS) temperature does not exceed 95°F. The use of the 24-hour average temperature is consistent with TSTF-330 and Standard Technical Specifications. By letter dated May 7, 2004 (TAC No. MC0594), Nine Mile Point Unit No. 2 has received NRC approval of a similar change.

PSEG has evaluated the proposed changes in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and has determined this request involves no significant hazards considerations. An evaluation of the requested change is provided in Attachment 1 to this letter. The marked up Technical Specification pages affected by the proposed changes are provided in Attachment 2. The retyped Technical Specification pages are provided in Attachment 3.

PSEG requests approval of the proposed change by April 28, 2006 with implementation within 60 days of receipt of the approved amendment.

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If you have any questions or require additional information, please contact Justin Wearne at (856) 339-5081.

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

Executed on 8/9/05
(Date)

Sincerely,



George P. Barnes
Site Vice President – Hope Creek

Attachments (3)

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**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
ULTIMATE HEAT SINK**

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1. DESCRIPTION

This letter is a request to amend Operating License NPF-57 for the Hope Creek Generating Station. The proposed change will revise TS 3.7.1.3, "Ultimate Heat Sink" to allow a 24-hour average temperature to be used if ultimate heat sink (UHS) temperature exceeds 89.5°F temperature provided the UHS temperature or the safety auxiliary cooling system (SACS) temperature does not exceed 95°F.

2. PROPOSED CHANGE

The proposed change will revise TS 3.7.1.3, "Ultimate Heat Sink" to allow operation, in excess of 89.5°F if all of the following criteria are met:

- 24-hour average temperature of the river water is less than or equal to 89.5°F
- Instantaneous river water temperature is less than or equal to 95°F.
- Instantaneous SACS outlet temperature is less than or equal to 95°F.

The proposed changes are consistent with TSTF-330, "Allowed Outage Time – Ultimate Heat Sink" and NUREG-1433 "Standard Technical Specifications General Electric Plants BWR/4". By letter dated May 7, 2004 (TAC No. MC0594), Nine Mile Point Unit No. 2 has received NRC approval of a similar change.

3. BACKGROUND

During the summer of 2005, the UHS temperature for Hope Creek has approached the 89°F temperature limit in the Technical Specifications (TS). A shutdown of the unit due to UHS high temperature would result in an unnecessary plant transient, and increase the possibility of a disturbance to the offsite electrical power sources and the regional electrical power distribution system at a time of potential grid vulnerability due to maximum generation requirements. This TS change is being proposed due to current extreme weather conditions and in anticipation of future potentially hot, dry periods encountered during the summer.

The UHS for Hope Creek is the Delaware River. The Station Service Water System (SSWS) is a safety related, open loop system, which provides cooling water to safety related heat exchangers and non-safety related heat exchangers during normal operating conditions and loss of offsite power (LOP). During a loss of coolant accident (LOCA) and other design basis accidents (DBA), the SSWS provides river water to cool only the safety related heat exchangers.

The Safety and Turbine Auxiliaries Cooling System (STACS) is a closed loop cooling water system consisting of two subsystems: a Safety Auxiliaries Cooling System (SACS) and a Turbine Auxiliaries Cooling System (TACS). The heat from both systems is transferred to the SSWS via the SACS heat exchangers.

SACS is designed to provide cooling water to the engineered safety features (ESF) equipment, including the residual heat removal (RHR) heat exchanger, during normal operation, normal plant shutdown, LOP, and LOCA conditions. TACS is designed to provide cooling water to the turbine auxiliary equipment during normal plant operation and normal plant shutdown.

The temperature readings that are used to satisfy the UHS temperature limit are based on a 24-hr rolling average (measured in the Service Water Intake Structure), and the SW pump discharge temperature. The two principal safety functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident. The UHS temperature limit is established such that design basis temperatures of safety related equipment would not be exceeded. The basis for the proposed change is consistent with Amendment 120 to the Hope Creek Technical Specification and the NRC issued SER (ref. TAC MA2060).

4. TECHNICAL ANALYSIS

The proposed TS change maintains the original design basis river water temperature, but changes the licensing basis to allow for temporary fluctuations in temperature provided that the average over the previous 24-hour period does not exceed 89.5°F and the UHS and SACS temperature does not exceed 95°F. This change does not alter any assumptions on which the current plant safety analysis is based. The affected components were originally designed with margin that allows for cooling water temperatures greater than the previous design basis temperature limit of 89°F. In determining the capability of the affected heat exchangers, the original equipment design conservatively assumed a certain degree of degradation (i.e., component biofouling or tube plugging). Periodic testing and cleaning are performed to verify that these design conditions assumed for the affected components are not reached. Based on the proposed increased monitoring of SACS and SW temperatures when the UHS temperature is above 89.5°F, any immediate impacts that could reduce heat exchanger margin (such as macro-fouling) would be readily detected.

Where components rely upon UHS temperature to maintain the components within operating temperature limits, an engineering evaluation determined that the components could withstand service water temperatures up to 95°F. The following component design limits were reviewed:

- Traveling Water Screens
- Spray Wash Booster Pumps
- Service Water Pumps
- Service Water Pump Lubrication
- Service Water Strainers
- SACS Heat Exchangers
- RACS Heat Exchangers

This review resulted in a transient limit of 95°F as the maximum peak allowed river water temperature. An evaluation was performed to determine the effect of short-term operation with elevated river water temperature. The limiting aspect identified in this evaluation is the ability to support turbine auxiliaries cooling loads with UHS temperatures in excess of 89.5°F while maintaining SACS temperature below 95°F. Provided that SACS temperature remains at or below 95°F, safety related components would be capable of performing their design basis functions. If necessary, heat loads in to the TACS system will be reduced by lowering turbine power to maintain SACS temperature below 95°F IAW station operating procedures.

TSTF-330 revision 3 provides the following criteria as the basis for adopting the UHS temperature averaging approach:

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

Response: The UHS is not immediately relied upon to provide post-accident primary containment heat removal in the most limiting accident. The suppression pool serves that function and its initial temperature is independent of UHS temperature. Long-term heat removal is achieved through the use of the containment spray and/or suppression pool cooling modes of the RHR system. The drywell coolers are non-safety related and, therefore, are not relied upon in the plant safety analysis for post accident heat removal. The design basis heat removal capability of the RHR heat exchangers, assumed in accident analyses, has been evaluated and deemed to have margin that would compensate for the proposed increase in UHS temperature.

- B) When the UHS is at the proposed maximum allowed value of [95°F], equipment that is relied upon for accident mitigation, anticipated operational occurrences or for safe shutdown, will not be adversely affected and are not placed in alarm condition or limited in any way at this higher temperature.

Response: The equipment, previously listed, that is relied upon for accident mitigation, anticipated operational occurrences, or for safe shutdown remains capable of performing its design basis function at UHS temperatures up to 95°F.

- C) Plant specific assumptions, such as those that were credited in addressing station black out and Generic Letter 96-06 have been adjusted as necessary to be consistent with the maximum allowed UHS temperature of [95°F] that is proposed.

Response: A review of the Generic Letter (GL) 96-06 evaluations has determined that the evaluations are not impacted by the proposed UHS temperature limit. The maximum SACS water temperature assumed in the UHS

analysis during normal operation remains unchanged and ensures maximum suppression pool temperature of 95°F used in accident analysis and station blackout. The impact of the increased UHS temperature limit on special events that the plant must be designed to withstand is encompassed by the previous evaluations which demonstrate that the safety related equipment which relies on the UHS for cooling remains capable of performing its design basis function at UHS temperatures up to 95°F. Therefore, plant specific assumptions previously credited in evaluating special events and regulatory issues are not impacted by the increase in the UHS temperature limit.

- D) Cooling water that is being discharged from the plant (either during normal plant operation, or during accident conditions), does not affect the UHS intake temperature (typical of an infinite heat sink), but location of the intake and discharge connections, and characteristics of the UHS can have an impact.

Response: The UHS for Hope Creek is the Delaware River. Between the months of June and August, Hope Creek is required to limit temperature rise in the river to 1.5 deg F at the end of the mixing zone. Hope Creek is designed such that there is separation between the intake and outtake of the Salem and Hope Creek Stations. Specifically, the mixing zone is 2500 feet up river, 2500 feet down river and 1500 feet offshore. The Hope Creek service water intake structure is about 1500 feet down stream from the cooling tower discharge pipe or outfall. The point at which river temperature is measured in the service water structure is actually from two points, which are averaged. One point is on the north side of the intake structure between the trash rack and the icebreaker. The second point is located on the south side of the intake structure between the trash rack and the icebreaker. These points take into account any impact from cooling tower blowdown on river temperature as this water is drawn into the intake structure and is the point which the UHS 24-hr average temperature is monitored. Therefore, any impact on river temperature from the cooling tower blowdown is already impacting the technical specification monitored value. In addition, it is operating practice to use an average of the two service water headers temperatures as an indication of service water system temperature. This temperature is measured down stream of the service water pumps. During an accident, the unit would shut down and the heat input from the circulating water system would be greatly reduced.

The proposed change is consistent with the basis of the Hope Creek emergency operating procedures (EOPs) and event classification guide (ECG).

5. REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The ultimate heat sink (UHS) is not an accident initiator. An increase in UHS temperature will not increase the probability of occurrence of an accident. The proposed change will allow plant operation to continue if temperature of the UHS exceeds 89.5°F provided that UHS temperature averaged over the previous 24-hour period is less than 89.5°F and the UHS temperature and safety auxiliary cooling system (SACS) temperatures do not exceed 95°F. Maintaining these temperatures less than or equal to 95°F ensures that accident mitigation equipment will continue to perform its required function.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change will not install any new or different equipment or modify equipment in the plant. The proposed change will not alter the operation or function of structures, systems or components. The response of the plant and the operators following a design basis accident is unaffected by this change. The proposed change does not introduce any new failure modes and the design basis heat removal capability of the safety related components is maintained at the increased UHS temperature limit.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No

The increase to the UHS temperature will not adversely affect design basis accident mitigation equipment. Ensuring that SACS temperature remains below 95°F when UHS is above 89.5°F ensures that heat removal capability is within the current analyzed limits. Accident mitigation equipment will continue to

function as assumed in the accident analysis. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

5.2 Applicable Regulatory Requirements/Criteria

The design basis temperature limit for the SACS system during normal operation is 95°F. By ensuring this assumption is valid, the accident analysis design basis calculations and component operability is maintained.

Hope Creek complies with Regulatory Guide 1.27 "Ultimate Heat Sink for Nuclear Power Plants," Revision 2, as described in UFSAR Section 1.8.1.27. The proposed change maintains this compliance.

In conclusion, based on the considerations discussed above in evaluating the proposed change per 10CFR50.91 and 10CFR50.92:

- 1) There is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner.
- 2) Such activities will be conducted in compliance with the Commissions' regulations; and
- 3) Issuance of the amendment will not be inimical to the common defense and security or the health and safety of the public.

6. ENVIRONMENTAL CONSIDERATIONS

PSEG has determined the proposed amendment relates to changes in a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or relates to changes in an inspection or a surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released off site, or (iii) a significant increase in individual or cumulative occupational exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22 (c) (9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed change is not required.

7. REFERENCES

- 7.1 Issuance of Amendment – May 7, 2004 (TAC No. MC0594), Nine Mile Point Unit No. 2
- 7.2 NUREG-1433 "Standard Technical Specifications General Electric Plants BWR/4"

- 7.3 Safety Evaluation Report for Amendment 120 to Hope Creek Technical Specifications (TAC No. MA2060)
- 7.4 TSTF-330 "Ultimate Heat Sink"
- 7.5 Regulatory Guide 1.27 "Ultimate Heat Sink for Nuclear Power Plants," Revision 2.

**HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS**

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License NPF-57 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
3/4.7.1.3	3/4 7-5

PLANT SYSTEMS

ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

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3.7.1.3 The ultimate heat sink (Delaware River) shall be OPERABLE with:

- a. A minimum river water level at or above elevation -9'0 Mean Sea Level, USGS datum (80'0 PSE&G datum), and
- b. An average river water temperature of less than or equal to 85.0°F.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, 5 and *.

ACTION:

With the river water temperature in excess of 85.0°F, continued plant operation is permitted provided that both emergency discharge valves are open and emergency discharge pathways are available. With the river water temperature in excess of 88.0°F, continued plant operation is permitted provided that all of the following additional conditions are satisfied: ~~ultimate heat sink temperature is at or below 89.0°F~~, all SSWS pumps are OPERABLE, all SACS pumps are OPERABLE, all EDGs are OPERABLE and the SACS loops have no cross-connected loads (unless they are automatically isolated during a LOP and/or LOCA); with ultimate heat sink temperature greater than 89.5°F and less than or equal to 95°F verify once per hour that water temperature of the ultimate heat sink is less than or equal to 89.5°F averaged over the previous 24 hour period and SACS heat exchanger outlet temperature is less than or equal to 95°F; otherwise, with the requirements of the above specification not satisfied:

- a. In OPERATIONAL CONDITIONS 1, 2 or 3, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- b. In OPERATIONAL CONDITIONS 4 or 5, declare the SACS system and the station service water system inoperable and take the ACTION required by Specification 3.7.1.1 and 3.7.1.2.
- c. In Operational Condition *, declare the plant service water system inoperable and take the ACTION required by Specification 3.7.1.2. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

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4.7.1.3 The ultimate heat sink shall be determined OPERABLE:

- a. By verifying the river water level to be greater than or equal to the minimum limit at least once per 24 hours.
- b. By verifying river water temperature to be within its limit:
 - 1) at least once per 24 hours when the river water temperature is less than or equal to 82°F.
 - 2) at least once per 2 hours when the river water temperature is greater than 82°F.

* When handling recently irradiated fuel in the secondary containment.

**HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
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RETYPE TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

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PLANT SYSTEMS

ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

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3.7.1.3 The ultimate heat sink (Delaware River) shall be OPERABLE with:

- a. A minimum river water level at or above elevation -9'0 Mean Sea Level, USGS datum (80'0 PSE&G datum), and
- b. An average river water temperature of less than or equal to 85.0°F.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, 5 and *.

ACTION:

With the river water temperature in excess of 85.0°F, continued plant operation is permitted provided that both emergency discharge valves are open and emergency discharge pathways are available. With the river water temperature in excess of 88.0°F, continued plant operation is permitted provided that all of the following additional conditions are satisfied: all SSWS pumps are OPERABLE, all SACS pumps are OPERABLE, all EDGs are OPERABLE and the SACS loops have no cross-connected loads (unless they are automatically isolated during a LOP and/or LOCA); with ultimate heat sink temperature greater than 89.5°F and less than or equal to 95°F verify once per hour that water temperature of the ultimate heat sink is less than or equal to 89.5°F averaged over the previous 24 hour period and SACS heat exchanger outlet temperature is less than or equal to 95°F; otherwise, with the requirements of the above specification not satisfied:

- a. In OPERATIONAL CONDITIONS 1, 2 or 3, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- b. In OPERATIONAL CONDITIONS 4 or 5, declare the SACS system and the station service water system inoperable and take the ACTION required by Specification 3.7.1.1 and 3.7.1.2.
- c. In Operational Condition *, declare the plant service water system inoperable and take the ACTION required by Specification 3.7.1.2. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

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4.7.1.3 The ultimate heat sink shall be determined OPERABLE:

- a. By verifying the river water level to be greater than or equal to the minimum limit at least once per 24 hours.
- b. By verifying river water temperature to be within its limit:
 - 1) at least once per 24 hours when the river water temperature is less than or equal to 82°F.
 - 2) at least once per 2 hours when the river water temperature is greater than 82°F.

* When handling recently irradiated fuel in the secondary containment.