



FEB 14 2011

10 CFR 50.90

LR-N11-0007

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

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

**Subject: Response to Request for Additional Information - License Amendment Request: Emergency Diesel Generators (EDG) A and B Allowed Outage Time (AOT) Extension**

**References:** (1) Letter from PSEG to NRC, "License Amendment Request: Emergency Diesel Generators (EDG) A and B Allowed Outage Time (AOT) Extension," dated March 29, 2010

(2) Letter from PSEG to NRC, " Response to Request for Additional Information - License Amendment Request: Emergency Diesel Generators (EDG) A and B Allowed Outage Time (AOT) Extension," dated September 30, 2010

In Reference 1, PSEG Nuclear LLC (PSEG) submitted a license amendment request (H10-03) for the Hope Creek Generating Station (HCGS). The proposed change would modify TS 3/4.8.1, "AC Sources – Operating"; specifically ACTION b concerning one inoperable Emergency Diesel Generator (EDG). The proposed change would extend the Allowed Outage Time (AOT) for the 'A' and 'B' EDGs from 72 hours to 14 days. The proposed extended AOT is based on application of the Hope Creek Generating Station (HCGS) Probabilistic Risk Assessment (PRA) in support of a risk-informed extension, and on additional considerations and compensatory actions.

In Reference 2, PSEG submitted responses to an NRC Request for Additional Information (RAI) on the license amendment request, with the exception of the response to RAI Question 8.e. The response to question 8.e is provided in Attachment 1 of this letter.

PSEG has reviewed the information supporting a finding of no significant hazards consideration that was provided in Reference 1. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. 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. Jeff Keenan at (856) 339-5429.

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

Executed on FEB 14 2011  
(Date)

Sincerely,



John F. Perry  
Site Vice President  
Hope Creek Generating Station

Attachments (1)

C:

Regional Administrator - NRC Region I  
R. Ennis, Project Manager - USNRC  
NRC Senior Resident Inspector - Hope Creek  
P. Mulligan, Manager IV, NJBNE  
Commitment Coordinator – Hope Creek  
PSEG Commitment Coordinator – Corporate

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING PROPOSED LICENSE AMENDMENT  
EMERGENCY DIESEL GENERATORS A AND B ALLOWED OUTAGE TIME EXTENSION  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

By application dated March 29, 2010, as supplemented by letter dated May 28, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML100900458 and ML101590514, respectively), PSEG Nuclear LLC (the licensee) submitted a license amendment request for the Hope Creek Generating Station (HCGS). The proposed amendment would revise the Technical Specifications (TSs) to extend the allowed outage time (AOT) for the "A" and "B" Emergency Diesel Generators (EDGs) from 72 hours to 14 days.

The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal (this response only addresses Question 8.e).

8. *Provide the following information relating to the Alternate AC source, proposed as an additional compensatory measure by the licensee in its letter dated May 28, 2010:*
  - e. *Considering the distance involved from Salem, confirm whether the GTG has been evaluated to ensure its capability to start and run large loads at the HCGS buses expected during a LOOP or station blackout (SBO). Discuss the capability of the GTG to cope with inrush currents associated with energization of large transformers during black start conditions.*

**RESPONSE TO 8.e**

The capability of the GTG to cope with inrush currents associated with energization of large transformers during black start conditions is discussed below. As noted previously in PSEG letter dated May 28, 2010 (Adams ML101590514), PSEG will credit the GTG (designated Salem Unit 3) as an Alternate AC source only during the requested A and B EDG AOT extension period.

Hope Creek has obtained an engineering design analysis performed by Mitsubishi Electric Power Products, titled PSEG Calculation E-15.14, "Salem 3 Blackstart Capability for Hope Creek Loads." This calculation analyzes the capability of the Salem 3 GTG to energize the large transformers in the load path to Hope Creek and provide motor starting capability for the worst case 4.16 KV 1E loads during a blackout at the station.

The analysis concludes that the Salem 3 GTG is capable of energizing the Salem T2 Station Power Transformer (13.8KV/ 500 KV, 60 MVA), 5037 500 KV Transmission line, and the Hope Creek Station Power Transformer (500KV/13.8KV, 42 MVA, T2 or T4) under the worst case

transformer residual flux when the GTG output voltage is ramped up over a period of at least 8 seconds starting from 50% nominal using the softstart capability of the Salem 3 GTG Digital Voltage Regulation System. The Salem 3 GTG Digital Voltage Regulation System currently has softstart functionality enabled with a ramp time of 10 seconds starting from 50% nominal which envelopes this worst case condition from the analysis. The analysis was performed using the load path identified on PSEG drawing 601701 S 1000 – 33 (See response to RAI 8.a; PSEG Letter dated September 30, 2010 (ADAMS ML102870101)). Energization of a Hope Creek Station Service Transformer (13.8 KV/4.16KV, 17.4 MVA, 1AX501 or 1BX501) which supplies the station 4.16 KV 1E buses, under the worst case residual flux does not result in excessive current on the Salem 3 Generator, therefore is not required to be included in the initial softstart energization path.

The analysis concludes that the Salem 3 GTG can start and run all 4.16 KV motors attached to a typical 4.16 KV 1E station bus with total loading of approximately 200% (8.9 MVA) of the nameplate rating of a single 1E Diesel Generator, without separating the bus from the Salem 3 GTG offsite power source due to the inability of the 4.16 KV 92% Degraded Voltage Relays to reset after a motor starting transient. In this scenario the start of the largest motor (1250 HP RHR Pump Motor) results in a voltage drop to 91.58% nominal which recovers to 96.00% in less time (3 Seconds) than the nominal delay (20 seconds) of the station 4.16 KV degraded voltage relays, ensuring the 4.16 KV bus remains attached to the Salem 3 GTG.

The analysis also concludes that in the same loading scenario (8.9 MVA) with the 4.16 KV buses maintained at an elevated voltage (4245 V), in accordance with current station practice when two sources of offsite power are not available, the station is able to start and run all 4.16 KV 1E motors without dropping out the degraded voltage relays. Using the elevated 1E bus voltage ensures there are no unnecessary operational alarms for degraded bus voltage, during the worst case motor starting transient (1250 HP RHR Pump Motor).

Existing procedures will be revised as necessary to clarify the load path and place additional guidance on maximum Hope Creek loading (8.9 MVA) on the Salem 3 GTG and recommended 4.16KV bus voltages. These revisions will ensure switchyard alignment will be performed in a timely manner and the Salem 3 GTG will not be loaded beyond a point which could result in a loss of power to Safety related loads due to dropout and failure to reset of a 4.16 KV degraded voltage relay.