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Nuclear LLC

SEP 13 2011

10 CFR 50.46

LR-N11-0275

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

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NPF-57
DOCKET NO. 50-354

Subject: 10CFR50.46 REPORT

Pursuant to the requirements of 10 CFR 50.46, PSEG Nuclear LLC (PSEG) hereby reports changes in the application of the Emergency Core Cooling System (ECCS) evaluation models for the Hope Creek Generating Station. 10 CFR 50.46(a)(3)(ii) requires licensees to report at least annually each change to or error discovered in evaluation models used for calculating ECCS performance and the estimated effect on the limiting ECCS analysis. For significant changes or errors [as defined in 10CFR46(a)(3)i], licensees are required to submit a 30 day report and include a proposed schedule for providing a reanalysis or taking other action necessary to show compliance with 10 CFR 50.46 requirements. This letter and its attachments satisfy the annual reporting requirement.

For the current operating cycle, the Hope Creek core consists of GE14 fuel assemblies and GE14i fuel assemblies (there are 12 GE14i Isotope Test Assemblies in the Cycle 17 core; the remainder are GE14).

There are no regulatory commitments contained in this correspondence.

If you have any questions regarding this submittal, please contact Mr. Philip J. Duca at (856) 339-1640.

Sincerely,

David P. Lewis
Plant Manager – Hope Creek

Attachment 1 – 10 CFR 50.46 Report (2 pages)
Attachment 2 – 10 CFR 50.46 Report Assessment Notes (2 pages)

A002
NRR

cc: Mr. W. Dean, Administrator - Region I
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Hope Creek Commitment Coordinator (H02)

Corporate Commitment Coordinator (N21)

Attachment 1
10 CFR 50.46 Report
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PLANT NAME:	Hope Creek Generating Station
ECCS EVALUATION MODEL:	SAFER/GESTR-LOCA
REPORT REVISION DATE:	8/31/2011
CURRENT OPERATING CYCLE:	17

ANALYSIS OF RECORD

Evaluation Model: The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology, NEDE-23785-1-PA, General Electric Company, Revision 1, October 1984.

Calculations: "SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis for Hope Creek Generating Station at Power Uprate," NEDC-33172P, GE Energy, Nuclear, March 2005.

Fuel: GE14 and GE14i
Limiting Fuel Type – Licensing Basis PCT: GE14/GE14i
Limiting Single Failure: Battery
Limiting Break Size and Location: Double-Ended Guillotine in a Recirculation Suction Pipe

Fuel Type:	**GE14**	**GE14i**
Reference PCT	**1380 °F**	**1380 °F**

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

	GE14	**GE14i**
Impact of Top Peaked Power Shape on Small Break LOCA Analysis (see Assessment Note 1)	ΔPCT = 0°F	ΔPCT = 0°F
Cumulative PCT change from prior assessments	$\sum \lvert \Delta PCT \rvert$ = 0°F	$\sum \lvert \Delta PCT \rvert$ = 0°F

B. CURRENT LOCA MODEL ASSESSMENTS

	GE14	**GE14i**
2011-02: Impact of database error for heat deposition on the Peak Cladding Temperature (PCT) for 10 x 10 fuel bundles (see Assessment Note 2)	ΔPCT = 45°F	ΔPCT = 45°F
2011-03: Impact of updated formulation for gamma heat deposition to channel wall for 9 x 9 and 10 x 10 fuel bundles (see Assessment Note 2)	ΔPCT = 5°F	ΔPCT = 5°F
Total PCT change from current assessments	$\sum \lvert \Delta PCT \rvert$ = 50°F	$\sum \lvert \Delta PCT \rvert$ = 50°F
Cumulative PCT change from prior and current assessments	$\sum \lvert \Delta PCT \rvert$ = 50°F	$\sum \lvert \Delta PCT \rvert$ = 50°F
Net PCT	**1430 °F**	**1430 °F**

Attachment 2
10 CFR 50.46 Report Assessment Notes
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Hope Creek Generating Station 10 CFR 50.46 Report
Assessment Notes

1. Prior LOCA Model Assessments

   Letter, LR-N08-0221, reported the impact of the top peak axial power shape on the small break LOCA. The impact of the top peak axial power shape on the licensing basis PCT was zero degrees for GE14 fuel for Hope Creek. See Note 3 for applicability to GE14i Isotope Test Assemblies.

2. Current LOCA Model Assessments

   Two new assessments have been issued since the last Hope Creek Generating Station 10 CFR 50.46 Report transmitted in letter, LR-N10-0353. See Note 3 for applicability to GE14i Isotope Test Assemblies.

   Notification letter 2011-02 reported a discovery made regarding input coefficients used to direct the deposition of gamma radiation energy produced by the fuel, determining whether it would heat the fuel rod, cladding, channel, or control rod structural materials. The input caused the heat deposited in the fuel channel (post-scram) to be over-predicted, and the corresponding heat deposited in the fuel to be under-predicted. The error only applies to 10 x 10 fuel, and the bounding effect on peak cladding temperature was determined to be 45 degrees Fahrenheit.

   Notification letter 2011-03 reported a discovery made during investigation of the input coefficients referenced in 2011-02. The contribution of heat from gamma ray absorption by the channel was minimized. The formulation had been simplified such that all energy was assumed to be deposited in the fuel rods prior to the LOCA, and after the scram, it was adjusted such that the correct heat deposition was applied. Energy distribution during the pre-scram phase of LOCA was updated with the appropriate energy distribution, and the bounding effect on peak cladding temperature was determined to be 5 degrees Fahrenheit.

3. Applicability to GE14i Isotope Test Assemblies
   GE14i fuel is not listed in the LOCA analysis of record. In Section 4.5.6 of the "Safety Analysis Report to Support Introduction of GE14i Isotope Test Assemblies (ITAs) in Hope Creek Generating Station," NEDC-33529P, Rev. 0, December 2009, the five acceptance criteria established by 10 CFR 50.46 were determined to be satisfied with the introduction of the GE14i ITAs. NEDC-33529P also provided documentation that the licensing basis PCT, including reported errors, for GE14 is applicable for GE14i ITAs. Therefore, the errors identified in Notes 1 and 2 above are applicable to GE14i.