PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, New Jersey 08038-0236

PSEG
Nuclear LLC

SEP 1 0 2013

LR-N13-0210

10 CFR 50.46

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

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

Subject: 2013 Annual 10 CFR 50.46 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. In accordance with 10 CFR 50.46(a)(3)(ii), licensees are required 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. This letter and its attachments satisfy the annual reporting requirement.

For the current operating cycle, the Hope Creek core consists of GE 14 fuel assemblies and GE14i fuel assemblies (there are 12 GE 14i Isotope Test Assemblies in the Cycle 18 core; the remainder are GE 14).

There are no regulatory commitments in this correspondence.

If you have any questions regarding this submittal, please contact Mr. Paul Bonnett at (856) 339-1923.

Sincerely,

Eric S. Carr
Plant Manager - Hope Creek

Attachment 1: Hope Creek Generating Station 10 CFR 50.46 Report - Peak Cladding Temperature Rack-up Sheet
Attachment 2: Hope Creek Generating Station 10 CFR 50.46 Report Assessment Notes - Assessment Notes

cc: Mr. W. Dean, Regional Administrator - Region I
U.S. Nuclear Regulatory Commission
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

Mr. J. Hughey, Project Manager - Hope Creek
U.S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 08B1A
11555 Rockville Pike
Rockville, MD 20852

USNRC Senior Resident Inspector - Hope Creek (X24)

Mr. P. Mulligan, Manager IV
Bureau of Nuclear Engineering
PO Box 420
Trenton, NJ 08625

Hope Creek Commitment Coordinator (H02)

Corporate Commitment Coordinator (N21)

Attachment 1

Hope Creek Generating Station 10 CFR 50.46 Report
Peak Cladding Temperature Rack-up Sheet

Attachment 1

Hope Creek Generating Station 10 CFR 50.46 Report
Peak Cladding Temperature Rack-up Sheet

PLANT NAME:	Hope Creek Generating Station
ECCS EVALUATION MODEL:	SAFER/GESTR-LOCA
REPORT REVISION DATE:	8/29/2013
CURRENT OPERATING CYCLE:	18

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
2011-02: Impact of database error for heat deposition on the Peak Cladding Temperature (PCT) for 10 x 10 fuel bundles (see Assessment Note 1)	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 1)	ΔPCT = 5°F	ΔPCT = 5°F
Net PCT	**1430 °F**	**1430 °F**

B. CURRENT LOCA MODEL ASSESSMENTS

	GE14	GE14i
2012-01: PRIME Fuel Properties Implementation for Fuel Rod T/M Performance, replacing GESTR Fuel Properties (see Assessment Note 2)	ΔPCT = 45°F	ΔPCT = 45°F
Total PCT change from current assessments	$\sum$ ΔPCT = 45°F	$\sum$ ΔPCT = 45°F
Cumulative PCT change for current assessments	$\sum \lvert \Delta PCT \rvert$ = 45°F	$\sum \lvert \Delta PCT \rvert$ = 45°F
Net PCT	**1475 °F**	**1475 °F**

Attachment 2

Hope Creek Generating Station 10 CFR 50.46 Report Assessment Notes

Attachment 2

Hope Creek Generating Station 10 CFR 50.46 Report
Assessment Notes

1. Prior LOCA Model Assessments

Letters, LR-N08-0221 and LR-N11-0275, reported the impact of the top peaked axial power shape on the small break LOCA for GE14 and GE14i fuel for Hope Creek.

Letter LR-N11-0275 reported the impact of the database error for heat deposition on the Peak Cladding Temperature (PCT) for 10 x 10 fuel bundles and the impact of updated formulation for gamma heat deposition to channel wall for 9 x 9 and 10 x 10 fuel bundles as applicable to Hope Creek GE14 and GE14i fuel.

2. Current LOCA Model Assessments

One new assessment has been issued since the last Hope Creek Generating Station 10 CFR 50.46 Report transmitted in letter, LR-N12-0301.

GE Hitachi Notification letter 2012-01 reported that implementation of the PRIME fuel rod thermal mechanical performance bases, specifically PRIME fuel properties, addresses inaccuracies in fuel pellet thermal conductivity as a function of exposure that were identified in NRC Information Notice 2011-21. The effect of applying PRIME fuel properties on the Hope Creek Generating Station licensing basis PCT is an increase in the PCT of 45 °F. The resulting PCT is in compliance with the 50.46(b)(1) criterion that peak cladding temperature shall not exceed 2200 °F.