



MAR 18 2008

10CFR50.73

LR-N08-056

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Hope Creek Generating Station Unit 1
Facility Operating License No. NPF-57
Docket No. 50-354

Subject: Licensee Event Report 2008-001

In accordance with 50.73(a)(2)(i)(B) and 50.73(a)(2)(v)(D), PSEG Nuclear LLC, is submitting Licensee Event Report Number 2008-001.

Should you have any questions concerning this letter, please contact Mr. Philip J. Duca at (856) 339-1640.

No Regulatory commitments are contained in the LER.

Sincerely,

A handwritten signature in black ink that reads "John F. Perry". The signature is fluid and cursive, with the first and last names being more prominent.

John F. Perry
Plant Manager
Hope Creek Generating Station

Attachment: Licensee Event Report

cc: Mr. S. Collins, Administrator - Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. R. Ennis, Licensing Project Manager - Hope Creek
U.S. Nuclear Regulatory Commission
Mail Stop 08B3
Washington, DC 20555-0001

USNRC Resident Inspector office - Hope Creek (X24)

Mr. P. Mulligan, Manager IV
Bureau of Nuclear Engineering
PO Box 415
Trenton, New Jersey 08625

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch, (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Hope Creek Generating Station	2. DOCKET NUMBER 05000 354	3. PAGE 1 OF 5
---	-------------------------------	-------------------

4. TITLE
Reactor Recirculation Pump Motor Generator Set Scoop Tube Mechanical and Electrical Stop Over Speed Set Points Found Outside of Technical Specification Limits

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	19	2008	2008	- 001 -	000	03	18	2008	N/A	
									FACILITY NAME	DOCKET NUMBER
									N/A	

9. OPERATING MODE

1

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)

- | | | | |
|---|---|---|--|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below
or in NRC Form 366A |

10. POWER LEVEL

100

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Philip J. Duca, Compliance Engineer

TELEPHONE NUMBER (Include Area Code)

856-339-1640

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	AD	MG	GO82	N					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO

15. EXPECTED SUBMISSION DATE

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 19, 2008, during the performance of 18 month Technical Specification (TS) Surveillance Requirement 4.4.1.1.3 to demonstrate operability of the reactor recirculation pump Motor Generator (MG) set scoop tube mechanical and electrical stops, the "A" and "B" MG set mechanical and electrical stops were found non-conservatively high. In accordance with the surveillance procedure, the stop set points were adjusted to their proper settings.

An eight-hour notification was made for this event under the provisions of 10CFR50.72(b) (3)(v)(D).

An apparent cause evaluation was conducted.

Corrective actions include adjusting the stop set points to their proper settings, review of the Recirculation System trending program to identify any near term changes needed to ensure compliance with TS 4.4.1.3, benchmarking of the Recirculation System trending program, and consideration of revision of the TS BASES.

A similar LER, Hope Creek, LER 2000-010-000, described the "B" recirculation pump motor-generator set stops as being set non-conservatively high. The LER was retracted after further investigation showed an error was made in the calibration of the stops and the Technical Specification required set point values for the stops were never exceeded.

CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Hope Creek Generating Station	05000354	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		2008	- 001	- 000	

NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor (BWR/4)
Reactor Recirculation System, Motor Generator Set – {AD/MG}

*Energy Industry Identification System {EIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF OCCURRENCE

Event Date/Time: June 17, 2006
Discovery Date/Time: January 19, 2008 11:52

CONDITIONS PRIOR TO OCCURRENCE

Hope Creek was in Operational Condition 1 with reactor power at 100%. No structures, systems, or components were inoperable that contributed to the event.

DESCRIPTION OF OCCURRENCE

On January 19, 2008, the 18-month Technical Specification surveillance requirement 4.4.1.1.3 was performed to demonstrate operability of the reactor recirculation pump motor set {AD/MG} scoop tube mechanical and electrical stops. The over-speed set points are required to be less than or equal to 109 percent and 107 percent, respectively of rated core flow. Hope Creek sets the stops at the beginning of each cycle following the calibration of the Jet Pump Loop Flow summers. This sequence ensures that accurate flows are used to set the stops. Typically, calibration of the Jet Pump Loop Flow summers is performed two weeks after completion of the initial power ascension following the refueling outage to allow for xenon equilibrium to be reached. The surveillance to demonstrate operability of MG set stops is then performed. Subsequent to RF14, the calibration of the Jet Pump Loop Flow summers was performed on January 17, 2008 followed by the MG stop set surveillance on January 19, 2008. The surveillance was performed within the 18-month surveillance frequency. The position was that no other timing requirements needed to be satisfied. This interpretation was consistent with known General Electric and industry practices.

The "A" and "B" MG set stops were found non-conservatively high ("A" mechanical stop was found at 112.7% and "B" mechanical stop was found at 113.9%). The mechanical stops are important because they are used in the core reload design analysis and in relevant Updated Final Safety Analysis Report (UFSAR) Chapter 15 (Accident Analysis) events. In accordance with the surveillance procedure, the mechanical and electrical stop set points were adjusted to their proper settings.

An eight-hour notification was made for this event under the provisions of 10CFR50.72(b) (3)(v)(D) "Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to: (D) Mitigate the consequences of an accident."

The potential impact of this condition is a function of the reactor recirculation pump increasing flow transients (Reference UFSAR 15.4.5). If the analyzed transients were to have occurred, the potential existed that the Safety Limit Minimum Critical Power Ratio (SLMCPR) or the fuel rod thermal mechanical limits could have been exceeded under the most limiting postulated conditions. An evaluation of the potential impact determined that for the time period (June 17, 2006 to January 19, 2008) when the settings were non-conservative, the recirculation increasing flow transient would not have resulted in any fuel limits being exceeded.

CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Hope Creek Generating Station	05000354	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 5
		2008	- 001	- 000	

NARRATIVE

SAFETY CONSEQUENCES

The potential impact of this condition is a function of the reactor recirculation pump increasing flow transients (Reference UFSAR 15.4.5). If those analyzed transients were to have occurred, the potential existed that the Safety Limit Minimum Critical Power Ratio (SLMCPR) or the fuel rod thermal mechanical limits, respectively assuring avoiding centerline melt and 1% cladding plastic strain, could have been exceeded under the most limiting postulated conditions.

An evaluation of the potential impact of the improper settings determined the recirculation flow increasing transients would not have resulted in any fuel limits being exceeded. The initial core power distribution conditions required at the beginning of a recirculation maximum flow event to ensure no fuel limits are exceeded during the event are enforced by the core flow dependent Minimum Critical Power Ratio (MCPRf) and Linear Heat Generation Rate (LHGRf) power distribution limits. The required MCPRf and LHGRf are selected based upon the Technical Specification MG set scoop tube mechanical stop overspeed setting. The MCPRf and LHGRf were selected based upon the 109% setting. This evaluation determined the MCPRf and LHGRf required for the as-found condition of the settings and compared this requirement to the actual MCPR and LHGR operating conditions during the time period when the settings were non-conservative. The actual MCPR and LHGR operating conditions have been confirmed to have been within the initial conditions required to ensure no fuel limits would have been exceeded if a recirculation increasing flow transient had occurred with the non-conservative settings. Therefore there are no safety consequences to this event.

CAUSE OF OCCURRENCE

An apparent cause evaluation was conducted.

The physical position of the stops did not change between the last performance of the surveillance test (June 17, 2006) and the January 19, 2008 performance of the test. Therefore, the non-conservative as found settings were due to a change in the correlations between the pump speeds and core flow (i.e. change in Recirculation System hydraulic behavior). The following causes contributed to this occurrence.

- Alteration in Operational Practices in Cycle 14 Involving the Matching of Recirculation Loop Flows.

Prior to June 2006, Hope Creek interpreted "Recirculation Loop Flow" (in TS 3.4.1.3) to refer to "Recirculation Loop Drive Flow". Following an initial failed attempt in Cycle 14 to set the MG stops, the procedure used to set the stops was revised. As part of the revision process, it was identified that "Recirculation Loop Flow" should have been associated with "Jet Pump Flow" to align with the LOCA analysis. The need to alter operational practices was identified on June 14, 2006. The alteration of the operational practice was initiated at the setting of the MG set stops on June 17, 2006. The initial response was to blend the two practices and match both Recirculation Loop Drive Flows and Jet Pump Loop Flows within TS 3.4.1.3 requirements. It was not until early August 2006 that the change was completed and Jet Pump Loop Flows were being consistently matched by the Operating Shifts. During this transition period, the correlations began to show the behavior change. Once the Jet Pump Loop Flows were being consistently matched, the correlations stabilized and reflected the change in Recirculation System hydraulic behavior.

LICENSEE EVENT REPORT (LER) U.S. NUCLEAR REGULATORY COMMISSION

CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Hope Creek Generating Station	05000354	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 5
		2008	- 001	- 000	

NARRATIVE

With matching Jet Pump Loop Flows, both Recirculation Loops were capable of pumping the same Recirculation Loop Drive Flows with significantly lower speeds (i.e. more efficient). This behavior change may have been related to hydraulic behavior in the lower plenum of the reactor vessel between the Jet Pump discharges and the core inlet. With matching Jet Pump Loop flows, there is less radial flow between the structures in the lower plenum and possibly a lower backpressure for the Recirculation Loops. The magnitude of the behavior change may have been due to the degree of hydraulic asymmetries between the Recirculation Loops prior to the replacement of the "A" Recirculation Pump in RF14. Based on investigations performed as part of the cause evaluation, the impact of altering the operational practices was not predictable via industry benchmarking or an operating experience search.

- Change in Recirculation System Hydraulic Behavior Not Promptly Detected

The change in Recirculation System hydraulic behavior was retrospectively evident in August 2006 when the implementation of the alteration in operational practices was largely completed. However, the Recirculation System trending program did not detect the change. Data was reviewed with a short-term focus. Data changes on a daily basis were interpreted as "noise". The change following the operational practice alteration was not recognized.

- Significance of Change in Recirculation System Hydraulic Behavior Not Understood

The interpretation was, as long as the Recirculation MG Stops were set within the required frequency (at least once per 18 months), no other actions were required. This interpretation was consistent with known General Electric and industry practices.

There is a lack of guidance on when to perform the Technical Specification Surveillance Requirement 4.4.1.1.3 with respect to a refueling outage or plant change potentially impacting the maximum Total Core Flow. There is no guidance on the conditions for trending data or extrapolating future performance.

Improved Standard Technical Specification (NUREG-1433) does not include a similar requirement for Recirculation M/G Set Stops so it could not be used to clarify Hope Creek Technical Specification Surveillance 4.4.1.1.3.

PREVIOUS OCCURRENCES

A review of previous reportable events at Hope Creek was performed to determine if a similar event had occurred.

10/08/2000 – Hope Creek, LER 2000-010-000 Reactor Recirculation Pump Motor Generator Set Scoop Tube Mechanical and Electrical Stop Over speed Set points Found Outside of Technical Specification Limits. This LER described the "B" recirculation pump motor-generator set stops as being set non-conservatively high. Further investigation discovered that an error was made in the calibration of the stops and the Technical Specification required set point values for the stops were never exceeded. The LER was retracted via PSEG Nuclear Letter LRN-01-0027 dated February 7, 2001.

LICENSEE EVENT REPORT (LER) U.S. NUCLEAR REGULATORY COMMISSION

CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Hope Creek Generating Station	05000354	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 5
		2008	- 001	- 000	

NARRATIVE

CORRECTIVE ACTIONS

The mechanical and electrical stop set points were adjusted to their proper settings.

The Recirculation System trending program will be reviewed to identify any near term changes needed to ensure compliance with TS Surveillance Requirement 4.4.1.1.3. Appropriate changes will be implemented.

The Recirculation System trending program will be benchmarked against industry best practices. Appropriate changes in the program will be implemented.

The Technical Specification BASES will be reviewed. Revisions will be made as appropriate to provide guidance on the performance of, and compliance with TS Surveillance Requirement 4.4.1.1.3.

COMMITMENTS

This LER contains no commitments.