



10CFR50.73

LR-N17-0059

MAR 13 2017

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

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

Subject: Supplemental Licensee Event Report 2016-005-01, Reactor  
Protection System Actuation While the Reactor Was Shutdown

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv)(A), PSEG Nuclear LLC is submitting the enclosed Supplemental Licensee Event Report (LER) Number 2016-005-01, "Reactor Protection System Actuation While the Reactor Was Shutdown."

If you have any questions or require additional information, please contact Mr. Thomas MacEwen at (856) 339-1097.

There are no regulatory commitments contained in this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "E. T. Casulli".

Edward T. Casulli  
Plant Manager  
Hope Creek Generating Station

ttm

Attachment: Licensee Event Report 2016-005-01

cc: Mr. Daniel Dorman, Regional Administrator – Region I, NRC  
Ms. Carleen Parker, Project Manager - US NRC  
Mr. Justin Hawkins, NRC Senior Resident Inspector – Hope Creek (X24)  
Mr. Patrick Mulligan, Manager IV, NJBNE  
Mr. Thomas MacEwen, Hope Creek Commitment Tracking Coordinator (H02)  
Mr. Lee Marabella - Corporate Commitment Tracking Coordinator (N21)

<b>NRC FORM 366</b> (06-2016)	<b>U.S. NUCLEAR REGULATORY COMMISSION</b>  <b>LICENSEE EVENT REPORT (LER)</b> (See Page 2 for required number of digits/characters for each block)	<b>APPROVED BY OMB: NO. 3150-0104</b>  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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@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.	<b>EXPIRES: 10/31/2018</b>
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<b>1. FACILITY NAME</b> Hope Creek Generating Station	<b>2. DOCKET NUMBER</b> 05000354	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Reactor Protection System Actuation While the Reactor Was Shutdown

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
11	5	2016	2016	- 005	- 01	3	13	2017	FACILITY NAME	<b>05000</b>
									FACILITY NAME	<b>05000</b>

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
4 – Cold Shutdown	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)				
10. POWER LEVEL  0%	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)				
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)				
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)				
	<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)(D)	<input type="checkbox"/> 73.77(a)(2)(i)				
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)				
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A				

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT Thomas MacEwen, Principal Nuclear Engineer	TELEPHONE NUMBER (Include Area Code) 856-339-1097
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**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

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	MONTH	DAY	YEAR

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

On November 5, 2016, at 0404, a Reactor Protection System (RPS) actuation occurred due to a valid scram discharge volume high water level signal. This actuation was the result of a Redundant Reactivity Control System (RRCS) Alternate Rod Insertion (ARI) signal that was inadvertently generated during testing. The reactor was in cold shutdown at the time of the RPS actuation, with all control rods inserted. The Reactor Coolant System (RCS) pressure was 830 psig to support excess flow check valve testing, and shutdown cooling was removed from service. When the RRCS/ARI actuated, the B reactor recirculation pump tripped as expected, and the scram air header depressurized as expected. The depressurization of the scram air header is a design feature of the ARI. The ARI signal established the control rod drive (CRD) system scram flow path. This resulted in a high water level in the scram discharge volume (SDV), an expected response. High water level in the scram discharge volume is an actuation signal for the RPS.

This is a condition reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event or condition that resulted in a manual or automatic actuation of a listed system. The cause of the RRCS/ARI actuation is inadequate procedural guidance which resulted in a personnel error associated with partial procedure performance.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@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	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Hope Creek Generating Station	05000-354	2016	- 005	- 01

**NARRATIVE**

**PLANT AND SYSTEM IDENTIFICATION**

- General Electric - Boiling Water Reactor (BWR/4)
- Reactor Protection System - EIS Identifier {JC}\*
- Redundant Reactivity Control System - EIS Identifier {JC}\*
- Reactor Recirculation System - EIS Identifier {AD}\*
- Control Rod Drive System - EIS Identifier {AA}\*
- Reactor Water Cleanup System - EIS Identifier {CE}\*

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

**IDENTIFICATION OF OCCURRENCE**

Event Date: November 5, 2016  
Discovery Date: November 5, 2016

**CONDITIONS PRIOR TO OCCURRENCE**

Hope Creek was in Operational Condition (OPCON) 4, Cold Shutdown, at 0 percent rated thermal power. No other structures, systems or components that could have contributed to the event were inoperable at the time of the event. The reactor pressure vessel (RPV) in-service pressure test had been completed and reactor vessel pressure had been reduced from 1005 psig to 830 psig. Pressure was being held at 830 psig while excess flow check valve testing was being performed. Shutdown cooling was out of service to support the RPV pressure test, and the B reactor recirculation {AD} pump was in service to provide forced circulation.

**DESCRIPTION OF OCCURRENCE**

On November 5, 2016 at 0404 a RRCS / ARI {JC} signal was generated while excess flow check valve testing was in progress. The RRCS/ARI signal was generated due to trip signals on reactor pressure vessel dome pressure high channel "B" (expected for testing) and RPV water level low channel "A" (unexpected for testing condition). The unexpected signal was generated during the performance of isolating transmitters during preps for excess flow check valve (EFCV) testing. This signal would have been reset in accordance with procedures if followed. There were two procedures being executed in parallel by technicians to perform the excess flow check valve testing. The test procedure is written to test all EFCV's, with the EFCV's being separated into 21 groups based on channel and instrument rack relationships. Only one of the EFCV groups, group J, was to be tested. A second procedure is used to align and isolate the instrument racks for testing. Since only one group was to be tested, the evolution required partial procedure performance and coordination of both procedures to accomplish the test. In marking up the procedures for partial performance, the steps to isolate transmitters that were not to be tested were marked Not Applicable (N/A). In the process of marking up the procedure, the steps to reset any RRCS trips was also inappropriately marked N/A. As a result, the trip of the "A" channel low RPV water level was not reset prior to performing the test of the "B" channel high RPV pressure.

Upon RRCS initiation, the B reactor recirculation pump tripped as expected. The ARI system depressurized the scram air header, establishing the CRD {AA} system scram flow path, and the SDV filled with water that was being discharged from the control rod drive mechanisms, as expected. When the water level reached the SDV high level set-point, an RPS {JC} actuation occurred. All rods were already inserted. Operators reset the RRCS and RPS signals and then lowered RPV pressure in accordance with procedures, and placed shutdown cooling in service.

All systems operated as expected following the trip of RPS.



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Hope Creek Generating Station	05000-354	2016	- 005	- 01

**NARRATIVE**

**CAUSE OF EVENT**

The cause the event was inadequate procedural guidance which resulted in a personnel error associated with partial procedure use.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

There were no adverse safety consequences as a result of this event. The RRCS/ARI and RPS actuation did not cause any required systems to become inoperable or any design limits to be exceeded. The RRCS is not required to be operable in Operational Condition 4. The SDV high level trip is not required to be operable in Operational Condition 4. All plant systems responded as designed. The reactor water cleanup (RWCU) {CE} system remained in service, providing decay heat removal, as planned, during the pressure test window.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

A review of this condition and the associated evaluations determined that a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," did not occur.

**PREVIOUS EVENTS**

A review of events for the past three years at Hope Creek was performed to determine if similar events had occurred. On September 28, 2015, a human error resulted in an RRCS/ARI actuation and subsequent RPS actuation with the reactor at 100 percent power. The event was reported in LER 2015-005. That event involved a personnel error that was associated with incorrect keypad entries during testing on the RRCS system. The keypad entry instructions were clearly and accurately described in the procedure that was being performed at the time. In that event, the individual recognized his error and then tried to correct it without asking for help, or notifying supervision. In the most recent event, the test personnel did not recognize an error made when deciding that a step was not applicable. They believed that they were correctly following the procedure by marking the step N/A. The procedural guidance was found to be inadequate.

**CORRECTIVE ACTIONS**

The individuals involved in the event were disqualified from performing this and similar duties until remediated.

The test procedure will be revised to include the required guidance and to ensure the logic sequence is built into the procedure to prevent RRCS initiation.

**COMMITMENTS**

There are no regulatory commitments contained in this LER.