

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



DEC 17 2013

10CFR50.73

LR-N13-0291

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: Licensee Event Report 2013-005-00

In accordance with 10 CFR 50.73(a)(2)(i)(B), PSEG Nuclear LLC is submitting Licensee Event Report (LER) Number 2013-005-00, "Low-Low Set Safety/Relief Valve Pilot Solenoid Operated Valve Failed As-Found Testing."

If you have any questions or require additional information, please contact Mr. Paul Bonnett at (856) 339-1923.

There are no regulatory commitments contained in this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric S. Carr", written over a horizontal line.

Eric S. Carr  
Plant Manager  
Hope Creek Generating Station

Attachment: Licensee Event Report 2013-005-00

DEC 17 2013

LR-N13-0291

Page 2 of 2

10CFR50.73

cc: W. Dean, Regional Administrator – Region I, NRC  
J. Hughey, Project Manager - US NRC  
NRC Senior Resident Inspector – Hope Creek (X24)  
P. Mulligan, Manager, NJBNE  
P. Bonnett - Hope Creek Commitment Tracking Coordinator (H02)  
L. Marabella - Corporate Commitment Tracking Coordinator (N21)

# 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 F53), 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.

<b>1. FACILITY NAME</b> Hope Creek Generating Station	<b>2. DOCKET NUMBER</b> 05000354	<b>3. PAGE</b> 1 OF 3
--	-------------------------------------	--------------------------

**4. TITLE**  
Low-Low Set Safety/Relief Valve Pilot Solenoid Operated Valve Failed As-Found Testing

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
10	18	2013	2013	- 005 -	00	12	17	2013	N/A	
									FACILITY NAME	DOCKET NUMBER
									N/A	

<b>9. OPERATING MODE</b>  5	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> (Check all that apply)									
<b>10. POWER LEVEL</b>  0	<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)(vii)(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)(l)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A						

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Paul Bonnett, Sr. Compliance Engineer	TELEPHONE NUMBER (Include Area Code) 856-339-1923
--	--

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	SB	FSV	T020	N					

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

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

On October 18, 2013, Hope Creek Generating Station (HCGS) was notified by NWS Technologies that the solenoid operated valve (SOV) (S/N 481) associated with the pilot valve assembly for safety relief valve (SRV) 1ABHV-F013P (SRV-P) failed its required 'as-found' functional and air-leakage testing. The SOV failure affected the operability of the relief valve function and the low-low set function of SRV-P required by Technical Specification (TS) 3.4.2.2. The SOV was sent to an external vendor for failure analysis. On December 12, 2013, HCGS received the results of the failure analysis confirming that the SOV failure occurred at some point during the operating cycle. Technical Specification 3.4.2.2 requires the relief valve function and the low-low set function for the SRV-H and SRV-P to be OPERABLE in Operational Condition 1, 2, and 3. With one SRV inoperable, the TS action requires that the valve be restored to operable within 14 days or be in Hot Shutdown within the next 12 hours and in Cold Shutdown in the following 24 hours. Therefore, the SRV-P was inoperable for a period longer than the TS allowed outage time. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or condition which was prohibited by the plant's Technical Specifications.

The cause of the SOV's failure was determined to be a manufacturer's assembly error. The anti-rotation pin that secures the adjustable plunger in place was not installed. Without the pin, the plunger was allowed to rotate and unthread until contacting the internal stop, which prevented the solenoid from picking up when energized.

Corrective actions included replacing the failed single SOV.

NRC FORM 366A  
(10-2010)

**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	2 OF 3
		2013	- 005	- 00	

**NARRATIVE****PLANT AND SYSTEM IDENTIFICATION**

General Electric – Boiling Water Reactor (BWR/4)  
Safety Relief Valves - {SB/RV}\* - EIS Identifier  
Solenoid Operated Valve – {SB/FSV}\* – EIS Identifier

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

**IDENTIFICATION OF EVENT**

Event Date: October 18, 2013  
Discovery Date: October 18, 2013

**CONDITIONS PRIOR TO EVENT**

Hope Creek Generating Station (HCGS) was shutdown, in Operational Condition (OPCON) 5, for the eighteenth refueling outage (H1R18).

**DESCRIPTION OF EVENT**

During the 2013 Hope Creek Generating Station (HCGS) refueling outage (H1R18), all 14 pilot valve solenoid operated valve (SOV){SB/FSV} assemblies (5 Dual SOVs & 9 Single SOVs) for the Main Steam Safety Relief Valves (SRV){SB/RV} were removed and sent to NWS Technologies, LLC (NWS) for required 'as-found' functional and air leakage testing. On October 18, 2013, NWS notified HCGS that the single solenoid operated valve (SOV) H1AB-1ABSV-3664A-B21 (S/N 481), which is associated with the pilot valve assembly for SRV 1ABHV-F013P (SRV-P), had failed to actuate, and thereby, did not pass the 'as-found' functional testing. The SOV failure affected operability of the relief valve function and the low-low set function of SRV-P required by Technical Specification (TS) 3.4.2.2. The failed SOV was quarantined and sent to an external vendor for failure analysis.

The SRV-P SOV (S/N 481) was a new valve purchased from Target Rock for installation in refueling outage H1R17. SOV S/N 481 was functionally tested at Target Rock on March 14, 2012, and installed onto the SRV-P pilot valve in H1R17 on April 27, 2012. SOV (S/N 481) was removed and tested in H1R18. A new replacement Target Rock SOV was installed in H1R18.

On December 12, 2013, HCGS received the results of the failure analysis from the external vendor. From the failure analysis, HCGS confirmed that the SOV failure occurred at some point during the operating cycle. Technical Specification 3.4.2.2 requires the relief valve function and the Low-Low Set function of the SRV-H and SRV-P to be operable in Operational Condition 1, 2, and 3. With one SRV inoperable the TS action requires that the valve be restored to operable within 14 days or be in Hot Shutdown within the next 12 hours and in Cold Shutdown in the following 24 hours. Therefore, the SRV-P was inoperable for a period longer than the TS allowed outage time; however, the SRV-H remained operable. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or condition that was prohibited by the plant's Technical Specifications.

CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Hope Creek Generating Station	05000354	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 3
		2013	- 005	- 00	

**NARRATIVE**

**CAUSE OF EVENT**

The cause of the failure of solenoid valve (S/N 481) was determined to be a manufacturer's assembly error. The external vendor found that the anti-rotation pin that secures the adjustable plunger was not installed. Without the pin, the plunger was allowed to rotate and unthread until contacting the internal stop, which prevented the solenoid from picking up when energized. The solenoid coil was in good condition; there was no indication of an internal short. The SOV was reassembled with the plunger re-threaded in place. With the valve body installed back on the solenoid, the SOV could be operated. HCGS determined from the results of the failure analysis that the failure of this SOV occurred at some point during the operating cycle.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

The safety consequences of this occurrence are minimal. The basis of the Low-Low Set function is to ensure that the safety/relief valve discharges are minimized for a second opening of SRVs following any overpressure transient. This is achieved by automatically lowering the closing and opening setpoints of two SRVs. In this way, the frequency and magnitude of the containment blowdown duty cycle is substantially reduced. The failed SOV affected SRV-P; however, the SRV-H remained operable. With the SRV-H operable, the low-low set function remained available. Further, the SOV for the SRV-H was satisfactorily tested by NWS on October 18, 2013; therefore, SRV-H was capable of fulfilling its safety function. Sufficient redundancy is provided for the low-low set system such that failure of any one valve to open or close at its reduced setpoint does not violate the design basis.

The failure of the SOV did not impact the automatic safety valve function of the SRV-P based on SRV-P as-found pilot valve testing completed on November 22, 2013. SRV-P is an 1120 PSIG set pressure safety relief valve, which tested satisfactory in H1R18 with an as-found setpoint of 1152 PSIG (+2.9%).

**SAFETY SYSTEM FUNCTIONAL FAILURE**

A review of this condition determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," did not occur. This condition did not prevent the ability of a system to fulfill its safety function to either shutdown the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

**PREVIOUS EVENTS**

A review of events at Hope Creek for the past five years was performed to determine if a similar event had occurred. No events involving the failure of the SOV associated with an SRV pilot valve was identified.

**CORRECTIVE ACTIONS**

1. The solenoid operated valve associated with the SRV-P pilot valve was replaced.

**COMMITMENTS**

This LER contains no regulatory commitments.