



Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

DEC 27 1995

LR-N95252

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Dear Sir:

HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354  
UNIT 1  
LICENSEE EVENT REPORT 95-036-00

This Licensee Event Report entitled "As Found Values for Safety Relief Valve Lift Setpoints Exceeded Technical Specification Allowable" is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(ii)(B).

Sincerely,

Mark E. Reddemann  
General Manager -  
Hope Creek Operations

SORC Mtg. 95-127  
Attachment

LMK/tcp

C Distribution  
LER File 3.7

9601020327 951229  
PDR ADDCK 05000354  
S PDR

The power is in your hands.

020107

*JEZ*  
95-2168 REV. 6/94

**LICENSEE EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) <b>Hope Creek Generating Station</b>		DOCKET NUMBER (2) <b>05000354</b>	PAGE (3) <b>1 OF 5</b>
---	--	--------------------------------------	---------------------------

TITLE (4)  
As Found Values for Safety Relief Valve Lift Setpoints Exceeded TS Allowable

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	29	95	95	-- 036	-- 00	12	29	95	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)	0	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)(B)	50.73(a)(2)(viii)	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71	20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	Specify in Abstract below or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>J. Ondish</b>	TELEPHONE NUMBER (include Area Code) <b>(609) 339-3105</b>
--------------------------	---

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

Surveillance of the Safety Relief Valves following Hope Creek's sixth operating cycle has revealed that 10 out of a total of 14 Safety Relief Valves have experienced setpoint drift outside the TS 3.4.2.1 limit of +/- 1%. The cause of the occurrence is most likely corrosion bonding of the pilot disc to the pilot seat. This drift is a known current industry wide problem. The issue is being addressed by the Boiling Water Reactor Owners Group (BWROG). Currently, however, the setpoint drift issue is still unresolved. The Hope Creek containment analysis is currently being performed by General Electric and Vectra. Hope Creek will continue to work with the BWROG to resolve the setpoint drift issue. In addition, a License Change Request to change the SRV setpoint tolerance from +/- 1% to +/- 3% will be submitted to the NRC. This condition is reportable under 10CFR50.73(a)(2)(i)(B), as any operation or condition prohibited by the plant Technical Specifications.

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Hope Creek Generating Station	05000354	95	-- 036	-- 00	2 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**PLANT AND SYSTEM IDENTIFICATION**

General Electric - Boiling Water Reactor (BWR/4)  
Safety Relief Valves, EISS Identifier: RV

**IDENTIFICATION OF OCCURRENCE**

TITLE (4): As Found Values for Safety Relief Valve Lift Setpoints Exceeded TS Allowable

Event Occurrence: Following removal & testing of relief valves  
Event Time: N/A  
Discovery Date: 11/30/95

**CONDITIONS PRIOR TO OCCURRENCE**

Plant in OPERATIONAL CONDITION 5 (REFUELING)  
Reactor Power 0% of rated power (Refueling Outage 6)

**DESCRIPTION OF OCCURRENCE**

The Safety Relief Valves (SRVs) are tested each refueling outage per Technical Specification (TS) 4.4.2.2. Following cycle 6, this testing revealed that 10 out of a total of 14 SRVs have experienced setpoint drift outside the TS 3.4.2.1 limit of +/- 1%. The following is a list of the test results:

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Hope Creek Generating Station	05000354	95	-- 036	-- 01	3 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF OCCURRENCE (cont'd)

SRV Position	Drift (%)
A	1.24
B	-1.42
C	6.64
D	2.56
E	15.31
F	5.51
G	2.95
H	0.99
J	0.45
K	-3.07
L	0.27
M	-0.18
P	1.88
R	1.43
Average Drift	2.49

This condition is reportable under 10CFR50.73(a)(2)(i)(B), as any operation or condition prohibited by the plant Technical Specifications.

ANALYSIS OF OCCURRENCE

The SRVs are tested each refueling outage per Technical Specification (TS) 4.4.2.2. Hope Creek removed all fourteen (14) SRV pilot stage assemblies this refueling outage, as opposed to the minimum requirement of seven (7). This is based upon the additional testing requirements specified in ASME Section XI IV-3513, which states that for any of the initial seven (7) SRV pilot stage assemblies that fail setpoint testing, a sample expansion to all the valves in the group is required.

Setpoint testing of valves installed in cycle 6 has revealed that 10 valves have experienced setpoint drift above the TS 3.4.2.1 limit of +/- 1%. Two (2) valves had drifted low by 1.42% and 3.07% of the setpoint. The remaining eight (8) valves had drifted high with values ranging between 1.24% to 15.31% of the setpoint. Reviewing the results of the cycle 6 reload licensing analysis, it was determined that margin exists between the calculated pressure of 1303 psig (1130 psig setpoint + 15.31% maximum drift during cycle 6) and the ASME upset limit of 1375 psig.

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Hope Creek Generating Station	05000354	95	-- 036	-- 00	4 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**ANALYSIS OF OCCURRENCE (cont'd)**

Based on this result, it appears that operation in this condition did not adversely impact the vessel over pressure criterion. To support this conclusion further, a Hope Creek drift analysis is currently being performed by General Electric and Vectra. The transient event will be analyzed assuming all valve setpoints are 175 psig (approximately 15-16%) above the licensed setpoint pressure.

Setpoint drift for two stage Target Rock Valves is a phenomena that occurs when the pilot disc develops a corrosion bond to the pilot seat due to accumulation of radiolytic oxygen and hydrogen in the pilot area. This drift is a known current Boiling Water Reactor (BWR) industry wide problem. The problem is being addressed by the Boiling Water Reactor Owners Group (BWROG) which has undertaken numerous steps to resolve this issue. Hope Creek is a member of the BWROG and has implemented several steps to reduce the corrosion bonding. One such step is the trial use of a platinum alloyed pilot disc. This platinum alloyed pilot disc was on the 'K' SRV through out cycle 6. This alloy is designed to act as a catalyst to recombine the radiolytic hydrogen and oxygen found in the pilot area of the valve to prevent bonding of the pilot disc to the pilot seat which would result in an increase in the setpoint. Initial testing has proven favorable with test results indicating a reduced sticking force. This was demonstrated by the 'K' SRV which was found to lift 3.07% below its setpoint. The 'K' SRV did experience drifting which resulted in the setpoint being out of tolerance, however, the bonding as a result of corrosion was eliminated. The total BWROG test population results will be available by the fourth quarter of 1996.

If the platinum alloyed pilot disc does not resolve the issue of SRV pilot bonding, additional steps being investigated to resolve this issue include: installation of pressure switches if the catalyst solution fails, and investigation of the availability of alternate materials. Hope Creek will continue to support the BWROG in working toward a resolution of the drift issue. The corrective measures identified by the BWROG will be evaluated by Hope Creek for implementation.

**CAUSE OF OCCURRENCE**

The cause of the occurrence is most likely corrosion bonding of the pilot disc to the pilot seat due to radiolytic oxygen and hydrogen build-up in the pilot area.



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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Hope Creek Generating Station	05000354	95	-- 036	-- 00	5 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**SAFETY SIGNIFICANCE**

Reviewing the results of the cycle 6 reload licensing analysis, it was determined that margin exists between the peak drift pressure of 1303 psig (1130 setpoint + 15.31% maximum drift) for one valve and the ASME upset limit of 1375 psig. Therefore, the safety significance of this condition was minimal.

In addition, Hope Creek has contracted the services of Vectra Technologies (previously Nutech). This design firm performed the original containment design analysis. Through refinements in their analysis process, it is expected that the containment loads can be redefined to envelope the maximum upward drift experienced. Based on this approach, the safety significance is not expected to be a concern at this time. Upon completion of the analysis, results will be incorporated into plant design basis.

**PREVIOUS OCCURRENCES**

SRV setpoint drift has been previously reported in LER 95-004-00, dated March 31, 1995. The corrective action identified, to work with the BWROG to resolve the setpoint drift issue, remains in progress.

**CORRECTIVE ACTIONS**

Hope Creek SRVs were inspected, refurbished and satisfactorily retested at the test facility.

A License Change Request to change the SRV setpoint tolerance from +/- 1% to +/- 3% will be submitted to the NRC by September 30, 1996. This submittal will support NRC approval for Hope Creek's next refueling outage.

Hope Creek will re-install the platinum alloyed pilot disc for cycle 7.

The Hope Creek containment analysis is currently being performed by General Electric and Vectra. Scheduled completion is January 31, 1996. Upon completion of the analysis, if an unanalyzed condition existed, a supplement to this report will be provided.

Hope Creek will continue to work with the BWROG SRV setpoint drift fix committee to resolve the setpoint drift issue associated with two (2) stage Target Rock SRVs. Estimated completion is December 31, 1996.