NRC FORM 366 (5/92)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 5/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Brunswick Steam Electric Plant, Unit 1	05000325	1 of 4

TITLE (4)
Safety Relief Valves Tested At Wyle Laboratories Exceeded Technical Specification Setpoint Limits

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
05	11	95	95	- 07 -	00	06	05	95		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9): 04

POWER LEVEL (10): 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)

	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
	20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
	20.405(a)(1)(ii)		50.36(c)(2)	X	50.73(a)(2)(vii)		OTHER (Specify in Abstract and Text)
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
	20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
	20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Steve F. Tabor, Regulatory Affairs Specialist	(910) 457-2178

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
B/X	AD	RV	T020	Y					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single space typewritten lines) (16)

During the Unit 1 B110R1 refuel outage eleven Unit 1 Safety Relief Valves (SRVs) were removed and shipped to Wyle Laboratories for set pressure testing and recertification. 'As received' testing was performed by Wyle Laboratories. Technical Specification 3/4.4.2 requires the SRVs to be operable with lift settings within +/- 1% of their lift setpoints. The test results indicate that the 11 valves exceeded the Technical Specification setpoint requirement which included one of the valves failing to lift. The SRVs are manufactured by the Target Rock Corporation. Setpoint drift (> +/- 1%) is a generic concern with the Target Rock two-stage SRVs. The cause of elevated setpoint drift is attributed to oxygen induced bonding of the pilot disc-to-seat surface. The vendor also recognizes that due to the inherent design characteristics of the SRV pilot valves the Technical Specification setpoint tolerances are over restrictive. The SRV pilot assemblies were replaced with certified spares prior to Unit 1 startup. CP&L is pursuing a resolution to the SRV pilot disc-to-seat bonding issue which involves the modification of the SRV pilot disc surface and a change to the Technical Specification to allow a +/- 3% SRV setpoint tolerance. Although the SRV setpoint drift allowed by the Technical Specification (+/- 1%) was exceeded, the test results are bounded by a 1986 General Electric analysis which determined that the setpoint drift of the SRVs did not create a potential for exceeding the ASME code reactor pressure vessel limit of 1375 psig. Previous similar events have been reported in LERs 2-84-007, 1-85-033, 2-86-001, 1-87-011, 2-88-005, 1-88-030, 2-89-018, 1-91-002, 2-91-017, and 1-92-019. The cause classification for this event per NUREG-1022 criteria is B, Design, Manufacturing, Construction/Installation.

TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

TITLE

Safety Relief Valves Tested At Wyle Laboratories Exceeded Technical Specification Setpoint Limits

INITIAL CONDITIONS

During the Unit 1 B110R1 refuel outage, eleven Unit 1 Safety Relief Valves (SRVs) were removed and shipped to Wyle Laboratories for set pressure testing and recertification.

EVENT NARRATIVE

Technical Specifications require that the safety relief valve function of all reactor coolant system safety relief valves be operable with lift settings within +/- 1% of their setpoints. This requirement is intended to prevent the reactor system pressure, as measured in the reactor vessel dome, from exceeding the safety limit of 1325 psig. Eleven Target Rock Corporation two-stage safety relief valves are installed to perform this function.

On May 11, 1995, the results of the testing performed by Wyle Laboratories identified the following results:

SRV	NAMEPLATE SETPOINT	AS-FOUND LIFT POINT	PERCENTAGE OF DRIFT
B21-F013A	1105	1203	+8.87
B21-F013B**	1125	1104	-1.87
B21-F013C	1105	1180	+6.79
B21-F013D	1115	1102	-1.17
B21-F013E**	1115	1093	-1.97
B21-F013F	1105	>1248	*
B21-F013G**	1105	1079	-2.35
B21-F013H	1115	1130	+1.35
B21-F013J	1125	1191	+5.87
B21-F013K	1115	1097	-1.61
B21-F013L	1125	1157	+2.84

* The 1-B21-F013F pilot valve assembly did not open when pressurized up to 1248 psig. To prevent exceeding the valve's design pressure limit, pressure of >1248 psig was not applied during the test.

** Denotes SRV pilot valves with modified discs as described in the corrective actions section.

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

This event is being reported in accordance with the requirements of 10 CFR 50.73 (a) (2) (vii) as an event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems designed to mitigate the consequences of an accident.

CAUSE OF EVENT

SRV elevated positive (+) setpoint drift is caused by oxygen induced pilot disc-to-seat bonding. This bonding has been a recognized industry concern with Target Rock Two-Stage SRV pilot assemblies, model number 7567F, since the early 1980s.

The valve vendor has noted that the model 7567F Target Rock Two-Stage pilot valve is capable of performing within +/- 1% of its setpoint relative to repeatability during certification testing. However, the vendor noted that nuclear industry service experience has determined that the model 7567F experiences a larger drift after having been subjected to the environment of an operating nuclear unit. The Target Rock position on this issue is that +/- 3% drift is the normal range of drift for this design. Target Rock also indicated that other clients have changed or are in the process of changing their Technical Specifications to allow a >1% setpoint drift tolerance. The five SRV pilot assemblies with negative setpoint drift were within a -3% band.

CORRECTIVE ACTIONS

The SRV pilot valve assemblies were replaced with certified spares prior to startup of Unit 1.

CP&L is pursuing a resolution to the SRV pilot disc-to-seat bonding issue which involves modification of the SRV pilot disc surface as committed in LER 1-92-019. The modification involves particle deposition (platinum impregnated) on the SRV pilot disc by means of ion beam implantation. The modified disc surface will render the pilot disc-to-seat interface amorphous and thereby lower the oxidation rate. Three SRV pilot valve assemblies with modified discs were installed on each unit. The Unit 2 modified discs were removed after unit operation from May of 1993 to March of 1994. The Unit 1 modified discs were removed during the B110R1 refuel outage which ended in May of 1995 following a full cycle of operation. Metallurgical evaluation of the removed modified SRV pilot valve discs is in progress. Evaluation results will be used to assess permanent corrective actions.

The Power Uprate Project provides the basis for a change to the Technical Specification 3/4.4.2 to increase the allowable setpoint drift from +/- 1% to +/- 3%. The Power Uprate Project is expected to be implemented on Unit 1 in 1996. CP&L will pursue the change to the Technical Specification based on this analysis.

SAFETY ASSESSMENT

In this event the as found test data indicates that one SRV would not have actuated and the average setpoint drift of the remaining 10 SRVs was +1.7%. This condition is bounded by General Electric (GE) analysis of a 1986 event (LER 2-86-001 and SRV Setpoint Drift Evaluation Report) which determined that without the actuation of four SRVs and with the other seven SRVs having an average setpoint drift of + 8.3% the peak vessel pressure would have remained below the ASME code reactor vessel pressure limit of 1375 psig.

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TEXT CONTINUATION

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TEXT *(If more space is required, use additional NRC Form 366A's)* (17)

PREVIOUS SIMILAR EVENTS

Similar events have been previously reported in LERs 2-84-007, 1-85-033, 2-86-001, 1-87-011, 2-88-005, 1-88-030, 2-89-018, 1-91-002, 2-91-017 and 1-92-019.

EIIS COMPONENT IDENTIFICATION

System/Component	EIIS Code
Reactor Core System	AC
Relief Valve	AC/RV

Enclosure
List of Regulatory Commitments

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
CP&L will pursue a change to the Technical Specification setpoint drift tolerance based on the Power Uprate Project analysis.	N/A