

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8706260372 DOC. DATE: 87/06/23 NOTARIZED: NO DOCKET #
 FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
 AUTH. NAME AUTHOR AFFILIATION
 SCHWABENBAUER Carolina Power & Light Co.
 WATSON, R. A. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-031-00: on 870524, while operating at 100% power heater drain pump A tripped. Caused by failure of discharge valve on heater drain pump A due to faulty valve positioner. Control valve positioner repaired. W/870623 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Application for permit renewal filed. 05000400

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-1 LA	1 1	PD2-1 PD	1 1
	BUCKLEY, B	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/GAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/PMAS/ILRB	1 1
	NRR/PMAS/PTSB	1 1	<u>REG FILE</u> 02	1 1
	RES DEPY GI	1 1	RGN2 FILE 01	1 1
EXTERNAL:	EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Shearon Harris Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 0 0	PAGE (3) 1 OF 0 3
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TITLE (4)
'A' Heater Drain Pump Trip - Reactor Trip

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 NAMES		DOCKET NUMBER(S)																																		
0 5	2 4	8 7	8 7	0 3 1	0 0	0 6	2 3	8 7			0 5 0 0 0																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (9) 1</td> <td colspan="11">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)</td> </tr> <tr> <td rowspan="6">POWER LEVEL (10) 1 0 0</td> <td><input type="checkbox"/> 20.402(b)</td> <td><input type="checkbox"/> 20.405(c)</td> <td><input checked="" type="checkbox"/> 60.73(a)(2)(iv)</td> <td><input type="checkbox"/> 73.71(b)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(i)</td> <td><input type="checkbox"/> 60.38(c)(1)</td> <td><input type="checkbox"/> 60.73(a)(2)(v)</td> <td><input type="checkbox"/> 73.71(c)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(ii)</td> <td><input type="checkbox"/> 60.38(c)(2)</td> <td><input type="checkbox"/> 60.73(a)(2)(vi)</td> <td rowspan="4">OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(iii)</td> <td><input type="checkbox"/> 60.73(a)(2)(i)</td> <td><input type="checkbox"/> 60.73(a)(2)(vii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(iv)</td> <td><input type="checkbox"/> 60.73(a)(2)(ii)</td> <td><input type="checkbox"/> 60.73(a)(2)(vii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(v)</td> <td><input type="checkbox"/> 60.73(a)(2)(iii)</td> <td><input type="checkbox"/> 60.73(a)(2)(x)</td> </tr> </table>												OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											POWER LEVEL (10) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 60.38(c)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 60.38(c)(2)	<input type="checkbox"/> 60.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(vii)(A)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(vii)(B)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(x)
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LICENSEE CONTACT FOR THIS LER (12)

NAME R. Schwabenbauer - Regulatory Compliance	TELEPHONE NUMBER 9 1 9 3 6 2 - 2 6 6 8
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS
B	S N	L C V	M 1 2 0	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

ABSTRACT

On May 24, 1987 the plant was operating in Mode 1 at 100 percent reactor power. At 1002 hours 'A' Heater Drain Pump tripped on low net positive suction head due to its discharge level control valve failing to the open position. Plant operators initiated a manual turbine power reduction to compensate for the loss of the pump. During the manual turbine runback, at 1004 hours, 'B' Heater Drain Pump tripped on low net positive suction head.

In approximately 25 seconds 'A' Main Feedwater Pump tripped on low suction pressure as a result of the loss of the Heater Drain Pumps contribution to feedwater flow. The high steam demand and suddenly reduced feedwater flow resulted in the tripping of both 'A' and 'B' Condensate Booster Pumps due to high discharge pressure. The loss of these pumps resulted in 'B' Main Feedwater Pump tripping and the total loss of all feedwater flow.

In response to the loss of both Main Feedwater trains and decreasing steam generator levels, a manual plant trip was initiated at 1005 hours.

The plant was then stabilized in Mode 3 at 557°F (normal no load temperature) and normal pressure, and the steam generators water levels restored with the Auxiliary Feedwater System.

The discharge level control valve for 'A' Heater Drain Pump was repaired following the event.

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FACILITY NAME (1) Shearon Harris Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 0 0 8 7	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	- 0 3 1	- 0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 368A's) (17)

DESCRIPTION:

On May 24, 1987 the plant was operating in Mode 1 at 100 percent reactor power. At 1002 hours discharge level control valve (FCV-1255A) for the 'A' Heater Drain Pump failed open. As a result a low net positive suction head signal tripped the 'A' Heater Drain Pump. A faulty level control valve positioner caused the valve to fail open.

Operators initiated a manual turbine load decrease to compensate for the loss of the pump. The load reduction was relatively slow (5 Mw/min). With the 'A' Heater Drain Pump stopped, the flow in the 'B' Heater Drain Pump began to oscillate. During the turbine load decrease at 1004 hours, a low net positive suction pressure signal tripped the 'B' Heater Drain Pump.

The Heater Drain Pumps and the Condensate Booster Pumps both provide flow to the suction of the Main Feedwater Pumps. When the Heater Drain Pump trips, the variable speed control for the Condensate Booster Pump controls to increase the load on the Condensate Booster Pumps. When the second Heater Drain Pump tripped, the demand on the Condensate Booster Pumps increased to maximum, but it was not sufficient to prevent decreasing Main Feedwater Pump suction pressure. Low suction pressure tripped the 'A' Main Feedwater Pump. The sudden reduction in feed flow resulted in a high discharge pressure trip of both 'A' and 'B' Condensate Booster Pumps. This caused a trip of the remaining 'B' Main Feedwater Pump resulting in the loss of all feedwater flow.

In response to the loss of both trains of Main Feedwater, the operators manually tripped the reactor and turbine at 1005 hours.

Both Motor Driven Auxiliary Feedwater Pumps started on the loss of both Main Feedwater Pumps, and the Turbine Driven Auxiliary Feedwater Pump started on steam generator low-low levels.

All plant systems responded as required, and the plant was stabilized at normal no load temperature and pressure. Normal steam generator water levels were restored with the Auxiliary Feedwater System.

CAUSE:

The initiating event for the transient was the failure of the discharge valve on the 'A' Heater Drain Pump due to a faulty valve positioner. The subsequent trip of the Reactor was the result of two factors:

1. The inability of the feedwater and condensate system to stabilize feedwater flow after the loss of one Heater Drain Pump.
2. The unanticipated loss of the second Heater Drain Pump and the lack of time available to execute a load reduction to compensate for the loss of the second Heater Drain Pump.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Shearon Harris Plant Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 0 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	— 0 3 1	— 0 0	0 3	OF	0 3

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

ANALYSIS:

There were no adverse safety consequences resulting from this event. The Reactor Protection System and Auxiliary Feedwater System responded as required. Normal recovery followed the reactor trip.

This event is reportable under 10CFR50.73(a)(2)(IV) as an actuation of the Engineered Safeguards Features and Reactor Protection Systems.

CORRECTIVE ACTION:

Previous events associated with the Heater Drain Pump (LER-87-019-00, 87-024-00 and LER-87-025-00).

As a result of this event, the following additional corrective actions have been completed:

- 1) The control valve positioner for 'A' Heater Drain Pump has been repaired.
- 2) The procedure for the loss of a Heater Drain Pump has been changed to require a rapid (45 Mwe/min) load reduction to less than 90 percent upon the loss of one Heater Drain Pump.



Carolina Power & Light Company

HARRIS NUCLEAR PROJECT
P.O. Box 165
New Hill, NC 27562

JUN 23 1987

File Number: SHF/10-13510C
Letter Number: HO-870451 (O)


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

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 87-031-00

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is in accordance with the format set forth in NUREG-1022, September, 1983.

Very truly yours,


R. A. Watson
Vice President
Harris Nuclear Project

RAW:sdg.

Enclosure

cc: Dr. J. Nelson Grace (NRC - RII)
Mr. B. Buckley (NRR)
Mr. G. Maxwell (NRC - SHNPP)

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