REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8705280245 DOC. DATE: 87/05/22 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 87-025-00: on 870422, reactor tripped resulting in lou flow in A heater drain pump. Caused by failure of discharge valve on A heater drain pump. Separated air connection on heater drain pump discharge valve repaired. W/870522 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	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES 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/QAB	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	REG FILE 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

TOTAL NUMBER OF COPIES REQUIRED: LTTR 42 ENCL 40

CP&L

Carolina Power & Light Company

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

MAY 22 1987

File Number: SHF/10-13510C
Letter Number: HO-870435 (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 87-025-00

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

R. A. Watson
Vice President
Harris Nuclear Project

RAW:skm

Enclosure

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

8705280245 870522
PDR ADOCK 05000400
S PDR

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SHEARON HARRIS PLANT UNIT 1	0 5 0 0 0 4 0 0	1 OF 0 3

TITLE (4)
REACTOR TRIP - LOSS OF HEATER DRAIN PUMP A

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 4	2 2	8 7	8 7	0 2 5	0 0	0 5	2 2	8 7		0 5 0 0 0
										0 5 0 0 0

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)	0 9 9	20.402(b)	20.405(c)	X 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)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		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
RICHARD SCHWABENBAUER - REGULATORY COMPLIANCE	AREA CODE 9 1 9 — 3 6 2 - 2 6 6 9

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	S N	F C V	V 0 3 7	N							

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)

ABSTRACT

On April 22, 1987 at 2316 hours, while the plant was operating at 99 percent reactor power, 'A' Heater Drain Pump tripped from a low flow signal. This was caused by a separated air connection on the discharge valve causing the valve to fail shut. Plant operators initiated a manual turbine power reduction to compensate for the loss of the pump. During the manual turbine runback alarms for low flow were received for 'B' Heater Drain Pump, followed by the pump tripping at 2322 hours. This initiated an automatic turbine runback to 50 percent turbine power and activation of the plant steam dump system due to the large load reduction.

Low suction pressure then tripped both 'A' and 'B' Main Feedwater Pumps and was immediately followed by both 'A' and 'B' Condensate Booster Pumps tripping.

In response to the loss of both Main Feedwater trains and decreasing steam generator water levels, a manual plant trip was initiated at 2323 hours.

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

The separated air connection on the 'A' Heater Drain Pump discharge valve was repaired following the event.

IE22

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SHEARON HARRIS PLANT UNIT 1	0 5 0 0 0 4 0 0	8 7	— 0 2 5	— 0 0	0 2 OF 0 3

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

DESCRIPTION:

On April 22, 1987, the plant was operating at 99 percent reactor power. At 2316 hours, discharge valve (1HD-33) for the 'A' Header Drain Pump failed shut, resulting in a low flow condition tripping the 'A' Heater Drain Pump. A separated air line on the valve caused the valve to fail shut.

Operators initiated a manual turbine runback to compensate for the loss of the pump. The operators initiated the runback in response to a partial loss of feed flow and in anticipation of increasing reactor power due to the loss of secondary plant efficiency. During the turbine runback, the flow on the 'B' Heater Drain Pump oscillated. At 2322 hours, 'B' Heater Drain Pump tripped on low flow. The trip of the second Heater Drain Pump initiated an automatic turbine runback to 50% turbine load. The automatic turbine runback resulted in actuation of the steam dump system due to a Tave-Tref mismatch.

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 of the Condensate Booster Pump controls to increase the load on the Condensate Booster Pumps. The demand on the Condensate Booster Pumps increased to maximum, but response time was not sufficient to prevent decreasing Main Feedwater Pump suction pressure. Both Main Feedwater pumps then tripped on low suction pressure. Subsequently, both Condensate Booster Pumps tripped on high discharge pressure.

In response to the loss of both trains of Main Feedwater the operators manually tripped the reactor and the turbine at 2323 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 separated control air line connection followed by 'B' Heater Drain Pump tripping due to oscillations in heater level. This resulted in a turbine runback. This turbine runback resulted in steam dump valve actuation due to a Tave-Tref mismatch. As a result, both Main Feedwater pumps went to runout and tripped on low suction pressure followed by both Condensate Booster Pumps tripping on high discharge pressure. The reactor was manually tripped in response to the loss of feedwater flow.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SHEARON HARRIS PLANT UNIT 1	0 5 0 0 0 4 0 0	8 7	— 0 2 5	— 0 0	0 3 OF 0 3

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

ANALYSIS:

There were no 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 ACTIONS:

Previous events associated with the Heater Drain Pump (LER-87-019-00 and 87-024-00) resulted in the following corrective actions being implemented to improve reliability:

1) Heater Drain Pump trips on high discharge pressure, pump delta pressure, and Moisture Separator Reheater pressure were deleted.

2) The low-level trip setpoint for the Heater Drain Pumps in the Number 4 Feedwater Heater was lowered 12 inches to provide a margin for trips on level oscillations.

3) The Main Feedwater Pump low suction pressure trip time delay was increased from 5 seconds to 15 seconds to provide more time to stabilize after a loss of a Heater Drain Pump transient.

As a result of this event and still further evaluations of the Heater Drain System reliability and performance, the following additional corrective actions have been completed:

1) The separated air connection on the Heater Drain pump discharge valve was repaired.

2) The stroke for the Heater Drain Pumps discharge valve has been limited to 70 percent in order to limit the flow oscillations for the pumps.

3) The automatic Turbine runback on the loss of two Heater Drain Pumps has been deleted and operating procedures have been changed to require manual action to runback the turbine.