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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8811210292 DOC. DATE: 88/11/14 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 88-028-00: on 881014, plant tripped due to loss of feedwater caused by low condenser hot well level.

W/8 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Application for permit renewal filed.

05000400

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SHEARON HARRIS NUCLEAR POWER PLANT - UNIT 1						DOCKET NUMBER (2) 0 5 0 0 0 4 0 0				PAGE (3) 1 OF 0 3	
TITLE (4) PLANT TRIP DUE TO A LOSS OF FEEDWATER CAUSED BY A LOW CONDENSER HOT WELL LEVEL.											

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)									
1	0	1	4	8	8	8	8	0	2	8	0	0	1	1	1	4	8	8	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 1 4			20.402(b)			20.405(c)			X 50.73(a)(2)(iv)			73.71(b)									
			20.405(a)(1)(i)			50.33(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 365A)									
			20.406(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)												
			20.406(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)												
			20.406(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(ix)												

LICENSEE CONTACT FOR THIS LER (12)											
NAME R. SCHWABENBAUER - REGULATORY COMPLIANCE TECHNICIAN								TELEPHONE NUMBER 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 NPDs		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	
B	S	J	R	L	Y	W	1	2	3	Y	

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

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

ABSTRACT:

The plant was operating in Mode 1, Power Operation, at 14 percent reactor power on October 14, 1988. The plant was in the start-up phase following a 77 day refueling outage and was being held at 14 percent power due to Steam Generator (SG) water chemistry conditions. Due to the power level, only the 1B train Feedwater and Condensate System was in service. At 1227 hours, both the 1B Condensate Pump (CP) and the 1B Condensate Booster Pump (CBP) tripped on low discharge pressure. The 1B Main Feedwater Pump (MFW) which should have automatically tripped, had to be manually tripped due to a failed trip relay coil. As a result of this total loss of feedwater, both the reactor and turbine were then manually tripped. The Main Steam Isolation Valves were shut in order to limit plant cool down and the Auxiliary Feedwater System actuated to maintain Steam Generator water levels and the plant was stabilized in Mode 3, Hot Standby.

The cause of the event was a low level in the Condenser hot well which caused an automatic trip of the 1B CP on low discharge pressure. The low hot well level was caused by a discrepancy between the Main Control Board (MCB) indicated level and the actual level. The reference leg, for the level transmitters, was partially drained thus indicating a false higher reading at the MCB than actually existed.

Corrective actions include: 1) the failed relay coil has been replaced, 2) the Auxiliary Operator round sheets have been revised to include a check of local hot well level and lists acceptable levels, 3) an investigation will be done to resolve the problem of the draining of the reference leg for hot well level indication, and 4) an evaluation is being done for the changeout of pneumatic level controllers to electronic level controllers for the condenser hotwell level.

There were no safety consequences as a result of this event and is being reported in accordance with 10CFR50.73(a)(2)(iv) as an Engineered Safety System Feature and a Reactor Protection System actuation.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1	05000400	88	028	00	02	OF	03

TEXT (if more space is required, use additional NRC Form 356A's) (17)

DESCRIPTION:

The plant was operating in Mode 1, Power Operation, at 14 percent reactor power on October 14, 1988. At 0810 hours, the Main Turbine Generator (EIIS:TA) was synchronized to the transmission grid marking the completion of a 77 day refueling outage. Power had been increased to 14 percent and was being held steady to allow for improvement of Steam Generator (SG) (EIIS:TB) water chemistry. Due to the power level, only the B train Main Feedwater (MFW) (EIIS:SJ) and B train Condensate (EIIS:SD) System was in service and the SG water levels were being maintained by manual control of the feedwater regulating bypass valves.

At 1227 hours, both the 1B Condensate Pump (CP) (EIIS:SD) and the 1B Condensate Booster Pump (CBP) (EIIS:SD) tripped on low discharge pressure. Operators observed the decreasing suction pressure for the 1B Main Feedwater (MFW) Pump (EIIS:SJ) and manually tripped the pump approximately 26 seconds later. The 1B MFW pump should have automatically tripped when the 1B CBP tripped. It was later discovered that the 1B MFW pump did not automatically trip due to the failure of the trip relay coil (Westinghouse: Model # ARB-440A) in the CBP logic circuit.

Due to the total loss of feedwater, operators manually tripped the reactor (EIIS:AC) and the turbine. The Main Steam Isolation Valves (MSIV) (EIIS:SB) were closed in order to limit plant cool down and the 1B Motor driven Auxiliary Feedwater (AFW) Pump (EIIS:BA) was started to maintain SG water levels and the plant was stabilized in Mode 3, Hot Standby.

CAUSE:

Investigation into the cause of the 1B CP and 1B CBP trip which resulted in a plant trip revealed the following condition.

A discrepancy existed between the local condenser hot well level sight glass reading and the indicated hot well level shown on the Main Control Board (MCB). The indicated level to the MCB is provided by a differential pressure (DP) cell sensing a difference in level between the actual hot well level and a reference leg level. Prior to the event, the hot well was indicating about 63 percent on the MCB and the hot well level was being controlled manually. Upon investigation, the reference leg was found to be partially drained such that when it was indicating 63 percent on the MCB, the hot well was in fact down to about 23 percent, which is the low level interlock for pump start. Since the 1B CP was running at a fairly high capacity and the hot well level had drifted down to the low level alarm point, the 1B CP appeared to lose Net Positive Suction Head (NPSH) and tripped on low discharge pressure.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) SHEARON HARRIS NUCLEAR POWER 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 8	0 2 8	0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 325A's) (17)

ANALYSIS:

There were no safety consequences as a result of this event. The plant was challenged due to a loss of feedwater; however, the safety systems were not challenged as operators took the necessary actions to stabilize the plant due to the event. Had this event happened at 100 percent reactor power it would have also resulted in a plant trip on a loss of feedwater.

The event is being reported in accordance with 10CFR50.73(a)(2)(iv) as an Engineered Safety System (EISS:JE) and a Reactor Protection System (EISS:ID) actuation.

There have been no similar events reported where condenser hot well level loss resulted in a plant trip.

CORRECTIVE ACTION/ACTION TO PREVENT RECURRENCE:

- 1) The failed trip relay coil has been replaced.
- 2) The Auxiliary Operator round sheets have been revised to include a check of local hotwell level, and to include the maximum/minimum acceptable levels based on the sight glass.
- 3) An investigation will be made to resolve the problem of the reference leg draining, and appropriate corrective actions will be taken.
- 4) An evaluation will be done for the changeout of pneumatic level controllers to electronic level controllers for the condenser hotwell level.



Carolina Power & Light Company

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

NOV 14 1988

File Number: SHF/10-13510C
Letter Number: HO-880233 (0)

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 88-028-00

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:lem

Enclosure

cc: Mr. W. H. Bradford (NRC - SHNPP)
Mr. B. Buckley (NRR)
Mr. M. L. Ernst (NRC - RII)