

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: B704140499      DOC. DATE: 87/04/10      NOTARIZED: NO      DOCKET #  
 FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina      05000400  
 AUTH. NAME      AUTHOR AFFILIATION  
 HOWE, A.      Carolina Power & Light Co.  
 WATSON, R. A.      Carolina Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 87-012-00: on B70311, turbine trip & reactor trip occurred during troubleshooting at main turbine supervisory control panel. Cause unknown. During subsequent outage binding problem in rotor position repaired. W/B70410.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
	RUCKLEY, B	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	1 1
	ACRS WYLIE	1 1	AEOD/DOA	1 1
	AEOD/DSP/ROAB	2 2	AEOD/DSP/TAPB	1 1
	NRR/ADT	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/EPB	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 SPEIS, T	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)  
Reactor Trip During Turbine Rotor Instrumentation Testing

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		
0	3	11	8	7	012	0	4	10			
									DOCKET NUMBER(S) 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 4 7	<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)(vii)	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)(viii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(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)								

LICENSEE CONTACT FOR THIS LER (12)						
NAME Andrew Howe/Engineer - Regulatory Compliance				TELEPHONE NUMBER 9 1 9 3 6 2 - 2 7 1 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	

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)

At 1700 on March 11, 1987, with the plant operating at 47% thermal power level (370 MWe), a turbine trip and reactor trip occurred during troubleshooting at the main turbine supervisory control panel.

Subsequent to the reactor/turbine trip, the operating main feedwater pumps tripped actuating an automatic start of both motor-driven auxiliary feedwater pumps. Also the main steam line isolation valves were manually closed to limit the cooldown transient on the Reactor Coolant System (RCS). The plant was stabilized in Mode 3 at 557°F RCS average temperature (zero-load value).

The turbine trip was determined to be caused directly by depressing a test push button at the turbine supervisory control panel. The plant was returned to service on March 12, 1987.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	0 1 2	0 0	0 2	OF	0 3

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

Description of Event

On March 11, 1987, the plant was being operated at 47% thermal power level and 370 MWe generator load. During the day, while the turbine power was being increased, a "TURBINE TROUBLE" annunciator was being received intermittently. This alarm was being actuated by the turbine rotor position circuit, and each time the alarm was received, turbine loading was halted to allow for equilibration of the thermal expansion of the rotor. At approximately 1650, the alarm was again received and investigated; a test push button was actuated on the turbine supervisory control panel to check the functioning of the rotor position indicator. This push button also functions as a test for actuation of the turbine trip function for rotor position and a turbine trip occurred, initiating a reactor trip.

Prior to the events, both condensate pumps 1A and 1B, both condensate booster pumps 1A and 1B, main feedwater pump 1B, and both heater drain pumps 1A and 1B were in service. Immediately following the reactor trip, only the 1B condensate pump and the 1A heater drain pump remained in service. The trip of the operating main feedwater pump caused automatic start of both auxiliary feedwater pumps. Full auxiliary feedwater flow and the low decay heat of the core resulted in a cooldown of the RCS to approximately 540°F, and the operator manually closed the main steam line isolation valves in an attempt to limit the cooldown.

The plant was stabilized in Mode 3 at an RCS Tav<sub>g</sub> of 557°F which is the zero-load value.

Plant Design

Turbine rotor position is constantly monitored by the turbine supervisory instrumentation system since excessive movement of the rotor is indicative of a failure of the turbine rotor thrust bearing. During normal operation as electrical load is changed, the resultant changes in turbine torque cause small variations in the axial displacement of the rotor. Excessive changes indicating wear of the thrust bearing will cause the rotor position monitor to alarm and further increases will actuate a trip of the turbine.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		0 1 2	0 0	0 3	OF	0 3

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

Cause

Investigation of the rotor position alarms being received during the load increases revealed that the sensing probe was improperly positioned, resulting in erroneous rotor position indications and alarms. This mispositioning was caused by binding of the sensing probe during the performance of OPT-1509, Turbine Trips Test, which was last performed on March 10, 1987. (The binding of the probe led to the troubleshooting and eventual trip; however, the mispositioned probe was not a direct cause of the trip).

The test circuits which actuated the turbine trip was investigated by CP&L and Westinghouse personnel, and it was determined that actuation of the rotor position test circuit should cause a turbine trip. Plant documentation concerning this test circuit does not conclusively state that fact, and the operator was not aware that a trip would occur.

The cause of the trips of the various condensate and feedwater pumps is the subject of ongoing investigations by CP&L.

Analysis

There was 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 Actuation and Reactor Protection Systems.

Corrective Action:

- 1.The test push button on the turbine supervisory control panel has been temporarily disabled to prevent recurrence while the panel design is reviewed.
- 2.During a subsequent outage, the binding problem in the rotor position probe was repaired.
- 3.Procedure OPT-1509 is being reviewed for possible changes to account for resetting the rotor position sensing probes.
- 4.Procedure OP-131.05, Digital Electrohydraulic System is being revised to include details on the controls and instruments of the supervisory control panel.



Electric Power & Light Company

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

APR 10 1987

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Letter Number: HO-870404 (O)

U.S. Nuclear Regulatory Commission  
ATTN: NRC Document Control Desk  
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SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1  
DOCKET NO. 50-400  
LICENSE NO. NPF-63  
LICENSEE EVENT REPORT 87-012-0

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:skm

Enclosure

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

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