

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8904060492 DOC.DATE: 89/03/29 NOTARIZED: NO DOCKET #
 FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
 AUTH.NAME AUTHOR AFFILIATION
 LEGETTE,F. Carolina Power & Light Co.
 MORGAN,R.E. Carolina Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-004-00:on 890227,safety injection reactor trip due to
 inadvertent turbine dc power supply electrical short.

W/8 ltr.

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

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	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	DEDRO	1 1	IRM/DCTS/DAB	1 1
	NRR/DEST/ADE 8H	1 1	NRR/DEST/ADS 7E	1 0
	NRR/DEST/CEB 8H	1 1	NRR/DEST/ESB 8D	1 1
	NRR/DEST/ICSB 7	1 1	NRR/DEST/MEB 9H	1 1
	NRR/DEST/MTB 9H	1 1	NRR/DEST/PSB 8D	1 1
	NRR/DEST/RSB 8E	1 1	NRR/DEST/SGB 8D	1 1
	NRR/DLPQ/HFB 10	1 1	NRR/DLPQ/QAB 10	1 1
	NRR/DOEA/EAB 11	1 1	NRR/DREP/RPB 10	2 2
	<u>NRR/DRIS/SIB 9A</u>	1 1	NUDOCS-ABSTRACT	1 1
	<u>REG FILE 02</u>	1 1	RES/DSIR/EIB	1 1
	RES/DSR/PRAB	1 1	RGN2 FILE 01	1 1
EXTERNAL:	EG&G WILLIAMS,S	4 4	FORD BLDG HOY,A	1 1
	H ST LOBBY WARD	1 1	LPDR	1 1
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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) H.B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1	PAGE (3) 1 OF 0 3
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TITLE (4)
SAFETY INJECTION/REACTOR TRIP DUE TO INADVERTENT TURBINE DC POWER SUPPLY ELECTRICAL SHORT

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 2	2 7	8 9	8 9	0 0 4	0 0	0 3	2 9	8 9			0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
N		20.402(b)		20.405(c)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)		73.71(b)			
POWER LEVEL (10) 0 3 0		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)			
		20.405(a)(1)(iii)		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)		TELEPHONE NUMBER	
NAME Freddie Legette, Senior Reactor Operator		AREA CODE 8 0 3	3 8 3 - 1 2 5 3

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 checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO		0 6	0 1	8 9

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

On February 27, 1989, at 1617 hours, Unit 2 received a Safety Injection signal and, subsequently, an automatic reactor trip from 30 percent power when the turbine experienced a momentary loss of load. At the time, Maintenance personnel were investigating a power supply trouble alarm in the turbine control system when a technician inadvertently caused a short circuit, causing the governor valves to close. The steam dump system responded. When the electrical short was corrected, the governor valves reopened, resulting in high steam flow, but the steam dump valves had not modulated closed and a Safety Injection signal was initiated on high steam flow with low steam line pressure/low average reactor coolant temperature. The technician who caused the short found that the multimeter being used was wrongly configured to measure amperage versus voltage. This had apparently created the short in the turbine DC power supply. The licensee declared an Unusual Event at 1618 hours, then terminated the Event at 1651 hours, and Unit 2 was returned to power operations on February 28, 1989. The cause of the event has been attributed to inattentiveness by the maintenance technician to the configuration of the multimeter. Plant safety was maintained throughout the event. The related problem condition involving steam dump valve modulation is still being investigated. To date, it appears that a summator failure prevented the system from modulating as designed. This LER is submitted in accordance with 10CFR50.73(a)(2)(iv) and will be supplemented following completion of the investigation into the steam dump system logic problem.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) H.B. ROBINSON S.E. PLANT, UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1 8 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
			0 0 4	0 0	0 2	OF	0 3

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

I. Description of Event

On Monday, February 27, 1989, at 1617 hours, Unit 2 received a Safety Injection (SI) signal and, subsequently, an automatic reactor trip when the turbine experienced a momentary loss of load.¹ The unit was operating at 30% power, approximately 175 MWe net. At the time, Maintenance personnel were investigating an Electro-Hydraulic (E-H) power supply trouble alarm in the turbine control system when a technician inadvertently caused a short circuit on one of the E-H power supplies. The shorted power supply caused the turbine governor valves to momentarily close. The steam dump system responded to remove heat and provided artificial load while the governor valves were closed. When the short was removed, the governor valves re-opened resulting in a high steam flow condition. However, the steam dump valves had not modulated closed to prevent the Reactor Coolant System (RCS) from reaching a low T_{ave} condition, thus resulting in the SI actuation signal (i.e., high steam flow with low steam line pressure or low T_{ave}). Upon discovering that the Plant had tripped, the technician suspected that the test instrument may have been involved. This was confirmed when he discovered that he had mistakenly configured the multimeter to check amperage versus voltage. In this configuration the instrument responded similar to a short-to-ground on the turbine DC power supply. At 1618 hours an Unusual Event was declared in accordance with the Plant Emergency Plan and the NRC was notified. The Unusual Event was terminated at 1651 hours. The Plant returned to power on February 28, 1989.

II. Cause of Event

The event was caused by a Maintenance technician being inattentive to the test instrument configuration.² Maintenance technicians employ different brands of multimeters for test purposes. For different measurements, these instruments require reversing their amperage and voltage input jacks. This, along with not paying close attention to detail, resulted in the instrument's inadvertent set-up as an ammeter.

Additionally, based on an event five days later on March 4, 1989, again in which steam dump actuation occurred, there appeared to be a problem in the steam dump logic. Specifically, the steam dump valves apparently tripped open with no subsequent modulation to close once demand for steam dump diminished. This caused a higher than normal steam flow which was a factor in reaching the SI setpoint.

1/ H.B. Robinson Steam Electric Plant, Unit No. 2, is a Westinghouse Pressurized Water Reactor nuclear power plant, in commercial operation since March 1971.

2/ Cause Code: A.

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 (6)				PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				
H.B. ROBINSON S.E. PLANT, UNIT 2	0 5 0 0 0 2 6 1 8 9	—	0 0 4	—	0 0	0 3	OF	0 3

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

III. Analysis of Event

The signal that actuated the safeguard systems is designed to detect and mitigate the consequences of a steam line break. This event did not involve a steam line break; therefore, the SI and subsequent reactor trip were of no impact on safety other than an unnecessary challenge to systems. Plant safeguard systems performed as designed throughout the event. Plant Operations personnel maintained the safety of the Plant in accordance with established procedures.

IV. Corrective Actions

Human factors concerns considered attributable to this incident include the different brands of multimeters used by the I&C technicians having opposite test jack locations. To reduce the potential for this type of event to recur, I&C technicians have been instructed to remove the amp test input fuse, which is seldom used. Additionally, other test equipment that can be used in a similar capacity has been evaluated and preventive measures taken.

Although the actions taken will reduce the possibility of this event to recur, the first line of defense is the awareness required of the I&C Technicians when using test equipment. The technician responsible for this incident has met with other Maintenance crews to make them aware of the need for close attention to detail and proper test equipment configuration. The technician has also met with licensee Management to discuss the event and provide information to help preclude recurrence.

The steam dump logic problem was thoroughly investigated following the March 4 incident. Due to the reduced power level at the beginning of the February 27 event, it appeared that the steam dump system operated properly but did not respond quickly enough to the opening of the governor valves. The results of the later incident's investigation, however, revealed that the summator in the steam dump logic cabinet had failed. The summator supplies an output signal to modulate the steam dump valves once a demand signal is present. Due to the failure, the modulation signal was negated and the summator provided a full output signal that fully opened the dump valves once armed.

The summator has been replaced and the system tested satisfactorily.

The root cause of the summator failure is still being evaluated. Results of the evaluation and any additional corrective actions will be provided in a supplement to this LER.

IV. Additional Information

A. Failed Component Identification

Steam Dump Logic Summator No. TM-408J

B. Previous Similar Events

None



Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT
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MAR 28 1989

Robinson File No: 13510C

Serial: RNP/89-1114
(10 CFR 50.73)

United States Nuclear Regulatory Commission
Attn: Document Control Desk
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 89-004-00

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted in accordance with 10 CFR 50.73 and NUREG-1022 including Supplements No. 1 and 2.

Very truly yours,

R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

FLL:jch

Enclosure

cc: Mr. S. D. Ebnetter
Mr. L. W. Garner
INPO

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