

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8912270138 DOC.DATE: 89/12/18 NOTARIZED: NO DOCKET #
 FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
 AUTH.NAME AUTHOR AFFILIATION
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 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-014-00:on 891116,loading of safety-related equipment
 could exceed assumptions of accident analysis.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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	ACRS WYLIE	1 1	AEOD/DOA	1 1
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	NRR/DLPQ/LHFB11	1 1	NRR/DLPQ/LPEB10	1 1
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	NRR/DST/SELB 8D	1 1	NRR/DST/SICB 7E	1 1
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	NUDOCS-ABSTRACT	1 1	<u>REG FILE</u> 02	1 1
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EXTERNAL:	EG&G WILLIAMS,S	4 4	L ST LOBBY WARD	1 1
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Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT
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DEC. 18 1989

Robinson File No: 13510C

Serial: RNP/89-4338
(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 89-014

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

CTB:lko

Enclosure

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

IE22
11

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 4
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TITLE (4)

LOADING OF SAFETY-RELATED EQUIPMENT COULD EXCEED ASSUMPTIONS OF ACCIDENT ANALYSIS

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	1	1	6	8	9	8	9	0	1	4	0	0	0	0	0	0	0	0	0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
OPERATING MODE (9) N			20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)							
			20.405(a)(1)(i)			50.38(c)(1)			50.73(a)(2)(v)			73.71(c)							
			20.405(a)(1)(ii)			50.38(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 C. T. Baucom, Senior Specialist	TELEPHONE NUMBER AREA CODE 8 0 3 3 8 3 1 2 5 3
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH DAY YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On November 16, 1989, at 1200 hours a condition was confirmed whereby the emergency busses could unnecessarily shift from offsite power to the Emergency Diesel Generators during the automatic loading of safety-related equipment. This condition is the result of timing relay tolerances, longer than anticipated motor acceleration times, and other worst case assumptions regarding reduced grid voltages. The existing electropneumatic relays will be replaced with upgraded digital timing relays prior to unit restart. This condition was reported via the Emergency Notification System on November 16 at 1403 hours pursuant to 10CFR50.72(b)(2)(i). This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(ii)(A).

NRC Form 364A
(9-83)

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, UNIT NO. 2	0 5 0 0 0 2 6 1	8 9	0 1 4	0 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 364A's) (17)

I. Description of Event

In November 1989, calculational work was in progress to support 1990 electrical system changes. During this effort, input was being collected to provide the emergency diesel generator (EDG) manufacturer with data that was required for the EDG dynamic analysis. At this time, the tolerance of the emergency safeguards sequence relays was researched, as the tolerance was considered to be a key input to the dynamic analysis due to the impact of the relay tolerance on the sequencer 5 second load blocks. The plant operating manual was reviewed, and test OST-163 was found to contain the required data, which indicated that the calibration tolerance of the relays was ± 2 seconds.

The effect of the tolerance on the emergency diesel generators could not be fully evaluated until safeguards motor acceleration data was obtained. Shortly thereafter, actual motor data was obtained, and the acceleration times were longer than anticipated. This caused a more detailed investigation to begin, and the scope of the investigation was extended to the offsite power system.

On November 16, 1989, at 1200 hours, based on the results of this investigation, it was confirmed that the potential exists for safety-related motors to overlap during the safety injection sequence due to the sequence timer tolerance of ± 2 seconds and longer than anticipated motor acceleration times as provided from motor vendor information. Further, it was confirmed that an unanalyzed condition may exist in that this sequencing of safety-related equipment onto emergency busses could occur in such a manner that the emergency busses might unnecessarily shift from offsite power to the EDGs. Specifically, under certain assumed grid loading and voltage conditions, and with the safeguards sequencing relays at their maximum tolerances, the sequencing of emergency loads during a safety injection signal could occur such that the emergency buss degraded grid voltage relay could actuate. This would result in the unnecessary shedding of the emergency busses from offsite power, starting of the EDGs, and resequencing of safeguards equipment onto the emergency busses. This scenario is beyond the analyzed events as provided in Chapter 15 of the Updated Final Safety Analysis Report (UFSAR).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/88

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

II. Cause of Event

The original design for the emergency safeguards sequencer utilized electropneumatic timing relays for sequencing of safety-related loads onto the emergency power system upon the receipt of a Safety Injection or Blackout Signal. This type of timing arrangement is typical of those used in early Westinghouse designs, and used Agastat "2412" Series time delay relays. The emergency sequencer is tested at every refueling interval to verify that the safeguards sequencer operates satisfactorily.

Over the years of operation, some of these relays have been replaced for maintenance reasons. As the original "2412" series relays were no longer available, the updated Agastat "7012" series relays were used as replacements. The "2412" styles of relays have a manufacturers listed accuracy of $\pm 5\%$ of setting, and the "7012" style of relays have a manufacturers listed accuracy of $\pm 10\%$ of setting. With the manufacturers stated accuracy of $\pm 5\%$ or $\pm 10\%$, the existing relays could not be relied upon to remain within a value which would support the assumptions of the design basis analysis of the emergency power system.

The cause of the problem is the lack of a design basis for the ± 2 second tolerance stated for the calibration of sequencer time delay relays as provided in OST-163. In addition, the as found data for these relays indicated that the relays were not performing as desired, and no trending was done for relays which were consistently out of specification in one direction. The lack of an Electrical System Analysis which included these relay tolerances was also a factor; however, there were long term plans to perform the required analyses as part of the Design Basis Reconstitution Project currently in progress.

III. Analysis of Event

Proper operation of the safeguards sequence timing relays is required in order to provide accurate timing intervals for sequencing of safety-related loads, and to prevent the unnecessary shedding of the emergency busses from offsite power, automatic starting of EDGs, and resequencing of loads. Because this sequencing is required for accident mitigation, and proper sequencing is assumed within the accident analyses, the scenario described above is beyond the analyzed events as described in Chapter 15 of the UFSAR.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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		8 9	— 0 1 4	— 0 0	0 4	OF	0 4

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

Although the unnecessary shift from offsite power to emergency AC power is undesirable and beyond design basis, there is no evidence that the emergency busses would be unable to supply their safety-related loads. The EDGs would be available to supply the emergency busses as designed, and thereby ensure proper operation of equipment needed to mitigate the consequences of an accident.

This condition was reported on November 16, 1989 at 1403 hours pursuant to the requirements of 10CFR50.72(b)(2)(i). This Licensee Event Report is submitted pursuant to the requirements of 10CFR50.73(a)(2)(ii)(A) as an unanalyzed condition that significantly compromised plant safety.

IV. Corrective Actions

The existing relays will be replaced with Agastat digital timing relays for the time delay circuit, and will utilize Agastat GP series control relays as an interposing relay for the motor sequencing circuit. The relays will be located in the existing safeguards relay racks, and will be fully installed and tested prior to returning the unit to service. These activities will be completed by plant modification MOD-1035, "Emergency Load Sequencer Relay Replacement."

V. Additional Information

A. Failed Component Identification

None

B. Previous Similar Events

None