REGULATORY CORMATION DISTRIBUTION SYSTEM (RIDS)

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ACCESSION NBR:	8710160206	DUC. DATE: 8	//10/13	NUTARIZED:	NL)	DUCKE I H
FACIL: 50-261	H.B. Robinson	Plant, Unit	2, Caro	lina Power	& Light C	05000261
AUTH. NAME	AUTHOR AF	FILIATION				
CROOK, D.	Carolina F	ower & Ligh	t Co.			• •
MORGAN, R. E.	Carolina F	ower & Ligh	t Co.			
RECIP. NAME	RECIPIENT	AFFILIATIO	IN <sub>.</sub>			

SUBJECT: LER 87-024-01: on 870918, during walkdown of electrical equipment in reactor protection & control analog instrumentation racks (Hagan racks), anchorage to maintain seismic Class I requirements inadequate. W/871013 ltr.

DISTRIBUTION CODE: 1220 COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

### NOTES:

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NRC Form <b>386</b> (9-83)	U.S. NUCLEAR REGULATORY COMMISSION (9-83) LICENSEE EVENT REPORT (LER) EXPIRES: 8/31/88										
FACILITY NAME (1)									DOCKET NUMBER	(2)	PAGE (3)
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ABSTRACT										• .	
On Septe and Cont Class I	On September 4, 1987, during a walkdown of electrical equipment in the Reactor Protection and Control Analog Instrumentation Racks (Hagan Racks), anchorage to maintain Seismic Class I requirements was questioned.										
On September 11, 1987, Unit 2 was reduced to hot shutdown to repair leaks in the main unit generator hydrogen coolers. Since preliminary calculations indicated that the Hagan Racks did have insufficient anchorage, a Plant Modification was implemented during the outage to upgrade the anchorage as a precautionary measure while more detailed analyses were performed. On September 18, 1987, results of the more detailed analyses revealed that the anchorage as found indeed was inadequate. The NRC was notified by the licensee via the Emergency Notification System pursuant to 10CFR50.72(b)(2)(i).											
The cause of this event is attributed to improper installation during original construction, although information available from the construction time period was inadequate to enable plant staff to establish the original installation requirements of the Hagan Racks.											
The Modi prior to	The Modification to upgrade the Hagan Rack anchorage was completed on September 15, 1987, prior to return to power operation.										
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NRC Form 366 (9-83)

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LICENSEE EVENT	REPORT (LEF	R) TEXT CON	TINUATION
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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 REVISION NUMBER		
H. B. Robinson S. E. Plant Unit No. 2	<b>0  5   0   0   0   2   6   1</b>	8 7 - 0 2 4 - 0 0	0 2 <b>OF</b> 0 4	
TEXT (If more space is required, use additional NRC Form 366A's) (17)				

### I. DESCRIPTION OF EVENT

NRC Form 366A (9-83)

On September 4, 1987, Unit No. 2 was operating at one hundred percent power. During a walkdown of electrical equipment for unrelated reasons, the Reactor Protection and Control Analog Instrumentation Racks' (Hagan Racks) anchorage to maintain Seismic Class I requirements was questioned. The Hagan Racks consist of Analog Protection and Logic Channels which monitor parameters for nuclear and non-nuclear instrumentation and actuate signals for Reactor Protection and Safeguards initiation. The Hagan Racks are located in a room behind the Unit 2 Control Room.

On September 11, 1987, Unit 2 was placed in hot shutdown to replace the main unit generator hydrogen coolers.

Preliminary calculations indicated that the Hagan Rack anchorage was insufficient and that additional seismic supports and braces were needed for the racks to meet their Seismic Class I requirements and to assure continued operation of instrumentation within the cabinets during a Design Basis Earthquake.

On September 13, 1987, as a precautionary measure while more detailed analyses were performed, a Plant modification was implemented to upgrade the Hagan Rack anchorage. This modification was completed on September 15, 1987.

On September 18, 1987, the results of the more detailed analyses, supported by information provided by Westinghouse concerning the original testing and seismic qualification of the Hagan Racks, indicated that the Hagan Rack anchorage was indeed inadequate. The existing anchorage did not conform to the anchorage used in the generic testing which provided the original seismic qualification of the racks.

The NRC was notified by the licensee of a Significant Event in accordance with 10CFR50.72(b)(2)(i) in that this was an unanalyzed condition that could significantly compromise Plant safety.

The licensee notified the NRC Resident for the H. B. Robinson Plant by telephone.

#### II. CAUSE OF EVENT

The Hagan Rack cabinets apparently were either not properly installed during original Unit No. 2 construction or inadequate installation guidance existed at the time. The information available from the construction time period (1968-1970) was inadequate to verify the required installation procedure for the Hagan Racks.

LICENSEE EVENT	REPORT (LER) TEXT	CONTINUATION
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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 REVISION NUMBER NUMBER		
H, B. Robinson S. E. Plant Unit No. 2	0   <b>5   0   0   0</b>   2   6   1	8 7 - 0 2   4 - 0 0	0 13 <b>OF</b> 0 14	
TEXT (M more space is required, use additional NRC Form 395A's) (17)				

#### **III. ANALYSIS OF EVENT**

NRC Form 366A (9-83)

> The event identified a condition that could have resulted in the Plant being outside its design basis. Analyses determined that the Hagan Rack cabinet anchorage as installed did not conform to the anchorage used in the generic testing which provided the original seismic qualification of the cabinets. Therefore, calculations determined that loads which could result during a Design Basis Earthquake might exceed the ultimate strength of the anchorage of the Hagan Racks, and the operability of the instrumentation within these racks could not be assured. The consequence of Hagan Rack failure could involve a loss of analog and logic circuitry associated with the Reactor Coolant System and its auxiliaries.

> CP&L has reviewed the potential effect of a loss of Hagan Rack instrumentation functions in a seismic event. The review determined that in the worst case, although a major loss of Plant instrumentation and reliable monitoring capability could occur, such an event would result in a reactor trip and Engineering Safety Features (ESF) actuation with subsequent decay heat removal provided by ESF equipment and the steam generators. Indication remaining would include vital equipment (valves/pumps) on-off/open-closed status and control.

#### **IV. CORRECTIVE ACTIONS**

Concurrent with analyses of Hagan Rack anchorage seismic qualification, a design solution was pursued as a precautionary measure to assure the Class I requirements of the Hagan Racks. In addition, a review of the seismic qualification of the Reactor Protection and the Safeguards Relay Racks was performed since these racks receive signals from the Hagan Racks and actuate Reactor Protection and Engineered Safety Feature initiation circuitry. The anchorage of this equipment has been found satisfactory to assure operability during a Design Basis Earthquake.

A seismic support modification, which added supports and braces to the Hagan Rack Cabinets, was implemented on September 13, and completed on September 15, 1987.

In addition, CP&L is an active member of the Seismic Qualification Utility Owner Group, which is working with NRR to resolve Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Operating Plants." The Hagan Racks is equipment included in the implementation of A-46 for H. B. Robinson. CP&L believes that evaluations pursuant to A-46 methodologies could establish the operability of the Hagan Racks in the as-found condition. However, since these methodologies are not yet generically established, CP&L opted to report the event and take corrective action based on conventional analyses. 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 REVISION NUMBER	
H. B. Robinson S. E. Plant Unit No. 2	0  5   0   0   0   2   6  1	817 - 0 2 4 - 0 0	0 4 OF 0 4
TEXT (If more space is required, use additional NRC Form 366A's) (17)		· · · · · · · · · · · · · · · · · · ·	

## V. ADDITIONAL INFORMATION

NRC Form 366A

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### A. Failed Component Identification

This event was caused by an original equipment installation deficiency and is not attributed to equipment failure. The Reactor Protection and Control Analog Instrumentation Rack Assemblies are AMCO cabinets which were manufactured by Hagan,<sup>1</sup> supplied by Westinghouse,<sup>2</sup> and installed by Ebasco.<sup>3</sup>

### B. Previous Similar Events

On June 3, 1987, it was determined that due to unconfirmed original loading calculations, the original Service Water supply pump nozzle loads could exceed those allowed for continuous operation during a Design Basis Earthquake (LER-87-011).

On September 19, 1979, in follow-up to IE Bulletins 79-02 and 79-14, it was identified that a pipe restraint in the Service Water System was not properly installed during original construction and operability of the restraint could not be assured during a Design Basis Earthquake (LER 79-034).

<sup>1</sup>Eiis Codes: System - JC Component - not available Manufacturer - H015 <sup>2</sup>Eiis Codes: System - JC Component - not available Manufacturer - W123 <sup>3</sup>Eiis Codes: System - JC Component - not available Manufacturer - E065



Carolina Power & Light Company

USNRC-DS 1987 OCT 17 A 10: 10

# ROBINSON NUCLEAR PROJECT DEPARTMENT POST OFFICE BOX 790 HARTSVILLE, SOUTH CAROLINA 29550 **QCT 13 1987**

Robinson File No: 13510C

Serial: RNPD/87-4885 (10 CFR 50.73)

United States Nuclear Regulatory Commission Attn: Document Control Desk Washington, D. C. 20555

> H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 DOCKET NO. 50-261 LICENSE NO. DPR-23 LICENSEE EVENT REPORT 87-024-00

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted in accordance with the Licensee Event Report System of 10 CFR 50.73. The format of the LER follows the recommendations of NUREG-1022, and Supplements No 1 and 2.

Very truly yours,

Morgan

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

RDC:1ko

Enclosure

cc: J. N. Grace H. E. P. Krug INPO

IE22 1/1