

## ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8812270241 DOC.DATE: 88/12/21 NOTARIZED: NO DOCKET #  
 FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261  
 AUTH.NAME AUTHOR AFFILIATION  
 LEGETTE,F.L. Carolina Power & Light Co.  
 MORGAN,R.E. Carolina Power & Light Co.  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-028-00:on 881121,inadequate post accident containment  
 hydrogen reduction/venting sys.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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	PD2-1 LA	1 1	PD2-1 PD	1 1
	LO,R	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	ACRS WYLIE	1 1	AEOD/DOA	1 1
	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	ARM/DCTS/DAB	1 1	DEDRO	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/RAB 10	1 1	NRR/DREP/RPB 10	2 2
	NRR/DRIS/SIB 9A	1 1	NUDOCS-ABSTRACT	1 1
	<u>REG FILE</u> 02	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
	NRC PDR	1 1	NSIC HARRIS,J	1 1
	NSIC MAYS,G	1 1		

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## 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											
TITLE (4) INADEQUATE POST ACCIDENT CONTAINMENT HYDROGEN REDUCTION/VENTING SYSTEM																									
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	2	1	8	8	8	8	0	2	8	0	0	1	2	2	1	8	8	0	5	0	0	0		
OPERATING MODE (8) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																							
POWER LEVEL (10) 0 0 0		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)											
		20.405(a)(1)(i)				50.36(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 366A)											
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)															
		20.405(a)(1)(iv)				X 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 F. L. Legette, Senior Reactor Operator										TELEPHONE NUMBER 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 NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC															
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR									
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO													
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																									
<p><u>Abstract</u></p> <p>On November 21, 1988, during a programmatic review of the Environmental Qualification of the Hydrogen (H<sub>2</sub>) Recombiner System, it was noted that system operation requires access to several locked closed, manual valves in the Reactor Auxiliary Building (RAB) pipe alley. The valves would have to be opened in order to align motive nitrogen to remote operated control valves inside the containment vessel (CV) in order to place the H<sub>2</sub> Recombiner or the Post-Accident Containment Venting System (PACV) in operation. The pipe alley is considered to be a radiologically harsh environment and is inaccessible in a post-LOCA condition based on the 1979 Radiation Shielding Design Review performed pursuant to NUREG-0578.</p> <p>The 1979 Shielding Review examined the existing emergency instructions (EI-16) for PACV operation. However, due to an inadequacy in EI-16 that review failed to recognize that operation of some valves required for PACV operation required access to the RAB pipe alley. The H<sub>2</sub> Recombiner was installed with the assumption that the shared PACV System piping was available and areas needed to place the system in service were accessible.</p> <p>The valves in question are being relocated through a plant modification to an area accessible following a postulated accident.</p> <p>A Significant Condition Report has been initiated to review the event and will also review the procedure revisions implemented which added the valves requiring access to an inaccessible area. This review may result in additional corrective actions.</p>																									

## 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 NO. 2	0 5 0 0 0 2 6 1	8 8	— 0 2 8	— 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 November 21, 1988, during a programmatic review of the Environmental Qualification of the Hydrogen ( $H_2$ ) Recombiner System, it was noted that system operation requires access to several locked closed, manual valves in the Reactor Auxiliary Building (RAB) pipe alley. Four of the valves have to be unlocked and opened in order to align motive nitrogen ( $N_2$ ) to remote operated control valves inside the containment vessel (CV) in order to place the  $H_2$  Recombiner in operation. Since the area (pipe alley) is considered to be a radiologically harsh environment in a post-LOCA condition based on the 1979 Radiation Shielding Design Review performed pursuant to NUREG-0578, it has been determined that these valves may not be accessible when needed.

A further review has revealed that a total of eleven (11) locked closed, manual valves are located in the pipe alley which are operated for either the  $H_2$  Recombiner or one of the two Post-Accident Containment Venting (PACV) trains which serve as a backup to the  $H_2$  Recombiner. The PACV system is required to be operable in accordance with Technical Specification 3.3.5.

Although it is believed that sufficient time would be available to develop and implement the procedures to flush systems and permit access to ensure availability of the  $H_2$  Recombiner and PACV Systems, the absence of those procedures is considered reportable pursuant to 10CFR50.73(a)(2)(ii)(c).

II. Cause of Event

Initial plant design for containment vessel hydrogen control following a LOCA was the PACV System. The areas that required accessibility for placing this system in service were considered accessible based on the plant's Design Basis Analysis (DBA). The DBA assumes one percent failed fuel.

Following TMI, however, NUREG-0578 required all plants to perform a design review of the shielding of systems which process primary coolant outside of containment. One of the purposes of this review was to assure that any areas required for post-accident occupancy were accessible. The Robinson Radiation Shielding Design was completed in December 1979. The review examined the existing emergency instructions (EI-16) for PACV operation. However, due to an inadequacy in EI-16, that review failed to recognize that operation of some valves required for PACV operation required access to the RAB pipe alley. The procedure only identified operation of valves in the vicinity of the Hydrogen Venting Panel located on the second level of the RAB. This location would be accessible. EI-16 failed to address the valves in the pipe alley. Later versions of the PACV procedure (after 1984) corrected this problem by adding the manual  $N_2$  valves, however, this effort apparently did not consider the 1979 shielding study. The  $H_2$  Recombiner was installed with the assumption that the shared PACV System piping was available and areas needed to place the system in service were accessible. Therefore the reviews conducted at the time these procedures were developed or revised were inadequate.

## 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 NO. 2	0   5   0   0   0   2   6   1	8   8	—   0   2   8	—   0   0	0   3	OF	0   3

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

III. Analysis of Event

At the time of initial plant design, the accepted method for post-LOCA hydrogen control was the purge/repressurization system. This was the type system installed at H. B. Robinson in the form of the post-accident containment venting systems (PACV). 10CFR50.44 required hydrogen recombiners for later plants (plants for which the construction permit notice was published after 11/5/70).

10CFR50.44(c) was revised in January 1982 to require that each plant "that relies upon a purge/repressurization system as the primary means for controlling combustible gases following a LOCA shall be provided with either an internal recombiner or the capability to install an external recombiner following the start of an accident." 10CFR50.44 was also revised to require that the containment penetrations used for external recombiners either be "... dedicated to that service..." or be "... of a combined design for use by either external recombiners or purge/repressurization systems and other systems..." and "... be designed against postulated single failures both for containment isolation purposes and for operation of the external recombiners or purge/repressurization systems."

The recombiner system was installed in 1984 by Modification 750 in order to meet the requirements of 10CFR50.44(c). The recombiner tied into the existing PACV system. (The recombiner supply piping uses PACV "A" piping and penetration. The recombiner return piping uses PACV "B" piping and penetration. The recombiner supply/PACV "A" piping and penetration are shared with the containment pressure relief line.) Following its installation the hydrogen recombiner became the primary method of post-accident combustible gas control.

IV. Corrective Action

The valves in question are being relocated to an area accessible following a postulated accident thereby assuring the PACV and the H<sub>2</sub> Recombiner systems can be operated without the need for the flushing operation. The modification will be completed prior to startup from the refueling-outage currently in progress.

A Significant Condition Report in accordance with the Corrective Action Program, PLP-026 has been initiated to review the event and will also review the procedure revisions implemented which added the valves requiring access to an inaccessible area. This review may result in additional corrective actions.

V. Additional Information

## A. Failed Component

None

## B. Previous Similar Events

None



Carolina Power & Light Company

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**DEC 21 1988**

Robinson File No: 13510C

Serial: RNP/88-6142  
(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 88-028

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: Dr. M. L. Ernst  
Mr. L. W. Garner  
INPO

IE22  
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