

REGULARY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8712290288 DOC. DATE: 87/12/17 NOTARIZED: NO DOCKET #  
 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261  
 AUTH. NAME AUTHOR AFFILIATION  
 CROOK, D. Carolina Power & Light Co.  
 MORGAN, R. E. Carolina Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-029-00: on 871118, svc water flange leak identified in  
 containment air recirculation cooling unit HVH-2 &  
 containment integrity breached during repair. Caused by  
 corroded bolts. Flange repaired. W/871218 ltr.

DISTRIBUTION CODE: IE22 COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 9  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-1 LA	1 1	PD2-1 PD	1 1
	ECCLESTON, K	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/NAS	1 1
	AEOD/DSP/ROAB	2 2	AEOD/DSP/TPAB	1 1
	ARM/DCTS/DAB	1 1	DEDRO	1 1
	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/RAB	1 1	NRR/DREP/RPB	2 2
	NRR/DREP/SIB	1 1	NRR/PMAS/ILRB	1 1
	REG FILE 02	1 1	RES DEPY GI	1 1
	RES TELFORD, J	1 1	RES/DE/EIB	1 1
	RGN2 FILE 01	1 1		
EXTERNAL:	EG&G GROH, M	5 5	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		

NRC Form 308  
(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 08					
TITLE (4) SERVICE WATER FLANGE LEAK IN CONTAINMENT; MINIMUM COMPONENT REDUNDANCY VIOLATION																			
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	8	8	7	0	2	9	0	0	1	1	7	8	7	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)				50.73(a)(2)(iv)				73.71(b)					
POWER LEVEL (10)		1   0   0				20.405(a)(1)(i)				X 50.73(a)(2)(v)				73.71(c)					
		20.405(a)(1)(iii)				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)(ii)				50.73(a)(2)(viii)(A)									
		20.405(a)(1)(iv)				X 50.73(a)(2)(iii)				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 David Crook, Specialist - Regulatory Compliance										TELEPHONE NUMBER AREA CODE 8   0   3   3   8   3   -   1   1   7   9									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPROS									
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) (18)

## [ABSTRACT]

At 1230 hours, November 18, 1987, while operating at 100% power a small leak was identified in a Service Water line from the motor cooler of Containment Air Recirculation cooling unit HVH-2 inside the Containment Vessel (CV). Utility licensed Operators isolated HVH-2, the flange leak was repaired, and the unit returned to service. Post-maintenance testing revealed that the outlet isolation valve, V6-34B, had remained partially open (although Control Room indication showed it closed) while the flange spool piece inside the CV was removed. This constituted a breach of containment integrity. At 0300 hours, November 19, the licensee notified the NRC of a one-hour nonemergency event, pursuant to 10CFR50.72(b)(1)(ii). At 0902, after correcting the valve position problem, the flow path was declared operable. Later, the licensee determined that isolating HVH-2 had jeopardized component redundancy requirements in that two of four containment cooling units had no emergency power supply at the time HVH-2 was removed from service. The licensee provided the NRC follow-up notification at 1451 hours, November 25 to report this condition. At 0949 hours, December 3, the licensee provided an additional NRC follow-up notification to clarify that containment integrity should have been considered breached from 1230 to 2400 hours, November 18, instead of the four hours originally reported. This report is submitted in accordance with 10CFR50.73(a)(2)(ii) and 10CFR50.73(a)(2)(v).

8712290288 871217  
PDR ADDCK 05000261  
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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
H. B. ROBINSON S.E.P., UNIT NO. 2	05000261	87	029	00	02	OF	08

TEXT (If more space is required, use additional NRC Form 333A's) (17)

I. DESCRIPTION OF EVENT

On Wednesday, November 18, 1987, at 1230 hours, H. B. Robinson Unit No. 2 was operating at 100 percent power.<sup>1</sup> A leak was identified in a flexible two-inch Service Water System line from the motor cooler of Containment Air Recirculation Cooling Unit HVH-2.<sup>2,3</sup> The inlet and outlet Service Water lines were isolated and HVH-2 was removed from service by utility licensed Operators to allow for repair of the leak. At 2000 hours, licensee Maintenance personnel entered containment and discovered that a flange on the line was leaking. The flanged spool piece was removed to replace the flange gasket and bolting. At 2400 hours repair of the leaking flange was completed. During performance of post-maintenance pressure testing, test pressure could not be established. It was discovered that outlet isolation valve V6-34B, which is an automatic motor operated butterfly valve,<sup>4</sup> was in the open position, although Control Room indication on the Reactor Turbine Generator Board (RTGB) showed the valve closed.

Figure 1 provides a flow diagram of the Service Water System serving HVH-2.

At 0215 hours, Thursday, November 19, 1987, licensee Plant management personnel determined that the outlet isolation valve configuration during maintenance was a breach of containment integrity, which is a violation of H. B. Robinson Unit No. 2 Technical Specification 3.6.1.a. The utility licensed Shift Foreman on duty notified the Nuclear Regulatory Commission (NRC) of a one-hour nonemergency event at 0300 hours via the Emergency Notification System (ENS) in accordance with 10CFR50.72(b)(1)(ii).

The V6-34B valve actuator was found to be inadequately installed so that a "close" signal resulted in the valve not going fully closed. The actuator was then corrected and the valve returned to proper operation. At 0902 hours, November 19, 1987, the HVH-2 flow path was restored to operable.

On Thursday, December 3, 1987, at 0949 hours, the licensee provided a follow-up notification to the NRC via the ENS to clarify the initial notification of November 19, 1987. In this notification the licensee reported that further evaluation of the event had identified the breach of containment integrity on November 18, 1987 had existed from 1230 (when the flange leak was originally discovered) to 2400 hours instead of the four hours originally reported.

<sup>1</sup>H. B. Robinson Unit No. 2 is a Westinghouse Pressurized Water Reactor nuclear power plant in commercial operation since March 1971; Operating License No. DPR-23.

<sup>2</sup>Service Water System EIIIS Codes: System - BI; Component - Not available; Manufacturer - W120.

<sup>3</sup>Containment Air Recirculation cooling units EIIIS Codes: System - BK; Component - AHU; Manufacturer - W120.

<sup>4</sup>V6-34B EIIIS Codes: System - BI; Component - V; Manufacturer - Allis Chalmers

## 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 330A's) (17)

A discussion of a second event related to removing HVH-2 from service follows.

Prior to the event, Diesel Generator "B" was out of service for maintenance in accordance with Plant Technical Specification 3.7.2.d. The Specification allows power operation to continue for seven days if one diesel generator is inoperable provided the remaining diesel generator is tested daily to ensure operability and the engineered safety features associated with this diesel generator are operable. Diesel Generator "A" and its associated engineered safety features were operable at the time.<sup>5,6</sup> Diesel Generator "B" is the emergency power source for two of the four Containment Air Recirculation cooling units, HVH-3 and HVH-4.

Technical Specification 1.3 defines "OPERABLE - OPERABILITY" in part as a component being capable of performing its specified function(s) with its normal and emergency electrical power sources also capable of performing their related function(s). However, when a component is determined to be inoperable solely because its emergency power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided (1) its corresponding normal power source and (2) all of its redundant component(s) are OPERABLE.

Immediate isolation of the leak in the Service Water discharge of HVH-2 was required to assure containment integrity. However, pursuant to Technical Specification 1.3, removing HVH-2 from service with the emergency power source for HVH-3 and HVH-4 out of service resulted in only one Containment Air Recirculation cooling unit, HVH-1, being operable by definition. However, the normal power supply for HVH-3 and HVH-4 was available throughout the event.

The licensee notified the NRC via the ENS of the failure to report this condition in a timely manner at 1451 hours, Wednesday, November 25, 1987.

This Licensee Event Report is submitted in accordance with 10CFR50.73(a)(2)(ii) and 10CFR50.73(a)(2)(v).

<sup>5</sup>Emergency Diesel EIIIS Codes: System - EK; Component - DG; Manufacturer - F019;

<sup>6</sup>Engineered Safety Features EIIIS Codes: System - B; Component - Not Available; Manufacturer - W120.

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TEXT (If more space is required, use additional NRC Form 338A's) (17)

## II. CAUSE OF EVENT

Upon inspection of the service water line leak, it was discovered that both carbon steel and stainless steel bolts had been used in the leaking flange. The use of two different types of bolting material is acceptable in this application and should not have contributed to the flange leak. The carbon steel bolts, however, showed evidence of corrosion (apparently due to normal condensation from the SW pipe) which prevented further tightening of the flange in an initial attempt to stop the leak. The flange gasket was removed and inspected and appeared to be in satisfactory condition, although not as pliable as new material. Therefore, the cause of this event may have been due to a combination of the corroded bolts, normal vibration at the flange, age of the gasket, or due to the previous installation of the flange. No obvious cause of the leak however, could be determined. Routine weekly inspection in the containment by Operations personnel detected no evidence of flange leakage prior to the event.

The breach of containment integrity resulted from the leak in the Service Water discharge pipe flange from the HVH-2 motor cooler. This system forms one of the principal safety barriers for containment. Investigation of the event determined that the breach was further aggravated by inadequate alignment between the valve and motor operator on the outlet isolation valve, V6-34B, resulting from an error during reinstallation of the valve following a flushing procedure in May, 1987.<sup>7,8</sup>

The failure to comply with the Technical Specification definition of "operable - operability" resulted when immediate isolation of the HVH-2 motor cooler Service Water inlet and outlet lines was necessary to assure containment integrity. This was intentionally performed prior to returning the emergency power source for HVH-3 and HVH-4 to service. Diesel Generator "B" was returned to operable status one hour and fifty minutes later, at 1420 hours, November 18, 1987 thus satisfying the Technical Specification definition of "operable - operability" for HVH-3 and HVH-4.

The failure to report the violation of the Technical Specification definition of "operable - operability" was due to an error in judgement by the licensee. Evaluation of the reportability requirements for the event did not fully consider the implications of removing HVH-2 from service with the emergency power source for HVH-3 and HVH-4 unavailable. The probable cause was the lack of specific guidance in the licensee's procedure on NRC reportability requirements.<sup>9</sup>

<sup>7</sup>V6-34B actuator EIS Codes: System - BI; Component - Not Available;  
Manufacturer - Allis Chalmers.

<sup>8</sup>Cause Code: B

<sup>9</sup>Plant Operating Manual Administrative Procedure, AP-030, Revision 5, NRC  
REPORTING REQUIREMENTS.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 383A's) (17)

III. ANALYSIS OF EVENT

At no time throughout the event was there an actual threat to the health and safety of the public or the safety of the Plant. The reactor was at full power and all engineered safety features, with the exception of Emergency Diesel Generator "B" and HVH-2, and all normal power supplies were functioning.<sup>10</sup> The potential for a release of radioactivity did exist, however, since a direct path from containment to the discharge canal and Lake Robinson was available. Valve V6-34B receives an automatic signal to open on SI if closed; however, no automatic feature of the Plant was impaired due to its improper alignment since proper flow would have still been achieved through the valve if required to open automatically.

The Service Water discharge flow and exit temperature of each of the coolers are alarmed in the Unit No. 2 Control Room if the flow is low or if the temperature is high. The transmitters are outside of containment. In addition, the exit flow is monitored for radiation. Pressure indicators for each cooler discharge header are located in the Auxiliary Building. The misalignment of Valve Motor V6-34B had no effect on flow and temperatures through HVH-2.

Radiation Monitoring System Channel R-16 monitors the containment fan cooler Service Water discharge for radiation indicative of a leak from the containment atmosphere into the cooling water. Upon indication of alarm level cooling water activity, each heat exchanger is individually sampled to determine which unit is leaking. This sampling sequence is achieved by isolating one unit at a time from the Unit No. 2 Control Room and allotting sufficient time for sample equilibrium to be established (approximately one minute). When the leaking unit is isolated, the radiation level will decrease. The motor for valve V6-34B being misaligned may have hindered the identification of a leak in HVH-2. High radiation level alarms are annunciated on the Unit No. 2 Control Room RTGB and indicated on the Radiation Monitoring System cabinets.

The violation of Technical Specification redundancy requirements was necessary to immediately assure containment integrity prior to returning the emergency power source for HVH-3 and HVH-4 (Emergency Diesel Generator "B") to service. Plant Technical Specification 3.1 would have required that the unit be placed in Hot Shutdown within eight hours had Diesel Generator "B" not been returned to service.

<sup>10</sup> Normal power supplies EIIIS Codes: System - EL; Component - Not Available; Manufacturer - W120;

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TEXT (If more space is required, use additional NRC Form 358A's) (17)

IV. CORRECTIVE ACTION

The HVH-2 motor cooler two-inch Service Water pipe spool flange leak was repaired by replacing the flange gasket and corroded bolts. This repair corrected the breach in containment integrity. Other similar flanges were inspected, and no problems were noted. As a precautionary measure however, these flanges will be disassembled and installed with new gasket material and bolting material as necessary during the next refueling outage.

The repair of the HVH-2 outlet isolation valve, V6-34B, actuator added additional assurance to maintaining containment integrity whenever the cooling unit or its Service Water line is isolated. Following its repair, licensee Maintenance personnel inspected all other similar Service Water outlet isolation valves and found one other actuator, on V6-34C, also installed inadequately. This actuator was immediately corrected.

The CP&L response to IE Bulletin No. 80-24 stated that CP&L would notify the NRC of any Service Water leaks within containment as a degradation of containment boundary in accordance with Technical Specification 6.9.2.a(3).<sup>11,12</sup> All leaks would be evaluated and appropriate corrective action in accordance with existing Technical Specifications and procedures would be taken.

The corrective maintenance procedure will be enhanced to provide additional guidance during reassembly of the valve to ensure proper alignment between the valve and motor operator.

The follow-up notifications to the NRC, to clarify the original report regarding the correct time when containment integrity was breached and the violation of Technical Specification redundancy requirements, resulted from a lack of clear guidance regarding the reportability of these conditions. The instructions of the Plant administrative procedure governing Nuclear Regulatory Commission reporting requirements will be revised to provide this additional guidance.

<sup>11</sup>NRC IE Bulletin No. 80-24 of November 21, 1980, prevention of damage due to water leakage inside containment (October 17, 1980, Indian Point 2 Event).

<sup>12</sup>H. B. Robinson Technical Specification 6.9.2.a(3) was deleted following the CP&L response to IE Bulletin 80-24. Reporting of Service Water leaks is now required pursuant to 10CFR50.72 and 10CFR50.73.

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TEXT (If more space is required, use additional NRC Form 303A's) (17)

V. ADDITIONAL INFORMATIONPREVIOUS SIMILAR EVENTS

The following prior Licensee Event Reports have been submitted concerning potential breach of containment integrity or events involving the Containment Air Recirculation Cooling units or the associated Service Water System:

LER 84-11-01 (HVH-3) Fan Cooler Service Water Line Leak During Weld Repair

The following similar Licensee Event Reports were submitted during 1983 which involved a degradation of containment boundary due to Fan Cooler Coil Leakage resulting from corrosion of tubing. The cooling coils have since been replaced.

LER 83-27 (HVH-3)

LER 83-26 (HVH-3)

LER 83-25 (HVH-2)

LER 83-22 (HVH-2)

LER 83-14 (HVH-2)

LER 83-03 (HVH-3)



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

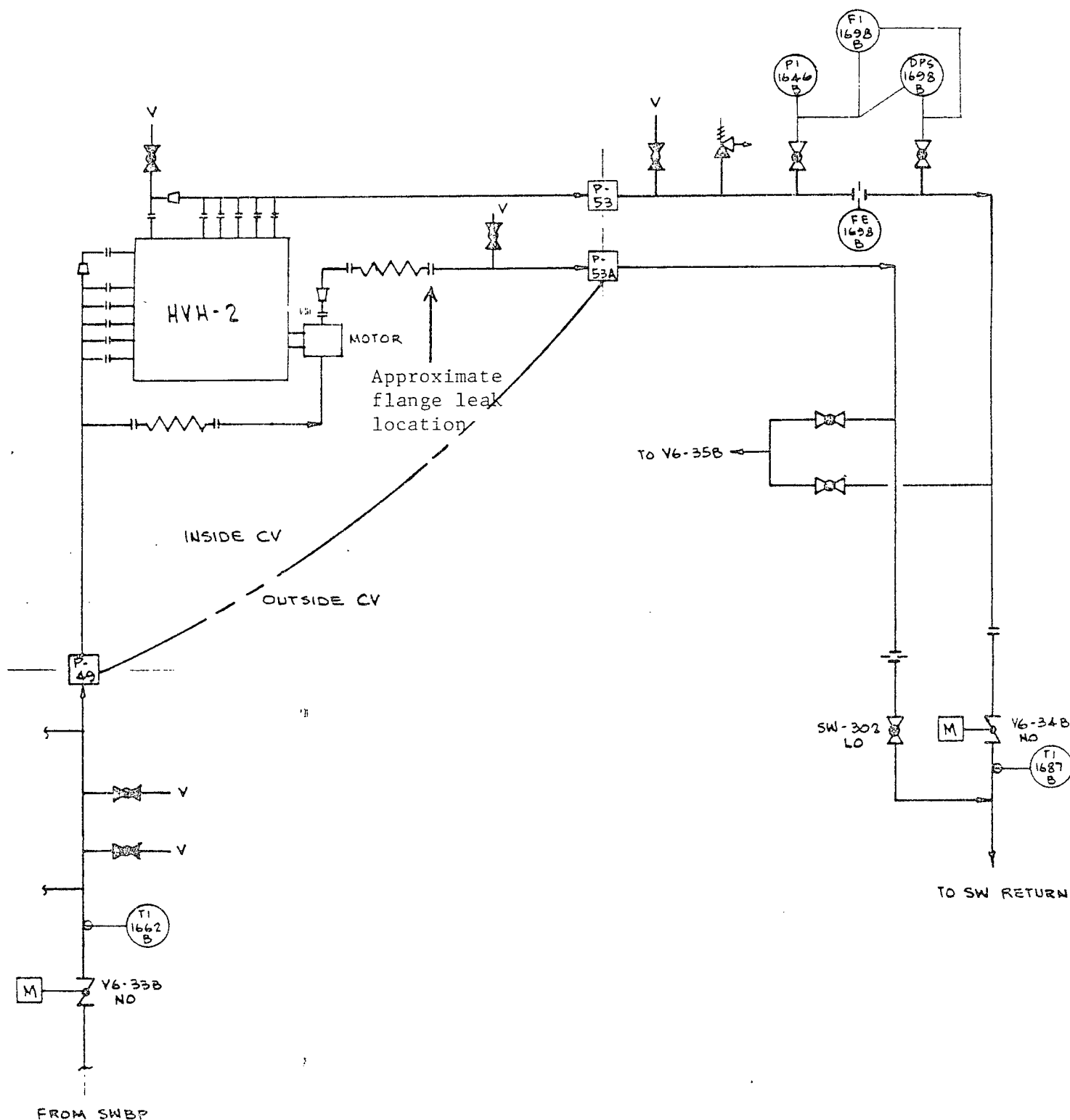
U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMS NO 3150-0104

EXPIRES: 8/31/83

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TEXT (If more space is required, use additional NRC Form 300A's) (17)



3231  
Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT  
POST OFFICE BOX 790  
HARTSVILLE, SOUTH CAROLINA 29550

DEC. 18 1987

Robinson File No: 13510C

Serial: RNP/87-6093  
(10 CFR 50.73)

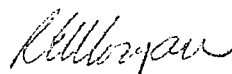
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261  
LICENSE NO. DPR-23  
LICENSEE EVENT REPORT 87-029-00

Gentlemen:

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

Very truly yours,

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

DAS:jch

Enclosure

cc: Dr. J. N. Grace  
Mr. R. Latta  
INPO

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