

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8101060689 DOC. DATE: 80/12/30 NOTARIZED: NO DOCKET #  
 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Light 05000261  
 AUTH. NAME: STARKEY, R.B. AUTHOR AFFILIATION: Carolina Power & Light Co.  
 RECIP. NAME: RECIPIENT AFFILIATION: Region 2, Atlanta, Office of the Director

SUBJECT: LER 80-030/03L-0: on 801130, 1202 & 03, pressure gauge tap pipe  
 sockolets on A, B & C lines were found leaking. Apparently  
 caused by high vibration from positive displacement charging  
 pumps. Leaks repaired.

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## NOTES:

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	ASLBP/J. HARD		1	1	AUX SYS BR 15		1	1
	CHEM ENG BR 16		1	1	CONT SYS BR 17		1	1
	CORE PERF BR 18		1	1	D/DIR, HUM FAC19		1	1
	DIR, DIV OF LIC		1	1	DIR, ENGINEER120		1	1
	DIR, HUM FAC S21		1	1	DIR, SYS INTEG22		1	1
	EFF TR SYS BR23		1	1	EQUIP QUAL BR25		1	1
	GEOSCIENCES 26		1	1	I&C SYS BR 29		1	1
	I&E 05		2	2	JORDAN, E./IE		1	1
	LIC GUID BR 30		1	1	LIC QUAL BR 31		1	1
	MATL ENG BR 32		1	1	MECH ENG BR 33		1	1
	MPA		3	3	NRC PDR 02		1	1
	OP EX EVAL BR34		3	3	OR ASSESS BR 35		1	1
	POWER SYS BR 36		1	1	RAD ASSESS BR39		1	1
	REACT SYS BR 40		1	1	REG FILE 01		1	1
	REL & RISK A 41		1	1	SFTY PRUG EVA42		1	1
	STRUCT ENG BR44		1	1	SYS INTERAC B45		1	1
EXTERNAL:	ACRS	46	16	16	LPDR 03		1	1
	NSIC	05	1	1	TERA: DOUG MAY		1	1

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7	8	LICENSEE CODE						14	15	LICENSE NUMBER										25	LICENSE TYPE					30	57	CAT 58	

CON'T

REPORT  
SOURCE

REPORT SOURCE: 0 1 7 8

DOCKET NUMBER: L 6 0 5 0 0 0 2 6 1 7 68

EVENT DATE: 1 2 0 3 8 0 74

REPORT DATE: 1 2 3 0 8 0 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | While in the cold shutdown condition on 11/30/80, a cracked and leaking weld was  
0 3 | identified on a pressure gauge tap pipe sockolet on the discharge line from "B"  
0 4 | charging pump. The same pipe sockolets on the "A" and "C" lines were found leaking on  
0 5 | 12/2/80, and on 12/3/80 the pressure gauge tap pipe sockolet on the common discharge  
0 6 | line to the regenerative heat exchanger was found leaking. This series of leaks was  
0 7 | identified as reportable per Technical Specification 6.9.2.B.4 as abnormal system  
0 8 | degradation. Since the plant was in the cold shutdown condition and the Safety  
0 8 | Injection system was operable, there was no threat to either plant or public safety.

09		SYSTEM CODE P C		11	CAUSE CODE B		12	CAUSE SUBCODE A		13	COMPONENT CODE P I P E X X					14	COMP. SUBCODE A		15	VALVE SUBCODE Z		16							
7	8	9	10		11		12	13			14	15	16	17	18	19	20												
17		LER/RO REPORT NUMBER		EVENT YEAR 8 0		21	22	SEQUENTIAL REPORT NO. 0 3 0		24	25	26	OCCURRENCE CODE /		27	REPORT TYPE L		30	31	REVISION NO. 0		32							
23		ACTION TAKEN B		18	FUTURE ACTION X		19	EFFECT ON PLANT C		20	SHUTDOWN METHOD Z		21	HOURS 0 0 0		22	ATTACHMENT SUBMITTED Y		23	NPRD-4 FORM SUB. Y		24	PRIME COMP. SUPPLIER A		25	COMPONENT MANUFACTURER 5 1 5 2		26	27
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 A preliminary evaluation revealed the apparent root cause as system design deficiencies

1 1 which allowed high vibration from the positive displacement charging pumps to cause

1 2 fatigue cracking in the pipe welds. The leaks were repaired and a safety evaluation

1 3 was completed prior to plant startup. An intense study has been initiated to

1 4 completely address the problem. Also, to ensure early detection of any future leaks,

1 5 a visual inspection of the affected portion of the charging system is being performed

1 6 each shift.

7 8 9  
FACILITY STATUS % POWER OTHER STATUS (30) METHOD OF DISCOVERY DISCOVERY DESCRIPTION (32)  
1 5 G (28) 0 0 0 (29) NA B (31) Operator Observation

ACTIVITY CONTENT  
RELEASED OF RELEASE AMOUNT OF ACTIVITY (35)  
1 6 Z (33) Z (34) NA  
LOCATION OF RELEASE (36)  
NA

PERSONNEL EXPOSURES									
NUMBER			TYPE	DESCRIPTION					
1	7	0	0	0	(37)	Z	(38)	NA	

PERSONNEL INJURIES		NUMBER		DESCRIPTION	
1	8	0	0	0	NA

7		8		9		10	
1		9		Z		(42)	
TYPE		DESCRIPTION					
						NA	

PUBLICITY  
ISSUED DESCRIPTION (45)  
2 0 N 44  
7 8 9 10 68 69 NRC USE ONLY

NAME OF PREPARER R. B. Starkey, Jr.

PHONE: (803) 383-4524

NRC USE ONLY

68 69 8

917-926

## Supplemental Information

For

Licensee Event Report 80-030

### 1. Cause Description and Analysis:

While solid in the cold shutdown condition for miscellaneous valve maintenance, four pressure gauge tap sockolets in the charging pump discharge piping were observed to have cracked and leaking welds. On 11/30/80, the sockolet on the discharge line from "B" charging pump was found to have a weld leak. On 12/2/80, the same sockolet on the "C" charging pump discharge line was observed leaking and later that day the same sockolet on the "A" charging pump discharge line was also found leaking. On 12/3/80, the pressure gauge tap sockolet on the common discharge line to the regenerative heat exchanger was found leaking. In each case, the sockolet to charging line welds experienced through wall cracks. These failures are the most recent of a series of similar failures previously viewed as maintenance problems. The near simultaneous nature of these four most recent failures prompted a review of past problems and resulted in these problems being regarded as abnormal system degradation. Therefore, this is reportable in accordance with Technical Specification Section 6.9.2.B.4.

The sockolets were removed and taken to the CP&L materials laboratory for failure analyses. These analyses revealed the failure mechanism as fatigue cracking. The root cause of the failures is attributed to a design deficiency in the system which allows the positive displacement charging pumps to cause excessive vibration in small branch piping connected to the pump discharge lines. The fatigue cracking is believed to have resulted from this excessive vibration.

Throughout the period that these leaks were being identified and repaired, the plant was solid in the cold shutdown condition and, as required by Technical Specifications, the Safety Injection System was operable. Therefore, there was no threat to either plant or public health or safety. Also, a safety evaluation was performed by an independent outside agency to address the safety concerns regarding the continued operation of the charging (CVCS) system. This evaluation concluded that the system could be operated without the creation of a "substantial safety hazard".

2. Corrective Action:

Immediate corrective action to return the system to operable status consisted of the removal and replacement of the existing sockolets.

3. Corrective Action to Prevent Further Occurrence:

In order to ensure that any future leaks are identified in a prompt manner, inspections of the affected piping are being performed each shift. Any leaks identified will be promptly repaired in accordance with applicable Technical Specification requirements.

An intense engineering study has been initiated to address the system problems. Options under consideration include the addition of pulsation dampers, the installation of additional pipe supports, and the replacement of the positive displacement charging pumps with centrifugal pumps. Until a permanent solution can be effected, the additional surveillance being performed and prompt maintenance efforts will ensure the continued safe operation of the plant.

This report constitutes an interim report. Following completion of the engineering review and identification of subsequent corrective actions and schedule for implementation, a supplemental report to this LER will be submitted.