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 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Ligh 05000261
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 RECIP. NAME RECIPIENT AFFILIATION
 Region 2, Atlanta, Office of the Director

SUBJECT: LER 80-028/01T-0; on 801127 primary sys leak was discovered caused by failure of carbon steel packing gland studs from boric acid corrosion due to erroneous installation of carbon steel studs to replace stainless steel studs.

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	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
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	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 PROG EVA42	1	1
	STRUCT ENG BR44		1	1	SYS INTERAC B45	1	1
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60	61								68	69							74	75						80

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EVENT DATE

REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

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0	2	At 1300 hours during normal plant operation, an investigation performed by plant
0	3	operators in response to a charging pump high speed alarm revealed a primary system
0	4	leak of approximately 2 gpm. A second evaluation at 1320 hours indicated an
0	5	approximate 22 gpm leak rate. This exceeds the limits allowed by Technical Specifi-
0	6	cation 3.1.5.2, and plant shutdown was initiated. The leak was subsequently identified
0	7	as a packing leak on valve CVC-311, the auxiliary pressurizer spray valve from the CVC
0	7	System. The leakage was totally contained within the plant containment; therefore,
0	8	there was no off-site release. Therefore, there was no threat to either plant or public
0	8	health and safety.

SYSTEM CODE P C 11		CAUSE CODE D 12		CAUSE SUBCODE Z 13		COMPONENT CODE V A L V E X 14				COMP. SUBCODE F 15		VALVE SUBCODE G 16					
EVENT YEAR 8 0 21 22		SEQUENTIAL REPORT NO. 0 2 8 24 26		OCCURRENCE CODE 0 1 28 29		REPORT TYPE T 30		REVISION NO. 0 32									
ACTION TAKEN A 18		FUTURE ACTION Z 19		EFFECT ON PLANT A 20		SHUTDOWN METHOD A 21		HOURS 0 1 9 8 22 37 40		ATTACHMENT SUBMITTED Y 23 41		NPRD-4 FORM SUB. Y 24 42		PRIME COMP. SUPPLIER N 25 43		COMPONENT MANUFACTURER C 6 3 5 26 44 47	

33 34 35 36

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

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1	0	The excessive leakage resulted from the failure of carbon steel packing gland studs
1	1	from boric acid corrosion. The root cause of the failure was the erroneous installation
1	2	of carbon steel studs as replacements for stainless steel studs. No record of replacement of studs on this valve has been found; therefore, it is assumed that this action
1	3	occurred during maintenance efforts prior to 1974. The degraded studs were replaced with studs of the proper (stainless steel) material. Appropriate maintenance personnel
1	4	will be instructed in the effects of boric acid on carbon steel and cautioned in the proper application of replacement materials.

80

FACILITY STATUS									% POWER						OTHER STATUS							METHOD OF DISCOVERY								DISCOVERY DESCRIPTION									
E									100						NA							A								Operator Observation									
ACTIVITY CONTENT RELEASED OF RELEASE									AMOUNT OF ACTIVITY															LOCATION OF RELEASE															
Z									Z						NA							NA																	
PERSONNEL EXPOSURES NUMBER									TYPE						DESCRIPTION																								
000									Z						NA																								
PERSONNEL INJURIES NUMBER									DESCRIPTION																														
000															NA																								
LOSS OF OR DAMAGE TO FACILITY TYPE									DESCRIPTION																														
Z															NA																								
PUBLICITY ISSUED									DESCRIPTION						NRC USE ONLY																								
N									NA																														

NRC USE ONLY

8012150229

NAME OF PREPARER

R. B. Starkey, Jr.

PHONE: (803) 383-4524

— 100 — 517-326

Supplemental Information

for

Licensee Event Report 80-28

1. Cause Description and Analysis: On November 27, 1980, at 1300 hours with the plant at 100% power, an operator investigation was initiated in response to a charging pump high speed alarm. A review of RCS make-up revealed primary leakage on the order of 2 gpm. A second determination at 1320 hours showed an approximate 22 gpm leak rate. This exceeded the limits allowed by Technical Specification Section 3.1.5.2 and, therefore, plant shutdown was initiated. The source of leakage was subsequently identified as a severe packing gland leak on CVC-311, the auxiliary pressurizer spray valve from the Chemical and Volume Control System.

The excessive packing gland leakage resulted from the failure of the packing gland studs due to boric acid corrosion. The studs were carbon steel and had become degraded to the point of failure as a result of the normal insignificant amount of packing gland leakage. Subsequent investigation revealed that the packing gland studs are required to be AISI-416 stainless steel. The results of an investigation of other Copes-Vulcan valves to determine installed stud material indicated that the improper stud installation was an apparent maintenance problem and not a generic valve vendor problem. The root cause of the failure is therefore considered to be the replacement of the packing gland studs with studs of improper material by maintenance personnel. A review of plant maintenance files failed to determine when the studs were replaced but did verify that the error occurred prior to the upgrading of the existing QA program to better conform to the 10CFR50 Appendix B criteria (November, 1974).

The valve packing gland leakage was totally contained within the Reactor Containment Building and the valve remained operable despite the leakage. Therefore, there was no threat to either plant or public health and safety.

2. Corrective Action: The valve packing gland studs were replaced with AISI-416 studs as per the manufacturer's specifications. In addition, packing gland studs were inspected to verify proper stud material on twelve other Copes-Vulcan valves. These other valves were inspected because they are either required for the safe operation of the plant or could result in a plant shutdown being required to effect a repair. In eleven of the twelve valves inspected no problems were identified; however, one of the valves was found to have one stainless and one carbon steel packing gland stud. The carbon steel stud was replaced. The review of plant files verified that this stud was also installed prior to upgrading of the plant QA program in 1974.

3. Corrective Action to Prevent Further Occurrence: The appropriate plant maintenance personnel will be instructed in the effects of boric acid on carbon steel and cautioned in the proper application of replacement materials. This training is scheduled to be completed by 1/1/81 and will be documented in the plant training records upon completion.

Since these problems apparently occurred prior to the plant QA program upgrade in 1974 and since our present inspection and repair efforts have corrected any potential leakage and/or reliability concerns and since the plant maintenance efforts have been more closely controlled by the upgraded QA program, no further corrective action is deemed necessary.