

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 7812270263 DOC. DATE: 78/12/19 NOTARIZED: NO
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 AUTH. NAME: STARKEY, R.B. AUTHOR AFFILIATION: CAROLINA POWER & LIGHT
 RECIP. NAME: RECIPIENT AFFILIATION

DOCKET #
 05000261

SUBJECT: LER#78-029/01T-0 on 781205: determined that 781128 Reactor
 Protec Sys relay failure was potential generic problem. Relay
 was stuck in energized position due to thermal
 deterioration of epoxy adhesive used in manufacture.

DISTRIBUTION CODE: A002S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 1+3
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	14 HANAUER	1	1	15 NOVAK/KNIEL	1	1
	16 EEB	1	1	17 AD FOR ENGR	1	1
	18 PLANT SYS BR	1	1	19 I&C SYS BR	1	1
	20 AD PLANT SYS	1	1	21 AD SYS/PROJ	1	1
	22 REAC SAFT BR	1	1	23 ENGR BR	1	1
	24 COLLINS	0	0	24 KREGER	1	1
	25 PWR SYS BR	1	1	26 HOUSTON	0	0
	26 VOLLMER	1	1	E JORDAN/IE	1	1
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REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 7812270257 DOC. DATE: 78/12/19 NOTARIZED: NO
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 BANKS, H. R. CAROLINA POWER & LIGHT
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 O'NEIL, J. P. **REG. 2, ATLANTA, OFF. OF THE DIRECTOR

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SUBJECT: Forwards LER#78-029/0.1T-0.

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	09 I&E	2	2	11 MPA	3	3
	14 HANAUER	1	1	15 NOVAK/KNIEL	1	1
	16 EEB	1	1	17 AD FOR ENGR	1	1
	18 PLANT SYS BR	1	1	19 I&C SYS BR	1	1
	20 AD PLANT SYS	1	1	21 AD SYS/PROJ	1	1
	22 REAC SAFT BR	1	1	23 ENGR BR	1	1
	24 COLLINS	0	0	24 KREGER	1	1
	25 PWR SYS BR	1	1	26 HOUSTON	0	0
	26 VOLLMER	1	1	E JORDAN/IE	1	1
EXTERNAL:	03 LPDR	1	1	04 NSIC	1	1
	27 ACRS	16	16			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 43 ENCL 43

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CON'T

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

7 8 9 80

8 9 10
 PUBLICITY
 ISSUED DESCRIPTION (45) 7812270263 NRC USE ONLY
 2 0 N 44 NA

7812270263

NRC USE ONLY

NAME OF PREPARER R. B. Starkey, Jr.

PHONE: (803) 332-1351

SUPPLEMENTAL INFORMATION
FOR
LICENSEE EVENT REPORT 78-29

I. CAUSE DESCRIPTION AND ANALYSIS:

At approximately 1330 hours on November 28, 1978, while conducting special relay timing tests in the Reactor Protection System, reactor trip relay Number 3, Train B, (RT-3B) was found to be stuck in the energized position. The armature would not drop out to the deenergized position when the coil, was deenergized. Deterioration, from heat, of the epoxy adhesive used during manufacture to attach the magnetic anti-stick disc, allowed the adhesive to affix itself to the end of the movable armature, sticking the armature to the armature stop post in the normally energized position.

The subject relay, RT-3B, is a Westinghouse Electric Corporation type BFD-31, style number 5069A95G03 with 125 to 130 volt DC coil, style number 1259C71G19. This and other BFD relays are used in the Reactor Protection System and most are in a normally energized mode, ie. voltage applied continuously when not in an alarm or test condition. The heat generated by normal continuous operation of the coil apparently caused a softening and resultant flow of the epoxy adhesive used to attach the magnetic anti-stick disc to the top of the armature stop post. The adhesive appeared dark brown in color rather than the original clear color. When heated inside the energized relay assembly, it became sticky to the touch. This has apparently occurred over the time period since the relay was installed new in March/April 1976. When this deteriorated adhesive flowed and affixed itself to the end of the movable armature, the armature stuck to the disc-stop post combination and would not drop out. On December 5, 1978, the Plant Nuclear Safety Committee, in review of these findings, determined this to be potentially generic in nature.

The special timing tests were being conducted on the Reactor Protection System relays as a result of findings from a special test program conducted monthly on test relays to determine the long term reliability of the BFD relay. This test program is being carried out under Periodic Test CPL-PT-19.2, in progress since April, 1978. The test program involves 20 BFD relays which were selected and removed from the Reactor Protection System. This group of 20 relays was replaced with new relays during the 1978 refueling outage and put into an isolated test program to measure actual drop times on a monthly basis. Two relays in the test program had stuck in the energized position. Subsequent bench analysis of the two relays revealed the problem with the adhesive. The plant then conducted the special timing tests to evaluate the condition of the Reactor Protection System relays. During these special tests, RT-3B was found stuck in the energized position.

II. CORRECTIVE ACTION

The defective relay was immediately replaced with a new relay when the problem was discovered. The manufacturer was notified of the problem and a manufacturer's representative examined the defective unit at the plant site on November 30, 1978. The two test program relays were thoroughly cleaned and all excess adhesive removed. The two relays were then returned to the test program to evaluate if further sticking will occur.

III. CORRECTIVE ACTION TO PREVENT FURTHER NON-COMPLIANCE

Monthly Periodic Test CPL-PT-19.0 A/B will be revised before the December monthly test is performed. The revision will include visual observation of all normally energized relays to insure drop-out during the monthly test. Newer style relays are presently offered by the manufacturer which eliminate the potential for this type failure. Purchase of these later style relays/components is planned with installation scheduled during the next refueling outage.