

TENNESSEE VALLEY AUTHORITY  
CHATTANOOGA, TENNESSEE  
37401



May 23, 1974



Mr. John F. O'Leary, Director  
Directorate of Licensing  
Office of Regulation  
U.S. Atomic Energy Commission  
Washington, DC 20545

Dear Mr. O'Leary:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -  
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - ABNORMAL  
OCCURRENCE REPORT BFAO-7429W

The enclosed report is to provide details concerning an armature spring which disconnected on a relay in the residual heat removal system shut-down cooling isolation valve logic and is submitted in accordance with Appendix A to Regulatory Guide 1.16, Revision 1, October 1973. This event occurred on Browns Ferry Nuclear Plant unit 1 on May 13, 1974.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

E. F. Thomas  
Director of Power Production

Enclosure

CC (Enclosure):

Mr. Norman C. Moseley, Director  
Region II Regulatory Operations Office, USAEC  
230 Peachtree Street, NW., Suite 818  
Atlanta, Georgia 30303

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## ABNORMAL OCCURRENCE REPORT

Report No.: BFAO-7429W  
Report Date: May 23, 1974  
Occurrence Date: May 13, 1974  
Facility: Browns Ferry Nuclear Plant unit 1

### Identification of Occurrence

Armature spring disconnected on a relay in the residual heat removal system shutdown cooling isolation valve logic.

### Conditions Prior to Occurrence

The reactor was in the cold shutdown condition.

### Description of Occurrence

At 8:19 a.m. while conducting a routine surveillance test, RHR isolation valves FCV 74-47, shutdown cooling suction isolation valve, and FCV 74-77, shutdown cooling head spray isolation valve, isolated the RHR shutdown cooling mode and tripped the RHR pumps.

### Designation of Apparent Cause of Occurrence

Both valves are isolated by relay 10A-K98B. The relay armature tensioning spring which holds the relay in its deenergized position was found disconnected. The surveillance test requires that four contacts on the relay be inhibited. While attempting to place the inhibits on the contacts, the relay armature, without the tensioning spring to hold it out, was inadvertently pushed in making up contacts to close the valves.

### Analysis of Occurrence

The disconnected tensioning spring allowed the relay armature to go to its energized position when the armature was touched. The contacts momentarily made up, closed the valves, and tripped the RHR pumps. This isolation did not affect the LPCI mode of RHR, and it would have been available if needed.

### Corrective Action

The spring was reconnected to the armature and the relay satisfactorily tested. The RHR system was placed back in the shutdown cooling mode. The surveillance was completed and the relay functioned properly.

An inspection of all similar relays in use on critical systems was conducted. Two other relays were found with the spring disconnected and were repaired. One relay was in the load shedding logic for the recirculation pump M-G set oil pumps and the control bay vent fans. The other was in the starting logic for diesel generator "D." Neither of these cases would have prevented the logic circuit from performing its intended safety function.

Failure Data

Two General Electric Company type HFA relays, model 12HFA51A41F, 250V dc  
One General Electric Company type HFA relay, model 12HFA51A41H, 250V dc

The disconnected springs are believed caused by a maintenance or installation error rather than any weakness of the relay.