

TENNESSEE VALLEY AUTHORITY  
CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

JUL 27 1981

July 23, 1981



Mr. James P. O'Reilly, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Region II - Suite 3100  
101 Marietta Street  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 80-25 - RII:JPO 50-259,  
-260, -296 - BROWNS FERRY NUCLEAR PLANT

In response to the subject bulletin, enclosed is a summary of testing performed on Browns Ferry units 1 and 2 safety/relief valves. A summary of unit 3 testing will be provided following completion of this testing during the fall 1981 unit 3 refueling outage. If you have any questions concerning this matter, please get in touch with Jim Domer at FTS 857-2014.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

A handwritten signature in cursive script, appearing to read "L. M. Mills".

L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

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OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 80-25  
BROWNS FERRY NUCLEAR PLANT  
(DOCKET NOS. 50-259, -260, -296)

Unit 1

Seven valves were tested before shutting down for a scheduled refueling outage. All but one of these valves actuated properly. Valve 1-31, Serial No. 1072, failed to operate properly by solenoid actuation. In accordance with Bulletin 80-25, we undertook a systematic evaluation to determine, understand, and correct the malfunction.

A check was made to verify circuit continuity, and the results showed no loss of continuity. Voltage to the solenoid was read at 250 volts dc upon remote actuation of the solenoid from the control room. A check of the circuit resistance resulted in a reading of 1,550 ohms. This is within the acceptable range of 1,520-1,680 ohms for coil resistance on the solenoid. It was noted that the conduit line to the valve had broken off, but there was no evidence of damage to the wiring.

The next step was to remove the solenoid delicately and hand carry it to a test bench. Testing was performed on the bench as provided in the Target Rock Technical Manual for Model 7567F. Results showed no operability problems on the solenoid. Solenoid identification is Target Rock Model Number 1/2 SMS-A-01, Serial No. 263.

Finally, the solenoid was disassembled and inspected for excessive **Loctite** by knowledgeable engineering and quality assurance personnel. The inspection did show an excessive **Loctite** condition. There was **Loctite** evident on the inside diameter of the bonnet tube and on the plunger at the same radial location. Photographs showing these locations are available at the plant for NRC review. The **Loctite** was hardened and a

raised-face condition existed on the bonnet tube ID. Subsequently, the solenoid was reassembled and lined up as it was disassembled, with the Loctite remaining as it was found.

The solenoid was then taken to Wyle Laboratories in Huntsville, Alabama, to be placed back on MSRV Serial No. 1072 and heated up to test temperature with the valve. No operability problem was evident when the solenoid actuation was performed. Target Rock employees also disassembled and inspected the solenoid valve at Wyle following the steam test actuation. They informed us that there was evidence of excessive Loctite around the core tube and plunger.

Therefore, we have concluded that the excessive Loctite condition in the solenoid was the probable cause of the failure of MSRV Serial No. 1072 to actuate. Evidence indicates conditions occurred which allowed the Loctite to flow and harden at the point it was found, thus binding the movement of the plunger inside the bonnet tube. This condition appears to be similar to the conditions reported by your staff in IE Bulletin 80-25. This binding could have been broken loose during removal of the solenoid from the valve, thereby explaining the operability of the solenoid in the tests. Recurrence control of this type problem has been addressed in our initial response to IE Bulletin 80-25.

#### Unit 2

Three valves were tested before shutting down for a scheduled outage. All valves actuated properly. No further testing or investigation is planned.