

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

September 21, 1979

Director of Nuclear Reactor Regulation  
Attention: Mr. Brian K. Grimes  
Acting Assistant Director for  
Systems Engineering  
Division of Operating Reactors  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

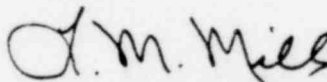
Dear Mr. Grimes:

In the Matter of the	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

This is in response to your letter to All Boiling Water Reactor Licensees dated July 16, 1979. Enclosed is the additional information requested by the above letter for Browns Ferry Nuclear Plant concerning Target Rock safety-relief valves. If you have any further questions, please get in touch with us.

Very truly yours

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

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ENCLOSURE

RESPONSE TO NRC REQUEST FOR INFORMATION  
CONCERNING TARGET ROCK SAFETY/RELIEF VALVES FOR  
BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3

Discussions concerning Target Rock safety-relief valve operation, modification and/or maintenance, and testing of the valve assembly should be separated into its two major components--the base (topworks) and body. The reason is that TVA is in the process of replacing the original three-stage valve with the redesigned two-stage valve. To accomplish this, TVA is purchasing the two-stage base assembly with additional valve "mains" (main valve internal parts such as main guide, main disc, main piston, piston ring, etc.) to modify the existing three-stage bodies to two-stage bodies. This will also provide the option, if necessary, to use any body to assemble (using the appropriate internals and base) either a three-stage or two-stage valve. TVA's response to the specific NRC questions in light of the above is presented below.

Question 1 - What is the status of each of the Target Rock safety/relief valves at your plant(s);

a. Are they in their original design configuration?

None of the three-stage base assemblies or any of the original valve bodies are in their original design configuration.

b. What is the existing simmer margin?

The existing simmer margin of the three-stage valve assemblies is equal to the operating pressure (approximately 900 psig) minus the valve set pressures (1,105; 1,115; and 1,125 psig).

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- c. What modifications have you implemented to improve reliability?
1. Three-stage modifications
    - a. Replaced the air operator diaphragm with an improved air operator diaphragm.
    - b. Replaced second-stage disc and second-stage insert.
    - c. Incorporated a double-locknut with lock tab on the second-stage disc.
    - d. Increased set pressures from 1,080, 1,090, and 1,100 to 1,105, 1,115, and 1,125 psig, respectively (which increased the simmer margins).
    - e. Increased throat diameter to 5.125 inches.
  2. Two-stage modifications
    - a. Increased orifice diameter of the orifice plate from 0.290 inch to 0.392 inch.
    - b. Changed seat angle on pilot disc from a nominal 60° included angle to a nominal 75° included angle.
- d. On what date were these modifications made?

The modifications were accomplished from 1975 through 1979 as the modifications were identified, parts became available, and outage time could be scheduled.

Question 2 - What maintenance and testing do you routinely perform on these valves and how often is it performed?

Once every operating cycle, the valves removed from the unit being refueled are disassembled; the main valve internals are inspected; and the base is nitrogen-tested, disassembled, refurbished, and steam-tested for set pressure verification and pilot leakage determination. These valves are then stored for placement on the next unit to be refueled or reinstalled on the unit before startup.

Question 3 - What additional modifications and/or maintenance do you plan to implement in the future?

TVA has requested that the General Electric Company investigate modifications which would alleviate two problem areas:

- a. Steam leakage of the base-to-body flange--the size of the gasket needs to be increased in order to provide a greater pressure retaining capability.
- b. Galling of the pilot assembly during maintenance--the tolerances need increasing in the applicable areas to reduce the possibility of galling during maintenance.

Question 4 - On what date will the modification(s) and/or maintenance in item 3 be implemented?

The two modifications addressed in item 3 are maintenance oriented and do not affect the operability of the valve. Therefore, no specific date is available for implementation.