

TENNESSEE VALLEY AUTHORITY REGION II

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

December 29, 1981

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SQRD-50-328/81-35

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:

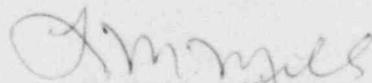
SEQUOYAH NUCLEAR PLANT UNIT 2 - PORV OPERATING TIME - SQRD-50-328/81-35  
- REVISED FINAL REPORT, FINAL SUPPLEMENT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on April 24, 1981 in accordance with 10 CFR 50.55(e) as NCR SQN NEB 8122. An interim report was submitted on May 26, 1981, and our final report was submitted on June 15, 1981. In accordance with discussions with R. V. Crlenjak, a supplement to the final report was submitted on September 8, 1981. This report constitutes an additional supplement and our final submittal. We consider 10 CFR 21 applicable to this deficiency.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

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



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## ENCLOSURE

SEQUOYAH NUCLEAR PLANT UNIT 2  
PORV OPERATING TIME  
SQRD-50-328/81-35  
10 CFR 50.55(e)  
REVISED FINAL REPORT, FINAL SUPPLEMENT

### Description of Deficiency

The operational time requirement for the pressurizer PORV (manufactured by Copes-Vulcan) is 2 seconds maximum. The PORV's are being used as the pressure relieving devices in the RCS low temperature Overpressurization Mitigation System (OMS). The operating time of the PORV's at normal system pressure meets the design requirement of 2 seconds. As the system pressure decreases to 500 lb/in<sup>2</sup>, the operating time of the PORV's increases to between 5 and 6 seconds. This operating time for low pressures is unacceptable because the Westinghouse cold overpressurization setpoint analysis assumed an operating time of 2 seconds as stated in the FSAR (section 5.2.2.4.2). The reason for the increased operating time is that, as system pressure decreases, less system force is being exerted on the valve plug which assists the operator to open the valve. The present air supply to the valve operator is insufficient to open the valve in the required time.

The PORV's at Sequoyah unit 1 are Masoneilan valves and the PORV's at Watts Bar units 1 and 2 are Fisher valves. Therefore, this condition applies only to Sequoyah unit 2.

### Safety Implications

Had this condition remained uncorrected, the cold overpressurization system would not operate as assumed in the Sequoyah FSAR. The cold overpressurization system could not have adequately mitigated the effects of all low temperature overpressure transients. Events could have occurred where the 10CFR50 Appendix G reactor vessel nil ductility transition temperature (NDT) limits could have been exceeded. Such events could have occurred only when the plant was in a water solid cold shutdown condition.

### Corrective Action

The air supply to the valve operator was increased by replacing the 1/2-inch tubing air supply line from the air headers to the PORV's with a 1-inch air supply line. (Note: The 1/2-inch tubing was previously reported as a 3/8-inch line.) This change was approved by Westinghouse.

As stated in the second paragraph of our Corrective Action in Interim Report 3, the valve was retested and the results were evaluated by Westinghouse. The valve operating time of 2.8 seconds was not sufficient to mitigate the overpressure transients of inadvertently starting a safety injection pump or two centrifugal charging pumps.

In Interim Report 3, TVA requested to delay full implementation of the RCS low temperature overpressure protection system until the first unit 2 refueling outage. The Sequoyah Nuclear Plant unit 2 operating license item 2.C.(7) granted the delay.

For a valve operating time of 2.8 seconds, valve opening setpoints were determined which could mitigate the overpressure transients from the inadvertent operation of one centrifugal charging pump. TVA will provide administrative controls to preclude overpressure transients in general operating instruction (GOI)-3 which will prevent the occurrence of those events that the system cannot adequately mitigate. TVA will also revise the Final Safety Analysis Report (FSAR), section 5.2.2.4.2 to address the changes in the RCS low temperature overpressure mitigating system. With the administrative controls and FSAR change, the deficiency will be corrected.