TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

APR 3 1978

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 1217
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNIT 1 - REPORTABLE DEFICIENCY - MAIN STEAM ISOLATION VALVES - POSSIBLE SCORING OF VALVE BODY BORE - NCR 302-1

The subject deficiency was initially reported to NRC-OIE Inspector L. E. Foster on December 2, 1977. Enclosed is our final report on this deficiency.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Enclosure
cc: Dr. Ernst Volgenau, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 1
REPORTABLE DEFICIENCY
MAIN STEAM ISOLATION VALVES
POSSIBLE SCORING OF VALVE BODY BORE

NCR-302-1

Description of Condition

Scoring was found to exist in the main steam isolation valve body cylinder bores. Scoring was first discovered by Atwood and Morrill (A&M) of Salem, Massachusetts, on MSIV 6-13827 (Bellefonte unit 2). This valve had been disassembled to replace a seal ring that had not passed the seat leakage test conducted at their plant. Subsequently MSIV 5-13827 (Bellefonte unit 2) was also inspected and it too had scoring in the body cylinder bore. The scoring on MSIV 6-13827 consisted of a vertical groove approximately 1/16" to 1/8" wide and 15-20 mils deep running the full length of the valve stroke. Because of the nature of the deficiency, it was A&M's opinion that scoring may be present in the four MSIV's manufactured by A&M for Watts Bar Nuclear Plant unit 1 (MSIV 1-13824, 2-13824, 3-13824, and 4-13824).

For TVA valves, the seal blowdown (leakage) test and the valve operational tests, which are conducted using dry nitrogen, were run before the hydrostatic tests. This means the valves were cycled 10 to 15 times without benefit of water lubrication. The reason for this "out-of-sequence" production testing was that A&M wanted an early indication of whether the seal ring would pass the stringent TVA leakage requirements. A&M disassembled and inspected five other non-TVA PWR MSIV's of similar design for indications of this deficiency. These valves were cycled after their hydrostatic tests. None had evidence of scoring on the body bore area. This information, in addition to the procedures for testing the TVA valves, indicates the scoring was caused by lack of water lubrication during cycling.

Safety Implication

The deficiency, had it gone uncorrected, would have not represented a problem of sufficient magnitude to impair the functioning of the valve at any time. The bore scorings were slight and did not represent significant damage to the bore surface. Once placed in operation, water lubrication would be available and no more scoring of the valves would occur. Therefore the deficiency would not provide a hazard to the safety of the plant at any time during its lifetime.

Corrective Action

A&M contacted TVA and requested that the valves be shipped backed to their plant for inspection. Upon receipt of the four Watts Bar valves at their Massachusetts plant, A&M disassembled and fully inspected them. TVA inspectors were present during the disassembly and inspection. Of the four valves, two (MSIV 2-13824 and 4-13824) were found to have valve body scoring. The remaining two (MSIV 1-13824 and 3-13824) were not scored. The two scored valves were repaired by hand blending. All four were then reassembled, wet down, cycled, and disassembled again for reinspection. This reinspection revealed no evidence of scoring. The two repaired valves were reassembled and hydrostatically retested. The remaining two valves were reassembled without hydrostatic retest. All four valves were leaked tested again before shipment back to WBNP.

The same repair procedures were used to repair the scored TVA valves that had not yet been released from the A&M plant.

In the future all TVA valves will have hydrostatic tests first, followed by the operational blowdown tests.