

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

84 DEC 10 P 1: 27 December 5, 1984

WBRD-50-390/84-45, BLRD-50-438/84-56
WBRD-50-391/84-40, BLRD-50-439/84-52

U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

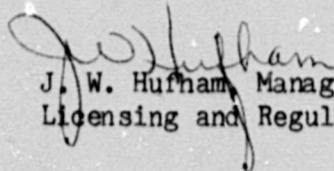
WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2 - G. H. BETTIS VALVE
ACTUATOR PROBLEMS - WBRD-50-390/84-45, WBRD-50-391/84-40, BLRD-50-438/84-56, AND
BLRD-50-439/84-52 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on September 17, 1984 in accordance with 10 CFR 50.55(e) as
NCR WBN MEB 8434. Our first interim report was submitted on October 17, 1984.
On November 26, 1984, NRC-OIE Inspector P. E. Fredrickson was notified that NCRs
WBN MEB 8435 and BLN MEB 8408 (BLRD-50-438,439/84-56,52) would be combined with
NCR WBN MEB 8434. Enclosed is our combined final report for the stated NCRs.
We consider 10 CFR Part 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


J. W. Hufham, Manager
Licensing and Regulations

Enclosure

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

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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ENCLOSURE

WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2

G. H. BETTIS VALVE ACTUATOR PROBLEMS

NCRs WBN MEB 8434, WBN MEB 8435, AND BLN MEB 8408

WBRD-50-390/84-45, WBRD-50-391/84-40,

BLRD-50-438/84-56, AND BLRD-50-439/84-52

10 CFR 50.55(e)

FINAL REPORT

Description of Deficiency

The G. H. Bettis Company (Bettis), Houston, Texas, issued a 10 CFR 21 report (No. CAR0023) to the NRC on February 13, 1984, based on Bettis' laboratory testing of a series of nuclear qualified actuators ("N" series). The results of these tests indicated that there existed a potential degradation of actuator stroking times from the times arrived at in testing and during original manufacture. The reason for this potential degradation of actuator performance was traced to the combination of seals and grease used in the original manufacture of "N" series actuators. Specifically, ethylene propylene (EP) seals were used which absorbed hydrocarbons from MOBIL 28 grease causing them to swell. Seal swell increased the time required to initialize stroke.

The Bettis actuators identified as having the potential of stroking speeds greater than 15 seconds are the NCB series, NT310-SR4 and 5, and NT312-SR5 actuators. The 15-second stroking time was selected as representative of customer specifications submitted for safety-related pneumatic valve actuators.

The Henry Pratt Company, Aurora, Illinois, notified TVA in their letter dated March 8, 1984, that some valves supplied by them to TVA for the Hartsville Nuclear Plant (HTN) were furnished with Bettis actuators which may be affected. TVA subsequently identified that some of those valves supplied for HTN were transferred to Watts Bar Nuclear Plant (WBN). Of those transferred valves, 12 were identified as being affected by the subject deficiency and requiring rework. These valves were documented in TVA nonconformance report (NCR) WBN MEB 8434.

Additional investigation by TVA revealed that the deficient Bettis actuators were also supplied on safety-related dampers at WBN. Forty-two affected dampers were identified for use in the heating, ventilating, and air-conditioning (HVAC) and emergency gas treatment (EGT) systems at WBN. These dampers were documented in NCR WBN MEB 8435.

TVA also identified one Bettis actuator installed in the postaccident sampling facility (PASF) ventilation system at Bellefonte Nuclear Plant (BLN). NCR BLN MEB 8408 (BLRD-50-438/84-56 AND BLRD-50-439/84-52) was issued to document this condition.

Safety Implications

The subject condition could prevent an affected safety-related system from functioning as designed when time is a critical factor. Additionally, the subject condition could possibly impair the actuator's ability to open or close an affected valve at all. This could result in the loss of a safety-related system function and, subsequently, could adversely affect the safe operation of the plant.

Corrective Action

Bettis has determined that Dow Corning Molykote 44 grease is compatible with the original actuator design using EP seals. Accordingly, the deficient actuators will be repaired by removing the existing Mobil 28 grease, cleaning the actuators, replacing the affected seals with new ones, and installing fresh Dow Corning Molykote 44 grease. Operability of the operators will be verified after repairs are made. Details for each NCR are as follows.

NCR WBN MEB 8434

TVA has contracted with Bettis to furnish actuator repair kits at no cost to TVA. The contract calls for Bettis to supply all O-rings, seals, asbestos gaskets, washers, Molykote 44 grease, and repair manuals. TVA field personnel will perform all necessary repairs per the Bettis repair manual. This will assure that the nuclear qualification of the actuators to Bettis test reports will not be invalidated. All field repairs will be completed before installation. All work will be completed by February 3, 1985.

NCR WBN MEB 8435

All necessary repairs to Bettis actuators used on safety-related dampers at WBN will be made under the warranty terms of the original contract with Ruskin Manufacturing Company. Ruskin personnel will perform the repairs at the WBN site. All corrective actions will be completed by February 3, 1985.

NCR BLN MEB 8408

The repairs to the affected Bettis actuator at BLN will be performed by TVA field personnel. Materials to accomplish this repair will be furnished by Bettis. All corrective actions will be completed by October 1, 1985.

The aforementioned corrective actions are sufficient to prevent recurrence of this problem. TVA will take no further actions to prevent recurrence.