400 Chestnut Street Tower II

June 18, 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:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - IMPROPER INSTALLATION OF BELLOWS-TYPE PENETRATIONS - NCR'S 2512, 2742, 2853, 2935, AND 2936 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector M. Thomas on November 19, 1980 in accordance with 10 CFR 50.55(e). Interim reports were submitted on December 19, 1980, February 20, 1981, and April 27, 1981. Enclosed is our final report.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

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

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
IMPROPER INSTALLATION OF BELLOWS-TYPE PENETRATIONS
NCR'S 2512, 2742, 2853, 2935, AND 2936
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Several bellows-type containment penetrations in Watts Bar Nuclear Plant have been found to be improperly installed. The bellows alignment does not agree with the design installation tolerances. The bellows were manufactured by Tube Turns Company but were installed by TVA.

Safety Implications

The misalignment of the bellows could cause the penetrations to fail because of maximum design basis loadings. A failure of this type could be a breach of containment, which could adversely affect the safe operation of the plant.

Corrective Action

Field misalignment measurements for a number of penetrations for Watts Bar Nuclear Plant were made by TVA employees. These were submitted to Tube Turns for analysis. The analysis has been made, and the misalignment movements superimposed on maximum operational movements (which result from maximum design basis loadings) as provided by TVA.

Based on the above, the following penetration bellows are capable of absorbing the maximum operational movement superimposed on the misalignment.

Unit 1

x-8B; x-12A; x-12D; x-13A; x-13B; x-13C; x-13D; X-17; x-20A; x-22; x-24; x-32; x-47B; x-109; K-16; and K-17

Unit 2

x-12A; x-12B; x-12C; x-12D; x-13B; x-13C; x-13D; x-14C; x-15; x-21; x-22; x-24; x-32; x-47

The following penetration bellows would be somewhat overtransversed if exposed to maximum operational movement superimposed on misalignment, and shall be inspected after each such exposure, and replaced if permanently distorted.

Unit 1

x-8A; x-20B; x-33; x-46; x-107; x-108

Unit 2

x-8C; x-17; x-20A; x-20B; x-33; x-47B; x-107; x-108; x-109

The following penetration bellows would be grossly overtransversed if exposed to maximum operational movement superimposed on misalignment and will be realigned before integrated containment leak rate testing.

Unit 1

K-14; K-15

Unit 2

X-8B; K-14; K-15; K-16; K-17

Dimensions "A" and "B" required for realignment are as shown below:

Unit 1

Penetration No.	"A" and "B"
K-14; K-15	1-1/2 min; 3" max
K-16	2-7/8 min; 3-9/16 max

Unit 2

Penetration No.	
x-8B	3-13/16 min; 4-1/2 max
K-14; K-15	2-1/2 mn; 3" max
K-16; K-17	207/8 min; 3-9/16 max

TVA has confirmed the above analysis and determined that the corrective actions are sufficient for the disposition of this item.