TENNESSEE VALLEY AUTHORITY

5N 157B Lookout Place

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April 4, 1986

BLRD-50-438/84-09
BLRD-50-439/84-08

U.S. Nuclear Regulatory Commission
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - INSULATION WEIGHTS ASSUMED IN ANALYSES FOR VALVES AND PIPE FITTINGS - BLRD-50-438/84-09, BLRD-50-439/84-08 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector P. E. Fredrickson on January 23, 1984 in accordance with 10 CFR 50.55(e) as NCR BLN CEB 8401. Our interim reports were submitted on February 16 and April 15, 1985. Enclosed is our final report.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley

R. L. Gridley
Manager of Licensing

Enclosure
cc: Mr. James Taylor, 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

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
INSULATION WEIGHTS ASSUMED IN ANALYSES FOR VALVES AND PIPE FITTINGS
BLRD-50-438/84-09 AND BLRD-50-439/84-08
NCR BLN CEB 8401
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

TVA's Civil Engineering Branch (CEB) Engineering Procedure (EP) 21.12, revision 2, Table 5.4-5, and Bellefonte Engineering Project (BLEP) drawing 3BT0001-00-01 list valve and pipe fitting adjustment factors for insulation weight calculations. These adjustment factors take the fitting or valve length and diameter into consideration. The factor is multiplied by the weight per foot of pipe insulation to yield an insulation weight value per valve or fitting. The analysts used these factors and assumed the results were a weight per foot value which was to be converted to a weight value in the analyses -- creating some unconservative results. The deficiency does not constitute a generic condition for other Bellefonte work or that of other TVA plants.

The cause of this deficiency is that analysts were not aware of the units for the calculated results (the dimension-units of the weight adjustment factors were not supplied in the Bellefonte Analysis Handbook). Therefore, the analysts erroneously assumed that the calculated result units were pounds per foot.

Safety Implications

The use of nonconservative analyses in the design of seismic piping supports could result in inadequate support designs and installations. Therefore, if this condition had remained uncorrected, the safe operation of the plant could have been adversely affected.

Corrective Action

All analysis problems have been reviewed and those deficient in units of weight for insulation have been identified. Action is currently underway to track and correct the deficient problems involved. All affected piping systems will be reanalyzed. Piping supports will be redesigned and reworked as required. All action to correct the deficient condition for units 1 and 2 will be complete six months before fuel loading of the respective unit.

The Bellefonte rigorous piping analysis verification checklist, BLN-RAH-401, was issued on March 5, 1984, and included the requirement to check the application of the insulation weight adjustment factor(s). Additional instructions will be provided in a policy statement to the BLN Rigorous Analysis Handbook by April 1, 1986, to ensure that the analyst is aware of the results that must be obtained by applying the adjustment factor(s). This will complete the action required to prevent recurrence.