

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

1630 Chestnut Street Tower II

85 SEP 18 9:41  
September 11, 1985

BLRD-50-438/84-39

BLRD-50-439/84-36

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 PLANTS UNITS 1 AND 2 - OMISSION OF WATER WEIGHT IN  
VALVES IN PIPING ANALYSIS BY TELEDYNE - BLRD-50-438/84-39,  
BLRD-50-439/84-36 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
P. E. Fredrickson on June 7, 1984 in accordance with 10 CFR 50.55(e)  
as NCR BLN CEB 8408. This was followed by our interim reports dated  
July 6, 1984 and July 10, 1985. Enclosed is our final report which concludes  
that TVA no longer considers this item reportable under 10 CFR 50.55(e).

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*J. A. Hufham*  
J. W. Hufham, Manager  
Licensing and Risk Protection

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

## ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2  
OMISSION OF WATER WEIGHT IN VALVES IN PIPING ANALYSIS BY TELEDYNE  
BLRD-50-438/84-39, BLRD-50-439/84-36  
NCR BLN CEB 8408  
10 CFR 50.55(e)  
FINAL REPORT

### Description of Deficiency

In performing rigorous piping analysis on some valves in the component cooling system, Teledyne Engineering Company (TEC), Waltham, Massachusetts, did not consider water weight inside the valves. This means that the results of the analysis are potentially unconservative for support loads, nozzles, and stress values. The cause of this deficiency may be attributed to the failure by TEC analysts to implement TVA analysis procedures.

One common table of valve/flange data (which did not account for the weight of the water inside the valve) was prepared to be used in a number of component cooling system problems. All of the affected piping analysis problems are listed below:

N4-1KC-P	N4-2KC-P	N4-2KC-G	N4-0KC-K	N4-2KC-H	N4-2KC-N
N4-1KC-M	N4-2KC-M	N4-1KC-G	N4-0KC-H	N4-1KC-N	

### Safety Implications

The analyses affected by the NCR were reviewed to ascertain whether the omission of the valve water weight would significantly affect the support design loads, nozzle load qualifications, stress limit qualifications or valve acceleration limit qualifications for the piping system. As a result of this review, it was concluded that the subject nonconformance would not have significantly affected any of the above-mentioned system qualifications. All analyses containing this nonconformance have been reanalyzed for other reasons and no longer have the condition of omitted water weight for the valves.

Since there was no significant degradation of any of the affected support designs, nozzle loads, or piping analyses, TVA concludes that no nonconforming condition exists, and therefore, no longer considers this condition reportable under 10 CFR 50.55(e).

Although TVA has determined that this item is no longer reportable under 10 CFR 50.55(e), TVA has taken steps to ensure that the problem does not recur.

The action required to prevent recurrence is to ensure that contractor analyses/checkers are trained and familiar with existing TVA analysis procedures. This was accomplished via documented training sessions for all current analysis contractors. To further ensure that all new piping analysts in the future are cognizant of the requirement to include the water weight of valves in the analysis model several references are made to this requirement in the indoctrination program for analysts.

These references are as follows:

Bellefonte Rigorous Analysis Handbook

BLN-RAH-204, paragraph 2.5.3:

"Total valve weight should include valve body weight, water or other pipe contents . . . ."

BLN-RAH-210:

Standard analysis input forms for the EN DES calculation includes a required Valve/Flange Data Table which includes the column heading, "Fluid Weight."

Civil Engineering Branch Engineering Procedures

CEB-EP 21.12 (revision 3), paragraph 7.2:

". . . apply the weight of the valve as a uniformly distributed load (weight of valve including contents, insulation, etc., . . . ."