TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

April 25, 1983

BLRD-50-438/82-05
BLRD-50-439/82-05

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, NW
Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - SEISMIC SUPPORT LUGS ON 2-INCH OR LESS STAINLESS STEEL PIPE - BLRD-50-438/82-05, BLRD-50-439/82-05 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on December 25, 1981 in accordance with 10 CFR 50.55(e) as NCR 1690. This was followed by our interim reports dated January 21, March 23, May 18, August 12, and November 16, 1982. Enclosed is our final report. TVA does not now consider the subject nonconforming condition adverse to the safe operation of the plant. Therefore, we will amend our records to delete the subject nonconformance as a 10 CFR 50.55(e) item.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

for L. M. Mills, Manager
Nuclear Licensing

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

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As a result of these findings, TVA has modified the design and has changed the fabrication techniques to reduce the amount of welding and heat input required to install the lugs. This includes:

a. Drawings 3GB0053-00-23A, 3GB0062-00-01, and 3GB006G-00-01 have been modified to allow shims to obtain close tolerances required by the design. This will minimize rewelding required to meet drawing tolerance.

b. Welders have been instructed to deposit welds which meet the design requirements with a minimum of overwelding utilizing procedures which minimize heat input.

Therefore, there are no safety implications to Bellefonte, and TVA no longer considers this item to be reportable under 10 CFR 50.55(e).

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
SEISMIC SUPPORT LUGS ON 2-INCH OR LESS STAINLESS STEEL PIPE
NCR 1690
BLRD-50-438/82-05, BLRD-50-439/82-05
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Because of the relatively large amount of weld required for lug attachment, it was suspected that stainless steel pipe (2-inch diameter and less) in the areas where lugs are attached may not meet ASME Section III Code NB-, NC-, and ND-4200 ovality tolerances and may have exhibited burn-through, oxidation, or excessive sensitization.

Safety Implications

A large number of mockups were fabricated by TVA's Division of Construction (CONST). Original mockups were overly conservative in that they did not consider the effects of end constraint. A second set was fabricated by CONST to simulate the field conditions regarding attachment lugs. These have been evaluated with the following results:

1. The condition will have no effect on the validity of the piping support analysis as ASME Code requirements governing pipe ovality and wall thickness are not compromised.

2. There was some area constriction of flow created as a result of weld shrinkage surrounding the lugs, from a minimum of 6 percent in one case to a maximum of 10 percent in the initial set of mockups. For the second set, area constriction was greater. In this case, it varied from 10 to 24 percent. This condition has been evaluated and system operability will not be compromised.

3. The metallurgical studies on lug support mockups are complete on all pipe sizes and have shown that there is no sugaring (excessive oxidation) and that the observed burn-through is sound weld. Sensitization evaluations have shown that on the internal diameter (ID) the heat affected zone (HAZs) of the lug support mockups are less sensitized than HAZs of butt weld mockups typical of plant construction practices.

Furthermore, the sensitization occurring in actual plant welds is not excessive and pipe welds made using previously existing or subsequently modified procedures are acceptable for use.