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SUBJECT: Interim deficiency rept re inadequate design calculations for pipe rupture mitigation devices. Initially reported on 870716. Final rept will be submitted one year before fuel load.

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TENNESSEE VALLEY AUTHORITY

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AUG 17 1987

BLRD-50-438/87-06
BLRD-50-439/87-05

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
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Gentlemen:

BELLEFONTE NUCLEAR PLANT (BLN) UNITS 1 AND 2 - INADEQUATE DESIGN CALCULATIONS
FOR PIPE RUPTURE MITIGATION DEVICES - BLRD-50-438/87-06 AND BLRD-50-439/87-05
- INTERIM REPORT

The subject deficiency was initially reported to NRC-Region II Inspector
Gordon Hunegs on July 16, 1987, in accordance with 10 CFR 50.55(e) as
CAQR BLF870090. Enclosed is our interim report. We expect to submit our
final report on or about one year before fuel load. We do not consider
10 CFR 21 applicable to CAQR BLF870090.

If there are any questions, please telephone D. L. Terrill at (205) 574-8820.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley
R. L. Gridley, Director
Nuclear Safety and Licensing

Enclosure
cc: See page 2

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PDR ADOCK 05000438
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U.S. Nuclear Regulatory Commission

AUG 17 1987

cc (Enclosure):

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
INADEQUATE DESIGN CALCULATIONS FOR
PIPE RUPTURE MITIGATION DEVICES
BLRD-50-438/87-06 AND BLRD-50-439/87-05
CAQR BLF870090
10 CFR 50.55(e)
INTERIM REPORT

Description of Deficiency

The design calculations for jet impingement barrier mark 1-2, shown on design drawings 4RW0550-X2-01 and 02, are inadequate because they do not reflect the configuration of the structure shown on current design output drawings. The calculations also do not provide sufficient technical justification for seismic out-of-plane loading. Also included in this concern are any additional structures used to mitigate the effects of a pipe rupture shown on other design drawings. The causes of this deficiency are failure to revise design calculations when design drawings were revised for a field change request (FCR), failure to adequately justify design assumptions made in the calculations, and insufficient procedures in place at the time when the drawings were being revised for FCRs.

This condition was identified when review work was being performed for TVA's Employee Concerns Special Program.

Interim Progress

Recurrence control will be accomplished through implementation of existing procedures and increased review/verification efforts. Nuclear Engineering Procedure NEP-3.1, "Calculations," Section 3.0, requires that each release of drawings for construction (i.e., FCRs) shall be accompanied or preceded by approved calculations and analyses. Procedure NEP-3.2, "Design Input," Section 2.0, requires written technical justification for judgements or assumptions made in the support of a design. Procedures NEP-5.1, "Design Output," and NEP-5.2, "Review," require increased efforts in the area of review, approval, and verification. The above-mentioned procedures were issued July 1, 1986.

The calculations for jet impingement barrier mark 1-2, for the barriers shown on the 4RW0550-X2 design drawing series, and for all additional structures used to mitigate the effects of pipe rupture will be reviewed for verification of the following criteria:

- a. The calculations address all applicable loads and loading combinations to include seismic out-of-plane loads.

Interim Progress (Continued):

b. The calculations are complete and technically adequate, and judgements are either justified or are intuitively obvious.

c. The calculations and drawings are in agreement.

TVA will modify structural details on the design drawings, if design requirements cannot be met, and will modify existing barriers as required.