

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

1630 Chestnut Street Tower II

August 28, 1985

BLRD-50-438/84-02

BLRD-50-439/84-02

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 - FAILURE TO INCORPORATE INCREASED
SUPPORT LOADS INTO DESIGN - BLRD-438/84-02, BLRD-439/84-02 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on December 22, 1983 in accordance with 10 CFR 50.55(e) as
NCR 2661. This was followed by our interim reports dated January 18 and
April 20, 1984. Enclosed is our final report.

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

J. W. Hufham
by *RLS*

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
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ENCLOSURE
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
FAILURE TO INCORPORATE INCREASED SUPPORT LOADS INTO DESIGN
BLRD-50-438/84-02, BLRD-50-439/84-02
NCR 2661
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

During the course of scheduled NRC-OIE Bulletin 79-14 walkdown exercise, a number of supports on rigorous analysis problem N4-1KE-4, for the essential raw cooling water (ERCW) system, were discovered not to be in agreement with analysis data in regard to loads and movements. Some supports were designed by ITT Grinnell while the remainder of these supports were designed per TVA's load-rated typical program. Specific support designs found to be disagreeing with ERCW analysis drawings 1KB0506-KE-41 R1 and 1KB0506-KE-42 R2 were:

| | | |
|------------------|------------------|------------------|
| 1KE-MPHG-0046 R3 | 1KE-MPHG-0054 R1 | 1KE-MPHG-0097 R2 |
| 1KE-MPHG-0049 R0 | 1KE-MPHG-0057 R0 | 1KE-MPHG-0101 R0 |
| 1KE-MPHG-0051 R0 | 1KE-MPHG-0059 R0 | 1KE-MPHG-0114 R0 |
| 1KE-MPHG-0053 R0 | 1KE-MPHG-0061 R0 | 1KE-MPHG-0127 R0 |
| | | 1KE-MPHG-0140 R0 |

There are two separate parts to this deficiency. Part 1 consists of a failure to review the revised analysis drawing 1KB0506-KE-41 R1. This drawing is a support load table for supports which were designed by ITT Grinnell. TVA support review personnel reviewing the revised drawing learned that other changes to analysis problem N4-1KE-4 were scheduled as a result of engineering change notice (ECN) 1626. Therefore, the support review personnel decided to defer the review until ECN 1626 was incorporated.

When the new analysis drawings were issued, the revised analysis review was completed, identifying all needed changes for the subject analysis and for ECN 1626. All supports found to be inadequate were identified to be redesigned. No Office of Engineering (OE) procedures were violated in failing to review the above drawing revision. The time lag between the second analysis issue and support review caused the analysis and the supports to temporarily disagree.

Part 2 consists of a failure to revise the support detail sheets for TVA-designed load-rated typical supports for changes made on support load table drawing 1KB0506-KE-42 R1. These supports were placed on construction hold and identified to the Office of Construction (OC) by memorandum dated November 17, 1982, as requiring revision. The personnel reviewing the supports at the site released the listed supports with no revision required. This resulted from an error by the site personnel in determining when a support required revision for an analysis change. OE determined that the incorrect release of rigorously analyzed typical supports which required revision for analysis changes was a generic error at Bellefonte Nuclear Plant (BLN).

Safety Implications

The subject supports, if not corrected, could become overstressed due to increased loads and movements. Additionally, these supports might not restrain the piping in the correct direction(s) due to changes in the sizes of the loads. These conditions would invalidate the piping seismic analysis and jeopardize the safe operation of the ERCW system. Since the ERCW system is an essential safety-related system, its failure in an emergency situation would adversely affect the safety of the plant. A similar situation would occur for load-rated typical supports found on other systems.

Corrective Action

The following ITT Grinnell supports on 1KB0506-KE-41 R1 were placed on construction hold to be redesigned per OE procedures:

| | |
|------------------|------------------|
| 1KE-MPHG-0046 R3 | 1KE-MPHG-0054 R1 |
| 1KE-MPHG-0049 R0 | 1KE-MPHG-0057 R0 |
| 1KE-MPHG-0051 R0 | 1KE-MPHG-0059 R0 |
| 1KE-MPHG-0053 R0 | 1KE-MPHG-0061 R0 |

The following typical supports were placed on hold per ECN 1626 for changes due to that ECN:

1KE-MPHG-0097 R2
1KE-MPHG-0101 R0
1KE-MPHG-0114 R0
1KE-MPHG-0127 R0
1KE-MPHG-0140 R0

To correct the generic error, OE has reviewed all load-rated typical supports (including those identified above) on rigorously analyzed problems to resolve the deficiency. Those supports found in error have been revised to reflect the correct analysis information. OE personnel (who now review typical supports instead of OC) have been instructed in the proper methods of revising typical supports. Also, Bellefonte Engineering Project (BLEP) Engineering Procedure (EP) 44.77 has been revised to ensure that all TVA load-rated typical supports identified by revised analysis review as needing review are properly handled. This action should prevent recurrence of these deficiencies.