

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

March 3, 1986

BLRD-50-438/84-06

BLRD-50-439/84-05

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 - LENGTHS OF FLEX CONDUIT EXTENSIONS
NOT AS SPECIFIED - BLRD-50-438/84-06, BLRD-50-439/84-05 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on January 12, 1984 in accordance with 10 CFR 50.55(e) as
NCR 2707. This was followed by our interim reports dated February 7,
August 10, December 11, 1984 and February 28, 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

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
LENGTHS OF FLEX CONDUIT EXTENSIONS NOT AS SPECIFIED
BLRD-50-438/84-J6 AND BLRD-50-439/84-05

NCR 2707

10 CFR 50.55(e)

FINAL REPORT

Description of Deficiency

Flexible conduit extensions of the following conduit do not meet the thermal criterion for length:

<u>Conduit ID</u>	<u>Size Inches</u>	<u>Existing Flexible Conduit Extension Length Exposed (inches)</u>	<u>Minimum Specified Extension Length (inches)</u>
1R4-1959-B	1-1/2	25.5	32
1R3-1961-B	1-1/2	27	32
1R3-1962-B	1-1/2	24	32
1R3-1964-B	1-1/2	25	32
1R3-1965-B	1-1/2	21	24
1R3-1341-B	0.75	22.75	24

General Construction Specification G-40, "Installing Electrical Conduit Systems and Conduit Boxes," revision 5, section 3.2.6.3, "Thermal Movement Consideration," specifies that where flexible conduit is to be connected to items which are part of a mechanical system designed for thermal movement, it should be used to compensate for any expansion and contraction.

The cause of this deficiency was a failure to specify that the thermal movement consideration should be applied to the assemblies cited above, either in TVA General Construction Specification G-40 or on the applicable conduit drawings.

In order to assess the generic implications of this deficiency, TVA issued a potential generic condition evaluation memo for Brown's Ferry, Sequoyah, and Watts Bar. Personnel of these plants will investigate, in accordance with site procedures, and document any deficiencies found.

Safety Implications

The possibility exists that the conduit assemblies could fail if the conduit is too short when the system thermally expands. This could result in electrical shorts in the circuits inside the conduit and subsequent failure of the affected safety-related equipment. Although only one train is affected, such failure, if left uncorrected, could result in failure to comply with 10 CFR 50, Appendix A, Criterion 17, with respect to a single failure. Thus, the safe operation of the plant could be adversely affected if the affected electrical conduit fails.

Corrective Action

TVA's Office of Engineering (OE) has reviewed all affected mechanical systems designed for thermal movement and has provided Bellefonte Nuclear Plant, Office of Construction (BLN) (OC) with a list of the devices where more than one inch of thermal movement can be anticipated. All the flexible conduit installations of the devices identified by OE will be reviewed, and any corrective action required will be performed and documented accordingly to maintain the minimum length requirements of General Construction Specification G-40 (table 3.2.6.1) no later than six months prior to fuel load of the affected unit.

To prevent recurrence, Engineering Change Notices (ECNs) 3427 and 3428 have been prepared to revise the applicable conduit drawings to list the devices where thermal movement considerations are to be taken into account when installing the connecting flexible conduit. The affected conduit drawings will be revised and issued by March 31, 1987. Also, BLN Quality Control Procedure (QCP) 3.34, "Electrical Cable Installation (Pulling)," has been revised to include the requirement that flexible conduit be installed to compensate for thermal movement.