

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

84 OCT 10 October 10, 1984

BLRD-50-439/84-15

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNIT 2 - DEFECTIVE AMPLIFIERS IN SAFETY-RELATED
PANELS MANUFACTURED BY EL-TEX - BLRD-50-439/84-15 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on February 14, 1984 in accordance with 10 CFR 50.55(e)
as NCR 2815. This was followed by our interim reports dated March 5 and
June 28, 1984. Enclosed is our final report.

Please note that 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, please get in touch with R. H. Shell at
FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


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

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 UNIT 2
DEFECTIVE AMPLIFIERS IN SAFETY-RELATED PANELS MANUFACTURED BY EL-TEX
BLRD-50-439/84-15
NCP 2815
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

All DC isolation amplifiers in electrical panels 2EU-EDP-52A-E and 2EU-EDP-51A-E were found to be defective. These amplifiers are powered by a 125V AC supply, and send a 0-3 milliamp (ma) signal to the main control room indicators which show the status of the class 1E 125V DC power distribution system. This system provides power to various essential safety-related switches such as the 6.9 kV, 13.8 kV, and 480V switchgear.

The failure of the amplifiers has resulted in a wide open (i.e., maximum 3 ma) output to the indicators, regardless of the input signal. This results in erroneous indications in the control room on the status of the 125V DC system.

Safety Implications

TVA has determined that the failure of the subject amplifiers could not have resulted in a failure of or an unnecessary challenge to the plant safety systems. The amplifiers are only used to provide control room indication on the status of the 125V dc power distribution system. This is not a safety-related function which, if lost, could adversely affect the safe operation of the plant.

TVA no longer considers 10 CFR 50.55(e) applicable to this item; however, we did request the vendor (El-Tex Industries, Incorporated, Baltimore, Maryland) to perform an analysis to determine the cause of the failures. El-Tex informed TVA that their supplier (Scientific Columbus) could not perform the analysis. TVA subsequently sent two of the defective amplifiers to TVA's Central Laboratory in Chattanooga for analysis. It was determined that the failures were caused by a defective output filter-capacitor in the power supply of each unit. Age degradation contributed to this failure.

The failed devices have been repaired and will be used as spares. The subject amplifiers have been entered into the Bellefonte Nuclear Plant (BLN) site maintenance procedure (BNP-QCP-1.3) for periodic testing and replacement of the devices every 5 to 7 years as necessary. No other problems of this type have been identified at BLN or any other TVA nuclear plant.