

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

August 29, 1985

BLRD-50-438/84-58

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:

BELLEVILLE NUCLEAR PLANT UNIT 1 - EXCESSIVE WIRING DEFICIENCIES IN BABCOCK AND
WILCOX SUPPLIED CABINETS - BLRD-50-438/84-58 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
P. E. Fredrickson on November 14, 1984 in accordance with 10 CFR 50.55(e)
as NCR 3675. Our interim reports were submitted on December 12, 1984 and
March 29 and June 25, 1985. Enclosed is our final report. We consider 10 CFR
Part 21 applicable to this deficiency.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham
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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Atlanta, Georgia 30339

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNIT 1
EXCESSIVE WIRING DEFICIENCIES IN
BABCOCK AND WILCOX-SUPPLIED CABINETS
BLRD-50-438/84-58
NCR 3675
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

The engineered safety features actuation system (ESFAS) control cabinets for Bellefonte Nuclear Plant (BLN) were supplied to TVA by Babcock and Wilcox (B&W) on the BLN NSSS contract. The initial site inspection of these cabinets resulted in at least 68 separate nonconformance reports (NCRs) being issued for wiring and drawing deficiencies. A large number of the NCRs identify installed wiring which does not conform to B&W drawings with respect to color codes, wire size, or configuration. Several NCRs identify breakers which are of a higher rating than the B&W drawings show. While none of these 68 NCRs represent a significant condition adverse to quality on an individual basis, they collectively indicate a significant breakdown in B&W's quality assurance/quality control program for BLN.

The cause of this deficiency was a deficiency in the manufacturer's (Bailey Meter) relevant engineering instruction for cabinet checkout. The engineering instruction required the system to be electrically equivalent to the design and functionally correct. However, it did not require that the as-built configuration of the system be physically identical to the design drawings.

Safety Implications

The ESFAS is a primary safety-related system which initiates action of various safety features devices to protect the reactor core during a loss of coolant accident (LOCA) or a steam line or feedwater line break, and to mitigate the consequences of these accidents. A deficient vendor quality assurance/quality control program could result in TVA receiving equipment of indeterminate quality. Failure of the affected equipment due to unidentified deficiencies could result in a condition adverse to safe plant operation.

Corrective Action

B&W has issued field change packages (FCPs) 177 and 310 to resolve the wiring and drawing deficiencies in the unit 1 ESFAS control cabinets as identified on the 68 separate NCRs. Additionally, B&W has performed a 100 percent review of the BLN unit 2 ESFAS control cabinets and of the units 1 and 2 reactor protection system (RPS)

control cabinets. The cabinets were checked to ensure that they were physically equivalent to the drawings. The subject wiring deficiencies were determined to be not applicable to these cabinets. B&W has not provided the subject cabinets for any other TVA nuclear plant.

To prevent recurrence of this deficiency, B&W has notified TVA that Bailey Meter has revised their engineering instructions to require physical equivalency between their cabinets and design drawings.

All field modifications necessary to correct the deficiencies identified by the 68 separate NCRs will be completed by March 21, 1986.