

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 26, 1984

BLRD-50-438/82-52

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW
Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

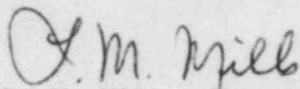
BELLEFONTE NUCLEAR PLANT UNIT 1 - FAILED VALVE CONTROL UNIT -
BLRD-50-438/82-52 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on July 27, 1982 in accordance with 10 CFR 50.55(e) as NCR 1891. This was followed by our interim reports dated August 25 and October 20, 1982 and January 24, July 27, and November 22, 1983. Enclosed is our final report. We consider 10 CFR Part 21 applicable to this deficiency.

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


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 1
FAILED VALVE CONTROL UNIT
NCR 1891
BLRD-50-438/82-52
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

The large expansion valve control unit, supplied by Air Conditioning, Refrigeration and Combustion, Incorporated (ARC) of Knoxville, Tennessee, and manufactured by Dunham-Bush, for the water chiller (1VE-MCHL-172-B) in the Auxiliary Building Air Conditioning System failed. This item regulates the refrigerant to the chiller which provides cooling for safety-related equipment.

The control unit is an electronic relay enclosed in a "black box." It is not serviceable nor can any maintenance be performed on it. This problem has occurred in other Dunham-Bush chillers at Bellefonte (BLN) and is considered generic only to BLN.

Safety Implications

Had the subject condition remained uncorrected, failure of the control unit in the Auxiliary Building air-conditioning system could have resulted, reducing the cooling capability of the subject chiller. This could have resulted in overheating of safety-related equipment which could adversely affect the safe operation of the plant.

Corrective Action

An identical control unit was installed by the vendor service representative on April 4, 1983. TVA contacted the vendor on June 13, 1983, and requested the cause of failure be analyzed. The vendor stated in their letter dated November 3, 1983, that they have tested several of the control units from BLN and determined that the most common mode of failure is an open discontinuity filter capacitor. However, they could not determine the root cause of the failures. The vendor also stated that they have not received any deficiency reports by other customers, and that Dunham-Bush has found an alternate supplier for the relay.

The control unit failures experienced to date have occurred during the first few minutes in the startup testing of the chiller in operation. The control units on two of the chillers were subsequently changed out and the chillers placed in service. We have experienced no further failures after the chillers became operational and, because of this, we believe the failure rate of the control unit is greatly reduced after equipment is placed in operation. We are purchasing new control units for all the chillers as spares and these will be stored in the "controlled" warehouse until needed. All unit 1 chillers have been started and are in use. Operability of the unit 2 chillers will be demonstrated during startup testing of these units at a future time in the construction phase.