TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

1630 Chestnut Street Tower II

August 12, 1985

BLRD-50-438/85-21
BLRD-50-439/85-20

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 OF BBC BROWN BOVERI LIMIT SWITCHES ON MEDIUM-VOLTAGE CIRCUIT BREAKERS - BLRD-50-438/85-21 AND BLRD-50-439/85-20 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on July 3, 1985 in accordance with 10 CFR 50.55(e) as NCR 4277 and 4352. This was followed by our final report dated July 29, 1985. Enclosed is our revised 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. A. Domer

for 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
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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ENCLOSURE
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
FAILURE OF BBC BROWN BOVERI LIMIT SWITCHES
ON MEDIUM-VOLTAGE CIRCUIT BREAKERS
BLRD-50-438/85-21, BLRD-50-439/85-20
NCRs 4277 AND 4352
10 CFR 50.55(e)
REVISED FINAL REPORT

Description of Deficiency

Two safety-related BBC Brown Boveri, Incorporated (Springhouse, Pennsylvania), medium-voltage circuit breakers failed to electrically close at Bellefonte Nuclear Plant (BLN) during routine maintenance. The circuit breakers are used in the class 1E 6.9-kV switchgear. Failure was caused by a dislodged spring and contact in the circuit breaker limit switch model number 191921-T6. Dislodgement of the limit switch spring and contact renders the circuit breakers unable to electrically close.

The cause of this deficiency is a flaw in the model number 191921-T6 limit switch design. The contacts become loose due to the shock created by control level overtravel when the breaker is tripped. This flaw is limited to circuit breakers manufactured between March 1974 and July 1978 inclusive.

Safety Implications

The deficient circuit breakers can be closed manually, but manual operation is not an acceptable alternative to the sequential electrical closing that is required during abnormal plant conditions and which was assumed in the plant safety analysis. Failure of circuit breakers to close electrically as required in redundant safety-related power systems could cause unavailability of electrical power to redundant essential safety-related systems. Therefore, if this condition had remained uncorrected, the safe operation of the plant could have been adversely affected.

Corrective Action

Corrective action for the deficient circuit breakers will be in accordance with Brown Boveri, Incorporated, recommendations and Instruction Book IB 8303 revision 1. This action will involve the installation of a 2-17/32-inch control lever stop in place of the 2-25/32-inch control lever stop found on most of the affected circuit breaker limit switches. The shorter lever stop will limit lever travel to reduce the shock to the contacts. Also, the mechanism will be adjusted to meet dimensional requirements specified in Instruction Book IB 8303 revision 1.

In order to prevent future failures of this nature, all Brown Boveri, Incorporated, medium-voltage circuit breakers manufactured between March 1974 and July 1978 at BLN will be modified and adjusted as stated above. Also, medium-voltage circuit breakers manufactured after July 1978 will be inspected and adjusted as necessary to meet dimensional requirements specified in Instruction Book IB 8303, revision 1.

All action to correct the deficient condition for units 1 and 2 will be complete by March 1, 1987.