

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 29, 1984

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:

**INSPECTION AND ENFORCEMENT BULLETIN 83-08 - ELECTRICAL CIRCUIT BREAKERS
WITH AN UNDERVOLTAGE TRIP FEATURE IN USE IN SAFETY-RELATED APPLICATIONS
OTHER THAN THE REACTOR TRIP SYSTEM**

Enclosed is our response to NRC-OIE Bulletin 83-08 dated December 28,
1983 for Browns Ferry, Sequoyah, Watts Bar, and Bellefonte Nuclear Plants.

If you have any questions concerning this matter, please get in touch with
R. H. Shell at FTS 858-2698 for PWRs or J. A. Damer at FTS 858-2725 for
BWRs.

To the best of my knowledge, I declare the statements contained herein are
complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

D. S. Kammer
Nuclear Engineer

Enclosure

cc (Enclosure):

Mr. Richard C. DeYoung, Director
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ENCLOSURE

BROWNS FERRY, SEQUOYAH, WATTS BAR, AND BELLEFONTE NUCLEAR PLANTS NRC-OIE BULLETIN 83-08 ELECTRICAL CIRCUIT BREAKERS WITH AN UNDERVOLTAGE TRIP FEATURE IN USE IN SAETY-RELATED APPLICATIONS OTHER THAN THE REACTOR TRIP SYSTEM

Question 1

Identify applications of Westinghouse Plant (W) type DB, W type DS, or General Electric Company (GE) type AK-2 circuit breakers with the undervoltage (UV) trip feature as discussed in IEB 83-01 or 83-04 in safety-related applications at your facility(ies), other than as reactor trip breakers (RTBs). Construction permit (CP) holders and licensees should also identify similar applications of other types of breakers by other manufacturers that use a UV trip feature. If such circuit breakers are used or planned for use, identify the system(s) involved.

TVA Response

Browns Ferry Nuclear Plant

Browns Ferry Nuclear Plant (BFNP) has the GE 480-V type AK-2 circuit breakers referred to in IEB 83-08. As a result of IEB 79-09 (failure of GE-type AK-2 circuit breaker in safety-related systems), all boards which supply safety-related systems at BFN were examined to determine if AK-2 type breakers were being used. None of the AK-2 breakers found in safety-related systems were equipped with an undervoltage trip device; however, BFN does utilize GE molded-case circuit breakers with an undervoltage trip feature on the output of the reactor protection system motor-generator sets. Problems have been experienced in the past with these breakers, and they are being replaced with a GE-type TFK-236Y225 breaker (without undervoltage release feature) and a combination of contractors and relays to provide undervoltage and overvoltage tripping. Replacement has been completed on unit 1, is in progress on unit 3, and is being scheduled for unit 2. An administrative (maintenance) procedure controls the maintenance and testing of these breakers. Breakers by other manufacturers at BFN did not have the undervoltage trip feature; therefore, we believe no further response is required for BFN.

Sequoyah, Watts Bar, and Bellefonte Nuclear Plants

A review of equipment scheduled for use at Sequoyah, Watts Bar, and Bellefonte Nuclear Plants has revealed that breakers with an undervoltage trip attachment feature have not been specified for use on safety-related systems exclusive of the reactor trip system.

Question 2

For each circuit breaker type identified in item 1, do the following:

- a. Review the design of the UVTA and the connecting linkage. Using input from the breaker manufacturer, determine the design margin available to open the breaker. Evaluate whether or not this design margin is adequate in view of safety applications, considering possible problems of alignment, lubrication, adjustment of spring tension, etc., discussed in the "Description of Circumstances."
- b. Describe the current breaker surveillance program, including details of test frequency, methodology, and response time measurement of UVTA device.
- c. Review operating experience with the circuit breakers in your plant(s) identified in item 1. Provide a list of all malfunctions (both failure to trip and failure to close on demand) associated with the UVTA, including the connecting linkages and latching mechanisms. The list should include the date of each malfunction, and the operating time prior to failure or date of installation, and the date(s) of major maintenance. In general, when the circuit breaker UVTA is actuated on undervoltage and the breaker contacts do not open within the design time response value, NRC considers the breaker to have failed.
- d. Describe any preventive or corrective measures you have taken, or intend to take, based on the results of Items 2a, 2b, and 2c. Include any revisions to the surveillance test program and methodology. Specifically, address the inherent reliability of the UV trip feature in view of its apparent heavy dependence on intensive maintenance and surveillance and whether a basic design change is warranted to correct the problem, e.g., using a voltage sensitive relay to sense loss of voltage and energize the shunt trip coil from an independent dc power source.

TVA Response

Browns Ferry Nuclear Plant

Although GE molded-case circuit breakers with an undervoltage trip attachment (UVTA) are utilized at Browns Ferry Nuclear Plant, these breakers are being replaced with breakers that do not have UVTAs.

Sequoyah, Watts Bar, and Bellefonte Nuclear Plants

No response is required.