

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

July 10, 1984

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

Dear Mr. O'Reilly:

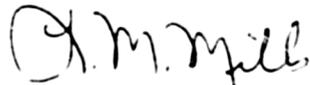
INSPECTION AND ENFORCEMENT BULLETIN 84-02 - FAILURES OF GENERAL  
ELECTRIC TYPE HFA RELAYS IN USE IN CLASS 1E SAFETY SYSTEMS - BROWNS  
FERRY, SEQUOYAH, WATTS BAR, AND BELLEFONTE NUCLEAR PLANTS

Enclosed is our response to IE Bulletin 84-02 dated March 12, 1984.  
If you have any questions, please call Jim Domer at FTS 858-2725.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc (Enclosure):

U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555

Mr. R. C. DeYoung, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
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ENCLOSURE

RESPONSE TO IE BULLETIN 84-02  
DATED MARCH 12, 1984  
FAILURES OF GENERAL ELECTRIC TYPE HFA RELAYS  
IN CLASS 1E SAFETY SYSTEMS

OL Licensed Plants - Browns Ferry (BFN) and Sequoyah (SQN) Nuclear Plants

Note: All of the reported failures involved normally energized type HFA 51 Series ac relays which are the same type of failures that BFN has experienced. As of this date, SQN has not experienced any HFA relay failures.

- A. An inspection was performed at BFN identifying all the class 1E HFA relays in service. The following information was obtained.
1. Location of each relay (unit, panel number, and board number)
  2. Relay model number
  3. GE relay number
  4. Type spool piece (Lexan, nylon, tefzel, and century series)
  5. Normal operating state of relay (deenergized or energized)

Based on the information obtained in the inspection and the recommendations in the NRC bulletin, the following schedule will be used to set the priority for relay replacement at BFN.

1. Nylon or Lexan normally-energized ac relays in the reactor protection system (RPS)
2. Nylon or Lexan normally-energized ac relays in other safety systems
3. Nylon normally-deenergized in the RPS
4. Nylon normally-deenergized in other safety systems

A similar inspection was performed at SQN identifying all the class 1E HFA relays in service and obtaining similar information as the BFN inspection.

Based on the inspection at SQN, we have determined there is no need for any relays to be replaced.

- B. During the period before relay replacement, the following surveillance plans will be implemented.
1. The Instrument and Controls Group (I&CG) was provided a list of the HFA relays used in the RPS at BFN to determine whether the present monthly surveillance instructions (SI) verify that these relays function properly when deenergized. The I&CG is presently coordinating with the Instrument Maintenance Section at BFN to revise the appropriate plant SIs to ensure that each relay is checked on a monthly basis. Appropriate plant SIs should be revised and in effect before July 14, 1984.
  2. BFN and SQN currently have in effect an inspection program where all safety-related relays are visually inspected each refueling outage. These visual inspections to date have not resulted in detection or prediction of imminent coil failure.

Since we have no indication that the cracking spools and melting spools are in any way related, BFN will inspect all the normally-energized ac relays in safety-related systems every six months and test all normally-energized ac relays in the RPS on a monthly basis until replacement coils have been installed. We believe this is sufficient.

- C. A complete list of HFA relays used at BFN and SQN in all safety-related systems both normally energized and deenergized has been reviewed. All of the failures have occurred in normally-energized ac circuits at BFN; therefore, it is unlikely that a normally-deenergized relay will experience similar problems. In accordance with the requirements of the bulletin, all the BFN RPS normally-energized relays will be inspected monthly. They are also functionally tested monthly. These surveillances will reduce the probability of the expected failure going undetected such that it is approximately equal to that of random failures (this will restore the original reliability of the relays). The RPS is designed to withstand a random single failure.

If any additional failures occur during the time before relay coil replacement, then the inspection frequency can be increased as appropriate. Based upon past experience and our current inspection program, we believe continued operation for BFN is justified for the two-year period until they can be changed out.

- D. Because of the large number of relays involved and the impact they have on the safety systems, the replacements at BFN will only be done during a refueling outage. Based on the current delivery date on coil replacement kits and our present refueling outage schedules, the relay coil spools will be replaced during outages according to the following schedule:

BFN unit 1, cycle 6  
BFN unit 2, cycle 5  
BFN unit 3, cycle 6

Should the coil delivery dates or outage schedules change the replacement schedule will be adjusted accordingly.

CP Licensed Plants - Watts Bar (WB) and Bellefonte Nuclear Plants (BLN)

As a result of IE Information Notice 82-13, nonconformance reports (NCRs) WBNEEB8206 (WB) and BLNEEB8101 (BLN) were written to address all class 1E HFA relay coils identified by GE as having Lexan or nylon coil spools. The corrective action for both NCRs was to replace the Lexan or nylon coil spools with Century series coils.

Watts Bar

Per Westinghouse letter WAT-D-5583 dated July 12, 1983, no GE type HFA relays were supplied on the WB nuclear steam supply system (NSSS) contract.

All class 1E and non-1E HFA relay coils, for the balance of the plant, identified by GE as potentially defective have been replaced with Century series coils.

Bellefonte

Per Babcock and Wilcox (B&W) letter D-4791 dated October 6, 1983, no GE type HFA relays have been supplied or specified by B&W for use in any of the NSSS 1E safety systems supplied to Bellefonte.

In addition, TVA's Quality Assurance Program, specifically the Nuclear Operations Quality Assurance Manual (NOQAM), part 3, sections 2.1 and 2.3, forbids installation of unqualified devices in class 1E circuits.

General Information

In regard to the concerns of other types of relays with similar materials or different relays used in similar safety functions, we believe the system already established within TVA is sufficient in alleviating this concern. Manufacturers' recommendations, experience review items, significant event reports, and information notices are reviewed for applicability to our nuclear plants. If these items are determined to be applicable, appropriate measures are taken to alleviate any potential safety problems. We also review failures of plant equipment to determine if a generic problem exists. We believe that these measures sufficiently address any concerns which might be raised regarding these types of relays by the NRC.