Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

John H. Garrity
Vice President, Watts Bar Nuclear Plant

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WBRD-50-390/91-40
WBRD-50-391/91-40

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - INADEQUATE SELECTIVE BREAKER COORDINATION - WBRD-50-390/91-40 AND WBRD-50-391/91-40 - FINAL REPORT

The subject deficiency was initially reported to NRC Region II on December 5, 1991, in accordance with 10 CFR 50.55(e) as Significant Corrective Action Report (SCAR) WBSCA 910278. An interim report was submitted to NRC on December 20, 1991. Subsequently, TVA determined that 10 CFR 21 is also applicable to this deficiency. Enclosure 1 contains TVA's final report on this subject.

The commitments made in this report are contained in Enclosure 2.

If there are any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,

John H Garrity

John H. Garrity

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

FEB 10 1992

cc (Enclosures):
INPO Record Center
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

NRC Resident Inspector
Watts Bar Nuclear Plant
P.O. Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Mr. B. A. Wilson, Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN)
INADEQUATE SELECTIVE BREAKER COORDINATION
SIGNIFICANT CORRECTIVE ACTION REPORT (SCAR) WBSCA 910278
WBRD-50-390/91-40 AND WBRD-50-391/91-40
FINAL REPORT

DESCRIPTION OF DEFICIENCY

TVA has determined that various 480-volt shutdown boards may not have selective coordination between the feeder breakers and the load breakers on the motor control centers or downstream boards as a result of a breaker design feature. Impact of this design feature on selective breaker coordination had not been recognized due to insufficient vendor information.

Westinghouse Electric Corporation type DS-206 breakers with type LS Amptectors contain a discriminator circuit. This is a circuit in the trip unit which determines, at the time of a fault, whether or not there has been current flow in the primary circuit previous to the fault. The circuit is provided for personnel safety protection against possible injury and to limit equipment damage should the breaker be closed on a faulted board. If there has been no measurable current flow previous to the fault and the primary current flow exceeds approximately 12 times the sensor rating, the Amptector trip unit will function instantaneously, defeating any delayed tripping operation.

For WBN's boards with both Class 1E and non-Class 1E loads, postulated faults on the non-Class 1E loads during a design basis event (e.g., loss of offsite power with concurrent safety injection) could result in loss of multiple safety-related boards and associated loads. The 480-volt reactor vent boards, 480-volt reactor motor operated valve boards, 480-volt control and auxiliary ventilation boards, 480-volt diesel generator auxiliary boards, and 120-volt vital power transfer switches are affected.

The above deficiency was identified at the Sequoyah Nuclear Plant (SQN) on November 7, 1991. Licensee Event Report (LER) 50-327/91-026 was submitted to NRC on December 9, 1991. Through a review of SQN Incident Investigation (II) S-91-120, WBN personnel determined the deficiency was applicable and initiated SCAR WBSCA 910278.

SAFETY IMPLICATIONS

The subject deficiency could have adversely affected the safe operation of the plant had it remained uncorrected. Loss of selective coordination could result in the inability of the 480-volt Class 1E power system to safely shut down the unit or mitigate an accident.

ROOT CAUSE

The root cause of this deficiency is insufficient vendor information regarding the Amptector discriminator circuit and operation. The original vendor manual did not contain information pertaining to the discriminator. Subsequent revisions to the vendor manual did contain information on the discriminator, but the time versus current characteristic curves were not revised to reflect the existence of the discriminator.

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN)
INADEQUATE SELECTIVE BREAKER COORDINATION
SIGNIFICANT CORRECTIVE ACTION REPORT (SCAR) WBSCA 910278
WBRD-50-390/91-40 AND WBRD-50-391/91-40
FINAL REPORT

ROOT CAUSE (continued)

The subject breakers were procured under TVA Contract 74C2-84647. TVA Specification 1775 of Contract 74C2-84647 required the vendor to provide instructions for installation, operation, and maintenance of the equipment. Failure to provide sufficient information regarding the Amptector discriminator circuit and operation is considered to be a deviation from the technical requirements of a procurement document (i.e., a defect). Since this defect is associated with a basic component (the Class 1E DS-206 breakers) and could create a substantial safety hazard (major degradation of essential safety-related equipment), TVA considers 10 CFR 21 to be applicable to this deficiency.

CORRECTIVE ACTIONS

1. Design input documents (calculations, etc.) will be reviewed to ensure that other Class 1E 480-volt breakers with delayed trips do not have similar instantaneous trip circuits. This action will be completed by April 30, 1992.

2. A design change notice will be issued and implemented to defeat the type LS Amptector discriminator circuit for type DS-206 breakers which are either installed in the plant or maintained as spares in Power Stores. This action will be taken prior to System 212 (480-volt Shutdown Power) completion for preoperational testing.

ENCLOSURE 2

LIST OF COMMITMENTS

1. Design input documents (calculations, etc.) will be reviewed to ensure that other Class 1E 480-volt breakers with delayed trips do not have similar instantaneous trip circuits. This action will be completed by April 30, 1992.

2. A design change notice will be issued and implemented to defeat the type LS Amptector discriminator circuit for type DS-206 breakers which are either installed in the plant or maintained as spares in Power Stores. This action will be taken prior to System 212 (480-volt Shutdown Power) completion for preoperational testing.