Westinghouse Electric Corporation Energy Systems

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NSD-SRC-96-036

December 13, 1996

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: NRC Operations Center

SUBJECT: **NOTIFICATION OF THE POTENTIAL EXISTENCE OF DEFECTS PURSUANT TO 10CFR 21.21**

Westinghouse has identified defects that could create a substantial safety hazard should the defect remain uncorrected.

Background

A deviation was determined by Callaway Nuclear Plant during testing of six type HFD3045 and HFD3060 molded case circuit breakers with 125 VDC shunt trip devices supplied as safety related by Westinghouse. The shunt trip circuitry is specified to be equipped with a cut-off switch to remove the shunt trip coil from the power source subsequent to tripping the breaker. The coil is not designed for continuous duty and would eventually open circuit if it remained energized. The shunt trip coil of the breakers supplied to Callaway remained connected to the power source after the breaker tripped. In addition, it was determined when evaluating returned breakers from Callaway, that shunt trip barriers that provide protection against damage due to arcing were missing.

Evaluation

Investigation by the vendor (Cutler Hammer) has determined that the six circuit breakers supplied only to Callaway were tested by the same technician using the wrong test procedure. The shunt trip units were installed incorrectly but would still trip the breaker on demand. However, the cut-off switch would not operate properly and the shunt trip coil would be damaged and unable to perform upon the next demand. The breaker could be reset and the damaged coil would not be detected until the next surveillance. Records at Cutler Hammer show that this technician only tested these six breakers, therefore no suspect breakers are in service.

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Cutler Hammer has concluded that a recent change in the facilities that installed the shunt trip units led to the missing shunt trip barriers. Since the change in facilities, 21 breakers with either AC or DC shunt trip units (including the six above) have been shipped, again only to Callaway Nuclear Plant. Subsequent operability of these breakers after a trip has not been determined by Cutler Hammer.

Safety Significance

Westinghouse is rarely informed of the application of devices such as molded case circuit breakers. However, the device was supplied as safety related and the utility has indicated that if damage to the shunt trip circuitry was not detected it could potentially represent a substantial safety hazard. Any damage subsequent to a trip would be detected at the next surveillance interval, which would be acceptable for random failures. However, this would not be acceptable if these breakers were installed in redundant circuit applications.

Plant Applicability

Callaway

Recommendations/Corrective Actions

All six (6) of the breakers with incorrectly installed DC shunt trip units have been identified (none in service) and are in the process of being returned to the vendor. Therefore, no recommendations to the utility are required. Corrective action at Cutler Hammer consisted of additional training of the technician regarding correct testing and installation practices.

Westinghouse has been informed by Callaway that only one breaker with a suspect barrier is in service. The remaining fourteen (14) breakers will not be placed in service until it is verified that the shunt trip barriers are installed. Since subsequent operability of shunt trip units with missing barriers is indeterminate, Callaway will be advised to perform a surveillance test after any breaker trip demand until the breaker can be corrected or replaced. Corrective action at Cutler Hammer will be additional training on correct shunt trip unit installation.

If you have any questions regarding the notification, please call H. A. Sepp of my staff at (412) 374-5282.

Very truly yours,

N. J. Liparulo, Manager
Engineering

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GENERAL INFORMATION or OTHER

EVENT NUMBER: 31449

LICENSEE: WESTINGHOUSE ELECTRIC CORPORATION
CITY: PITTSBURGH REGION: 1
COUNTY: STATE: PA
LICENSE#: AGREEMENT: N
DOCKET:

NOTIFICATION DATE: 12/13/96
NOTIFICATION TIME: 14:22 [ET]
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LAST UPDATE DATE: 12/13/96

NOTIFICATIONS

NRC NOTIFIED BY: N. J. LIPARULO
HQ OPS OFFICER: LEIGH TROCINE

VERN HODGE, RVIB NRR

EMERGENCY CLASS: NOT APPLICABLE
10 CFR SECTION:
CCCC 21.21 UNSPECIFIED PARAGRAPH

EVENT TEXT

MOLDED CASE CIRCUIT BREAKERS WITH INCORRECTLY INSTALLED DC SHUNT TRIP UNITS AND MISSING SHUNT TRIP BARRIERS

CALLAWAY IDENTIFIED A DEVIATION DURING TESTING OF 6 TYPE HFD3045 AND HFD3060 MOLDED CASE CIRCUIT BREAKERS WITH 125-VOLT DC SHUNT TRIP DEVICES SUPPLIED AS SAFETY-RELATED BY WESTINGHOUSE. THE SHUNT TRIP CIRCUITRY IS SPECIFIED TO BE EQUIPPED WITH A CUT-OFF SWITCH TO REMOVE THE SHUNT TRIP COIL FROM THE POWER SOURCE SUBSEQUENT TO TRIPPING THE BREAKER. THE COIL IS NOT DESIGNED FOR CONTINUOUS DUTY AND WOULD EVENTUALLY OPEN THE CIRCUIT IF IT REMAINED ENERGIZED. THE SHUNT TRIP COIL OF THE BREAKERS SUPPLIED TO CALLAWAY REMAINED CONNECTED TO THE POWER SOURCE AFTER THE BREAKER TRIPPED. IN ADDITION, DURING THE EVALUATION OF THE BREAKERS THAT WERE RETURNED FROM CALLAWAY, IT WAS DETERMINED THAT SHUNT TRIP BARRIERS WERE MISSING. THESE BARRIERS PROVIDE PROTECTION AGAINST DAMAGE DUE TO ARCING. THE VENDOR (CUTLER HAMMER) DETERMINED THAT 21 BREAKERS WITH EITHER AC OR DC SHUNT TRIP UNITS (INCLUDING THE 6 REFERENCED ABOVE) HAD BEEN SHIPPED ONLY TO THE CALLAWAY PLANT. SUBSEQUENT OPERABILITY OF THESE BREAKERS AFTER A TRIP HAS NOT YET BEEN DETERMINED BY CUTLER HAMMER.

ALL SIX OF THE BREAKERS WITH INCORRECTLY INSTALLED DC SHUNT TRIP UNITS HAVE BEEN IDENTIFIED AND ARE IN THE PROCESS OF BEING RETURNED TO THE VENDOR. WESTINGHOUSE HAS ALSO BEEN INFORMED BY CALLAWAY THAT ONLY ONE BREAKER WITH A SUSPECT BARRIER IS IN SERVICE. CALLAWAY DOES NOT PLAN TO PLACE THE REMAINING FOURTEEN BREAKERS IN SERVICE UNTIL IT IS VERIFIED THAT THE SHUNT TRIP BARRIERS ARE INSTALLED. SINCE SUBSEQUENT OPERABILITY OF THE SHUNT TRIP UNITS WITH MISSING BARRIERS IS INDETERMINATE, CALLAWAY WILL BE ADVISED TO PERFORM A SURVEILLANCE TEST AFTER ANY BREAKER TRIP DEMAND UNTIL THE BREAKER CAN BE CORRECTED OR REPLACED.

NSD - Nuclear Services Division

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No. of Pages: (Including cover sheet) 3

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