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IEB 83-04

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

March 11, 1983

IE BULLETIN NO. 83-04: FAILURE OF THE UNDERVOLTAGE.TRIP FUNCTION OF REACTOR TRIP BREAKERS

Addressees:

All pressurized water nuclear power reactor facilities holding an operating license (OL) except those with Westinghouse DB type breakers for action and to other nuclear power reactor facilities for information.

Purpose:

The purpose of this bulletin is to inform CP holders and licensees about recent failures of General Electric AK-2 type circuit breakers to trip open during testing of the undervoltage (UV) trip function and to require action of operating pressurized water reactors to assure proper operation of all reactor trip breakers in the future.

Description of Circumstances:

On March 11, 1983, Southern California Edison reported that during testing on March 3 and 8, 1983 of reactor protective system (RPS) breakers at San Onofre Nuclear Generating Station (SONGS) Units 2 and 3, three reactor trip breakers on Unit 2 and one reactor trip breaker on Unit 3 failed to open on activation of the undervoltage trip coil. Both units were shutdown at the time of the tests. The SONGS RPS systems are designed such that a reactor trip signal energizes the shunt trip coil and deenergizes the undervoltage trip coil. All tests of the reactor trip breakers using the shunt trip coil were satisfactory. A reactor scram would have occurred if an automatic or manual signal had been generated during operation from the redundant undervoltage and/or the shunt coils.

Background:

In some RPS designs, the automatic protection signals are fed only to the undervoltage (UV) trip attachment of the reactor trip breakers. Other plants may actuate both the UV device and the shunt trip coil on RPS trip.

As described above, four RPS breakers at the SONGS Units 2 and 3 failed to open during testing. Other failures involving the GE type UV trip attachment to the RPS have been reported to the NRC. These failures were due to either binding or

out-of-adjustment within the linkage mechanism of the UV trip device installed in General Electric (GE) type AK-2 (i.e., AK2A-15, 25, 50, 75, 100) circuit breakers. Failures have occurred at ANO-1, Crystal River-3, Oconee Units 1 and 3, TMI-1, and St. Lucie. As a result of these events, the NRC issued IE Bulletin No. 79-09 dated April 17, 1979 and IE Circular 81-12 dated July 20, 1981. Subsequently, failures have been reported at ANO-1 and Rancho Seco.

Required Actions for Holders of Operating Licenses for Pressurized Water Reactors:

PWR licensees with other than W DB type breakers in Reactor Protective System applications are requested to:

1. Perform surveillance tests of undervoltage trip function independent of the shunt trip function within 5 days of receipt of this Bulletin unless equivalent testing has been performed within 10 days. Those plants currently shutdown should complete this item before resuming operation or within 10 days, whichever is sooner. Those plants for which on-line testability is not provided should complete this item at the next plant shutdown if currently operating.

2. Review the maintenance program for conformance to the latest manufacturer's recommendation, including frequency and lubrication. Verify actual implementation of the program.* If maintenance does not conform, initiate such maintenance within 5 days of receipt of this bulletin or provide an alternate maintenance program. Repeat the testing required in item 1 prior to declaring the breaker OPERABLE.

3. Notify all licensed operators of the failure-to-trip event which occurred at Salem (see IE Bulletin 83-01) and the testing failures at San Onofre Units 2 and 3 described above. Review the appropriate emergency operating procedures for the event of failure-to-trip with each operator upon his arrival on-shift.

4. Provide a written reply within 10 days of receipt of this bulletin:

   a. Identify results of testing performed in response to item 1. Plants without on-line testability should report the date and results of the most recent test.

   b. Identify conformance of the maintenance program to manufacturer's recommendation and describe results of maintenance performed directly as a result of this Bulletin in response to item 2.

*IE Bulletin 79-09, dated April 17, 1979, had as an attachment an extract of General Electric (GE) Service Advice Letter No. 175(CPDD)9.3 which is applicable to GE type AK-2 breakers.

c. Provide a statement that provisions are in place to notify licensed operators of the Salem and San Onofre events and bring to their attention appropriate failure-to-trip emergency procedures upon their arrival on-shift.

d. Provide a description of all RPS breaker malfunctions not previously reported to the NRC.

e. Verify that procurement, testing and maintenance activities treat the RPS breaker and UV devices as safety related. Report the results of this verification to the NRC.

5. Any RPS breaker failure identified as a result of testing requested by this bulletin should be promptly reported to the NRC via the emergency notification system, regardless of the operating mode of the plant at the time of the failure.

The written report required shall be telefaxed to Richard C. DeYoung, Director, Office of Inspection and Enforcement within 10 days of receipt of this bulletin.** At the same time, the report shall be submitted to the appropriate Regional Administrator under oath or affirmation under provisions of Section 182a, Atomic Energy Act of 1954, as amended. The original copy of the cover letters and a copy of the reports shall be transmitted to the U. S. Nuclear Regulatory Commission, Document Control Desk, Washington, D.C. 20555 for reproduction and distribution.

This request for information was approved by the Office of Management and Budget under a blanket clearance number 3150-00012 which expires April 30, 1985. Comments on burden and duplication may be directed to the Office of Management and Budget, Reports Management, Room 3208, New Executive Office Building, Washington, D.C. 20503.

If you have any questions regarding this matter, please contact the Regional Administrator of the NRC Regional Office or the technical contact listed below.

James H. Sniezek for

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Technical Contact: I. Villalva, IE
301-492-9635

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Attachment:
1. List of Recently Issued IE Bulletins

**Rapidfax (301) 492-8187 or (301) 492-7376
3M Remote Copies (301) 492-7285

Attachment
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LIST OF RECENTLY ISSUED IE BULLETINS

Bulletin No.	Subject	Date of Issue	Issued to
83-03	Check Valve Failures in Raw Water Cooling Systems of Diesel Generators	03/11/83	All power reactor facilities holding an OL or CP
83-02	Stress Corrosion Cracking in Large-Diameter Stainless Steel Recirculation System Piping at BWR Plants	03/04/83	Table 1 BWRs an for action and all other licensees and holders of a CP
83-01	Failure of Reactor Trip Breakers (Westinghouse DB-50) to Open on Automatic Trip Signal	02/25/83	All PWR facilities holding an OL and other power reactor facilities for information
82-04	Deficiencies in Primary Containment Electrical Penetration Assemblies	12/03/82	All power reactor facilities holding an OL or CP
82-03 Rev. 1	Stress Corrosion Cracking in Thick-Wall Large-Diameter Stainless Steel, Recirculation System Piping at BWR Plants	10/28/82	Operating BWRs in Table 1 for action and other OLs and CPs for information
82-03	Stress Corrosion Cracking in Thick-Wall Large-Diameter, Stainless Steel, Recirculation System Piping at BWR Plants	10/14/82	Operating BWRs in Table 1 for action and other OLs and CPs for information
82-01 Rev 1, Supp 1	Alteration of Radiographs of Welds in Piping Subassemblies	08/18/82	All power reactor facilities with an OL or CP
82-02	Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR plants	06/02/82	All PWR facilities with an OL for action and all other OLs or CPs for information
82-01 Rev. 1	Alteration of Radiographs of Welds in Piping Subassemblies	05/07/82	All power reactor facilities with an OL or CP

OL = Operating License
CP = Construction Permit