

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
OFFICE OF NEW REACTORS  
WASHINGTON, DC 20555-0001

April 14, 2010

NRC INFORMATION NOTICE 2010-09:      IMPORTANCE OF UNDERSTANDING CIRCUIT  
BREAKER CONTROL POWER INDICATIONS

**ADDRESSEES**

All holders of an operating license or construction permit for a nuclear power reactor issued under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of or applicants for an early site permit, standard design certification, standard design approval, manufacturing license, or combined license issued under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

All holders of or applicants for a license for a fuel cycle facility issued pursuant to 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material."

All holders of or applicants for a certificate of compliance issued under 10 CFR Part 76, "Certification of Gaseous Diffusion Plants."

All holders of or applicants for a license for a uranium conversion facility issued pursuant to 10 CFR Part 40, "Domestic Licensing of Source Material."

**PURPOSE**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to inform addressees about circuit breaker control power indication issues that could result in degraded circuit breaker protection and control. The NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

**DESCRIPTION OF CIRCUMSTANCES**

On March 28, 2010, following an automatic reactor trip at H.B. Robinson Steam Electric Plant Unit 2, a non-safety related electrical circuit breaker did not automatically open to isolate an electrical fault because this breaker did not have control power to the trip circuit. The lack of control power was due to a faulty fuse assembly in the breaker's control power circuit. The licensee's corrective action program shows that the control power indicating lights on the front

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panel of the breaker had not been illuminated for approximately one year. Additional information is available in Preliminary Notification of Event [PNO-II-10-002](#) dated March 29, 2010, and can be found on the NRC's public website in the Agencywide Documents Access and Management System (ADAMS) under Accession No. [ML100880412](#).

## **BACKGROUND**

The NRC previously issued two INs related to circuit breaker control power issues:

- (1) IN 1991-78, "Status Indication of Control Power for Circuit Breakers Used in Safety-Related Applications," November 28, 1991 (ADAMS Accession No. [ML082380373](#)).
- (2) IN 2007-34, "Operating Experience Regarding Electrical Circuit Breakers," October 22, 2007 (ADAMS Accession No. [ML072390061](#)).

The NRC issued IN 1991-78 to inform licensees of the importance of having control power for circuit breakers used in safety-related applications. This IN highlighted the importance of having control power indication for both safety-related and non-safety related applications. IN 2007-34 highlighted the importance of identifying possible causes for breaker problems including the lack of control power indication.

## **DISCUSSION**

Industry operating experience shows similar control power fuse issues where the indicating lights were either dim or not illuminated. The loss or degradation of control power in circuit breakers can prevent the breaker from performing its design function of either opening or closing on demand. Although there is no regulatory requirement for the functionality of the non-safety related breaker discussed in this IN, industry operating experience describes instances of technical specification required equipment being rendered inoperable due to similar circuit breaker control power issues.

A recent review of breaker control power operating experience has determined that the following items are important to ensure proper breaker operation:

- the verification of control power indication for both safety-related and non-safety related circuit breakers during walkdowns
- the potential impact on safety-related equipment resulting from a loss of control power to non-safety related circuit breakers when they fail to open to isolate a fault

## CONTACT

This IN requires no specific action or written response. Please direct any questions about this matter to the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

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Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.

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