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From: Meredith Brown <racer@lanl.gov>
Subject: Yellow Alert: Power Circuit Breakers

TITLE: Power Circuit Breaker Experience

IDENTIFIER: 1998-SR-WSRC-LL-0002

DATE: April 9, 1998

LESSONS LEARNED STATEMENT:

Caution should be used while racking out Brown Boveri, Type LK power circuit breakers. Tests have shown that there is a time delay between breaker trip initiation and when the breaker main contacts actually open. During this delay, it is possible to rack out the breaker while in the closed position.

DISCUSSION OF ACTIVITIES:

The Savannah River Site has experienced problems with some 480-volt, Brown Boveri, Type LK, low voltage power circuit breakers. The affected breakers may experience a delay from the time of trip initiation, either by the manual trip lever or the overcurrent trip device's magnetic latch, until actual opening of the breaker main contacts. Initial testing indicates the breaker will interrupt in a fault, but a delay is still present.

This failure mode could result in an unsafe condition in which the breaker fails to open immediately upon manual operation, and as a result, the breaker could be racked-out in the CLOSED position.

SRS RECOMMENDED ACTIONS:

In the interim, all Type LK breakers shall be racked-out only after positive verification that breaker has opened. Positive verification may be as simple as confirmation of a significant loud bang (i.e., springs retracting operating mechanism) instead of a soft "click" (i.e. magnetic latch being activated). Workers must not assume a breaker is OPEN when the trip lever is activated or the trip indicator flag is present.

A single NCR (NCR#98-NCR-06-011) was initiated to identify this problem. Since the problem potentially affects all LK breakers at SRS, the single NCR will be used to track the evaluation and disposition of all LK breakers sitewide.

Concurrence with all affected site organizations will be obtained prior to any corrective actions being implemented.

RECOMMENDED COMPLEX ACTIONS:

Facilities in the DOE complex should disseminate this information to appropriate personnel to make them aware of this brief unsafe condition while racking out Brown Boveri, Type LK breakers.

ORIGINATOR: WSRC, QA & Performance Evaluation Section Site Lessons Learned
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PRIORITY DESCRIPTOR: YELLOW/CAUTION

FUNCTIONAL CATEGORY: OPERATIONS

OCCUPATIONAL SAFETY AND HEALTH

KEYWORDS: Breaker, Rack-out

REFERENCES: Savannah River Site Safety Alert (4-8-98)

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