

5. FAILURE OF ELECTRICAL BREAKER OPERATING LINKAGE

On September 23, 1993, personnel at the Idaho National Engineering Laboratory Test Reactor Area Hot Cell facility identified a Westinghouse Type EH, 480-volt, 3-phase breaker that failed to de-energize when the handle was placed in the OFF position. As part of electrical preventive maintenance on the cell no. 2 manipulator carriage, workers completed a lock and tag out to isolate power to the equipment. Operators and maintenance personnel independently verified the lock and tag out as satisfactory. Prior to starting work and prior to voltage tests being performed, an operator actuated the manipulator carriage and discovered that it still operated, indicating that the manipulator carriage was still energized. Facility personnel halted all maintenance work on the equipment and reviewed the adequacy of the lock and tag out.

During the follow-up investigation, operators identified a problem with the mechanical linkage between the breaker handle and the line breaker. When they moved the breaker handle to the OFF position, it failed to actually open the line breaker. On closer inspection, they noted that the handle only moved the breaker approximately half way to the OFF position. A plastic face plate in the cubicle door, which is designed to fit over the breaker operator, was attached to the cubicle door with two slotted screws. The slots in the plastic plate allow for about 3/8-inch travel of the operator plate and the as-found condition was in the highest position. In this position, the movement of the breaker handle would not completely open the line breaker. Facility personnel adjusted the plastic plate approximately 1/4 inch and the breaker functioned correctly.

Facility personnel are inspecting and adjusting other similar breakers. In addition, they are reviewing the preventive maintenance program for these breakers to ensure that they are periodically inspected for plate alignment. DOE managers may wish to

determine if any of these Westinghouse EH breakers are installed and take appropriate action to preclude the same failure. Additional information on this issue can be obtained by contacting Bob Seal at 208-526-5373. NS will provide additional information on this event in future OE Weekly Summaries.

6. EMERGENCY PRESSURE RELIEF SYSTEM FAILURE CAUSED BY MOISTURE IN AIR LINE

On September 23, 1993, an Emergency Pressure Relief System (EPRS), which provides alternate ventilation capability for plutonium storage vaults in the event of a fire or tornado, at the New Brunswick Laboratory in Illinois did not activate as required during a quarterly functional test of the fire protection system. The EPRS is a separate ventilation system for storage vaults that automatically activates in the event of a fire, or it can be manually activated when a tornado warning is issued. The EPRS consists of a sand and gravel filter to absorb heat during a fire, high-efficiency particulate air filters to remove potentially radioactive components, and system valves and controls that direct exhaust air from the vaults through the gravel and particulate filters when required. Facility personnel were testing the automatic system response to a smoke detector signal when a solenoid valve for one of the vaults failed to operate correctly. System controls for the three other vaults operated as expected.

Maintenance personnel conducted an investigation and discovered a small amount of moisture in an EPRS air line, which engineers determined could have affected operation of the solenoid valve during the test. Facility personnel later successfully repeated the smoke detector test. After the moisture was discovered, workers blew out the air system and implemented measures to check the system for moisture monthly. (ORPS Report CH-NBL-NBL-1993-0007)