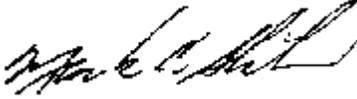
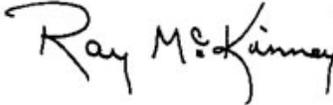
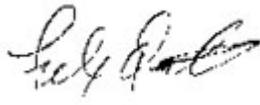


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PROGRAM INFORMATION BULLETIN NO. P06-02

FROM: MARK E. SKILES   
Director of Technical Support

  
RAY MCKINNEY  
Administrator for  
Coal Mine Safety and Health

  
FELIX A. QUINTANA  
Acting Administrator for  
Metal and Nonmetal Mine Safety and Health

SUBJECT: Modifying Molded Case Circuit Breakers

**Who needs this information?**

Mine Safety and Health Administration (MSHA) personnel, underground coal mine operators, underground gassy metal nonmetal mine operators, miners' representatives, mining equipment manufacturers, independent contractors, and repair/rebuild shop facilities should have this information.

**What is the purpose of this Program Information Bulletin?**

MSHA is issuing this Program Information Bulletin (PIB) to alert the mining industry, in particular all entities that repair or rebuild circuit breakers used with mining equipment, of the hazards involved with using circuit breakers with modifications that do not meet the circuit breaker manufacturer's specifications. While circuit breakers are not approved pieces of equipment under Title 30 Code of Federal Regulations (30 CFR), they pose a significant safety hazard if they are not properly maintained. MSHA recently investigated two incidents where molded case circuit breakers were modified

by an independent repair shop. In both cases, these modifications outwardly did not appear to change the circuit breaker. However, upon an examination of the internal components of the circuit breaker, MSHA discovered that significant changes in the circuit breaker design had been made causing a potential safety hazard.

**What needs to be done?**

MSHA recommends repairing circuit breakers to the original manufacturer's specifications using components exactly like those furnished by the manufacturer. Independent repair shops, the original equipment manufacturer (OEM) or an authorized OEM repair shop can repair circuit breakers when replacement components exactly like those furnished by the manufacturer are available.

Before modifying any molded case circuit breaker or repairing any circuit breaker with components different from the manufacturer, consult the manufacturer to determine if the modification will have any adverse effect on the circuit breaker. Since circuit breaker designs and specifications are proprietary information, independent repair shops may not be able to obtain the required specifications from the manufacturer. If the independent repair shop can not obtain the specifications, the circuit breaker should be modified by the OEM or an authorized OEM repair shop.

Mine operators are ultimately responsible for all repairs and modifications made to the circuit breakers whether made by the OEM, an authorized OEM repair shop, independent contractor or by a repair/rebuild shop facility. The mine operator must make sure that all repairs are made in a workman-like manner and that any modifications will not adversely impact the performance of the circuit breaker.

**What is the background of this PIB?**

MSHA's investigations showed that some circuit breakers are being modified to incorporate accessories and parts that were not included in the original circuit breaker design.

1. A Cutler-Hammer (Westinghouse) 225 Amp, 3 Pole, circuit breaker was modified to use an electrical reset undervoltage release. This particular circuit breaker frame was designed to incorporate a mechanical latching reset undervoltage release. An independent repair shop tried to modify the circuit breaker frame to match the frame of a similar circuit breaker designed to accept the electrical reset undervoltage release. The modifications were not to the OEM specifications and the undervoltage release did not reliably trip the circuit breaker. This impacted the undervoltage protection, the ground fault protection and the ground wire monitoring protection for this circuit. This problem was discovered during routine tests and the circuit breaker was replaced.
2. Another Cutler-Hammer (Westinghouse) molded case circuit breaker was modified by an independent repair shop by using circuit breaker contact tips that were not specified for use with the circuit breaker. The circuit breaker feeding a shuttle car could not be closed. The contact tips had welded together during repeated attempts to close the circuit breaker. Once the cable coupler was removed, a ground fault was found on one of the phase conductors leading to

the shuttle car, which explained why the circuit breaker could not be closed. A miner was attempting to locate the fault by using jumpers from the power center receptacle to the cable plug. When attempting to make the connections, a severe electrical arc occurred resulting in fatal injuries to the miner.

**What is the authority for this PIB?**

Federal Mine Safety and Health Act of 1977; 30 CFR §§ 75.900, 77.900, 56.12001 and 57.12001.

**Is this PIB available on the Internet?**

This bulletin may be viewed on the World Wide Web by accessing the MSHA home page (<http://www.msha.gov>) and choosing "Compliance Info" and "Program Information Bulletins."

**Who are the MSHA contact persons for this PIB?**

Kenneth Sproul, (304) 547-2038  
Technical Support  
E-mail: [sproul.kenneth@dol.gov](mailto:sproul.kenneth@dol.gov)

Terry Bentley, (202) 693-9521  
Coal Mine Safety and Health  
E-mail: [bentley.terry@dol.gov](mailto:bentley.terry@dol.gov)

Thomas Loyd, (202) 693-9645  
Metal and Nonmetal Mine Safety and Health  
E-mail: [loyd.thomas@dol.gov](mailto:loyd.thomas@dol.gov)

**Who will receive the PIB?**

MSHA Program Policy Holders  
Mine Operators  
Electrical Equipment Manufacturers  
Repair and Rebuild Facilities  
Independent Contractors  
Special Interest Groups  
Miners' Representatives