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SUBJECT: Approval of Communication and Tracking Devices Required by
the Mine Improvement and New Emergency Response Act of
2006 (MINER Act)

Scope

This program policy letter (PPL) is intended for Mine Safety and Health Administration (MSHA) personnel, equipment manufacturers, repair facilities, underground mine operators, underground independent contractors, miner's representatives, and other interested parties.

Purpose

This PPL is issued to establish approval guidelines for communication and tracking devices under Title 30 Code of Federal Regulations (30 C.F.R.) Part 23, *Telephones and Signaling Devices*, to address the provisions of the MINER Act. This PPL is revised to clarify interpretations of the requirements of 30 CFR Part 23 and to ensure consistency with Program Policy Letter No. P09-V-01 "Guidance for Compliance with Post-Accident Two-Way Communications and Electronic Tracking Requirements of the Mine Improvement and New Emergency Response Act of 2006 (MINER Act)" issued on January 16, 2009.

Policy

The following guidelines are being administered by the Approval & Certification Center when processing applications for approval of communication and tracking products for those underground mines or operations required to have permissible equipment:

1. Any component or system used to provide voice, text, or signaling data (e.g., tracking) that is intended to remain operational in the event of an emergency is considered a telephone or signaling device and evaluated under 30 C.F.R. Part 23.
2. Line powered devices must be equipped with a standby power source to allow continued operation in the event the line power is lost during an emergency. The standby power source must be capable of providing additional operating capacity (24 hours minimum) based on a 5% transmit time, 5% receive time and 90% idle time, denoted as 5/5/90, duty cycle.
3. Untethered communication devices, such as hand-held radios, and individually worn/carried tracking devices, such as tracking tags, must provide at least 4 hours of operation in addition to the normal shift duration (a minimum of 12 hours of operation) based on a 5/5/90 duty cycle. Additionally, these individually-worn/carried tracking devices must provide a low power warning.
4. When operating under standby power, all components of a communication or tracking system must be MSHA-evaluated as intrinsically safe, or housed in an MSHA certified explosion-proof enclosure. Communication and tracking system components include any interconnecting cables. The standby power source must be intrinsically safe within 20 seconds after loss of line power. This would include the in-coming line power cable (back-feed protection).
5. The cable supplying power to the system and all cables between communication and tracking components must be MSHA-approved as flame-resistant or enclosed in MSHA-approved, flame-resistant hose conduit. These cables must be protected from mechanical damage by position, MSHA-approved, flame-resistant hose conduit, metal tubing or troughs. Cables worn by the miner are exempt from these requirements.
6. All non-intrinsically safe cables of a communications and tracking system must be provided with short-circuit protection. Cables shall be protected against short circuits by devices set to trip at no more than 70% of the minimum available short circuit current. The clearing time of the short-circuit protective device must be less than the time required to cause cable damage by any short-

circuit or 10 seconds whichever is less. Cables supplied from non-intrinsically safe low-energy sources need not be protected by short-circuit protection devices provided:

- a. The cable receives power from a Class 2-listed power supply (maximum voltage of 30 Volts and maximum power of 100 VA), and
 - b. The output is protected with a fuse or circuit breaker with a trip setting less than or equal to the ampacity of the cable, and
 - c. The system can identify short circuits in the cable and an operator can manually remove power from the cable.
7. Large intrinsically safe batteries (greater than 5 kg) that are evaluated in accordance with the battery enclosure requirements of §§ 7.44(a), (b), (d), (e), (f), (h), (l) and (m) will not be subjected to the MSHA intrinsic safety drop test.
8. Standby power sources that include rechargeable batteries must be designed or equipped with means to mitigate the explosion hazard of battery off-gassing. Examples of available mitigation techniques include venting of the enclosure or automatic de-energization when an explosive gas concentration reaches 20% of the lower explosive limit of the gas.
9. A justification detailing the minimum safe distance to blasting circuits, detonators, and explosives must be provided by the approval applicant for any radio frequency (RF) device. One acceptable method of justification is through the calculation of the electric field strength and comparison of this value to the acceptable limits published by the Institute of Makers of Explosives (IME) in Standard Library Publication (SLP-20). For this calculation, the near field/far field boundary is assumed to be three times the wavelength of the radiate frequency unless the applicant justifies a different distance. The approval applicant must specify the maximum output power, normal operating frequency, maximum antenna gain and the minimum safe distance from blasting circuits, detonators and explosives.
10. Person-wearable tracking tags are considered portable apparatus and therefore are subjected to the MSHA intrinsic safety drop test. Machine-mounted (asset) tracking tags are subjected to an impact test.
11. Cap lamps powering communication and/or tracking related components are required to meet the performance requirements specified in § 19.9(a) when both the cap light and communication and/or tracking component are in operation. To assure sufficient operational capability in various scenarios, the cap lamp battery should be capable of providing sufficient power to effectively

operate the communication and/or tracking component for four hours beyond the 10-hour minimum for the cap lamp.

12. Where lightning arrestors for conductors between surface and underground locations are required, system approval documentation must specify the lightning arrester used to comply with §§ 57.12069 and 75.521, and to ensure that it does not invalidate the Part 23 approval.

Background

The regulations for approval of Telephones and Signaling Devices are specified in 30 C.F.R. Part 23.

The MINER Act included the following requirement for communications and tracking equipment:

“Not later than 3 years after the date of enactment of the Mine Improvement and New Emergency Response Act of 2006, a[n emergency response] plan shall, to be approved, provide for post accident communication between underground and surface personnel via a wireless two-way medium, and provide for an electronic tracking system permitting surface personnel to determine the location of any persons trapped underground or set forth within the plan the reasons such provisions can not be adopted.”

The requirements in 30 C.F.R. Part 23 were intended for audible and visual communication devices. However, the concepts of safety and functionality in potentially hazardous atmospheres are also applicable to the communications and tracking equipment required by the MINER Act. MSHA has therefore provided these clarifying interpretations.

Authority

Mine Improvement and New Emergency Response Act of 2006 (MINER ACT)

Filing Instructions

This PPL should be filed behind the tab marked "Program Policy Letters" at the back of Volume II of the Program Policy Manual.

Internet Availability

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

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*Per PIB P14-04 the expiration date was removed.

**Contact information was updated on 7/25/14.