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March 27, 2006

MSHA
Office of Standards, Regulations and Variances
1100 Wilson Blvd.
Room 2313
Arlington, Virginia 22209-3939

VIA FAX to 202-693-9441

**Re: RIN 1219-AB44
Request for Information
Underground Mine Rescue Equipment and Technology**

We are pleased to have this opportunity to respond to the Request for Information (RFI) by MSHA regarding Underground Mine Rescue Equipment and Technology. IPITEK has many years of experience in fiber optic networking and high-bandwidth security and surveillance systems, which we feel is directly relevant to addressing the serious issues in communications for mine safety and rescue operations. Our comments below are intended to respond collectively to the questions E1, E2, and E3 of the RFI.

E. Communications

- 1. What types of communication systems can be utilized in an emergency to enhance mine rescue?**
- 2. Current systems include permissible hand-held radios, hand-held radios using small diameter wires, pager systems, sound powered telephones, leaky feeder systems that "leak" radio signals out of and into special cables, and inductive coupled radios that use existing mine wires as a carrier for radio signals. Are there other systems?**
- 3. Should a particular system be required over another? If so, which system and why?**

IPITEK has developed a unique design for a hybrid fiber-optic/wireless communications system that combines the best features of wired and wireless systems, including:

- Allows for unlimited miner mobility
- Provides large bandwidth to simultaneously carry communications, monitoring and safety transmissions (voice, data, video)
- Completely passive fiber optic network operates when underground equipment fails or power is lost
- Transmits over many miles without the need for repeaters (amplifiers)
- Scalable – can easily provide access points as needed throughout the mine
- Extremely robust and reliable under normal operating conditions
- Includes redundant and failsafe capabilities to maintain communications under the most extreme emergency conditions.



The hybrid fiber optic/wireless underground mine communications system is based upon IPITEK's own optical communications technologies in combination with commercially available wireless equipment. The fiber optic "backbone" of the network interconnects with a wide range of available systems, including wireless communication equipment (for two-way voice and text messaging with hand-held radios), wireless tracking/locator systems, video surveillance equipment, and sensor systems.

Fiber optic cable is immune to electrical interference and inherently safer than electrical cables because there is no risk of spark that could cause fire or explosion. The survivability of the cabling is significantly enhanced by use of ruggedized fiber optic cable (flame retardant, crush resistant), as well as redundant cable routing in the mine. The optical transmission equipment has built-in redundancies and protection switching to ensure the highest level of network reliability under normal operating conditions.

In the event of an emergency situation, such as a fire, explosion, or roof collapse in the mine, it is critical that communications be maintained with the miners. IPITEK's fiber optic backbone is designed as a "self-healing" counter-directional network that will continue to operate even in the event of a cable break. In addition, unique passive optical channels provide a two-way communications link between the surface and the miner's personal communications device in the event of active equipment failure and even with a total loss of underground power. The self-healing and failsafe capability of the system is a significant improvement in mine rescue and safety over existing systems deployed and available today.

About IPITEK

IPITEK is a technology leader in fiber optic networking systems and an ISO 9001 certified manufacturer of video-optimized, multi-service, optical transport equipment and high-bandwidth security and surveillance systems. In addition to our commercial products, IPITEK provides high technology products and services to the U. S. Government. We have been a pioneer of many leading technologies for fiber transmission systems and passive optical networks since 1982. Currently, our products are deployed worldwide in cable TV and telecom networks, municipalities, rail systems, airports, and mines. A complete description of IPITEK's products and technology is available at our website: www.ipitek.com.

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FAX COVER SHEET

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To: MSHA
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