



The Q-Track Corporation
515 Sparkman Drive
Huntsville, AL 35816
(256) 489-0075 FAX (256) 704-6002

March 21, 2006

Mr. Robert Stone
Acting Director
Officer of Standards, Regulations, and Variances
1100 Wilson Blvd., Room 2350
Arlington, VA 22209-3939

Reference: Testing Communication and Locating Devices For Underground Mines

Dear Mr. Stone:

Your web site had a notice posted February 24, 2006 that states:

MSHA is reviewing and will be field-testing a number of emergency communications and tracking systems that represent the most [promising technologies](#) for application in underground mines. Both [MSHA-approved Technologies](#) and those under development will be evaluated.

<http://www.msha.gov/Techsupp/PEDLocatingDevices.asp>

The Q-Track Corporation respectfully requests that MSHA evaluate its tracking system. Q-Track's tracking system exploits Near Field Electromagnetic Ranging ("NFER™"), a recent breakthrough in wireless tracking. For a short video that explains NFER™ technology, see <http://www.q-track.com/Q-track.wmv>

Attached is a one page summary explaining why NFER™ technology is a more promising tracking technology than the "TRACKER Tagging System" summarized at <http://www.msha.gov/Techsupp/PEDLocatingDevices.asp> In December 2005, Q-Track submitted a SBIR proposal to the CDC National Institute For Occupational Safety and Health to develop a prototype NFER™ tracking system for miners.

Sincerely,

Jerome S. Gabig

Jerome S. Gabig
President

NFER™ Tracking System For Underground Mines

General Information

The NFER™ Tracking System allows potential rescuers to know the precise location of miners at the instance a catastrophe occurs. Depending on the damage to the infrastructure of NFER™ Tracking System, it may be possible to continue to monitor the location of the miners during the rescue effort. The miners wear tags that transmit a low frequency signal which is detected by locator receivers. The receivers are spaced approximately a hundred yards apart in the drifts of the mine. Using near field physics, the receivers can measure the distance to the transmitter. These measurements provide a basis to determine the real-time location of a miner to an accuracy of a yard or better as the miner travels down a draft. If a miner is in a chamber, the receivers can determine the X and Y coordinates to locate the position of the miner to an accuracy of a yard or less.

NFER™ technology is a recent breakthrough in wireless tracking that has never been implemented in mines. However, wireless propagation tests within a mine indicate that the low frequencies used by NFER™ technology are well-suited for underground mines because the radio waves diffract to follow the curvature of drifts.

- Infrastructure would include tapping into existing power lines. Each receiver only requires 1.5 watts. The receiver uses either a wired Ethernet or an IEEE 802.11 wireless data link that transfers the location data to a central control point outside the mine.
- The receiver can be placed in explosion proof boxes.
- Cost estimates - about \$1,000 per receiver (plus cost for explosion proof box). Transmitters for individual miners are about \$150.

Pro:

- If the system is disrupted, it still provides the last location of all miners to an accuracy of one yard or better.

Cons:

- System is subject to damage from fire and explosion which could deny rescuers of real-time location information if the miners re-position themselves after the catastrophe.

Benefit Over TRACKER Tagging System:

- The TRACKER Tagging System “is limited to identifying their location in the ‘zone’ between two receivers where any given transmitter is located.” Rather than merely identify a “zone,” a NFER™ Tracking System can identify the precise location of the miner to an accuracy of better than one yard.