



**AMERICAN SOCIETY
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March 27, 2006

The Honorable David Dye
Acting Assistant Secretary
Mine Safety & Health Administration
Office of Standards, Regulations & Variances
1100 Wilson Blvd., Room 2313
Arlington, Virginia 22209-3939.

RE: Underground Mine Rescue Equipment
and Technology Request for
Information (RIN 1219-AB44)

Dear Mr. Dye:

On behalf of the 30,000 members of the American Society of Safety Engineers (ASSE) as well as its Mining Practice Specialty, the following comments are offered in response to the Mine Safety and Health Administration's (MSHA) Request for Information on Underground Mine Rescue and Technology. Founded in 1911, the ASSE is America's oldest and largest professional safety organization. ASSE's Mining Practice Specialty is one of the fastest growing of ASSE's thirteen practice specialties. As a society dedicated to the promotion of workplace safety, we are pleased to offer the experience and expertise of our members in helping further MSHA's goal of improving mine rescue capabilities.

In response to this winter's tragedies in the Appalachian coal region, ASSE established a task force of members from within its Mining

Practice Specialty to address emergency response and communication in mining. This group is comprised of accomplished mining safety professionals from across the country with experience in managing safety risks within various mining methods in both coal and the metal/non-metal industries. The task force has prepared the following response, which are keyed to the specific topics outlined in the RFI, as requested by MSHA.

A. Rapid Deploy Systems

Rapid deploy systems are valuable in that they make the most effective tools available to the widest range of miners in the event of an entrapment.

The theoretical applicability of electromagnetic systems in locating signals from underground locations has been acknowledged for years. Likewise, seismic technology is not based on any new science. Both could, in the right circumstances, be useful in locating trapped miners underground.

Electromagnetic systems would require a transmitter to be worn by the miner and powered by the cap lamp battery. Seismic tools operate independently. As such, seismic technology seems to be the most appropriate to use in a “Rapid Deploy” kit because it would function regardless of the conditions or practices of the mine.

When discussing the equipment that might be used for locating trapped miners, it important to note that the most effective tool will always be an accurate and up to date mine map. The Quecreek incident in July 2002 highlights the importance of this practice.

B. Breathing Apparatus

The two manufacturers mentioned in the question – Draeger and Biomarine – both market closed circuit, self-contained breathing apparatus that provide four hours of breathing time. These units have been approved by MSHA and function adequately within the mine rescue procedures. Most concerns with this equipment tend to be about cost issues as opposed to functionality.

There is the potential that mine rescue operations in metal/nonmetal mines where no explosive atmosphere exists could benefit from using less complex systems such as the SCBA used by fire fighters for atmospheres immediately dangerous to life and health. In these limited situations, this option could allow for supplemental systems to be borrowed from local fire stations which would increase the lifesaving tools on hand while addressing the cost factors.

C. Self-Contained Self-Rescuers (SCSR)

It is important to consider the intended purpose of the self-contained self-

rescuer, which is to provide breathable air to a miner so that he may be able to escape the mine. Neither was it developed nor is it suitable for sustaining breathable air for extended periods.

As such, miners should have access to SCRs sufficient to provide adequate breathable air to facilitate their evacuation from the mine assuming the most indirect route, barring entrapment. This should be provided in whatever way is most suitable for a mine. No one-size-fits-all approach will work.

That being said, these units should continue to be evaluated and developed to provide for the most efficient operation possible.

D. Rescue Chambers

Rescue Chambers are practical options in situations where escape is impossible or impractical. In those instances, they offer safe harbor for miners while the hazards that created the emergency are mitigated. While escape should always be stressed as the primary option in an emergency situation, Rescue Chambers are a sound alternative in some circumstances.

It is important to stress that rescue chambers are not favorable in every mining environment. As such, individual risk assessments should be performed before deciding where to encourage their use. MSHA has already demonstrated an understanding of this need to be sensitive to the risk profiles of each operation in their existing requirements for Rescue Chambers in metal/non-metal mines that cannot be evacuated in one hour.

The size of a chambers as well as the provisions that should be maintained within them should be dictated by the working population of the mine. To accommodate worst-case scenarios, they should be able to house the highest number of miners occupying the mine at any one time.

Again, individual risk assessments should be used to dictate the location of these structures and the duration for which they should be equipped to function.

E. Communications

The first critical emergency communication need is a system to alert miners that they should initiate a mine's emergency response plan. This system need not be sophisticated or be dependent on any new technology. It is important, however, that it be able to reach all miners at all locations in the mine and give fundamental information on what steps to take in response to an emergency.

Ironically, the most effective alarm is often the one that is least complicated. For some mines, a system that simply flashes the lights works well. Other mines successfully rely on a siren with different blasts that miners are trained to know mean different things. In the end, no singular system should be required for this purpose. This requirement should continue to be performance based.

Of all the emerging technology, personal emergency devices (PEDs) seem to have demonstrated the greatest reliability. However, functionality issues still surround “dead spots,” the message alert system for miners in mobile equipment and operating during power outages. Until these issues are addressed, PEDs should not be required by a new standard.

Though technology continues to advance, two-way communication continues to be limited to line-of-sight and is significantly restricted in range. This can be expanded by antenna systems that can relay communications, but, at this stage, even those require an active electrical system that likely would not be functional in an explosion/entrapment scenario.

F. Robotics

The current limitations of MSHA’s robot were evident at the Sago disaster due to its inability to traverse muddy environments. Still, robots could eventually prove to be tremendous tools for expediting exploration without exposing rescuers to hazardous conditions. As such, these design issues must be addressed.

It would more appropriate to include Robots in a rapid response “Rapid Response” program as opposed to requiring individual mines to maintain them for emergency situations. Again, the individual risk profiles for each mine should be considered in setting any such requirement.

G. Thermal Imagers and Infra-Red Imagers

If MSHA approves thermal and infra-red imagers for use in gassy atmospheres, the requirement should come under the rapid response program. Because risk assessments in various mines would not justify the need for the technology, it should not be required of individual operations.

I. Mine Rescue Teams

The Mine Rescue requirements for equipment (as stated in 30 CFR part 49) are adequate as written. The alternative provisions for small or remote mines detailed in part 49.3, however, might be revised to improve the response time and the familiarity of the rescue team to both the mine and its transportation/communication systems. It seems practical to require rescue

teams to have orientation training in each facility they are to cover under this provision.

In the wake of the recent tragedies, some have questioned the alternative provisions for small and remote mines. It is important not to overlook the value that is derived by these provisions or the possibility of unintended consequences. Currently, every member of a mine rescue team is a dedicated volunteer who willingly risks his or her personal safety to rescue another miner in very hazardous environments. Requiring each mine, regardless of size or location, to have a dedicated mine rescue team would be counter-productive in that sufficient numbers of volunteers who are both qualified and dedicated to undertake the inherent dangers of rescue might not be available.

It is difficult for some mines to have enough volunteers to participate on a mine rescue team, and, in some cases, undedicated team members put in only the minimum amount of time required by law or may not be ready to try to rescue miners from a hazardous environment. These issues are even more acute for small operations that do not even have six able-bodied employees, much less six willing to accept the risk and harsh physical requirements of the job. As such, the provisions made in Part 49.3 are critical for ensuring the most effective emergency response for all miners.

One possible alternative solution to strengthening emergency response might be to establish full-time mine rescue teams to provide support for mines in a designated geographical area. These teams could be directed by the MSHA district office for the area in which the team would cover. Miners might be better served by well equipped, professional rescuers.

J. Government Role

The response to the tragedies in the Appalachian coal region this winter has demonstrated the commitment for mine safety from both state and federal governments as well as from agencies such as MSHA and the National Institute for Occupational Safety and Health (NIOSH). This has brought about an appropriate review of the standards and regulatory actions designed to protect miners.

In this era, it is very important that any actions taken to address presumed weaknesses in mining's emergency preparedness program must be prudent ones. Moreover, they should continue to be sensitive to the differences within the mining industries and the risk indexes of different mines.

Government's role in promoting the development and advancement of emerging technology cannot be overstated. ASSE fully supports strong, effective enforcement of the mining standards that exist. At the same time, MSHA should continue to work through their partnerships, strategic alliances

and with their sister agency, NIOSH, to press the need for communication and tracking systems that could improve mine rescue operations. However, imposing any regulation prematurely, especially where MSHA seeks to drive the use of technology forward, could very well result in the same operators MSHA seeks to target by purchasing the least expensive alternative that will help them meet the broadest interpretation of a standard. When that happens, the market becomes saturated with marginal equipment, demand drops and technological advancements stall.

At this stage, before clear consensus on some technologies exist, it is far more important to encourage development of practical tools. Such encouragement can best come through the implementation of a combination of pilot programs and incentives for operators to adopt new systems.

Conclusion

ASSE applauds MSHA for this effort to move quickly ahead on the issue underground mine rescue and technology. As always, ASSE's members offer their expertise and experience in helping MSHA advance the industry's understanding of these issues. If our members can be instrumental in working with MSHA and NIOSH in testing equipment or helping establish pilot programs, we would encourage you to contact us. We all share the same concern that solutions that will be effective in saving lives are developed as quickly as practicable. Thank you for this opportunity to comment.

Sincerely,



Michael Neason
Adminstrator
ASSE Mining Practice Specialty

cc: Jack Dobson, CSP
President
ASSE