



New Mexico Coal  
San Juan Coal Co.  
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March 13, 2006

Mine Safety & Health Administration  
Office of Standards, Variance & Regulations  
1100 Wilson Boulevard  
Room 2350  
Arlington, VA 22209-3939

RE: RIN 1219-AB41

Dear Director:

San Juan Coal Company has completed our review of the Mine Safety & Health Administration Request for Information regarding Underground Mine Rescue Equipment and Technology and is pleased to provide the following comments for the consideration by the Agency.

We have also solicited information and comments from BHPBilliton coal mining operations in South Africa and Australia. This information has been incorporated.

San Juan Coal Company is pleased to have the opportunity to provide these comments.

Sincerely,

David Hales  
Health & Safety Superintendent  
San Juan Coal Company

Our comments and answers to the questions contained in RIN 1219-AB44 are as follows:

#### A. Rapid Deploy Systems

##### RESPONSE:

Seismic systems are available that could serve the purpose. We do not have the technical information at present. Information from the oil and gas industry indicates that equipment is available that can pinpoint locations within about 10 feet.

Due to the extreme distances between underground mines in various parts of the country, the challenge would be to have these systems in a rapid deployment situation. In New Mexico for example, equipment stored in Albuquerque could take as long as 4 hrs to be delivered to Carlsbad or Farmington.

In South Africa the government provides emergency drilling equipment for the purpose of drilling rescue boreholes such as the one used at Quecreek. A test of this system at the Khutala Colliery was successful in reaching miners in a refuge bay within 9 hrs.

Ideally such seismic and drilling systems would need to be stored in each state where underground mining is conducted in order to be of value in the first minutes or even hours of an emergency event.

#### B. Breathing Apparatus

##### RESPONSE:

San Juan Coal Company currently equips, trains and maintains 3 mine rescue teams at its underground coal mine near Farmington, New Mexico. There are 23 team members. These teams are equipped with Biomarine SCBA equipment.

BHPBilliton underground coal mining operations in South Africa and Australia currently use the Draeger BG-4 apparatus.

#### C. Self-Contained Self-Rescuers (SCSR)

##### RESPONSE:

1- There is new technology that could be effective in protecting miners. Ceramic devices can filter oxygen out of a contaminated atmosphere and deliver it to a person. These devices would not function in an oxygen deficient atmosphere. There are also some rechargeable systems employed in other parts of the world. Refill stations are positioned at strategic locations for miners to recharge their

device. These stations could become damaged or destroyed in the event of an explosion. In that event, the miner may reach the location expecting to be able to refill his tank only to find that the system has been destroyed.

2- Development of an SCSR with a longer duration may be desirable. The problem is that the duration remains a finite period of time and may not be sufficient in a given situation.

3- Mine operators that have implemented SCSR Storage programs already have extra units available in additional caches. In the case of San Juan Coal Company, any working section that takes longer than an hour to walk out of is supplied with an additional cache of rescuers along the escapeway route. These storage areas are currently marked with reflective signs. Recent changes to New Mexico State law will require the signs to be luminescent and supplemented with strobe lights.

4- We have no evidence to suggest that SCSR units need to be inspected more frequently. Our SCSR devices are inspected by the user each shift. Our stored units are inspected every 8 hrs as part of the regular onshift inspections in the mine. These inspection frequencies are detailed in our SCSR Storage Program.

5- We have no evidence to suggest that the SCSR service life should be different than those terms currently established for each unit. Those periods of time should continue to be determined through testing by NIOSH, MSHA and the manufacturers of the devices.

#### D. Rescue Chambers

##### RESPONSE:

1- San Juan Coal Company has implemented the use of chambers we refer to as refuge chambers. These are constructed as semi-permanent facilities, supplied with fresh air from the surface via a borehole. The chambers are supplied with food, water and other emergency supplies. The chamber is provided with two communications systems. One is connected to the existing mine system, the other is from the chamber to the top of the borehole.

We continue to train our miners to escape in the event of an emergency and provide multiple escape routes from each part of the mine. We added these chambers to provide another alternative in the event that escape is cut off.

Regulations currently in effect would allow the Assistant Secretary to require these facilities now. The decision to require them should be based on the risk profile of a given mine.

The use of refuge chambers makes much better sense than trying to determine the appropriate quantity of SCSR units necessary to maintain breathable atmosphere in the event of an emergency situation. The numbers proposed in some of the recent US legislation are excessive and impractical. Miners couldn't carry the 16 units proposed by one bill. The other bill proposes a requirement for mine operators to provide 4 days of breathable air for each miner. These recommendations do not appear to be based on sound, mine specific risk assessments.

2- Our refuge chambers are not mobile. Information collected from other countries indicate that if a mobile chamber is large enough to accommodate the number of miners in a given working section, the unit is commonly destroyed trying to move it from one section to another. If the system is required, the decision to make them permanent or mobile should be left to the mine operator.

3- If a mine operator builds a place for miners to take refuge, there should not be a finite supply of air. The supply of air being delivered to our chambers has been calculated to be able to support 200 people indefinitely.

4- The numbers of people that the chamber should support should be based on the numbers of people working in a given area. Chambers used in South Africa are designed to accommodate from 30 to 50 people. This is based on the numbers of employees assigned to that part of the mine.

5- South African and Australian standards have been developed based on each mine's risk profile. Some mines have the chambers as close as every 600 meters and others have them up to every 1,000 meters or more. This spacing is determined based on the miners wearing a 20 minute SCSR and storing their 1 hour units in the refuge chamber.

If required in the US the spacing of chambers should be similarly assessed by the mine operator and the spacing for each mine determined by that operator.

## E. Communications

### RESPONSE:

1 thru 8 - Wireless communications systems might be capable of enhancing communications during mine rescue operations provided the leaky feeder or beacons involved are not damaged by the event creating the rescue situation. In an event such as Sago, if there had been multiple communication systems, those would likely have been destroyed as well.

Improving the capability of knowing where miners are located during the shift would be desirable. Some primitive systems are available now that would provide limited information about when people passed a certain point and if they had

passed another beacon somewhere else in the mine. Their ability to pinpoint miner's locations is extremely limited at this time.

We have sought information about such systems and have been informed by the manufacturer's representatives that these systems require power from the mine's electrical system. In the event of a fire or explosion this power is likely to be removed from the mine. The available battery backup systems are currently not MSHA approved and would therefore add an unnecessary ignition source risk.

Fortunately there is better technology on the horizon and MSHA should take steps necessary to expedite the availability of these improved systems. Approval applications have been filed and should be completed as quickly as humanly possible. San Juan Coal Company stands ready to include this technology into our systems and have offered to be a beta test site as this equipment becomes available.

San Juan Coal Company utilizes four separate communication systems. The mine is equipped with a leaky feeder radio system that is used as the primary communications system. The MSHA approved radio that we currently use is no longer being produced. At present we do not have a replacement radio identified. That replacement will also need to be MSHA approved.

The radio system is backed up by a standard pager phone system. The pager phones are primarily located along the belt lines and other outby locations. It is also used in the working sections and in our refuge chambers.

San Juan Coal Company has also installed a digital telephone system to some parts of the mine. These are not widely distributed.

San Juan Coal Company also utilizes a PED system. This one-way system has an antenna installed on the surface and provides the capability of sending text messages to persons wearing PED receivers. There are approximately 140 miners wearing these receivers.

The PED has successfully accomplished the objectives we set. It does not provide 100% certainty that when you send a message, the intended recipient will receive it. Messages do not get received if the person is inside a vehicle or under other large steel structures, such as the shields. The individual receivers are very high maintenance and are easily damaged in the mine environment. System reliability is typically compromised during lightning storms.

San Juan Coal Company contacted the PED supplier about the availability of a 2-way PED and was informed that due to the power supply needed, a 2-way PED was not possible. Other technology is being developed that could accomplish this 2-way communication.

## F. Robotics

### RESPONSE:

We believe there are better systems available to collect gas readings from remote sites. San Juan Coal Company maintains a Tube Bundle System that is constantly performing these tasks.

This system constantly pulls air from up to 30 different locations underground. Many of these locations are from places people cannot go such as behind seals. This air is analyzed and trends monitored. The system provides alerts and alarms in our Control Room as the situation warrants.

The ability of robotic systems to cope with the mine conditions needs to be improved before expanding their use. It appeared that the inability of the robot actually added to the delays of getting the Sago Mine explored.

## G. Thermal Imagers and Infra-Red Imagers

### RESPONSE:

San Juan Coal Company maintains thermal imaging capability at this mine site. This equipment is used when conducting maintenance examinations.

It is also intended to be used if a suspected spontaneous combustion event begins.

This equipment is utilized under safety provisions defined in a Petition for Modification.

## H. Developing New Mine Rescue Equipment

### RESPONSE:

Items 1 thru 5 - The major complaint heard about approval of new equipment is that it takes so long. We've seen this with field modifications, petitions for modification and heard of these problems from suppliers that are trying to get new products to the mines.

Equipment used for mine rescue needs to be intrinsically safe. Mine rescue team members must never be placed at risk by using products capable of causing an ignition or explosion.

Anything that can be done to streamline the process should take place immediately. If additional personnel or funding is necessary to make that happen then it should be provided.

Our industry is continually faced with the problem of being so small that it is often the choice of OEM's not to invest money in products for mining. This has been especially true with regard to diesel powered equipment. There are other examples as well.

Increased funding should be provided for NIOSH research grants and increased funding should be provided for the former Bureau of Mines personnel now working within NIOSH to assist in developing new technology for the mining industry.

## I. Mine Rescue Teams

### RESPONSE:

1- Part 49 identifies the basic equipment a mine rescue team should have. This regulation also sets the numbers of persons that make up a team. This needs to change. Mines should be allowed to have teams made up of smaller numbers of people. As is done in South Africa and Australia, the numbers of team members is determined by the hazard being dealt with.

It would be far better to allow smaller sized teams than to continue to let mines operate without maintaining mine rescue capability.

In addition to the types of equipment listed in Part 49 there should be protective equipment necessary for performing the specific tasks assigned, ie turnout gear if being sent in to fight a fire.

2- The equipment required should be matched to the mine size and the risk profile for that mine. It would be much better for a small mine to be allowed to provide smaller amounts of equipment, 3 to 6 sets for example than holding fast on the requirement for 12 sets. This results in having that same mine seek mine rescue coverage from someone several hours away and end up with no equipment on site at all.

3 - If each mine operator maintains their teams, the equipment for the mine rescue station is part of the equipment located at the mine. Mines with their own teams already far exceed this minimum set of equipment. There is no need to make changes to this standard.

4- This equipment should be maintained at the mine.

5- Mine rescue teams that will be involved with fighting fire should receive training specific to that task. This would be the same if they are performing high angle rescue etc.

6- The practice of allowing mines to exist without having their own equipment and personnel trained to perform mine rescue should be halted. Adjustments should be allowed for teams to consist of smaller numbers and the funding for the equipment and training should come from returns of royalty payments, assessments, taxes etc.

7- Updating is expensive. Finding ways to reimburse the operator for these costs through returns of royalty payments, assessments, taxes etc. would improve the pace of updating.

8- New technology should only be used after performing a risk assessment and the risk presented by this new technology does not put mine rescue personnel at greater risk.

#### J. Government Role

##### RESPONSE:

1- Require all underground mines to have mine rescue capability on site.

2- Require all underground mines to have mine rescue capability on site.

Adjustments should be allowed for teams to consist of smaller numbers and the funding for the equipment and training should come from returns of royalty payments, assessments, taxes etc.

San Juan Coal Company has no comment regarding how standards and implementation regarding mine equipment and technology could be improved.

3- Provide regular evacuation drills.

At least annually all miners should receive hands on practice sessions at least with emergency equipment such as SCSR units, fire extinguishers, fire hydrants and hoses.

Miners should also participate in Mine Emergency Response Drills.

San Juan Coal Company has no comment regarding what types of emergency supplies (timbering materials, ventilation materials, sealing materials, etc.) should be maintained at each mine site. Current requirements are adequate.

5- Find ways to help fund the small mine operators so that all mines have equipment and trained personnel at their sites.

6- Implement the recommendations described throughout