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October 13, 2006

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

RE: PPL P06-V-9-- Emergency Response Plan, Post-Accident Breathable Air –  
Request for Information, August 30, 2006 (71 FR 51638)

Dear Ms. Silvey,

San Juan Coal Company has completed a review of PPL P06-V-9-- Emergency Response Plan, Post-Accident Breathable Air and is please to be able to offer a set of comments addressing each of the issues identified in the RFI.

Our comments address the availability of readily accessible breathable air that would be sufficient to maintain miners trapped underground over a sustained period of time. We request that MSHA consider these comments in developing guidance to assist in assuring that the ERPs provide safe and reliable post-accident breathable air supplies for trapped miners.

### **Issues on Which Information is Requested**

#### **A. Emergency Supply of Breathable Air**

**What factors should MSHA consider in determining a “sustained period of time?”**

**Response:** San Juan Coal Company believes that the following factors should be considered in determining this period of time;

- The total distance from working sections to the portals or other routes to the surface should be a factor to be considered.
- The geology of the given mine such as grades, seam height, condition of the escapeways etc.  
The availability of alternate escape routes or additional escape methods, i.e. remote escape hoist(s) or other accessible remote portals should also be considered.
- The availability of emergency response capabilities maintained at the mine vs. having to wait for teams to respond from other locations.
- Time required getting mine rescue personnel and equipment to the mine. Mines that maintain sufficient mine rescue capability that they could begin a rescue effort with on-site personnel would not need the same amount of time as a mine that must wait for mine rescue assistance to come from other sites.
- Another important consideration is the methane liberation of the particular mine.

**Should a specific time period be adopted?**

**Response:** We believe that even if MSHA were to review past incidents to determine what the average response time has been to get mine rescue personnel to those persons remaining underground, that average may prove inadequate in a given situation. We believe it would be impossible to determine a standard length of time. MSHA should not try to develop a one size fits all solution. The time period should be based on an individual mine's overall risk profile and be subject to the approval of the District Manager.

**If so, what is the appropriate time period and why?**

**Response:** See response above.

**The Agency has received suggestions ranging from one hour of post-accident breathable air to a continuous supply. Please include the rationale for the recommended period of time.**

**Response:** The rationale for establishing any set period of time needs to be based on each individual mine's overall risk profile and approved by the District Manager. That risk profile should include the list of parameters previously listed in our response to Question 1 and in the next Question below.

**Should factors such as mine size, mine design and layout, number of miners potentially affected, and distance from the portals to the working section be used, and if so, how, in determining the sufficient quantity of breathable air?**

**Response:** San Juan Coal Company believes that the following factors should be used to determine this period of time;

- Distance from working sections to the portals or other escape routes.  
The availability of alternate escape routes or additional escape methods, i.e. remote escape hoists or remote portals.

- The geology of the given mine such as grades, seam height, condition of the escapeways etc.
- The emergency response capabilities maintained at the mine vs. having to wait for teams to respond from other locations.
- It should also evaluate the time that would be required in getting mine rescue personnel and equipment to the mine. Mines that maintain sufficient mine rescue capability that they could begin a rescue effort with on-site personnel would not need the same amount of post-accident breathable air as would a mine that must wait for mine rescue equipment and personnel to come from other sites.

**What other factors should be considered and how should they be considered?**

**Response:** Please see response to Question 1.

**Where should the post-accident breathable air supply be located in relation to: working sections; outby work stations; and along travel routes?**

**Response:** Each individual mine should determine the location(s) for providing this post-accident breathable air supply. It should be based on the overall risk profile of an individual mine. We believe that attempting to make a one-size-fits-all provision is not feasible and should not be considered. The original Mine Act of 1969 has recognized for over 30 years that mines are individual entities with different conditions, risks and issues. Each mine needs to determine what is appropriate for their situation. This determination should be subject to the approval of the District Manager.

**The MINER Act requires that plans be periodically updated to reflect changes in operations in the mine. What specific changes in operations would result in a need to update the breathable air provision of the plan?**

**Response:** The specific changes that should prompt an update to the breathable air provision should include;

- The addition or loss of alternate escape routes beyond the primary and secondary routes required by statute.
- Increases or decreases in the methane liberation of a mine
- Changes in the mine rescue capabilities at a given mine.
- Significant increases or decreases in the travel distance from the working sections at a particular mine.

This plan process should be handled in a similar manner as the roof control and ventilation plans.

**B. Oxygen Sources**

**Please provide information and make recommendations on the best way to provide breathable air.**

**Response:** The best way to provide breathable air will vary from mine to mine. For example, a mine using an exhaust ventilation system may find that it is best

to provide this air via boreholes at various intervals. A mine using a blowing system would not find this approach effective.

The MINER Act requirement for each US underground coal mine to address the issue of “post-accident breathable air” should be left to that operator and the District Manager. The methods chosen should be based on a risk assessment that considers the risk profile of that individual mine. There should not be an attempt to develop a ‘one-size-fits-all’ approach. Our system works fine for SJCC because it is based on the risks that are present. It would not be necessary or even possible at all mines due to various factors such as severe restrictions to surface disturbance or even complete inability to provide surface access for drilling holes due to surface topography.

**Please elaborate on the arguments for and against using oxygen, compressed air, or chemically-induced oxygen to maintain trapped miners for a sustained period of time.**

**Response:** Providing post-accident breathable air through the means of gas cylinders, compressed air or chemically-produced oxygen brings with them their own additional risks. Storage of multiple large high pressure oxygen cylinders introduces risk associated with storing these cylinders. There is a similar risk with the use of large compressed air cylinders. The compressed air system used in Australia utilizes cabinets for storage of the cylinders as a means of protecting them and reducing the risk associated.

The storage of large quantities of devices utilizing chemically produced oxygen also introduces risk. There are documented incidents that attest to the fact that these devices bring a risk of fire with them. The MINER Act and ETS have already produced a risky if not dangerous rush to provide immense stockpiles of such devices that in effect will actually increase the risk of fire for the nation’s underground coal miners.

**What other available means of technology appropriate to maintain miners would you recommend, and why?**

**Response:** San Juan Coal Company is exploring the possibility of introducing some new technology to the US coal industry. This SCBA system uses a refillable compressed air system and is currently being used in Australia. This system as well as some other new SCSR technologies presented to NIOSH shows tremendous promise.

In every way possible MSHA should encourage and enable the means to implement such new technology and expedite the process to make it available. The haste at which the ETS, The MINER Act and its requirements have been produced and implemented causes us substantial concern.

San Juan Coal Company is seriously concerned that our industry and the Agency are being forced to react to the headlines rather than respond and really improve safety in the mines.

Our concern is not with the cost of purchase of additional devices. It is not the cost of the additional lifeline material. It is not the increased cost of the evacuation drills. It is not the increased manpower necessary to implement and maintain the components of the new rules.

What we see as the concerning issues are as follows. The recent increased demand for SCSR devices and the increase in the size of the market has already resulted in a tremendous increase in research and development. This increases not only the possibility of new technology being made available very soon. It also will result in shortening the time for that to happen. Such new technology and research is something that hasn't happened or even been talked about for many years.

The shrinking size of the underground coal industry over the past 10-15 years, coupled with the loss of the Bureau of Mines has drastically reduced the research and development of new safety products for the mining industry. The size of our market now appears to be changing. This improvement has prompted some new companies to become interested and new technology to be considered.

SCSR devices that last for much more extended periods are expected to become available in a very short period of time. If this new technology proves to be more effective, mines that have already purchased the old style units, because of the deadlines called for in the ETS and the MINER Act, would be unlikely to turn around and immediately purchase the new ones. The Act actually allows for this. The net result of these new so-called safety enhancing rules would be to extend the use of technology that is some 20 yrs old and has recently been called in to question regarding its reliability and effectiveness.

It is our concern that should these new devices become available after the huge investment required by these new rules, as currently written and enforced, the ETS and the MINER Act will have the net effect of delaying this improved technology from being implemented into the mines.

Prior to publishing the Final Rules and policies associated with the post-accident breathable air issue, the Secretary of Labor should reconsider the deployment strategy for additional self-rescuers at each underground mine.

If a mine operator does not already provide additional units, they should be required to do so. If there are already additional units in place the urgency is much less at that particular mine and additional time should be allowed for development and deployment of improved devices.

**MSHA solicits information on how compressed air lines routed through mine openings could be protected against damage from explosion or fire.**

**Response:** Mine operators can install such lines using a variety of methods and materials. The operator can also take steps to harden the system and protect it against damage. How that same operator would go about assuring that the lines remain undamaged is a feat we do not believe is feasible. MSHA should not attempt to regulate how such systems are installed.

**How could techniques such as burying or armoring air lines provide adequate protection?**

**Response:** The practice of burying these utilities may be effective in protection from explosion. That method was something we considered early in 2006. The San Juan South Mine conditions would require such buried lines to be made of HDPE or some other material that would not be affected by the presence of H<sub>2</sub>S and also sulfur reducing bacteria. Steel lines are not an option in such an application due to corrosion. Therefore we were not able to assure that we could protect such plastic, fiberglass or HDPE lines from damage by fire. As a result we developed an alternative through the use of a series of emergency escape shelters. This is just one example of how a mine operator must consider the conditions and risks of their particular mine and develop solutions to address them. MSHA should not attempt to regulate how to protect or harden mine systems.

**MSHA solicits information on availability and possible obstacles in developing and deploying systems for providing oxygen.**

**Response:** Providing post-accident breathable air through the means of large oxygen cylinders bring with them certain additional risks. Storage of large high pressure oxygen cylinders induces the risk of storing these cylinders. The system would need to be able to protect the cylinder from damage and corrosion. Prior to requiring such systems, MSHA should conduct an overall risk assessment to be sure that the end result doesn't increase the risks for miners.

The storage of large quantities of devices utilizing chemically produced oxygen also introduces risk. There are documented incidents that attest to the fact that these devices bring a real risk of fire with them. The MINER Act and ETS have already produced a risky if not dangerous rush to provide immense stockpiles of such devices that in effect has actually increased the risk of fire for the nation's underground coal miners.

### **C. Emergency Shelters**

**Section 13 of the MINER Act requires the National Institute for Occupational Safety and Health (NIOSH) to conduct research concerning various types of refuge alternatives, including commercially-available portable refuge chambers. In the interim, MSHA solicits comments on the**

**use of emergency shelters which contain sufficient quantities of post-accident breathable air to maintain trapped miners.**

**RESPONSE:** Here in the US the subject of refuge chambers/ emergency shelters has to a great degree become a polarized issue. One view advocating the design of and requirement for a chamber that would be effective in anything from an irrespirable atmosphere, to water inundation and on to providing refuge from a subsequent explosion. It is our view that trying to design something that will address each of those issues is a misguided approach that would not be feasible to install and if history is carefully considered, would be unnecessary.

The miners at Sago didn't need a bomb proof chamber, they needed fresh air. The same could be said of the miners at Aracoma and Wilburg. The miners at Darby, Willow Creek and even at Jim Walters No. 5 would not have received benefit from a so-called 'refuge chamber' because they were killed by the initial explosion. The miners at Quecreek would not have benefited because they were trapped in the face by the inrush of water.

The opposite view is one that says the use of such structures should be prohibited because of the belief that the only approach should be to evacuate. That approach works fine unless the mine's escape system fails. That system failure could be anything from having the routes blocked by fire, smoke, roof fall etc. Or it could be a failure of the escape equipment itself such as SCSRs, escape hoists etc. If that escape system failure occurs in an 'evacuation only system', miners are left with barricading as their only alternative. In a gassy mine the area necessary to sustain miners for any significant period of time becomes so large that it isn't feasible to accomplish. That is one of the major factors that helped us identify our escape shelter alternative.

We believe our approach is on middle ground between these two views and that such a middle ground approach is viable for this mine. We teach our miners to evacuate. We provide them with multiple evacuation routes and methods to reach the main portals. We install lifelines to aid them in their escape. We utilize multiple SCSR caches and well marked escape routes. We have installed an emergency escape hoist at each shaft site. As part of this evacuation strategy we have incorporated a series of emergency escape shelters to enhance their ability to escape.

Our system is based on the risks and conditions identified at this individual mine and as such we do not propose them for anyone else. If the escape system were to fail, the shelter provides them with an indefinite supply of air and the food and water necessary to sustain them until rescue teams could reach them.

**Until specifications for refuge alternatives are developed, what type of emergency shelters (e.g., inflatable or other portable quick- deploy designs) should be provided?**

**RESPONSE:** San Juan Coal Company has reviewed information about various inflatable shelters and has come to the determination that such devices would be ineffective for our purposes. We have chosen systems that are more robust in their structural design. We believe the inflatables would be too easily damaged just from moving them each time a section advances. We also believe it would make it difficult to protect the supplies necessary to maintain miners. We also believe as stated previously that MSHA should not attempt to devise a one-size-fits-all approach to any of these requirements.

The MINER Act requires each US underground coal mine to address the issue of “post-accident breathable air”. How an individual mine operator chooses to address that should be left to that operator and the District Manager. The methods chosen should be based on a risk assessment that considers the risk profile of a given mine and provides methods that are appropriate to the risks.

**What safety features should they offer, where should they be located, and why?**

**RESPONSE:** The Emergency Escape Shelters at San Juan Coal Company are located in crosscuts. They are installed at intervals not to exceed 6000 feet. Air from the surface is supplied to the shelters via a 5” ID borehole. The initial air supply is generated by the ventilating pressures of the main exhaust ventilation system. In order to address the issue of CO<sub>2</sub> buildup the shelter has an opening through the walls to allow the ventilation circuit to go through the shelter and then out in to the mine atmosphere. The shelter also is equipped with a sampling pipe through the walls so that miners inside can sample the atmosphere outside the shelter. They could then report the sample results to personnel on the surface.

SJCC utilizes multiple communication systems. We have installed a pager phone system, a leaky-feeder radio system, an IP Phone system and a PED system. In order to assure we can maintain communications in the event of an emergency an additional pager phone line has been installed from the surface through the boreholes to the Emergency Escape Shelters. For similar reasons our PED antenna has been installed on the surface of the mine.

In case of main fan failure each borehole has been equipped with fittings to allow attachment of a forced air ventilating fan. A system of portable generators and portable blowing fans is maintained on the surface to serve that purpose.

The shelters are also supplied with food, water, blankets, first aid supplies, toilet facilities and materials that could be used to help with the stress that miners might need to cope with during an emergency.

Our system works fine for SJCC because it is based on the risks that are present. It would not be necessary or even possible at all mines due to various factors such as severe restrictions or even complete inability to provide surface

access for drilling holes. Another significant hurdle would be there if a mine utilizes a blowing ventilation system.

**How should the use of emergency shelters be tied to emergency supplies of breathable air?**

**RESPONSE:** The system at San Juan Coal Company incorporates the emergency supplies and post-accident breathable air inside the escape shelters. The shelters offer a much more protected environment for storing these materials. This method also eliminates the need for miners to carry this material with them to a shelter.

**If post-accident breathable air is provided through emergency shelters, provide information on appropriate distances between installations and proximity to working sections.**

**RESPONSE:** MSHA should not attempt to establish a single solution distance from the working sections. It is the opinion of San Juan Coal Company that this distance should be established based on the risk profile of an individual mine and be subject to the approval of the District Manager. The distances established at San Juan Coal Company are in relation to the SCSR storage distance we identified through testing of the SCSR device in use here.

**Please provide specific feasibility considerations, if any.**

**RESPONSE:** Feasibility considerations include; the overall seam height; the depth of cover; the availability of surface access to install boreholes; the ventilation system employed at the mine; the methane liberation rate at a mine; access to the mine, i.e. shaft, slope, drift, etc.

**Under what circumstances, if any, could a barricade be used as an emergency shelter to provide post-accident breathable air?**

**RESPONSE:** Based on the risks present here at this mine, San Juan Coal Company believes that use of barricades is not a viable option.

Other mines with a high methane make would likely have a similar opinion. Inside a barricade in the face areas at such mines the methane would quickly displace the oxygen and be just as deadly as the presence of CO. Teaching miners to barricade in that manner, at this mine, would be a terrible mistake.

Our Emergency Evacuation program clearly teaches that barricading should only be considered as a very last resort. Miners here have also been provided with clear information about how much area would be needed to offer any degree of a sustained breathable atmosphere.

At mines that don't have large methane liberation, the use of barricades might be a viable alternative.

This concludes our comments regarding the MSHA Request for Information, PPL P06-V-9-- Emergency Response Plan, Post-Accident Breathable Air.

San Juan Coal Company is pleased to have the opportunity to provide these comments and request that they are considered carefully in developing the Final Rules.

Sincerely,

[David C. Hales](#)

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