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From: Hales, David DC [mailto:David.DC.Hales@bhpbilliton.com]  
Sent: Monday, August 18, 2008 9:51 PM  
To: zzMSHA-Standards - Comments to Fed Reg Group  
Cc: Roybal, Charles CE; Whitehead, Tracey T  
Subject: San Juan Coal Company Comments - RIN 1219-AB58

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AB58-COMM-29

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August 19, 2008

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Re: RIN 1219-AB58  
Refuge Alternatives for Underground Coal Mines  
Comments on Proposed Rule

San Juan Coal Company appreciates the opportunity to provide comment regarding the above referenced proposed rules which will require specific refuge alternatives in underground coal mines.

Our first general comment is basically a question as to whether such a proposed rule is necessary given these requirements have already been incorporated in the Post Accident Breathable Air sections of the Approved Emergency Response Plans. This entire rulemaking seems to be an unnecessary duplication of requirements that are already in place.

In early 2006 the management at San Juan Coal Company determined that the escape system would be enhanced by providing a series of Escape Shelters as part of our mine evacuation system. This was based on the thought that such refuge alternatives could be used to assist miners in escaping from the mine. These shelters also provided an additional means of communication to the surface via phone lines installed in the boreholes used to ventilate the shelters. This was all intended to be an enhancement to the overall escape system. The original concept included having the ability to store additional SCSR devices inside the shelters. Also stored there was food, water, medical and other emergency supplies. We believed this would provide a way-station for miners during evacuation. Miners would be provided with an opportunity to rest, re-hydrate, treat injuries and even don a new SCSR in a safe atmosphere. Then after communicating with the surface, could make an informed evacuation to the next shelter and repeat the process until reaching the surface.

To a large extent that system remains in place. The ability to store the spare SCSR devices inside was eliminated by the Agency determination that SCSR devices had to be stored behind seal-strength walls. Today at this mine the thickness of the only approved seal we have reaches 12 feet thick and has no door. By installing two walls of this size will result in consuming over half of the available space in a given crosscut and presents walls that escaping miners could not easily climb through.

As required by the Agency, we now have the SCSR devices stored outside the shelters. In some cases a cache of them on each side of the shelter, albeit outside the shelter.

Information in the Foster Miller report indicates that walls of shelters located in a crosscut between two entries could be expected to be subjected to forces of an estimated 3 psi. Estimated forces passing down the escapeway, in the entry, would be much higher than that and might negatively affect the SCSR storage in those same entries.

The final rule should be modified to allow for shelter walls other than 15 psi, provided they are protected by location. The rule should also allow for the storage of SCSR devices inside these same shelters which would also protect the devices by location and provide walls that miners can easily pass through to reach the safe atmosphere inside.

San Juan Coal Company's further comments regarding the specifics of the proposed rule are as follows;

#### Part 7 Approval.

The proposal includes new requirements for approval of refuge alternatives for underground coal mines. The proposal also includes approval of components of refuge alternatives.

**Response:** This entire section prompts three very important questions. First, what are the specific issues that make this process or these systems necessary for just underground coal mines?

Secondly, given the reported 2 year backlog of applications at the Approvals & Certification Center, what additional resources will MSHA provide to accommodate the workload this proposed rule would generate?

The third question has to do with expertise regarding approval or inspection of such systems. Where will MSHA obtain the expertise needed to accommodate the approval process that has been proposed?

The proposal includes requirements that the refuge alternative would have to include provisions for sanitation, food, water, and first-aid. These items would have to be approved in the ERP. This entire area has already been incorporated in the Emergency Response Plan. There is no need to further bog down the process by duplicating such requirements that are already in place.

MSHA asserts that the proposed requirements would assure that the refuge alternative could be used safely and effectively in underground coal mines and that the components could be used safely with each other.

**Response:** This prompts another set of questions. What is unique about coal mines that call for these requirements or supports not calling for them in other underground mines?

The proposed requirements include that upon request the approval-holder must make a product available to MSHA for audit at no cost to MSHA, but no more than once a year except for cause.

**Response:** This entire requirement seems unnecessary because if the system or device has been approved and is deployed in a mine, each device will be audited by MSHA inspectors at least 4 times per year. This is an unnecessary requirement and should not be included in the final rule.

For refuge alternatives that are not pre-fabricated, i.e. constructed in place or materials pre-positioned, the structure would be approved by the District Manager in the Emergency Response Plan. Consistent with this requirement, the approval-holder must provide a refuge alternative or component to MSHA for audit.

**Response:** The audit requirement is unnecessary because if the system or device has been approved and is deployed in a mine, each device will be audited by MSHA inspectors at least 4 times per year. This is an unnecessary requirement.

The current Emergency Response plans already include the post-accident breathable air elements. This is also a duplicative requirement that is unnecessary and should not be included in the final rule.

§ 7.501 Purpose and Scope. This proposal would state that the purpose of approved refuge alternatives is to provide a life-sustaining environment for miners trapped underground when escape is impossible. The proposal would also define the scope as applying to underground coal mines.

**Response:** In its report on refuge alternatives, NIOSH recognized that the “potential for refuge alternatives to save lives will only be realized to the extent that mine operators develop comprehensive escape and rescue plans that incorporate refuge alternatives.” Mine operators have implemented such systems over the past two years. They are already incorporated into the Emergency Response plans and miners have been training regarding these ERP requirements at least 4 times per year during this same period.

**MSHA solicits comments on the estimated service life of the pre-fabricated self-contained units.**

**Response:** As stated in the proposed rule, the refuge alternatives that states have approved and those that MSHA has accepted in approved ERPs should continue to meet the requirements of the final rule. If something other than those systems already in place is necessary for underground miners, how can that only apply to coal miners?

Many of these systems are of heavy steel construction. If at the end of 10 years the system remains undamaged and functional, why would the unit need to be replaced? The components inside the system may need refurbishing or replacement as service dates are reached. Items that might need replacement or refurbishing are components such as stored water, medical supplies, the hydro-testing of compressed gas cylinders or possibly replacement of door seals, etc. The final rule should allow for a means of refurbishing this equipment and returning it to the mines. Also, establishing a 5 year maximum on component life ignores that some components such as those listed above can have established service lives that vary from 5 to 8 or even up to as much as 15 years. Those established service lives should be accepted under the final rule.

**MSHA requests comments on including a requirement that refuge alternatives be designed with a means to signal rescuers on the surface.**

**Response:** Mine operators have just recently been required to train miners regarding the inability to locate them via seismic or listening devices. This training is required by MSHA to be part of each evacuation drill. Finding a system that would produce sufficient sound to be heard from the surface is likely to conflict with the noise requirement contained elsewhere in this proposed rule. Asking miners to climb out to perform such signaling would compromise the atmosphere inside the device and ultimately reduce the amount of breathable air available due to this loss. The final rule should contain no such requirement related to this means to signal. An alternative could be to require the locations of such alternatives to be provided with a survey marker so the exact location is known prior to an event. That element is in the Emergency Response Plan at San Juan Mine 1 today.

**MSHA requests comments on including a requirement that the manufacturer design refuge alternatives with a means to signal underground rescuers with a homing device.**

**Response:** The final rule should not suggest requirements for homing devices. Limitations on radio signal performance in the underground environment would make such devices ineffective. An alternative for this requirement would be to provide the shelters with a survey marker at their location. This would accomplish providing the exact location of the alternative prior to any event. This system can be used to provide accurate information about the location of the system without introducing electronics, potential ignition sources or other health and safety concerns. The potential risk far outweighs any benefit, especially with a system already available to provide the location information.

**MSHA requests comments on the types, sources, and magnitude of lighting needed for the proper functioning of a refuge alternative and the needs of the occupants.**

**Response:** If miners find they need to utilize the refuge alternative, when they arrive at the alternative, their cap lamps will be functional and provide the light necessary to read instructions and carry out initial tasks. Miners can be trained to

conserve cap lamp batteries. The refuge alternatives can be provided with storage of chemical light sticks that will provide sufficient lighting to sustain miners after that initial setup. Such devices generate little or no heat and can be in whatever quantity is deemed necessary by the mine for their application.

**MSHA solicits comments on these minimum space and volume requirements.**

**Response:** The space requirement listed in the proposed rule doesn't take in to account mines with high seams. A refuge alternative in a mine with a 10 ft or higher seam may be able to provide a much taller refuge alternative, thereby increasing the overall volume per miner and enhancing the ability to dissipate heat without compromising the comfort of the miners inside or inhibiting their ability to operate components, drink, eat, and use the sanitation facilities – and tend to injuries. It could also provide the additional space that may be needed for suspended curtains, as part of a passive system CO2 removal system. The final rule should be modified to allow options regarding these space requirements. San Juan Coal Company requests MSHA to adopt the recommendations in the report prepared for NMA by Joel M. Haight, PHD, Associate Professor of Energy and Minerals Engineering, in which Dr. Haight correctly identifies the issues associated with the excessive space requirements proposed by MSHA. San Juan Coal Company agrees with the spacing recommended in this report and recommends the final requirement for seated positions, should be 7.5 ft<sup>2</sup>/persons and for persons in a supine position, 9.4 ft<sup>2</sup>/person be considered (6'3" person 18" wide). The following table is one used by FEMA for calculating shelter needs;

The following are minimum floor areas for calculating the size of shelters:

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| • Adults                         | 5 square feet per person standing |
| • Adults                         | 6 square feet per person seated   |
| • children (under the age of 10) | 5 square feet per person          |
| • Wheelchair bound persons       | 10 square feet per person         |
| • Bed-ridden persons             | 30 square feet per person         |

The proposed rule under Paragraph (a) (9) would require that refuge alternatives be designed to permit measurement of outside gas concentrations without exiting the structure or allowing entry of the outside atmosphere.

**Response:** The means available today to conduct this measurement would require that an instrument be extended outside the instrument, which would require an opening to extend the device through. This would compromise the integrity of the internal atmosphere and allow leakage of this breathable air. Another method would be to pump some of the external atmosphere inside through a sampling port to bring that atmosphere to the instrument. As proposed, this method would be illegal as it allows entry of the outside atmosphere into the shelter. If this measurement requirement is maintained in the final rule the rule must allow for pumping samples from outside to the instrument inside. This would require a very small volume and would have no significant impact on the safety of the miners inside the shelter as opposed to opening a porthole to extend an instrument outside or by miners exiting the refuge alternative to perform such measurements.

Paragraph (b) (1) would require that tests be conducted to determine or demonstrate that the refuge alternative can be constructed, activated and used as intended. Under this provision, trained persons would need to be able to fully activate the structure, without the use of tools, within 10 minutes of reaching the refuge alternative. It is expected that the testing under this paragraph would be conducted using simulated real-life situations and conditions, such as smoke, heat, humidity and darkness using SCSRs.

**Response:** San Juan Coal Company has received complaints from miners following their use of the new realistic training devices that have been developed recently. Miners claim they have experienced negative health effects as a result of wearing the device. They claim these effects have lasted for days afterwards. As a result of those complaints San Juan Coal Company researched and obtained the MSDS for the active chemical in the training device as well as the SCSR itself. Upon review of that MSDS, it is quite understandable that miners are experiencing such negative health effects. The MSDS information makes us question the wisdom of requiring miners to use these products in anything but a real life evacuation scenario. San Juan Coal employees have also experienced injury as a result of evacuation drills that require miners to walk entire escapeways from working sections to the surface. Subjecting miners to activities that can result in significant detrimental health effects and injury should not be further mandated. San Juan Coal Company strongly urges that MSHA reconsider even those existing requirements and remove any new such requirements in new rules. This is especially important with regard to these refuge alternatives given that testing of these devices has not occurred.

Proposed § 7.505(d) (1) would require that refuge alternatives be designed such that pre-shift examination of the components critical for activation can be conducted without entering the structure. San Juan Coal Company has experience with a portable shelter that developed an O<sub>2</sub> leak inside the shelter. When the shelter was opened, oxygen content inside the shelter exceeded 23%. Left uncorrected and sealed up, that shelter could have reached an even higher O<sub>2</sub> content and had the available breathable air volume reduced dramatically.

**Response:** This proposed requirement needs to be reconsidered to allow for regular inspection of the atmosphere inside the refuge alternative to quickly ascertain leaks so they can be repaired and assure the cylinders are full if miners must use the system.

Proposed § 7.505(d) (2) would require that a refuge alternative be designed to provide a means to indicate unauthorized entry or tampering.

**Response:** San Juan Coal Company believes regular entry of these devices is necessary so that conditions inside can be regularly monitored, leaks detected at an early stage and cylinder volumes maintained full. The final rule needs to include the ability to do this. If an operator chooses to utilize this inspection method, a means to detect tampering with internal components could be included so that an examiner could readily see if supplies or equipment inside the shelter had been tampered with.

Paragraphs (d) (1) and (d) (2) would assure that the refuge alternative is designed to allow for all necessary inspections.

**Response:** The gauges and controls for critical components, such as compressed air and oxygen, should be easy to observe to determine the readiness of those components. San Juan Coal Company believes that in order to properly protect these components, they would be better to be inside the alternative. If they are inside then as stated in the paragraph above, the device needs to be entered and inspected on a regular basis. The final rule should allow for that option.

§ 7.506 Breathable air components. Paragraph (a) would require that breathable air be supplied by compressed air cylinders, compressed breathable- oxygen cylinders, fans installed on the surface or compressors installed on the surface. Only uncontaminated breathable air is allowed to be supplied to the refuge alternative.

**Response:** This rule should also recognize and allow for use of the mine's main ventilation system to be used to provide this breathable air. A mine using an exhausting ventilation system can connect a shelter to a borehole and have the main fan provide a continuous flow of air down the borehole.

MSHA solicits comments on the proposed 96-hour supply of breathable air.

**Response:** San Juan Coal Company shares the NMA position regarding the 96 hr requirement and reminds MSHA that Program Information Bulletin P07-03 PIB)4 which the agency issued on Feb. 8, 2007 remains in effect today and ensures That miners are provided with a 96-hour supply of breathable air. It also allows for a shorter duration if mines are capable of drilling boreholes to provide continued supplies of breathable air. The final rule should include the elements of that PIB.

San Juan Coal Company shares the NMA position regarding overall implementation of this final rule, particularly the underground testing elements. As stated previously, our miners have already experienced detrimental health effects and injury as a result of some of the recent rules that have been implemented. Before enacting further such rules, this testing must be conducted to ensure miners are not adversely affected. Failure to take this step ultimately makes miners research or test subjects and does so without their consent.

Paragraph (c) would require that breathable air supplied by compressed air from cylinders, fans, or compressors provide a minimum flow rate of 12.5 cubic feet per minute of breathable air for each miner. MSHA proposes to use 12.5 cubic feet per minute of breathable air as a required volume for each miner based on the amount of air needed for respiration and dilution of CO<sub>2</sub> and other harmful gases. In addition, the 12.5 cubic feet per minute flow rate would assure positive pressure to prevent contamination from the mine atmosphere. A maximum positive relief valve would need to be located in the refuge alternative. MSHA requests comments regarding the flow rate.



**Response:** This proposed flow rate value is consistent with what was actually derived from a study conducted on bomb/air raid shelters during the Cold War. The flow rate specified in the proposed rule is extremely high by most accepted standards. Additionally, the flow rate proposed per miner is less a concern than the oxygen content (18.5-23%). Internationally accepted standards support that life can be sustained in an atmosphere of 12% or greater oxygen content. Similarly, the carbon dioxide content of 1% or less with excursions not to exceed 2.5% are overly conservative where international standards acknowledge a conservative 5% maximum concentration noting that sustained concentrations of 9% are lethal. The 12.5 cfm flow rate per miner is high, and also seems to directly contradict the efforts to not significantly overpressure the refuge shelter to prevent adverse physiological effects. According to the Federal Emergency Management Agency (FEMA) for American shelters, the minimum ventilation requirement for each occupant is 3 cfm. This quantity is about three times the supply of outdoor air needed to keep healthy people from having health affects, particularly headaches, as a result of exhaled carbon dioxide.

MSHA believes warning operators when the CO level exceeds 10 ppm will help maintain safe breathable air in the refuge alternative. MSHA solicits comments on this provision including alternatives.

**Response:** San Juan Coal Company agrees with the need to provide breathable air that is maintained safe. This requirement for automatic warnings should only apply to those systems that use internal combustion engines near the supply intake. For example a remote borehole that utilizes the main mine exhaust fan for ventilating pressure would not have the same risk of CO levels. In those situations a simple multi-gas detector could be provided to the person manning the top of that borehole and would provide information regarding air quality entering the mine via the borehole. The final rule needs to provide for that option.

Paragraph (c) (1) (ii) would require in-line air-purifying sorbent beds and filters or other equivalent means to assure the breathing air quality and prevent condensation. Sorbent beds and filters would help assure that the air quality is maintained and condensation is prevented.

**Response:** This requirement should only be applied to those systems using compressed air or fans powered by internal combustion engines located near the intake location. If a fan were powered by a generator, the generator could be located far enough away from the intake supply that the air supply would not be placed at risk. The final rule should allow for this alternative.

Paragraph (c) (1) (iii) would require maintenance instructions that provide specifications for periodic replacement or refurbishment of sorbent beds and filters or alternate means. Proper maintenance and periodic replacement of sorbent beds and filters would help assure that the air quality is maintained and condensation is prevented.

**Response:** This requirement should only be applied to those systems using compressed air or fans powered by internal combustion engines located near the intake location. If a fan were powered by a generator, the generator could be

located far enough away from the intake supply that the air supply would not be placed at risk. The final rule should allow for this alternative.

Proposed paragraph (c) (1) (VI) (A) is intended to prevent accumulation of water, which could affect the quantity and quality of breathable air provided underground. Moisture-laden air should not be pumped into the area where miners are trapped. If this moisture is not removed water could accumulate in the refuge alternative. All air supply systems must provide a means of preventing and removing the accumulation of water. MSHA anticipates air dryers with drain valves will be used. Air lines or pipes that are pre-installed must also be capped to prevent the entry of rain or moisture-laden air. If horizontal runs of air lines or pipes are used, they must be provided with a means to automatically drain any water accumulation.

**Response:** The issue of water accumulation will be one that must be dealt with on a mine by mine basis. Such elements are best dealt with through in the individual mine's Emergency Response plan. Humidity, rain and water entering a borehole at mines located in the desert southwest are not a huge concern. It may be at some other location. The final rule should not include specifics associated with this element. The requirement should be that mine operators explain how the issue is being managed at a particular mine, in the ERP would be far more appropriate.

Proposed paragraph (c)(1)(vi)(B) is intended to provide protection for lines that come from boreholes or air lines from the surface that are extended underground to a refuge alternative. This protection could consist of burying pipes by trenching deep enough to protect the pipes from mine traffic, explosions, ground movement or equipment damage.

**Response:** This requirement is one that in certain geologic conditions would be impossible to follow. Ground movement could possibly close off even a cased borehole. In the final rule this requirement should be modified to state that if such lines become damaged they will be repaired or replaced.

Paragraph (g)(3) would require that respirators or breathing apparatus used with breathable air components allow for communication, and the provision of food and water while at the same time preventing the entry of any outside atmosphere. MSHA believes that the proposed requirements could be met with full-faced respirators or breathing apparatus that have ports for the use of liquids, such as those used by commercial divers.

**Response:** Masks available today do have means for drinking without removal of the mask. We have not seen masks that would allow intake of food. If this requirement remains in place, information about where such components can be obtained will need to be provided by MSHA.

#### § 7.507 Air-monitoring components.

Proposed § 7.507(a) would include requirements for an air-monitoring component that provides persons inside the refuge alternative with the ability to determine the concentrations of carbon dioxide, carbon monoxide, oxygen, and methane, inside and outside the structure, including the airlock.

**Response:** San Juan Coal Company agrees that providing the means to monitor air quality inside and outside the shelter is important. We do not know how this monitoring can be done from inside the shelter, without allowing at least some of the external atmosphere from entering the shelter as air from outside is pumped inside to the monitoring device. The final rule needs to be modified to allow for such sample collection. If that element is allowed, this monitoring could be completed using MSHA approved handheld detectors that miners already have with them. Allowing the use of tools miners use everyday simplifies the process and helps ensure all miners could accomplish the monitoring task. It would also remove the need for the remaining elements of atmospheric monitoring contained in the proposed rule. Through the use of handheld devices that have interchangeable battery packs, miners could be provided with extended service by the handheld device simply by storing additional batteries in the shelter. Allowing this would also assist in miners using devices that are functional and have been calibrated as required. It would also allow the use of other sampling tools that are unaffected by elevated concentrations of one gas or another and even such tools that do not require batteries at all.

Paragraph (a) (2) would require that chemical scrubbing or other effective methods be provided to maintain the average carbon dioxide concentration in the occupied structure at 1.0 percent or less with excursions not to exceed 2.5 percent.

**Response:** The carbon dioxide content of 1% or less with excursions not to exceed 2.5% are overly conservative where international standards acknowledge a conservative 5% maximum concentration, noting that sustained concentrations of 9% are lethal.

#### B. Part 75 Safety Standards.

§ 75.221 Roof Control Plan Information. Paragraph § 75.221(a) (12) would require that the operator describe the roof and rib support necessary for the refuge alternative in the roof control plan. Roof and rib falls could damage a refuge alternative and compromise its integrity. Humidity resulting from fires, vibrations, shock, and thermal effects are often associated with catastrophic events that may require the use of additional roof support for areas housing refuge alternatives.

**Response:** Experience at San Juan Coal Company has shown that additional roof and rib support is necessary in some specific cases. Those are with constructed shelters, particularly those that will be used in a longwall tailgate. That has not been shown to be the case where portable shelters are used. Those devices are moved frequently and the areas are not subjected to the forces seen in a longwall tailgate. The final rule needs to recognize these differences and allow for standard roof control practices where portable, self-contained shelters are used.

#### § 75.360 Preshift Examination.

MSHA requests specific comments on the visual damage that would be revealed during the preshift examinations.

**Response:** San Juan Coal Company believes it is necessary to check inside the refuge alternative to assess air quality and air direction if the alternative is supplied with air from an external source such as a borehole. As stated previously, during such an inspection at San Juan Coal Company, an elevated oxygen level was

identified that was being produced by an oxygen leak. This inspection allowed for early detection and correction of the leak. Had this leak gone undetected for a longer period of time, the oxygen level could have been even higher and the oxygen supply further depleted. The final rule should allow an operator to make such inspections if that operator deems them to be necessary. Tamper evident seals could be applied to the components inside the shelter in lieu of sealing the shelter itself.

§ 75.372 Mine Ventilation Map. Paragraph § 75.372(b) (11) would require that each refuge alternative be shown on the mine ventilation map.

**Response:** This requirement should be eliminated. The location of refuge alternatives should be shown on the Escapeway Map, not the ventilation map. These components are part of the overall escape system and should be contained on that map with updates as necessary on a given shift. Affected miners should be informed of changes regarding these devices just as they are informed of changes to the escapeways.

§ 75.1200 Mine Map. Paragraph § 75.1200(g) would require that the mine map show the locations of refuge alternatives.

**Response:** This requirement should be eliminated. The location of refuge alternatives should be shown on the Escapeway Map, not the 75.1200 mine map. These components are part of the overall escape system and should be contained on that map with updates as necessary on a given shift. Affected miners should be informed of changes regarding these devices just as they are informed of changes to the escapeways.

§ 75.1501 Emergency Evacuations. Paragraph § 75.1501(a) (1) would require that the responsible person know the locations of refuge alternatives. Under the proposal, the designated responsible person must have current knowledge of the locations, types, and capacities of refuge alternatives to make informed mine evacuation decisions in the event of an emergency.

**Response:** San Juan Coal Company agrees that a responsible person should know the locations of the refuge alternatives. We also believe that maintaining the locations on the escapeway map simplifies and assures this will be the case. A responsible person could quickly review the map to obtain the most current information about their locations.

§ 75.1502 Mine Emergency Evacuation and Firefighting Program of Instruction. Paragraph § 75.1502(c) (3) would be a new provision and require that instruction in the activation and use of refuge alternatives be added to the mine emergency evacuation program of instruction. This proposal would assure that miners are able to effectively activate and use refuge alternatives in case of an emergency. Existing

§ 75.1502(c) (3) would be redesignated as paragraph (c) (4). Paragraph (c) (4) (VI) would be new and require that the program of instruction include a scenario for using refuge alternatives.

§ 75.1502(c) (7) would be redesignated as paragraph (c) (8) and would require that the program of instruction include the locations of refuge alternatives.

**Response:** At San Juan Coal Company this rule already exists. Each of the evacuation scenarios we already have established includes a review of shelter locations and implementation as applicable to each of the associated scenarios. Changes to these standards would be an unnecessary action.

§ 75.1504 Mine Emergency Evacuation Training and Drills. During each quarterly drill, miners would be required to locate the refuge alternatives and review the activation and use of the refuge alternative for the area where the miners normally work and travel during each quarterly drill.

**Response:** At San Juan Coal Company this rule already exists. Each of the evacuation scenarios we already have established includes a review of shelter locations and implementation as applicable to each of the associated scenarios. Changes to these standards would be an unnecessary action.

Proposed § 75.1504(b) (3) (ii) and (4) (ii) would require that in quarterly training and drills, miners locate refuge alternatives. This knowledge would be critical to miners in a mine emergency.

**Response:** At San Juan Coal Company this rule already exists. Each of the evacuation scenarios we already have established includes a review of shelter locations and implementation as applicable to each of the associated scenarios. Changes to these standards would be an unnecessary action.

Proposed § 75.1504(c) (3) would require annual expectations training in construction, where applicable, activation, and use of refuge alternatives and components.

**Response:** San Juan Coal Company strongly urges MSHA not implement further such requirements prior to actual testing of the devices. To endure something that is unpleasant, results in a minor injury or causes some short-term health effects in order to save your life may be understandable. To require use of such things that have these outcomes on a quarterly basis is not. Review of activation procedures is one thing, subjecting miners to such unknown outcomes is entirely different. Rules associated with further actual use of such equipment need to be deferred until MSHA and NIOSH have actual testing completed. San Juan Coal Company miners have experienced minor injury and detrimental health effects during recent required 'expectations training'. Training on locating equipment, performance of tasks associated with construction of alternatives, if used or in activating equipment are all good things. The addition of requirements about actually using the equipment needs to wait for the testing described above. This testing should not be conducted as part of the quarterly drills. These are miners not research animals.

Proposed § 75.1504(c) (4), redesignated from existing § 75.1504(c) (3), would require that a miner participate in expectations training within one quarter of being employed at the mine. MSHA would expect that any new miner would be given the

expectations training within this timeframe. This could be accomplished during new miner or newly employed miner training.

**Response:** San Juan Coal Company miners have experienced minor injury and detrimental health effects during recent required 'expectations training'. Rules associated with further actual use of such equipment need to be deferred until MSHA and NIOSH have actual testing completed.

Proposed § 75.1505(b) would require that escapeway maps include the locations of refuge alternatives, and that any change be shown on the map.

**Response:** San Juan Coal Company agrees that escapeway maps form the basis for mine rescue efforts and that locations of refuge alternatives are critical to decisions made during rescue efforts and must be kept current on the escapeway map. This is the correct place to keep this information, not other required maps.

§ 75.1506 Refuge Alternatives. This section would require that mine operators provide refuge alternatives to accommodate all persons working underground and specify criteria for the use and maintenance of refuge alternatives.

**Response:** At San Juan Coal Company this rule already exists. Changes to this standard would be an unnecessary action

Paragraph (a) would require each operator to provide refuge alternatives with sufficient capacity to accommodate all persons working underground.

**Response:** At San Juan Coal Company this rule already exists. Changes to this standard would be an unnecessary action

Paragraph (a)(1) would require at least 15 square feet of usable floor space and at least 60 cubic feet of usable volume per person.

**Response:** San Juan Coal Company requests MSHA to adopt the recommendations in the report prepared for NMA by Joel M. Haight, PHD, Associate Professor of Energy and Minerals Engineering, in which Dr. Haight correctly identifies the issues associated with the excessive space requirements proposed by MSHA. San Juan Coal Company agrees with the spacing recommended in this report and recommends the final requirement for seated positions, should be 7.5 ft<sup>2</sup>/persons and for persons in a supine position, 9.4 ft<sup>2</sup>/person be considered (6'3" person 18" wide).

Paragraph (a) (2) would require that refuge alternatives for working sections accommodate the maximum number of persons that can be expected on or near the section at any time.

**Response:** At San Juan Coal Company this rule already exists. The current maximum accounts for the possibility of an inspector, a miner's representative and company representative traveling with the inspector. The system does not account for the practice of sending a team of inspectors to the mine to attempt to complete a quarterly inspection in a short period of time. The existing rule accounts for that possibility and does not require an operator to include MSHA in the calculations. If this proposed rule is implemented, MSHA will need to acknowledge that it could impact the ability of an inspector to enter certain areas due to the numbers of

people present. The proposed change could prove to be unmanageable for everyone.

Paragraph (b) addresses proposed locations for placement of refuge alternatives. Refuge alternatives would have to be near locations where miners are typically stationed. Paragraph (b) (1) would require that refuge alternatives be located between 1,000 feet and 2,000 feet from the working face and from areas where mechanized mining equipment is being installed or removed.

**Response:** Maintaining this equipment within the specified distance is problematic due to other equipment that already must be stored in these locations. A mine operator simply runs out of places to put things required by existing standards. This is especially true with gateroad development sections and would be especially impractical to impossible in a 2-entry development.

The final rule should allow the device to be located within 2000 feet of the working section or loading point. This provides numerous additional crosscuts in which to store or construct the refuge alternative. This will also help to move the alternative farther away from the possible explosion source at the face and reduce the chance that it would be damaged by overpressure or flying debris from the initial explosion. MSHA is proposing to allow, depending on mine specific conditions, refuge alternatives with boreholes to be located up to 4,000 feet from the working face. MSHA solicits comments on this proposed alternative to locating refuge alternatives in inby areas.

Paragraph (b)(2) would require that refuge alternatives be spaced within one-hour travel distances in outby areas where persons work such that persons in outby areas are never more than a 30-minute travel distance from a refuge alternative or safe exit.

**Response:** At San Juan Coal Company this rule already exists. Changes to this standard would be an unnecessary action.

MSHA solicits comment from the public on the Agency's proposed approach to locating refuge alternatives in outby areas, including the minimum and maximum distances.

**Response:** Minimum and maximum distances between the refuge alternatives should not be mandated by MSHA. The conditions at each mine are different and the spacing should be established on a mine by mine basis and incorporated in to the Emergency Response Plan for that given mine.

Please be specific in your response, including alternatives, rationale, safety benefits to miners, technological and economic feasibility, and data to support your comment.

Paragraph (c) would require that roof and rib support for the refuge alternative locations be specified in the mine's roof control plan.

**Response:** Experience at San Juan Coal Company has shown that additional roof and rib support is necessary in some specific cases. Those are with constructed shelters, particularly those that will be used in a longwall tailgate. That has not

been shown to be the case where portable shelters are used. Those devices are moved frequently and the areas are not subjected to the forces seen in a longwall tailgate. The final rule needs to recognize these differences and allow for standard roof control practices where portable, self-contained shelters are used.

Paragraph (d) would require that the operator protect the refuge alternative and contents from damage during transportation and storage.

**Response:** This paragraph should not establish a means for an inspector to issue a violation if a property damage accident occurs. The standard should simply be that if the alternative is damaged, that the refuge alternative be removed from service if examination reveals damage or tampering that could interfere with the functioning of the refuge alternative or any component. Refuge alternatives may be damaged by persons, mining equipment or the mine environment. If the refuge alternative is immediately removed from service or repaired, there would be no risk to miners.

Paragraph (e)(1) would require the operator to withdraw all persons from the area serviced by the refuge alternative if the refuge alternative is removed from service, except those persons referred to in § 104(c) of the Mine Act.

**Response:** The final rule should provide for an operator to include an alternative means of providing this protection on a temporary basis. Provided the alternative means provides at least similar protections. For example, if a constructed shelter were damaged, an alternative might be to transport a pre-fabricated device to that location to provide the protection until the constructed shelter could be repaired. This method could be used to assure miners would be provided the protection afforded by approved refuge alternatives at all times.

Paragraph (f) would require that, at all times, the site and area around the refuge alternative be kept clear of machinery, materials, and obstructions that could interfere with the activation or use of the refuge alternative.

**Response:** The intent of this requirement is good. In practice, if the proposed location from the working face is not changed, other required equipment such as emergency roof support materials or other items could be required to share the same general location in order to maintain compliance with existing standards. This problem can be removed if the spacing is changed to 2000 feet from the working section, rather than the working face.

Paragraph (g) (1) would require that a sign or marker made of reflective material with the word "Refuge" be posted conspicuously at each refuge alternative.

**Response:** MSHA should refrain from mandating specific wording on these systems. San Juan Coal Company definitely agrees with MSHA in training miners that escape is always the first choice and staying in these alternatives is a last resort choice. With that in mind these components are called escape shelters at San Juan Mine 1. They currently have such signs and all of them that are located outby the loading point have the lifeline attached to them with tactile devices on the line to indicate to escaping miners that a shelter has been reached. These



shelters have been part of every quarterly evacuation drill for the past 2 years. Not only would there be no value in changing the signage, there could actually be confusion by making this unnecessary change. The final rule should not mandate the specific wording on these or other devices.

§ 75.1507 Emergency Response Plan; Refuge Alternatives. Proposed § 75.1507 would require mine operators to include refuge alternative provisions in their Emergency Response Plan (ERP).

**Response:** At San Juan Coal Company this rule already exists. Changes would be an unnecessary action. One additional step that could be of value would be to allow for incorporation of the Fire and Emergency Evacuation, Program of Instruction, into the mine's Emergency Response Plan. This should only be made optional, not mandated. Many mines may choose to incorporate all of these requirements in to one plan for simplification and consolidation of the various mine emergency requirements.

Paragraph (a) (1) would require that the mine operator specify the types of refuge alternatives and components used in the mine.

**Response:** At San Juan Coal Company this rule already exists. Changes to this standard would be an unnecessary action.

In this same section MSHA goes on to establish that the stoppings and doors would have to be designed to resist a 15 psi overpressure. MSHA envisions that this refuge alternative would typically be used outby. MSHA goes on to say that if used near the working section, the stoppings could be removed to allow the components to be moved periodically to the next location and new stoppings would have to be built.

**Response:** Information in the Foster Miller report indicates that walls of shelters located in a crosscut between two entries could be expected to be subjected to forces of an estimated 3 psi. This same Foster-Miller report states that construction of walls meeting a 15 psi overpressure may be necessary if the alternative is located in direct line of the potential explosion source. No one knows what such a wall and its door looks like today however. If the approval process for a 15 psi wall, with a door in it is only as cumbersome as the current ventilation seal approval process, installation of an approved wall is unlikely to be accomplished for many months. An acceptable alternative needs to be included in this final rule. The final rule should be modified to allow a refuge alternative to be protected by its location. Such actions can reduce the expected forces on those same walls to 3 psi or less as reported by Foster-Miller. This would make the entire system much more feasible, would improve its functionality and all accomplished without reducing the safety of miners.

This concept is further reinforced by the Agency accepting the third type of refuge alternative that uses materials pre-positioned for miners to construct a secure area with an isolated atmosphere. Construction of such a refuge alternative under duress, during an emergency situation would be very unlikely to meet any 15 psi

standard and if located out of the direct path of the expected explosion forces, would not need to. This concept is simply a formalized version of barricading.

The final rule needs to allow for protecting these alternatives by location. The MSHA approval process cannot cope with this unnecessary requirement nor can miners.

Paragraph (a) (2) would require that the ERP include procedures for maintaining the approved refuge alternatives and components. This proposal would assure that miners are able to maintain or correct any problems that may develop during storage or use of the refuge alternatives.

**Response:** This provision needs to be rewritten. How would miners be expected to repair the skin of metal shelter if it were damaged while in use? The shelter could be resealed with various methods but that repair would not maintain the 15 psi overpressure requirement. The intent of this requirement is understood, that a means to address damage and leakage needs to be available for miners using these systems. The final rule needs to consider that there are significant limitations to the capabilities if in an emergency situation.

Paragraph (a)(3) would require that the rated capacity of each refuge alternative, the number of persons expected to use each refuge alternative, and the duration of breathable air provided per person by the approved breathable air component of each refuge alternative be defined in the ERP.

**Response:** At San Juan Coal Company this rule already exists. Changes to this standard would be an unnecessary action.

MSHA solicits comment from the public on the 96-hour duration.

**Response:** San Juan Coal Company requests that MSHA retain the provisions and options published by MSHA in Program Information Bulletin No. P07-03. This PIB remains in effect and was required to be used in conjunction with PPL No. P06-V-10. The final rule should retain these provisions for the various options that may satisfy the breathable air requirement. These options include: an established borehole capable of providing fresh air to a predetermined location; a 48-hour supply of breathable air, if advance contingency arrangements have been made to reliably assure that miners who cannot be rescued within 48 hours will receive additional supplies of breathable air sufficient to sustain them until rescue; a 96-hour supply of breathable air located at a predetermined location, and other methods as long as these methods provide equivalent safety protection.

Retaining these options allows mine operators to consider specific mine conditions and respond to the relevant variables that may impact the method used and air supply required, under a variety of adverse conditions, to provide breathable air to trapped miners. Many operators have made advance arrangements for quickly providing a borehole to specific locations in the mine for the purpose of delivering breathable air, communications and even emergency supplies to these locations for an even longer period than 96 hrs. That element as defined in the PIB and PPL referenced needs to be retained in the final rule.

Paragraph (a) (5) would require that the ERP include methods to provide ready backup oxygen controls and regulators.

**Response:** Elements of this proposed rule may be impossible for anyone to comply with as any alternative relying on compressed gas bottles, ultimately requires a single fitting or valve on the bottle itself. There is only one opening in to that cylinder. Development of the final rule must consider this element.

Paragraph (a) (6) would require that the ERP include the methods for providing an airlock and methods for providing breathable air in the airlock.

**Response:** The final rule should not require all refuge alternatives to have an airlock at all. A shelter provided with a constant flow of air from an external source would have a positive pressure inside. Opening the entrance door would result in fresh air flowing out of the shelter through the door. An airlock would provide no additional protection. The final rule should allow for that method and not require airlocks for all situations. The space required for constructing a usable airlock space, is space that will not be available inside the shelter itself. In some pillar sizes that would preclude an operator from having an entrance to the alternative from each side. There simply isn't enough space available and if ventilated with positive pressure, would not provide additional safety for miners, just less space inside the shelter.

MSHA goes on to require that when miners enter the airlock, it is necessary to monitor and provide purge air to remove any contaminants and minimize contamination inside the refuge alternative.

**Response:** This statement isn't the case in all designs. As stated above, if the alternative is provided with a continuous supply of air inside, either by a borehole or other means, there would be no risk of contaminating the air inside the shelter and an airlock would not be necessary. The final rule needs to allow for this option. It might even encourage additional operators to choose this method.

Paragraph (a) (9) would require that the ERP include methods for monitoring gas concentrations, and charging and calibrating equipment.

**Response:** San Juan Coal Company believes the methods for monitoring gas concentrations are already built in via other federal requirements and mine ventilation plans. The final rule should allow for operators to simply provide additional battery supplies in the shelters and supplement those instruments with chemical stain tubes. In shelters connected to boreholes additional battery supplies and even replacement instruments could be lowered in to the shelter.

Paragraph (a) (11) (i) and (ii) would require that the ERP specify that refuge alternatives are not within direct line of sight of the working face and, where feasible, not in areas directly across from, nor closer than 500 feet radially from, belt drives, take-ups, transfer points, air compressors, explosive magazines, seals, entrances to abandoned areas, and fuel, oil, or other flammable or combustible material storage.

**Response:** This rule would make it illegal for a mine using a spontaneous combustion control system to retain shelters in the tailgate. Such shelters would

be located directly across from a seal as soon as the longwall face retreated past the location. If this requirement is retained, the shelter would need to be dismantled or disabled prematurely when in fact the system could be utilized for as much as a year after that. Given the new seal requirements that include improved seal strength requirements, systems of monitoring and managing atmospheres behind the seal, this element needs to be removed from the final rule. Not doing so will reduce the safety of miners assigned to longwall systems and eliminate the refuge alternative from outby workers and examiners performing work in these locations.

The requirements in this rule will also result in contradictions in rules. For example a temporary fuel storage station is required to be located no more than 500 feet from the loading point. If the refuge alternative can be no more than 2000 feet from the face, the two items could end up needing to share the same space and would be in violation of another requirement contained in this proposed rule. This further emphasizes the need to modify that refuge alternative requirement to allow them to be up to 2000 feet from the loading point.

Proposed paragraph (b) contains provisions for ERPs for refuge alternatives constructed in place. The proposal would require that the ERP specify that stoppings and doors are designed to resist 15 psi overpressure.

**Response:** Information in the Foster Miller report indicates that walls of shelters located in a crosscut between two entries could be expected to be subjected to forces of an estimated 3 psi. The final rule should be modified to allow for shelter walls other than 15 psi, provided they are protected by location. The rule should also allow for the storage of SCSR devices inside these same shelters which would also protect the devices by location and provide walls that miners can easily pass through to reach the safe atmosphere inside where a change from one device to another could be accomplished in fresh air.

MSHA is proposing that breathable air contain an oxygen concentration between 18.5 and 23 percent and a carbon dioxide concentration not exceeding a 1.0 percent time-weighted average and that at no time exceeds 2.5 percent for any 24-hour period.

**Response:** Internationally accepted standards support that life can be sustained in an atmosphere of 12% or greater oxygen content. Similarly, the carbon dioxide content of 1% or less with excursions not to exceed 2.5% are overly conservative where international standards acknowledge a conservative 5% maximum concentration noting that sustained concentrations of 9% are lethal.

Paragraph (c) (1) would require that the ERP specify the means to store and protect materials from being damaged when moved. The operator would be required to provide details of how the components are placed on a transportation device to provide security, transportation readiness and component integration to assure this alternative will be available when needed and readily constructed and activated.

**Response:** This is a completely unnecessary and burdensome requirement. The rule requires the alternative to be available and functional. If not it is clearly

mandated that non one can work in those areas except to make such alternative available. There is no benefit to be gained from this tedious and administrative requirement. The final rule should not place this burden on those involved, including MSHA. Mine inspectors are in the mines hundreds of times per year and if the alternative is not in usable condition, inspectors will take the appropriate actions. The alternatives are part of the preshift process by certified persons and defects noted in those examinations will be noted every 8 hrs.

MSHA requests comments on whether the rule should contain a provision that the advance arrangements specified in the ERP include a method for assuring that there will be a suitable means to connect the drilled hole to the refuge alternative and that the connection be made within 10 minutes.

**Response:** This is already a requirement at San Juan Coal Company. Those elements are already required by our ERP.

Under this provision, MSHA would also expect that advance arrangements specified in the ERP include the capability to provide full-face breathing apparatus to persons exiting the refuge alternative to make necessary connections from the borehole. MSHA asserts that this breathing apparatus would be necessary to protect the miner from any gases or toxic products of combustion generated by a fire or explosion.

**Response:** There are other methods to protect miners during connection to the borehole. A miner would also be protected during this activity through use of a SCSR. Also, MSHA is not being cognizant of the fact that in a mine ventilated via an exhaust ventilation system, as soon as the borehole contacts the mine entry, the area is being supplied with fresh air from the surface. The air volume in the area would quickly be displaced with fresh air. MSHA should allow for more than full-faced breathing apparatus for protection of miners.

Paragraph (d)(8) would require that the advance arrangements specified in the ERP include a method for assuring the immediate availability of a backup source for supplying breathable air and a backup power source for surface installations.

**Response:** This is already a requirement at San Juan Coal Company via the approved ERP.

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Paragraph (a) (2) would require an additional communication system when approved in the operator's Emergency Response Plan (ERP).

MSHA requests comments on all the estimates of costs and benefits presented in this preamble and in the PREA, and on the data and assumptions the Agency used to develop estimates. The range of estimated compliance costs: \$102.6 million first year and \$43.3 million yearly. A lower-bound estimate of costs: \$84.1 million first year and \$38.7 million yearly.

**Response:** If MSHA estimates are based on the cost of going from where the industry is today with varying stages of compliance with the original post-accident breathable air requirements, costs will be significantly different than if estimating the impact of the overall refuge alternative requirement. For example, San Juan Coal

Company has expended over \$14 million over the past two years in compliance with the requirements of the Miner Act. We are just one underground mine. Of this expenditure, roughly \$750,000 was spent on portable, self-contained shelters. These devices meet West Virginia requirements. To replace these systems with approved versions can be expected to be more than 5 times that cost. Our current system also utilizes a series of constructed shelters. These currently cost approximately \$75,000 each, which includes the cost of a borehole to supply air and communications. With current projected mining rates we anticipate construction of two to three of these per year for the life of the mine. The increased costs that these proposed requirements will bring could easily increase that cost by a factor of 10. Based just on our estimates, this rule is very definitely a major rule.

The Table used to indicate a Summary of Yearly Costs does not include any element for plan development or revision, or the providing of systems for audit. The training costs are grossly underestimated.

Table 1: Summary of Yearly Costs of Proposed Rule

Detail	Yearly Cost			
Cost to Manufacturers				
Application and Approval Costs	\$2.1 million			
Cost to Mine Operators				
Mine Size				
1-19 employees	20-500 employees	501+ employees	Total	
Cost for Purchase, Installation, Moving, and Repair of Refuge Alternatives	\$2.4 million	\$17.5 million	\$1.9 million	\$21.8 million
Cost for Pre-Shift Exams and Revisions to Plans, Maps, and Programs	\$300,000	\$5.2 million	\$1.2 million	\$6.6 million
Cost for Training	\$520,000	\$10.4 million	\$1.9 million	\$12.8 million
Total	\$3.1 million	\$33.1 million	\$5 million	\$41.2 million

We also believe it does not comply with the paperwork reduction act as the rule includes a myriad of administrative requirements throughout the proposal. The

specifics that are going to be required in the ERP to provide descriptions of a vast variety of information certainly does not do as MSHA asserts in the Proposed Rule when the Agency states its belief that this will:

“• Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.”

This proposal does exactly the opposite. It will produce an administrative nightmare that will provide no degree of safety for miners and will be unnecessarily burdensome on MSHA personnel, mine operators and miners.

During preparation of the final rule MSHA should take every opportunity to eliminate the administrative elements of this rule and prevent these unnecessary elements.

San Juan Coal Company appreciates the opportunity to provide these comments and respectfully request they be considered and included in the development of the Final Rule.

Sincerely,

*David Hales*

David C. Hales CMSP  
Health & Safety Superintendent  
San Juan Coal Company