Public Hearing on MSHA's Proposed Rule for Refuge Alternatives for Underground Coal Mines

JULY 31, 2008
9:00 A.M.

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OFFICE OF STANDARDS, REGULATIONS AND VARIANCES

PANEL MEMBERS

HOWARD EPPERLY
ERIC SHERER
CHERI E HUTCHISON
RON FORD
JACK POWASNIK
MS. SILVEY: Good morning. My name is Patricia W. Silvey and I am the Director of the Mine Safety and Health Administration’s Office of Standards, Regulations and Variances. I will be the moderator of this public hearing on MSHA’s proposed rule for Refuge Alternatives for Underground Coal Mines. On behalf of Acting Assistant Secretary Richard E. Stickler, I want to welcome all of you to this hearing today.

If you would join with me, please, as we approach the one-year anniversary of the Crandall Canyon accident, I would ask you to pause for a moment of silence in memory of the dedicated miners and the heroic efforts of those miners and the three rescuers, including one of MSHA’s own. So if you would join with me in a moment of silence for those who lost their lives, please. Thank you.

The MSHA members of the panel are: on my right, Howard Epperly, who is the MSHA team leader of this Refuge Alternative Proposed Rule Making; to his right, Jack Powasnik, who is with the Office of the Solicitor; and to his right, Cherie Hutchison, who is a Regulatory Specialist in my office; on the left, Eric Sherer, who is with our Office of Coal Mining
Safety and Health; and to his left, Ronald Ford, who is an economist in my office.

This is the second of four public hearings on the proposed rule. As many of you know, we held the first hearing on Tuesday in Salt Lake City. The third hearing will be in Lexington, Kentucky on August 5th, and the final hearing in Birmingham, Alabama on the 7th.

The comment period for the proposal will close on August 18th, and that will be by midnight, Eastern Daylight Savings Time. You can view the comments on the Agency’s website at www.msha.gov. In the back of the room, we should have a few copies of the proposed rule.

The proposal, as many of you know, would implement the provisions of Section 13 of the Mine Improvement and New Emergency Response (MINER) Act of 2006 and would apply only to underground coal mines. The MINER Act required that the National Institute for Occupational Safety and Health (NIOSH) conduct research on refuge alternatives. NIOSH issued this report in January of ’08 and MSHA’s proposed rule is based on the Agency’s data and experience, recommendations from the NIOSH report, research on
available and developing technology and the
regulations of several states.

Before I start to discuss the proposal,
I want to reiterate and underscore an important mine
emergency principle embodied by both MSHA and the
mining community, and it is a principle of
longstanding, that in the event of a mine emergency
underground, the first line of defense is for the
miner to try to escape. Only if escape is impossible
would the protections of this proposal be needed.

Under the proposed rule, a refuge
alternative would provide a protected, secure space
with an isolated atmosphere that creates a life-
sustaining environment to protect miners and assist
them with escape in the event of a mine emergency.
The proposal allows the use of several types of
refuge alternatives and includes requirements that
the manufacturer or third party test a refuge
alternative and its components prior to obtaining
MSHA approval.

Under the proposal, three types of
refuge alternatives would be allowed: a pre-
fabricated self-contained unit; a secure space
constructed in place; and materials pre-positioned
for miners to use to construct a secure space.

Some of the major provisions of the proposed rule are:

Refuge alternatives would need at least 15 square feet of floor space and 60 cubic feet of volume per person.

The capacity of refuge alternatives near the working section would be the maximum number of persons that could be expected to work in the area.

The capacity of refuge alternatives in an outby area would be the maximum number of persons assigned to work in the area.

Refuge alternatives would be located between 1,000 feet and 2,000 feet from the working face and where mechanized mining equipment is being installed or removed.

For outby areas, refuge alternatives would be located within 1-hour travel distances; however, the operator may request, and the district manager may approve a different location based on an assessment of risks to persons in outby areas.

Refuge alternatives and their components would need to sustain persons for 96 hours or 48 hours if advance arrangements are made for additional
supplies, particularly, air from the surface. Food, water, lighting, sanitation, first aid supplies and a two-way communication system would need to be provided.

Refuge alternatives approved by states or by MSHA in the Emergency Response Plan prior to promulgation of the final rule would be allowed until replaced, or a 10 year maximum; and refuge alternative components approved by states or by MSHA in the Emergency Response Plan would be allowed until replaced, or a 5 year maximum.

The location, capability, and capacity of refuge alternatives would be addressed in the written ERP, Emergency Response Plan.

Training of miners to locate, transport, activate, use, and maintain refuge alternatives would be integrated into existing quarterly drills and annual expectations training.

Pre-shift examinations of refuge alternatives would be required. Refuge alternatives would need to be shown on mine maps.

MSHA has estimated the economic impact of the proposal and has included a discussion of the costs and benefits in the preamble and in the
Preliminary Regulatory Economic Analysis, or the PREA. The PREA contains estimated supporting data on costs and benefits.

The preamble addresses the provisions in the rule and includes a complete discussion of a number of specific requests for comment. I would like to briefly mention some of them here. And MSHA requests comments on:

- The estimated service life of pre-fabricated self-contained refuge alternatives and estimated service life of components.
- The proposed definition for ‘breathable oxygen’ as 99 percent pure oxygen, with no harmful impurities, and the proposed definition -- the proposed minimum of 96 hours of breathable air.
- The proposed rule would require that the apparent temperature within refuge alternatives in use at full capacity not exceed 95 degrees Fahrenheit.

And in Footnotes 1 and 2 in the preamble, the reference should have been to the NIOSH GARRETT REPORTING SERVICE
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report as the basis for the Agency's proposal on apparent temperature.

Whether a requirement should be added in the final rule that refuge alternatives be designed with a means for miners to signal rescuers on the surface, to assure that rescuers on the surface could be contacted if the communications systems become inoperable, and with a means for miners to signal underground rescuers with a homing device, to assure that rescuers could detect the trapped miners.

The proposal would require that a refuge alternative provide a two-way communication facility that is part of the mine communication system, which can be used from inside the refuge alternative; and an additional system as defined in the operator's approved ERP.

I would like to clarify that proposed approval requirements should reflect the same language as in the proposed safety standards in 75.1600-3.

We also ask for your comment on the types, sources, and magnitude of lighting needed for refuge alternatives. On this issue, Footnote 3 in the preamble should have cited pages 124 and 25 from...
the August 23rd, 1999 Department of Defense standard.

The proposed minimum space and volume requirements and the feasibility of using certain types of refuge alternatives in low seam coal mines.

The proposed minimum flow rate of 12.5 cubic feet per minute of breathable air for each miner.

The proposed setting for pressure relief and whether a higher pressure relief should be required. The proposal would require that fans or compressors provide positive pressure and an automatic means to assure that the pressure is relieved in the refuge alternative at 0.25 psi above mine atmospheric pressure.

The proposed requirement for carbon monoxide detectors, for compressors or fans at the surface and having them provide automatic and visual alarms if carbon monoxide levels in supplied air exceed 10 parts per million.

The visual damage that would be revealed during pre-shift examinations. The Agency is concerned with the feasibility and practicality of having to visually check the status of refuge alternatives without having to enter the structure or
break the tamper-evidence seal.

The proposed requirement for locating refugee alternatives in inby areas, as well as the alternate provision discussed in the preamble that would allow that refugee alternatives in these areas be located up to 4,000 feet from the working face, depending on mine-specific conditions, if they are connected to the surface with boreholes.

The proposed approach to the capacity of refugee alternatives in inby and outby areas and the proposed approach to locating refugee alternatives in outby areas, including minimum and maximum distances.

We also asked whether the final rule should contain a requirement that advance arrangements specified in the ERP include a method for assuring that there will be suitable means to connect the drilled hole to the refuge alternative and that the connection can be made within 10 minutes.

The proposed training requirements for persons assigned to examine, transport, maintain and repair refugee alternatives and components and whether it would be more appropriate to include that requirement in Part 48.
The proposed approach to annual expectations training for miners in the construction, where applicable, activation and use of refuge alternatives and components. Comments should address the proposed strategy and the proposed elements of training.

The Agency is also soliciting comments on the proposed information collection requirements. Please provide comments on all data and assumptions the Agency used to develop estimates of information collection burdens, as well as estimates of costs and benefits.

As you address these provisions -- and I cannot underscore this enough -- either in your testimony to us today or in your written comments, many of you have heard me say this before, please be as specific as possible and include in your comments alternatives, your suggested alternatives, rationale, rationale for your suggestions, safety and health benefits to miners, technological and economic feasibility information, and data to support your comments.

The Agency will use this information to help evaluate the requirements in the proposal and
produce a final rule that will improve safety and
health for underground coal miners in the event of a
mine emergency in a manner that is responsive to the
needs and concerns of the mining public.

The hearing, as many of you know, will
be conducted in an informal manner and formal rules
of evidence will not apply. The panel may ask
questions of the witnesses and the witnesses may ask
questions of the panel.

MSHA will make a transcript of the
hearing available on the Agency’s website within one
week of the hearing. And I underscore that, too,
within one week of the hearing. As most of you know,
time will be of the essence. I underscore that,
again. Time will be of the essence in developing the
final rule, which must be finalized by December 31,
2008.

If you wish to present written
statements or information today, please clearly
identify your material and give it to court reporter.
You may submit copies following the hearing by any of
the methods identified in the proposal.

We ask that everyone in attendance sign
the attendance sheet, and if you have a hard copy --
you signed up to speak and have a hard copy or
electronic version of your presentation, we would
appreciate it if you would provide a copy to the
court reporter.

We will now begin, and if you would
please begin by clearly stating your name and
organization and spelling your name for the court
reporter, this will ensure that we have an accurate
record.

At this point we will begin today's
hearing, and our first speaker is Ron Wooten,
Chairman, West Virginia Mine Safety Technology Task
Force. And he has a panel -- excuse me. Okay. Jim
Dean, co-chairman and Randy Harris, Consultant, West
Virginia Mine Safety Technology Task Force.

MR. WOOTEN: Thank you very much, Ms.
Silvey. My name is Ron Wooten, W-o-o-t-e-n, and I am
the Director of the West Virginia Office of Miners
Health Safety and Training. As such, I also serve as
the statutory chairman of the West Virginia Mine
Safety Technology Task Force.

It is important that I point out here
that the lion's share of the work performed by this
Task Force has been and is being done by the co-
chairman, Jim Dean, and the other members of the Task Force.

Jim Dean is the former acting director of the Office of Miners' Health Safety and Training and the first chairperson of this Task Force.

In addition to Co-Chairman Dean and others on the Task Force, I am accompanied by Mr. Randall Harris, who has served as consultant to the agency and the Task Force since early in 2006.

It is a pleasure for us to appear before you today to share our thoughts on Proposed 30 CFR, Part 7 and 75 regarding refuge alternatives.

Following the tragic events of January 2006 at the Sago and Aracoma mines, legislation was passed by the West Virginia legislature and signed by Governor Manchin in record time. The Task Force evolved following this enactment. I will leave details of the establishment of the Task Force and the details of the deliberations of the Task Force to Jim Dean and Randy Harris.

Suffice it to say that in my mind the establishment, the deliberations, the unprecedented cooperation and, finally, the work products of this group were truly remarkable. It is important to
remember that this group worked diligently to meet the established timelines at a time and during a period of intense pressure, that being immediately following the tragedies at Sago and Aracoma.

I was neither with the Agency nor the Task Force during this time, but their work is deserving of my respect and gratitude, as well as that of every West Virginian and all throughout the country who exhibited concern for mine safety.

Before I introduce Jim, let me further add that it the West Virginia coal industry, working with the Task Force that initiated that giant first step to require emergency shelters in the coal mines of West Virginia, following decades of inaction by state and federal governments, even though Congress directed the Mining Enforcement and Safety Administration to take such action following enactment of the Federal Coal Mine Health and Safety Act of 1969.

Congress again gave the same instructions to the Federal Mine Safety and Health Administration following passage of the Federal Mine Safety and Health Admin's Act of 1977.

Not until the West Virginia coal...
industry and this Task Force came together on a compromise over additional self-contained, self-rescuers did shelters become a regulatory reality anywhere in this country.

At this point I would like to introduce Jim Dean, from the Task Force, and any other Task Force members who may be present here today, to present additional comments. Mr. Harris will then follow Mr. Dean. At the conclusion of Mr. Harris' presentation, I have a few closing remarks.

Jim Dean.

MR. DEAN: Thank you, Ron, Ms. Silvey and the panel members. My name is Jim Dean, D-e-a-n. And the purpose of my providing comments is that I believe MSHA has missed the point in proposing rules on refuge alternatives, especially in regard to emergency shelters and is either unaware or has chosen to ignore the process at which rules were developed by West Virginia.

I would like to state that my comments here today represent my own views and opinions, having served as the Acting Director of the West Virginia Office of Miners Health Safety and Training from February of 2006 through September of that year.
During that time, as Ron has mentioned, I was the original chairman of the West Virginia Mine Safety Technology Task Force, which I currently co-chair with Director Ron Wooten. If the panel has any questions they may be forwarded to me in writing.

Other Task Force members include three individuals representing labor nominated by the United Mine Workers of America and three representatives representing industry nominated by the West Virginia Coal Association, with all members being appointed by Governor Joe Manchin and confirmed by the West Virginia Senate. They are, representing labor, Ted Hapney, Gary Trout, and Steve Webber and representing industry, Dale Birchfield, Terry Hudson, and Todd Moore.

Again, as a matter of background, I served as the Interim Director of the West Virginia Office of Miners Health Safety and Training from February 14th, 2006 until September 21st. As the Director, I also served as the Chairman of Task Force and the Board of Coal Mine Health and Safety.

As you know, the West Virginia legislature approved WV Senate Bill 247 on January the 23rd, 2006, following the tragic accidents with
14 fatalities occurring at Sago and Aracoma.
Governor Manchin approved this legislation the following day.

Senate Bill 247 required the Director of the Office of Miners Health Safety and Training to promulgate rules to define and implement the provisions of Senate Bill 247.

This action began a series of public policy reforms of mine safety in an effort to create effective solutions to issues surrounding better response following a disaster. It also placed West Virginia in a leadership position for change in mine safety reform, in the absence of national standards, on many areas of technology that were not widely understood by all individuals working in the mining industry.

The original Emergency Legislative Rule filed by the Office of Miners Health Safety and Training was on February the 1st, 2006, which addressed storage caches of SCSRs, strobe lights and lifelines, wireless communication devices, and wireless tracking devices, which almost all required purchase orders or plans within 30 days of notification of approval of these devices by the
Of key importance and relevance was the requirement in this version of the emergency rules for 16 SCSRs per person in a section cache, in addition to other SCSRs contained outby for breathable air. I have included this as Attachment I to our comments.

For a section with 10 workers, this would have required a total of 160 SCSRs to be present in a section cache.

For the Ocenco EBA 6.5 at 8 lbs -- and, again, that's the donned weight per unit -- would represent 1,280 pounds total or 128 pounds of SCSRs per person. For the CSE SR100 at 5.7 lbs of carried weight, this would have been somewhat better at 912 pounds total or about 91 pounds per person.

This existing requirement and the need for a better alternative for providing a breathable atmosphere for trapped miners became the impetus for requiring shelters in West Virginia.

During this time, many concerned individuals from labor, industry and technology vendors were working and providing input to better refine these emergency rules. Several of these
individuals and others began working with me as the Acting Director and eventually were named as WV Mine Safety Technology Task Force members.

There was also a great deal of discussion regarding mine shelters after the successful rescue of 72 potash miners on January the 30th, 2006 at the Esterhazy potash mine in Saskatchewan, Canada.

During these discussions, a representative of industry, Chris Hamilton from the West Virginia Coal Association, suggested that emergency shelters be considered as an alternate means of providing the sustaining air that would be provided by the sixteen SCSRs per person in the section cache. Individuals from both labor and industry agreed that, based on manufacturers' initial input, this seemed to be a means that would successfully provide the atmosphere that could sustain life for a trapped miner and that further definition and creation of standards needed to be developed.

The revised version of these emergency rules dated February the 27th, 2006 provided for the use of emergency shelters and chambers in lieu of 16
SCSRs per person on the section, which I've attached as Attachment 2. This version of emergency rules also required the Director to establish the Mine Safety Technology Task Force within 7 days of the effective date of the rules, with, again, three representatives from labor and three from industry and chaired by the Director.

This rule required all actions of the Task Force to be unanimous and directed the Task Force to commence a study, working with the Director, to determine the commercial availability and functional and operational capability of SCSRs, emergency chambers and shelters, wireless communication devices and wireless tracking devices.

These rules also required the Task Force to provide the Director with a written report summarizing its findings on these items and related safety measures. The report was also to include the Task Force findings and recommendations regarding implementation, compliance and enforcement of these requirements.

As the Acting Director, I announced the names of the members of the Task Force on March the 9th, 2006 and appointed Randall Harris as technical
advisor and facilitator. The group held its first meeting on March 13th and met a total of 36 full days between March 13th and May 25th of 2006. The Task Force met in open public forum with experts from industry, labor, MSHA, NIOSH and other regulators, as well as academia at five different locations throughout the State to facilitate participation in the open public meetings. In addition, representatives of the Task Force visited various vendors, research institutions, and underground mines.

I can definitely say that the State of West Virginia, through this Task Force’s efforts, reached out to MSHA, NIOSH, various manufacturers, and other countries for assistance, information and advice before setting standards for shelters and other areas in that report. We also included inviting employees from MSHA and NIOSH to observe and participate in various meetings sponsored by the agency. This also included inviting those people to approval group meetings for various shelter manufacturers following the finalization of WV’s shelter rules.

A list of organizations consulted and
whose material was reviewed during Task Force

deliberations and writing of the report may be found

on pages 112-113 of the final report.

The resulting final rules approved by

the WV legislature may be found on the West Virginia

Office of Miners Health Safety and Training’s

website, which I’ve included as Attachment 3. This
document outlines the requirements for emergency

shelters as it was primarily defined in the amended
emergency rules filed June 9th, 2006 with the West

Virginia Secretary of State’s Office following the

public hearing.

This document also went through the

Legislative Rule Making Committee and was authorized

by the West Virginia state legislature. This

authorization was cited in Section 64-10-1(a) of

House Bill 2670, which was passed March 10th, 2007

and later approved by Governor Manchin on March 28th,

2007.

Again, the technical advisor and

facilitator was Randy Harris. The final Task Force

report, which was issued on May the 29th, 2006 may

also be found on the Office of Miners Health Safety

and Training’s website, which I’ve included as
Attachment 4.

It's important to note that the WV Board of Coal Mine Health and Safety endorsed the Task Force report and its recommendations unanimously in a letter dated May the 30th, 2006, which I've included as Attachment 5. This Board is also composed of equal representatives from labor and industry and is statutorily charged with the review of all serious and fatal accidents and devotes its time toward promulgating rules to prevent fatal accidents and injuries.

Many believed the Task Force would not be able to agree on its recommendations. Through the process developed, the support of upper management of the entities being represented, both the United Mine Workers of America and the industry and the character of those involved, all recommendations of the Task Force were unanimous and formed the basis for the final rules which are referenced above.

It is my opinion that this approach of including representatives of the groups most affected, who are closest to the issue, in the initial development of public policy can provide the most effective solutions to the problems being
addressed.

We concluded that the first and preferred option for miners in an emergency is to escape without delay. However, it was found that options existed to provide the primary function of an emergency shelter and chamber which is designed to potentially sustain life after a major underground event, such as an explosion, where escape is cut off. We developed recommended minimum requirements for the emergency shelter and chamber and its use.

In developing recommendations, we reviewed summaries of mine accidents that resulted in barricading miners and developed a scenario. The scenario used is of an accident in which miners within 1,000 feet of the working face have survived a methane explosion. Our scenario does not include secondary explosions or on-going fires in the immediate area.

The scenario did not address these issues because there was complete agreement at that time that nothing would be capable of surviving these events in close proximity. The miners will have made every attempt to exit and found all escape ways impassable. As a last resort, they have been forced
to return to the shelter or chamber to await rescue.

In our scenario, miners approaching the emergency shelter and chamber may have consumed much of their SCSR time, be exhausted from escape attempts, with some injured and all under great stress. In this condition, the miners will need to be protected by the shelter or chamber within minutes of reaching it and for a period of at least 48 hours.

We should note that under WV rules, the section cache of SCSRs contains two SCSRs per person in addition to the one being worn, and that's three in the case of M20s being worn, which is a 20 minute device.

It's also important to note that during our deliberations and prior to setting standards for shelters, we believed that there is little chance of an explosion or fire occurring at a face that would, number one, prevent escape for surviving miners and, two, have surviving miners to benefit from an emergency shelter if an explosion were to occur greater than 15 psi.

After reviewing the proposed MSHA regulation, I believe that MSHA has missed this important point in crafting the regulation and
appears to be more interested in protecting the shelter, rather than looking realistically and solely at protecting the miner.

Given the background process I've just described, I am concerned about areas that significantly deviate and conflict with West Virginia's program on emergency shelters.

As you know, West Virginia is the leading underground coal producing state in the nation. This program has been in place since June the 9th, 2006, and is viewed by some as the model program in the industry, with many states accepting it, including MSHA, for breathable air. This program is nearing complete implementation and will probably be completed by the end of MSHA's rulemaking on refuge alternatives that end this year or early in 2009.

We've discussed many times that if we have overlooked some aspect or applied some incorrect logic that might endanger a surviving miner, every single member would agree to work to change that standard. We also agreed that changing standards just to be different is unnecessary. This would delay the implementation process and deployment of
I am also very concerned about the apparent lack of MSHA's communication with our state in the initial drafting of these proposed rules.

In reading the proposed rule by MSHA, there appears to be some conflicting statements on the use of the a refuge alternative or shelter. On page 34142, Section 705 -- or excuse me -- Section 7.501 it states that, quote, "Under the proposal refuge alternatives could also be used to facilitate escape by sustaining trapped miners until they receive communications regarding escape options."

The concern is that this statement seems to encourage that the refuge alternative be the first place to go until someone either contacts them or arrives to rescue them, while in several other locations of the proposed rule it states that refuge alternatives are a last resort.

I personally know of no US coal miner that is in favor of a refuge alternative being the first place to go and discuss an escape strategy. They should already know their strategy. I believe that if the unit was deployed and systems activated it would shorten the designed service time and I
strongly encourage MSHA to consistently refer to
refuge alternatives and their use as a last resort
option in instances that previously would have called
for barricading.

I am pleased to see that the proposed
rule appears to grandfather state approved units to
meet the requirements of the proposed rule. I would
ask MSHA to consider if there needs to be any
difference from WV’s program. I can understand why
there may a need for specifications to accommodate
for regional ambient temperatures, but ask that you
consider this program as a model for the nation.

If there are significant regional
differences and this is not possible, it is
imperative that the final rule clearly and
unconditionally accept current state approved units
as meeting all requirements of MSHA’s rule on refuge
alternatives and extends for the life of the units,
with a ten year maximum.

We have previously discussed the service
life with manufacturers and generally concur with the
estimated service life of pre-fabricated or portable
shelters of approximately 10 years, with 5 years for
most of the components; some may be longer, others
may be shorter.

I would also strongly encourage MSHA to allow for a period if a unit was damaged during normal handling or by a roof fall to accept those units as well. Some mines are discussing ordering spare units that could be utilized in such a case to quickly provide the needed protection in case of damage. It's my opinion these should meet the requirement for the full ten-year period.

A phase in time for units meeting the final rule should be addressed that when new replacement units meeting MSHA’s final rule are readily available for delivery. Units ordered after that time would be required to meet the final rule requirements. Readily available could be defined as something as short or as long as one week delivery time from order and could be confirmed by contacting the manufacturer. This change would allow for this protection to be available for miners if a unit were damaged and allow for the development of the next generation of this technology that will be required by the proposed rule.

I believe that it's important to note that there are mainly two primary types of portable
Shelters approved in West Virginia; inflatable and steel or rigid units. There are advantages and disadvantages to each in the areas of transportability, simplicity of use in a wide variety of seam characteristics and reported functionality.

MSHA should be as flexible as possible in allowing mines and miners to select an option and not be swayed as vendors try to sell their product by, in some cases, criticizing their competitors.

It's also my opinion that in no way should MSHA force the purchase of one shelter over another just because it's available.

In our original deliberations, we discussed applying minimum area per person requirements and decided to allow other factors, mainly temperature and storage are of necessary components, to drive the size of emergency shelters. In my opinion this performance-based standard is the right approach rather than specifying a value for comfort or something arrived at by taking information out of context, such as square footage and volume requirements for radiation fallout shelters for families.

We conducted an extensive review of past
incidents where barricading may have been implemented. In the final report we cite, "From 1940 to 1980 US Bureau of Mines reported that 127 miners survived behind barricades while 40 died." Each accident was unique and the reporting was not consistent, making it difficult to draw statistical conclusions. However, of those that discussed duration, the maximum was 54 hours at the Belva No. 1 mine in 1954 and the least was 4 hours at the Pocahontas 31 mine in 1957. The majority were in the 20-30 hour range. Based on its findings, the Task Force set a minimum duration of 48 hours.

On Table 4, page 22 of the 2007 Foster Miller Phase II Chapter 3 study, which I've included as Attachment 6, which I believe was commissioned by NIOSH under the MINER ACT, in which they examined a total of twelve past mining disasters where refuge stations would have had a positive impact, that is, saved lives. Table 4 indicates that in all but one of the twelve cases that rescuers would have made contact with trapped miners within 48 hours or less.

I point this out only to indicate that there is a substantial safety factor in the present 96 hours and then as time increases, so does the
I believe that there have been substantial changes in the number of mine rescue teams since 2006, which will reduce the time for response. There has been a substantial increase in the number of SCSRs and their distribution along escape ways. There have also been substantial improvements in training so that miners better understand their escape options and many other improvements, which collectively will substantially reduce the miners' need to barricade, as well as reduce mine rescue response time.

I also believe it is important to note that prior to 2006, as regulatory agencies, we essentially required a few basic tools, boards and brattice cloth for constructing barricades as illustrated in 30 C.F.R. §75.1100-2 (i)(l), which is the quantity and location of firefighting equipment and emergency materials, which requires mine operators to have emergency materials readily available, not exceeding 2 miles from each working section.

These emergency materials include boards, brattice cloth, nails, tools, et cetera, for
mine emergency situations. In an emergency, these materials would be used for providing emergency barricades and for controlling or restoring ventilation controls, end quote. This was the standard since the passage of the 1969 Mine Act, for approximately 39 years.

Since 2006, we have been focused on providing a breathable atmosphere for trapped miners and I believe that everyone should not lose sight of that goal. We, collectively, have made significant progress. The Foster Miller Chapter 3 study previously introduced as Attachment 6 on page 18 states explosions occurring right at working faces killed all or some of the affected section miners instantly in most cases, while face area miners were not killed instantly in most cases of explosions occurring away from the face. In cases of particularly violent outby explosions, Scotia, Jim Walters and Finley, for example, face area miners still died instantly from the explosions.

While the original Task Force report recommended that shelters be placed in crosscuts, we deliberated that this may not be valid due to the view that most incidents that would prevent escape
would occur in outby locations and, therefore, it was not included in the final WV rules. We have since discussed the probability of damage occurring through normal handling tying to place them in crosscuts being much greater than the probability of a miner being capable of surviving an event that would damage a shelter designed to withstand a 15 psi event.

We communicated this to Mr. Kohler at NIOSH in writing, which I've included as Attachment 7.

I would like to request that MSHA explain why they have deviated from their stated requirements for breathable air to date of requiring 3 times purge air and the proposed requirement in 7.505(3)(i) on page 34168 of the proposed rules, which states, quote, "The airlock shall be designed for multiple uses to accommodate the structure's maximum occupancy." This is vague and it should not be.

If it is a refuge alternative rated for 30 people, does that mean that it should be capable of being purged 30 times? If that's the intended meaning, it's unreasonable. I'm also interested in any physical tests or computer modeling that MSHA is
aware of that indicate the effectiveness of purging
on various size spaces, especially those greater than
50 square feet in area.

On page 34156 and other locations within
the proposed rules, I'm concerned that MSHA envisions
allowing the construction of a refuge alternative.
As I understand the proposed rule, MSHA is discussing
using inflatable stoppings. I have not seen
deployment in low visibility conditions and believe
that this product would serve a better function as a
temporary stopping in a mine rescue scenario.

On page 34157 of the proposed rule MSHA
states that, "The Agency would require training to
expose the miners to the expected heat and humidity
conditions in the refuge alternative." I believe
that miners should certainly be informed that
conditions within the refuge alternative or shelter
may be uncomfortable but certainly not life
threatening, and do not believe that exposing
thousands of miners to some high unknown temperature
and humidity is necessary or advisable.

How does MSHA know what the expected
conditions within the refuge alternative will be?
Based on my understanding, a range of temperatures of
some quality -- quantity X with a range of relative
humidity readings of Y would result in an apparent
temperature of 95 degrees F. Miners certainly can
relate and understand this through their personal
exposure to conditions such as this and even higher
on hot humid days. I have personally heard many
"considered opinions" about the use of the apparent
temperature versus some other means. It is important
that miners be protected from heat stress and in West
Virginia apparent temperature is used.

I do not believe that the proposed --

Excuse me. I do not believe that the proposed rule
should discuss the use of seismic location devices
unless the Agency is willing to significantly upgrade
its seismic capabilities. I am personally unaware of
any significant update of such technology that would
have restored the miners' confidence in MSHA that
they would bring, let alone detect trapped miners
with seismic equipment.

I strongly encourage the agency to
invest in the necessary upgrades and more timely
delivery of its seismic technology and discuss the
current limitations of seismic detection in order for
working miners to better understand these
limitations. I believe that it should not be present in the final rule unless MSHA is willing to obtain the significant upgrades, test them and the testing results be widely disseminated.

It is personally disturbing to me that members of both NIOSH and MSHA, since 2006, have been involved in numerous meetings with representatives from the state, and actually sat in meetings for determining whether manufacturers' products would be approved -- again, this was as observers -- failed to point out issues or concerns and more importantly bring solutions to the table and are now proposing significantly different standards.

Again, I would ask MSHA to consider if there needs to be any difference from WV’s program. I can understand why there may be a need for specifications to accommodate for regional ambient temperatures, but ask that you again consider this program as a model for the nation.

Given the past history of MSHA's rule development, if that same historical process would have been followed in these rules, it would appear that MSHA would have been developing these rules at the time WV was implementing its rules. It is also
important to note that the NIOSH evaluation studies were being finalized after the shelters were being placed in West Virginia's mines. If this is factual, MSHA certainly, in my opinion, should have communicated with the WV Office of Miners Health Safety and Training regarding potential conflicts and impacts of its proposed rules.

Amid rumors that MSHA is planning on de-rating the occupancy of WV approved shelters, it's imperative that the final rule clearly and unconditionally accept current state approved units as meeting all requirements of MSHA's rule on refuge alternatives, and extend for the life of the units, with a ten year maximum with some statement for allowing the use of spare units for their full life and making sure that units meeting newly promulgated rules be readily commercially available, as I previously discussed.

If MSHA is planning on de-rating these units and will not change the location requirement to language similar to, quote, "Within 2,000 feet of the nearest working face," end quote. I personally do not agree with the statement on page 34167 of the proposed rule, which reads, quote, "MSHA acknowledges
that West Virginia and Illinois have laws and/or regulations on refuge alternatives and has drafted the proposed rule to minimize conflict with these laws and regulations.

You have essentially wrecked the progress made by our state since 2006. If this is your intention, I would ask Governor Manchin, every member of the state legislature, and every member of the West Virginia federal delegation to ensure that does not happen by any means necessary.

A great deal of time, effort and financial resources have been expended by dedicated safety professionals at all levels within our State to get this far. I hope that the information I presented and the attachments make it clear that our program dealing with emergency shelters is not Jim Dean's program, Ron Wooten's program, Miners Health Safety and Training's program, Labor's program, Industry's program, the legislature's program or even the Governor's program, but rather the entire state of West Virginia's program.

I believe that our process was comprehensive, practical, and well founded and that it greatly improved mine safety in the area of post-
event survival from where it was in 2005, and it should not be delayed by conflicting federal guidelines. I appreciate the opportunity to share my concerns, observations and suggestions with you today.

In closing, I feel it is important to state again for the record that the Task Force recommendations and resulting rules in Attachments 3 and 4 had unanimous support of both industry and Labor and their upper management. I would encourage MSHA to not cast this aside and review in detail the rationale used in West Virginia. In my opinion, it appears you have not done this review.

We also kept MSHA and NIOSH informed and provided opportunity for input early in our process, but were not provided the same opportunity by MSHA. I also question the timeframe in which MSHA developed these rules.

I would appreciate MSHA reviewing the information and comments presented today and respond to the requests made in a timely manner so that I might submit additional written comments prior to the closing date. I'm very concerned about the lack of clear communication from MSHA regarding the impact of
the proposed rules on our progress to improving our
miners’ safety, but am willing to work with MSHA in
looking at ways technology can improve miner safety.
Thank you.

MR. HARRIS: Thank you Ms. Silvey and
panel. My name is Randall Harris, H-a-r-r-i-s. I’m
the engineering consultant to the Director of the
West Virginia Office of Miner’s Health Safety and
Training. My comments here today are based upon my
background as a health physicist, engineer, and
safety professional and upon my personal experience
as a consultant with the State of West Virginia.

During this time, I was the primary
technical advisor to the West Virginia Mine Safety
Technology Task Force and subsequently supported the
implementation of the recommendations by the Director
of the Office of -- West Virginia Office of Miner’s
Health Safety and Training.

Director Wooten and Mr. Dean have
already articulated the background of the West
Virginia law and the means by which recommendations
were arrived at and promulgated into rules. I will
not revisit those. Rather, I will predominately
focus on the processes followed during the
implementation of the law and highlight some aspects of the many technical issues facing those challenged with drafting the MSHA proposed rules. I will supplement my remarks with written section-by-section comments on the proposed rule following this testimony.

Here and in my written comments, I will discuss relevant observations from my extensive participation during the implementation phase of the West Virginia Mine safety Rules. These include reviewing of SCSR storage plans, lifeline implementation plans, defining testing and approval processes for communications and tracking system, along with individual mine implementation plans and defining the testing and approval processes for underground emergency shelters.

I have lead each of the peer reviews that preceded the manufacturer's approval by the Director and assisted the mine -- and assisted in approving individual mine implementations plans for each of the items required by West Virginia law.

Before my implementation observations, I would like to expand upon Director Wooten's and Mr. Dean's comments with observations from my time
advising the Taskforce and the West Virginia rulemaking process that I believe are relevant to your comparison of the West Virginia process to the proposed federal rules.

My first observation is that the task force process worked because everyone involved was focused on the same goal, identifying the best solutions for increasing the chances of miners to escape, and if that were impossible that they could be isolated from the hazardous atmosphere until conditions allowed escape or rescue could arrive.

During the deliberations, the individuals were not subjected to undue influence by the ideological or political agenda of the communities they represented and approached this issue as the mine safety professionals they were.

The elevation of this subject to the national stage has heightened the interjection into the process of these external influences. It has been detrimental to professional and timely decision making of the body. Moreover, it limits its ability to reproduce the progress of that first effort. Despite obvious pressures, the MSHA career professionals need to guard against the same.
My second observation is that the Taskforce was focused on the mining conditions in West Virginia. We did not attempt to develop solutions that are universally applicable. Many vendors and experts from outside the U.S. presented forceful positions concerning, for instance, the inability of a shelter to maintain internal temperatures without mechanical cooling, which while valid in many mining environments were not applicable to the conditions in West Virginia.

Since the issuance of the Task Force report and the promulgation of the rules and their implementation, many have mistakenly assumed that the West Virginia recommendations and rules could simply be copied to their mining conditions. We do not believe this to be the case. It is a misapplication of our work. Mining conditions vary widely across the county and the world depending upon local geology, topography and mining practices. Steadfast focus on performance based standards and prudent flexibility in application is essential.

My third observation is that comfort was not and should not be the concern when setting performance standards for emergency shelters. The
concept of shelters was approached with one
objective; isolate the miner from the toxic
atmosphere if and only if escape is not an option. I
along with those that worked through this viewed this
shelter as a big SCSR a miner could crawl into.

I have done dozens of briefings on the
totality of the aids to escape that were put into
place by the West Virginia law. More than once, I've
been greeted with someone stating, “You’ll find me
dead at the entry before I’ll get into one of those
boxes.” While I have yet to have anyone hold that
position at the end of the briefings, the best
response came from a miner in McDowell County who
afterwards told me, “With the all this added
equipment, if it is so bad that I am faced with
having to get into a shelter, it will not be a hard
decision. It will be getting into the shelter now or
put me in a body bag later."

Many of the comments relating to the
amount of space and amenities in shelters are missing
the point completely.

My fourth observation is that we did
indeed recognize the necessity to ensure that miners
occupying the shelter were not subjected to the
build up of life threatening temperatures due to heat generated by their own bodies. However, in solving one problem we did not want to create the unintended consequence of adding an explosion hazard with large battery packs necessary to operate air conditioning once the power was turned off.

We collected temperature data in West Virginia mines and asked manufacturers to develop solutions for those conditions that did not require power. Once challenged, they found a simple solution by increasing the surface area of the shelter in relation to the number of occupants. This inevitably increased the viability of those options that could provide the largest surface area.

Under West Virginia mine conditions inflatable shelters generally can provide a larger surface area per occupant for a larger numbers of occupants than hard-sided solutions. This smaller size prior to occupancy increases the maneuverability during normal operations, which has made them popular in lower height mines that predominate in West Virginia. While some still argue that hard-sided shelters provide greater protection against secondary explosions, the analysis of accidents done by West...
Virginia and others have indicated the in the few instances where secondary explosion occurs, those affected were more often rescuers rushing to their co-workers' aid than those that survived the initial event. And I've lost my place.

MS. SILVEY: Shelters --

MR. HARRIS: Shelters along -- Thank you very much. Shelters, along with their communication requirements, provide a degree of reassurance to rescuers that avert unnecessarily heroic advances, reducing this risk. Additionally, the concern expressed by some about added protection from the heat of ongoing fires, while it may seem obvious to non-miners, betrays our industry's lack of options for fighting ongoing fires.

If the coal in which the shelter is located is indeed on fire, we currently are limited to cutting off the oxygen long enough to extinguish the fire or inundating the mine with water. Neither option -- Either option is beyond the ability of any shelter to survive.

Transitioning to comments on the proposed rule, I would like to highlight a few areas of particular concern and, as stated, I will
supplement these with some 90 pages of detailed written comments. I finished at midnight last night.

My first comment is there seems to be a misunderstanding in the proposed rule regarding the objective of emergency shelters. In Section §7.501 the proposed rule states, "Under the proposal, refuge alternatives could be used to facilitate escape by sustaining trapped miners until they receive communications regarding escape options."

It is indeed the practice in other parts of the world that shelters are gathering places prior to escape; however, this is not the case in the U.S. Everything done to enhance safety by West Virginia and Congress since 2006 point to escape as the primary objective of miners and policy makers. Implied another objective is inconsistent with miners’ common sense and legislative intent. Shelters provide a last resort to isolate the miner from toxic carbon monoxide, which is the killer of those that survive the effects of the initial event.

Consistent with this objective of a shelter, West Virginia performance based standards reflect the analysis of accident reports from over 40 years in which the survivors of the initial event
attempted to barricade. This review of the West Virginia Bureau of Mines, NIOSH, and MSHA documents revealed that in only one instance did miners survive beyond 48 hours in barricades.

The logic behind MSHA's PIB 07-03's extension of this to 96 hours was never provided. To avoid conflict and despite the belief that it was excessive and introduced complexities that increased the likelihood of malfunction, we asked manufacturers with whom we were working through the approval process what it would take to increase their durations. Their engineers revised their designs, but as expected, it increased the complexity of the systems; however, they could do it.

As a result, even though the West Virginia rule states "At least 48 hours" all the approvals have been made for at least 96 hours. It is requested that MSHA provide the logic for this increase in the duration and if that logic does not support the safety benefit -- a safety benefit that outweighs the risk introduced by the added complexity, it is requested that the final rule state "At least 48 hours."

In a NIOSH report referenced in the
proposed rule on the evaluation of shelters, NIOSH's comments were not included. Those comments offered explanation as to why some of the key values exceeded the levels anticipated. Having been personally involved with NIOSH's development of the evaluation protocol leading to and the discussions after the evaluations, I must point out that the comments accompanying that spreadsheet, while brief, are critical to understanding the results. However, even though those brief notes -- even those brief notes do not reflect the testing difficulty that was more often the root of the failure of the product evaluated.

All those involved in this exercise went into it knowing that it was as much an exercise to learn how to test as it was a test of the shelters. Also included in the MSHA description -- Also not included in the MSHA description were the follow up emails from NIOSH noting that each of the issues raised in the original report were resolved and that the shelters were able to meet all of the requirements set by West Virginia.

While from an implementation basis, West Virginia considered this testing informative, we did
not then, nor do we now consider them representative of the performance of the shelters involved. We request that MSHA's reference to this document in this rule or future documents be omitted or references to the intent of the evaluations, the resolution of all the issues raised and the limitations of their significance be included.

The West Virginia approval process included interaction with applicants early and often. Applicants approved -- provided design drafts, invited me into brainstorming sessions on problems as they arose, allowed me to share common issues with other applicants, and were open to hard questions.

Of the over three dozen companies that contacted West Virginia about approval, only six made it through the approval process to the last step and to date only four have been issued approvals. The last step involved a multi-hour grilling patterned after the PhD thesis defense panel in which they defended their assertions that their shelters -- of their shelter's ability to meet the West Virginia and the MSHA PIB 07-03 standards. The panel consisted of several university professors with relevant experience and myself.
Early in the evolution of the West Virginia approval process it was decided that human subject testing would not be necessary nor was it the best proof of viability. During the study of the joint NIOSH/MSHA approval process of SCSR’s, we concluded that manufacturers spent significantly more time debating with the agencies which human subjects would be used in the approval testing than preparing their product for the test. The result was that the human subject was often the one that best fit the capabilities of the devices instead of the one that was most representative of the mining population that would have to use the device.

When discussing how a human shelter test might be conducted the conversation inevitably came back to who should be in the shelter and who would make that decision. In addition, we struggled with how we would know that the participant’s metabolic characteristics would be representative of those miners that might actually use the shelter in an emergency. However, mostly we struggled with how we could get participants to duplicate the mental and physiological conditions of those that would have just survived an explosion, unsuccessfully tried to
escape and were now facing death.

Similar challenges faced any physical test of shelters ability to survive an explosion, as the size and configuration of the only testing facility, NIOSH's Lake Lynn, did not match those of the typical West Virginia coal mine and was not available most of the time. It was, therefore, decided in conversations with the Director that the only practical approach was to require manufacturers to demonstrate using computational methods that the shelters could meet the standards set forth in West Virginia law and PIB 07-03.

In accomplishing this, the applicants employed engineering firms and universities with software and experience in computer simulation. During the final panel, these experts presented their results, the processes they used, and the assumptions they made during the analysis. In meeting this requirement applicants told us that their final products were improved as they could make design modifications and understand the impact on performance in almost real-time.

Two months ago, I participated in a demonstration in Huntington, Utah with the Modern...
Mine Safety Company. With the assistance of observers from the University of Utah mining department, 26 volunteers, including myself, occupied a West Virginia approved shelter. Simulating the ambient mine temperatures used in the West Virginia approval process, the interior temperature stabilized at an apparent 84 degrees Fahrenheit within 90 minutes. We conducted -- continued the test for an additional 90 minutes to ensure that the temperatures would not change. During that time, a paramedic checked the 26 occupants hourly. The only change noted was a decrease in pulse and blood pressure.

At no time did the carbon dioxide increase above the required threshold. The oxygen concentration did increase and the flow rate had to be lowered because the occupants were not consuming at the rate anticipated in MSHA PIB 07-03. We did find an increase in carbon monoxide which was finally tracked to the cross-sensitivity of the carbon monoxide monitoring instruments to certain forms of alcohol that are present in personal hygiene products.

While debate is valid concerning if the volunteers were representative of the mining
population and was their metabolic rates representative of miners who had tried to escape, the fact is that the results tracked exactly with the computational values developed during the West Virginia approval process. MSHA and NIOSH were invited to the test but the staff were told by management they could not attend because it involved human subject testing.

MSHA and NIOSH representative were also invited to each of the West Virginia approval panel sessions. We were told that their management only allowed their participation on the condition that they were not officially there. They could not offer opinions, or make judgments upon the validity of our recommendations. Never in off-the-record discussions following the panels or in multiple subsequent conversations were the differences that are currently evidenced between the West Virginia standards and those represented in this proposed rules pointed out. The West Virginia approval process was comprehensive and professionally conducted.

This brings me to a subject that is covered in the preamble but not in the proposed rules. West Virginia moved first. West Virginia
reached out to MSHA throughout the process. West Virginia conducted a comprehensive approval process. West Virginia was never notified by MSHA formally or informally that neither the standards nor the approval process it followed were flawed.

The shelters approved and which will be installed in all West Virginia mines prior to the finalization of this rule should be formally accepted as meeting the requirements and should have to be modified only following their manufacturer’s stated lifecycle.

Shelters that are damaged as the result of normal operations during this period should be allowed to be replaced by similar units if models needing any variations in the finalized version of the MSHA rule are not readily available. The alternative to this approach would be either closing down a section of a mine for an extended period of time or depriving miners of a valuable survival tool. It is requested that the MSHA final rule specifically include provisions to this effect without qualification.

On multiple occasions, I along with others have expressed concern to MSHA and NIOSH.
officials regarding the underlying assumptions behind PIB 07-3 that now have been carried forward into this proposed rule. The assumption that a barricade can be erected in a toxic atmosphere, purged with the use of pre-positioned compressed air bottles is not valid. Concentrations of carbon monoxide are likely to be present at levels significantly higher than that supporting human life.

Tests conducted by several manufactures and even preliminary evaluations conducted in a simulated crosscuts by MSHA itself demonstrated the difficulty of purging a significant concentration of a gas from a space using conditions in this PIB. West Virginia commissioned a computational fluid dynamics model of the conditions laid out in PIB 07-03 and found it not possible to purge a space of toxic levels of carbon monoxide following the suggestions in this document.

Using the computational model, we were able to simulate indefinitely full compressed air bottles. Even when we did that and allowed air to enter for 50 minutes, three times the duration possible with the supplied air, there was still large areas within the space with toxic levels of carbon
monoxide. Yet having reported these results to MSHA, this option remains in the proposed rule. In the strongest terms possible, I urge that this option be omitted in the final rule.

My final comment is that MSHA states its desire to use performance based standards several times in the preamble and in the subsequent explanations, yet many parts of the rule are very prescriptive. More than once I have been told by MSHA officials that once something is issued as part of the CFR, it is difficult to modify, even if knowledge or technology advances make it moot or incorrect.

MSHA has at its disposal tools which are better suited to addressing this type of -- these types of changes in understanding and interpretation. These include the established vehicles such as the PIBs. It is requested that MSHA avail itself of this flexibility and include in the rule only those elements necessary to establish performance standards and utilize its other tools to communicate the details it feels necessary to accomplish them.

In closing, I want to say that I make these comments under no illusions that they represent
the only or best conclusions to the issues I raise. As one who has been intimately involved in the processes leading to this point, I know that no one has all the answers and that the best solutions are those resulting from the most open and inclusive evaluation possible.

While the timing imposed by the 2006 MINER Act may have abbreviated the typical MSHA rule writing process, the subject has long been known to the agency. The Federal Coal Mine Health and Safety Act of 1969 and the Federal Mine Safety Health Act of 1977 had also required MSHA to review the subject of shelters and promulgate appropriate rules.

In addition, the abbreviated timing should not have precluded the staff working on the rules from reaching out to those states with co-enforcement authority for lessons learned. Safety is an ever-evolving process with wisdom diffused across the whole of mining community. Continuous interaction and exchange of knowledge at all levels is essential not just during the rule making process.

Thank you.

MS. SILVEY: Thank you.

MR. WOOTEN: Just a couple of closing
comments, if I may. As the panel can readily see, there are some very serious concerns with the proposed regulation. In fact, we did not see that it clearly represents a safety improvement over that which the Task Force in West Virginia has developed and promulgated.

As Mr. Harris stated, West Virginia's program was developed for West Virginia mines. As I look at the two standards, it may very well be that more West Virginia miners will be afforded access to prefabricated shelters under the West Virginia rule than under the federal standard.

Again, I believe that would be because the West Virginia standard was developed for West Virginia mines. It is further important to note that the West Virginia coal operations are complying with this regulation developed by the Task Force. According to my records, the 185th prefabricated shelter will be delivered in West Virginia today. This is 185 of 339 total shelters ordered in West Virginia.

As you can see, West Virginia coal operators and operations are well on their way to compliance with the Task Force requirements. As was
previously stated, it is truly unfortunate that MSHA did not request input from the sovereign states, especially those states who have already dealt with many of the issues that you are addressing in this proposal. This is something that, frankly, I just cannot understand.

It is my sincere hope that your final rule will clearly recognize what has been done to date in states like West Virginia and, further, that your final rule will not be in conflict with the rules developed by the Task Force for additional protection of our state's miners.

We thank you for the opportunity to comment to you today and we hope that you might respond to the inquiries previously made. Those responses would be very beneficial to us as we prepare additional written comments. Thank you very much.

MS. SILVEY: Thank you. And, again, thank you Mr. Dean and Mr. Harris.

First of all I have a few comments to make and maybe we can accomplish what is our most important purpose here today, and that is to advance the rule making process in a manner that -- as I said
In my opening statement, that will deliver a rule that provides the most effective safety hazard protection for miners in a manner, and I meant that, that is responsive to the needs and concerns of the mining public.

I would first like to make a few general comments. And throughout your statements you point out accurately that the subject of -- and I'm sure others in the room would say that to us, as prior was said to me, that emergency shelters were contained in the 1969 Act and the 1977 Act, as well you're right. But when you look at it at the legislative history to the '69 Act and '77 Act, the legislative history says that MSHA was to do design and research into the issue of emergency shelters and the issue of research is one of the issues that has -- that obviously, you know, the federal government in the area of emergency shelters has been either doing a long time or slowly doing. But we did get the MINER Act, and the MINER Act -- and that's going to take you to my next point.

The MINER Act specifically says for NIOSH to conduct research and for MSHA to issue its regulations based on the NIOSH report, to the extent possible. And I think we did say that in the
preamble that we tried to be consistent with the NIOSH report. In a few areas we were different. We considered the NIOSH recommendations and we considered -- just like you three gentlemen said, we considered the many conditions in the nation's underground coal mines and we made a reasoned agency position that in some areas we would be different than NIOSH. Well, we tried to explain that.

Now, I said, "Why do I say all this?" I said all of this because this still is a controlled group, and as a controlled group, that's the main reason we are here today, to get your comments.

And I will say to you that one of the things we want to do on December the 31st, when we issue this final rule, we do want to -- we, indeed, want to minimize any conflict with the state requirements. And I guess maybe at this point I missed by first statement. You know how you write these things down and you never do them in the right order. But my first statement I had down here to say, you know, on behalf of our agency, I would like to say that we appreciate what West Virginia has done in the area of underground shelters,

You are right. West Virginia moved and
took the lead in the area of underground shelters and, as an agency, appreciate that. So with that being said, and knowing that we have -- you know, I knew today when I came here today that we have some issues that have been raised in the movement here already, and some issues that we have to resolve.

One of the things that I want to do is to -- also, these are just still opening comments -- is to reiterate, and I said that in the opening statement, and maybe there was some confusion maybe, that the first line of defense -- I think I -- and all through the mine rescue team hearings -- I go back now, you know -- we had some many rule makings in the last few years, but all through the mine rescue hearings I reiterated that, that MSHA -- a long-standing principle of MSHA and the mining community is to -- the first line of defense in the event of an underground mine emergency is for the miner to try to escape. And that's MSHA's principle and I think everybody involved with that. So we agree with you in that principle.

Maybe we didn't as awkwardly write our preamble as you wrote your statement here, Mr. Harris. And you said, "Until conditions allow escape
or rescue could arrive." I think that we meant no other thing than that. So that nobody leaves without understanding that that was our -- that's our agency's principle.

The only other thing that -- the opening comment that I have is that Mr. Dean said that your comments represented your personal comments. So are we -- all these all the official comments of the West Virginia Task Force or comments of the -- I just want to make sure that these are the official comments or are we getting official comments.

MR. WOOTEN: Yes, you will receive comments from the Office of Miners Health Safety and Training. These are not comments of the Task Force. There were members of the Task Force who did not want to offer verbal comments today. These are comments of the co-chairman and the individual who chaired the Task Force through deliberations of our regulation 56-4, and the technical advisor to the Task Force.

MS. SILVEY: But we will get official comments from your office.

MR. WOOTEN: You will receive -- You will receive written comments from the Office of Miners Health Safety and Training, which will include
any of the comments that you heard today.

MS. SILVEY: Okay.

MR. WOOTEN: And those that have been submitted by Mr. Harris.

MS. SILVEY: Okay. And I will say this. I looked through Mr. Harris's comments and those -- as he put it, those comments he finished at midnight last night, and I must say to you, we appreciate those specific comments because, again, as people heard in my opening statement, it is those specific comments that are -- that are in specific response to issues we raised in the preamble or statements that we've written that we appreciate and will be useful to us as we craft the final rule.

One question that I have to ask right now -- and I think I know the answer, but I'm going to ask it again. Of the four approvals that West Virginia has issued, all four approved shelters -- do all four approved shelters meet the NIOSH testing requirements?

MR. HARRIS: Well, we're not quite sure what the NIOSH testing requirement is. The evaluation protocol, as it was called, was just that, it was a protocol to figure out, among other things,
how you test shelters. They -- The issues that arose
during those initial evaluations -- and they wrote
that letter out before all of the issues were
resolved -- have, indeed, all been resolved and I
have emails from Eric for each and every one of those
issues.

MS. SILVEY: Okay.

MR. HARRIS: So I mean --

MS. SILVEY: I'll be specific. I was
particularly relating to things asking about the
heat, the temperature.

MR. HARRIS: Yeah, those were all
resolved and in a lot of cases they were, quite
honestly, misplaced of thermometers within the
shelter, because no one had ever -- they had never
done this before.

I just finished reviewing your first
draft of the human protocol, human subject testing
protocol, which there are probably still six months
to a year away from actually implementing.

MS. SILVEY: Another comment I have is
on this -- and I think this goes to you, Mr. Dean --
on the space and volume requirements.

MR. DEAN: Yes, ma'am.
MS. SILVEY: Do you all have a recommendation for space and volume requirement? It seems -- Let me put it this way. It appears to me that you don't agree with ours, so -- or with the one we propose. Let me put it that way.

MR. DEAN: I think they'll --

probably by the end of the day, you'll hear a great deal of information. And, again, in my comments I point out that we left that as a performance based standard. We did not specify that. In our deliberations we decided to allow the temperature and space necessary to store items within the shelter to dictate size.

Now, there will be a lot of debate, and I did make in my comments about lifting shelters' cubic feet and square footage requirements from items, in my opinion, that are completely taken out of context.

MS. SILVEY: Yeah, I got that.

MR. DEAN: Okay. That's totally wrong. There is a South African standard issued by their director of mines there that comes in at around 6 and a half square foot per person. I truly believe that -- and just de-rating -- and, again, is that a
r umor or are you considering doing that? I think --
I think people in this room, people in this industry
need to know the answer to that, because if you're
planning on de-rating existing units, that's totally
unacceptable. And, again, this is my personal
opinion. Totally unacceptable based on some -- I
know you're basing this on NIOSH's report. If you
follow through the references that were used, there
was a 1971 Westinghouse study -- I forget -- I think
it's on Page 34 -- that lists their references, and
if you go back and check those references you'll find
a 1958 or 59 fallout shelter recommendation for
families.

MS. SILVEY: Yeah, I understand.

MR. DEAN: And this is very upsetting
to me. And, again, my personal comments, and they
are my personal comments, I feel that you have
totally ignored the tremendous hours and work and
effort that's been expended in this state.

MR. HARRIS: I ask you -- We spoke
before this hearing just shortly -- I actually did
on Page -- starting on Page 35 of my detailed
comments --

MS. SILVEY: Okay.
MR. HARRIS: -- I have gone back and found a few logical ways by which you could choose how to determine a volume, if you are so inclined to do so, from the Defense Unit Engineering Manual and an extrapolation from other -- I mean there's multiple ways of picking one, if you pick one. Although we have found, quite honestly, from working with manufacturers that if you choose other performance indicators, you will drive this to a unit that is acceptable because it's just part of a large formula and if you push on the other parts it will work out something that's acceptable.

MS. SILVEY: I understand. One of the things I do want to comment on -- some people may have heard this before -- and believe you me, I'm the person who is most in favor, quite honestly, of performance based standards. I mean, that's something I sort of push, performance based standards.

But, you know, performance based standards can be a double-edged sword because on the one hand, I'll tell you, you'll get some of the same people in this room who say, you tell me specifically what performance you want me to achieve
and I'll do that.

Then on the other hand you get people who say, "You just tell me, 'Make a chocolate cake.' Don't tell me how to make it. You tell me how to make it and I'll make you the best chocolate cake."

And somebody else would say, "You tell me exactly what you want, because somewhere along the way I'll go wrong. I won't put the right sugar in," or "I won't put this in."

So, and then with all of you, I know you all are seeing MSHA now under the -- you'll see sometimes where the performance based standard give rise to a criticism of MSHA's own employees oftentimes, where one person will make one judgment call, "Well, you should have done that." Another person will make another one.

So, you know, it's sort of a no-win situation and I guess -- why do I say -- I say all of that to say I think when the dust clears you just do the best you can and try to develop the standards that you think give the clearest -- the clearest performance that you want to be achieved, but you do it in a manner that somehow -- in the best way you can that is reflective of the many mining conditions...
that we have.

MR. HARRIS: I would like to follow up on that. That's exactly why I made the reference that you have multiple vehicles. And by putting it into the CFR, that's very difficult to change over time. That you need to seriously consider utilizing all of the vehicles at MSHA's disposal for communicating it, put those things into the CFR that you know are performance based and put the detailed stuff that will change over time with technology and knowledge, put that in the form of a PIB.

MS. SILVEY: I hear you. And then you'll hear the same people criticizing PIB and calling that law.

MR. HARRIS: But if you find that you were in error, it's much easier to change a PIB than it is to change the CFR.

MS. SILVEY: I understand. I understand your comment.

Could I ask you, Mr. Wooten, of the 185 refuge shelters that you have underground, what types are they? Do you know? Are they the types we have included in the proposed rule?

MR. WOOTEN: There are three. There are
three types that have been delivered in West Virginia. Do you want to know the manufacturer?

MS. SILVEY: No. I just meant in terms of the categories. Is it prefabricated or --

MR. WOOTEN: They're all prefabricated.

MS. SILVEY: They're all prefabricated.

That's right, because you only --

MR. WOOTEN: That's correct.

MS. SILVEY: Your law is prefabricated.

Right. Okay. I've got one more comment.

One thing I do want to say, and we said -- you know, you were telling -- mentioning to me here today about the West Virginia -- you know, I say this at a little bit of risk, but I hope not a lot of risk. You asked about the West Virginia shelters that were approved. Now, we said in the preamble, and that was our intent, that was embodied in the preamble that we would accept state approved refuge alternatives or refuge alternatives that have been approved by MSHA and accepted by MSHA in the approved emergency response plan. And that was our intent then, that's our intent today.

So, you know, you all came and we appreciate your comments. I felt obligated to say
MR. WOOTEN: Ms. Silvey, I think our concern here is just mainly as it associates or refers to de-rating of the existing shelters that have been approved by the Task Force. In other words, are we going to be -- are these shelters going to be grandfathered in total or are they going to be -- if they're built for 20 individuals, designed for 20 individuals, is that going to be acceptable to MSHA?

MS. SILVEY: Well, I'm going to say what I just said. What I said is we would accept approved shelters.

MR. WOOTEN: Very good. Very good.

MS. SILVEY: Nobody has any comments then. Okay. Well, thank you all very much and we appreciate your comments and look forward to your official --

MR. WOOTEN: We'll have them. Thank you.

MS. SILVEY: At this point I think maybe we should take a break. Please, no more than ten minutes. So we will reconvene in ten minutes.

(WHEREUPON, a recess was
taken, after which the following
proceedings were had.)

MS. SILVEY: At this point we will
reconvene the Mine Safety and Health Administration's
Public Hearing on this Proposed Rule on Refuge
Alternatives for Underground Coal Mining.

Our first speaker will be Bill Kennedy,
Kennedy Metal Products & Building, Inc. Mr.
Kennedy.

MR. KENNEDY: Good morning.

MS. SILVEY: Good morning.

MR. KENNEDY: My name is Bill Kennedy,
Kennedy. I am the president and chief
executive officer of Kennedy Metal Products. We
manufacture mining ventilation equipment and the
Kennedy chamber. It, incidentally, is one of the
West Virginia approved chambers, has been deployed in
the State of West Virginia, Illinois, Indiana and a
number of other states.

I have submitted written comments to
MSHA and you, I believe, would have those by now.

MS. SILVEY: We do.

MR. KENNEDY: Good. There are a few
things that I thought probably should be reiterated
this morning. Most of what I'm going to talk about is in those written comments that you have. I'd like to give you a little bit of background about our company and the development of the chamber.

My entire career has been in mining ventilation and visionary related to it. The Kennedy chamber was sort of a natural for us, really, from the concepts that would have been evident since about 1969.

We designed the chamber very carefully. We have the right sort of facilities to do both the design and testing. I believe it may be the only device of its kind that's been through extensive full-scale explosion, heat, gas testing. We have the facilities to do that at our factory and have done so and did not use, for instance, exclusively finite element analysis or some other computer synthesis for the final approval or internal approval for a chamber.

It is a device that we know works and does what it's supposed to do, the way that it's supposed to do it.

Some things that I have written down here that are of concern are related mostly to the
practicality of what may find its way into the final rule. For instance, there are some time periods given in there where you have ten minutes to get a chamber ready to go, twenty minutes to get it purged and so forth.

In my experience underground, having personally been knocked down, rolled around in a dusty atmosphere, sat up in an environment where I could not see my hand in front of my face and not being injured very much, I could only imagine what it would take for me from that standpoint and experience that I've had personally to go any distance at all and then do any work to establish some sort of refuge and get in it and save myself.

I think that the time periods you're talking about there are unreasonable if you want to offer protection to people that have really been in that sort of event. You need to be able to walk up to it, open the door, go inside to an atmosphere that is probably still good, get your wits about you and maybe then start thinking about doing some things to save yourself. This may be applicable to a number of people.

I certainly agree with the West Virginia
comments about it not -- you know, everyone going to
a chamber and getting inside and then deciding what
they're going to do. However, if you have four or
five or more people all standing around with an SCSR
mouthpiece in the mouth, trying to figure out what
tyhe're going to do, not really knowing the condition
of each other and maybe not being able to see very
well or figure out what's going on, it could be that
if they could get in an established rigid chamber,
they could get that mouthpiece out of their mouth,
get some communication going to figure out the best
sort of escape that they might attempt and be much
better off than using any other sort of methods that
they could derive standing out in the smoke and dust.

There are some specifics in the proposed
rule; one of them is related to temperature. I have
done a lot of the thermal dynamics related to
chambers myself and I have tested the chambers under
conditions which they would be in a mine. I have
also witnessed NIOSH attempting to do the same thing.

I would like to emphasize that the
temperature standard need not be the Stedman
reference which is, in my opinion, a nonsensical
temperature and humidity chart best used by TV
weathermen and instead substitute the ISO Standard 7243. That is, indeed, the world standard for temperature measurement. It's used by the U.S. government extensively. The Armed Forces developed it. It is an OSHA standard, for instance, for people in factories and tight spaces that are hot and so forth. And it is really applicable because it takes into account all of the factors involved.

The Stedman chart, for instance, gives a number of 150 degrees for normal summertime conditions where I live in Illinois. There is no time in Illinois when farmers cannot work in the field or when the construction workers cannot work outside, yet Stedman reports that with a number of 150.

To use the Stedman chart very much, you wind up with a range of numbers from which you must pick. If you look at the ISO Standard, you will see it is much more carefully done, much more crisp, and takes into account factors the Stedman chart does not.

This is important for a number of reasons. When you look at chamber design, as I think we're all starting to realize, you're dealing with a
number of engineering compromises. You're not going
to have the best of everything, and that's really
typical in most engineering work.

For instance, in underground mines, we
have a tremendous space restriction, not only the
entry size but also the nature of the intersections
that the chambers must traverse to get from one area
to another. If the space requirement inside the
chamber is too great, it makes it difficult to get
from one place to another.

I heard the West Virginia comments this
morning regarding space requirements and I support
them wholeheartedly. There is an international
standard for about 6.4 square feet per man, and that
is what we used. And, incidentally, we developed it
independently. I only learned of the South African
standard afterward, but six and a half is the number
that we used for square feet per man, and that was,
as the people from West Virginia indicated to you
this morning, derived in large part based on what it
took to radiate the heat.

I think you may be starting to see now
how these things are start running into each other;
one is dependent upon the other.
Between the difficulty in moving a chamber around and the space available in the mines, which varies greatly from mine to mine, depending on seam thickness and some other things, and the temperature restraints in the rock, which is basically going to tell you what you're going to be able to radiate away from the chamber and, therefore, what the thermal dynamic characteristics of the chambers must be, you have a lot of design criteria made for you.

If you then balance that against what can be moved around in the mine, you come up with numbers that are close to what the South Africans have developed over the years. There is no reason at all to exceed those numbers.

If you make the chamber bigger, arbitrarily, because of comfort of some other criteria, you are no longer in line with the purpose that you had, you know. We need to make these chambers so that we give the maximum survival characteristic that we can. Comfort needs to be down the line considerably. We need people to survive; we don't need them to be in a country club. If we could have a country club, we would want it, but in this
case we must balance that with the engineering considerations that we have, the space constraints in the mine and so forth.

The only chamber that Kennedy makes is a hard chamber. We could make any sort of chamber that we wanted to, but we think that the chamber really needs to be up and running very quickly, you need to be able to walk to it, go inside and be in business.

Now, the reason that the chamber is there at all really is almost entirely because of CO. Purge capability, again, as you heard from the State of West Virginia earlier, is absolutely critical. If the chamber cannot be purged of CO or the space that you're going to use for your refuge cannot be purged of CO, absolutely, positively, no question about it, you've got a problem and you probably might as well not have the device at all.

To think of purging out some sort of adit that had a stopping built in it either before or after the event is not very realistic. If you have done some calculations at all regarding dilution of gases, you probably would have found out right then that it's not realistic.

If you follow that one step further and
take calculations based on not only just mathematical
dilution of the gases and the amount of air you would
have to have in the chamber to do that, but take one
more step and try to determine what it would take to
get an entire space, corners and all, purged of
gases, you find yet another order of magnitude of
difficulty.

In the design of the Kennedy chamber we
found it impossible to use dilution to get our
standard of CO down to a respirable atmosphere. Our
standard may have been a little higher than most
people's. But it was impossible to do it with
dilution and we were forced to develop proprietary
mechanisms for removing the CO from the chamber.
This is a difficult task. It's very difficult to do
if you don't have very carefully rearranged --
prearranged engineering considerations.

I think this 20 minutes to purge a
chamber is very unreasonable. You just can't be
assured that people are going to get there with
functioning SCSRs with that much time remaining.

In the proposed rule there are
statements about putting the chambers in cross-cuts
and not having them in the main entrance. While it
would probably be advantageous to not put them around the seals or in a direct line with sealed areas, there is no real logic to putting them in the cross-cuts and saying that you have made everything better. The difficulty in maneuvering them in and out of the cross-cuts is hard on the chambers, it's easy to pull them into the corner of the pillar and damage them and so forth. It requires a lot more handling, probably doubles the amount of handling that the chamber sees. And I suspect with adequate end armor on a chamber, which is something that we offer, any concerns about flying projectiles and so forth could be adequately handled.

In thinking about all of that — and to us, you know, this is just something we write in our specification, that the chamber has to be in a cross-cut or it does not have to be in a cross-cut. It's not a big deal to us. It doesn't make any difference too much in the design of the chamber. But from a practical point of view from the people that may have to use the chamber, you are probably as well off to have it moving along with the long wall train or sitting in a main entry, as reasonably far back from the face as you would be if you would put it in a
cross-cut. The disadvantages of having to maneuver it in and out and provide that space for it probably equate the advantages you would get, if any, from it being out of the direct line of ignition forces.

I saw a number of references, as I mentioned earlier, about, you know, 40s, 30s, 20s technology of building barricades. It looked like MSHA still had the idea that people could brattice themselves in an adit or some area of the mine with some boards and brattice cloth or Kennedy stoppings or something of that sort and be able to protect themselves.

Again, you have the CO problem in any area like that. You don't know that you're going to be able to go into an area with good air. But as significant as that is, it is not as significant as expecting people wearing breathing apparatus that have been rolled around, maybe hurt, to do a bunch of work. That's too much to expect. If you want something to come out of this, I think you need to do more than that.

Really, you had that provision available in the 1969 law. This could improve it, certainly, but it's not practical to expect us to be able to go
to a space and do a bunch of work getting purged of CO and then be able to stay there for a long period of time.

There has been some speculation about times and there's some ten-year numbers written in the law. And, of course, we heard comments earlier from people regarding grandfathering existing equipment. I would ask you to reconsider that. The -- Some of the equipment does not last ten years. We have specified in our manuals that some things have to be done long before ten years.

And to just blindly decide that the steel envelope of a Kennedy chamber, for instance, the one that I know the most about, is only going to have a service life of ten years is probably ludicrous. In order for it to have a service life of ten years or less than that, they'd probably have to destroy it somehow, and it isn't easy. The things are heavy. They're very solid. They will stand a substantial explosion in an underground mine and still be completely functional.

As a matter of fact, I took one Kennedy chamber and put it through a 20 psi and 36 psi explosion twelve times and that chamber would still
function. You know, and to me, to say that thing is going to have only a ten-year life, of something the mining industry has a significant investment in, is kind of foolish.

What needs to be done, in my opinion, is to follow the manufacturer's recommendations. In our case, we would say that, you know, you continue to do the testing that we have mandated. If the chamber will pass its test, it's okay, you know. They might as well still continue to use it. There's no need for them to replace it just based on chronology.

That concludes my comments. Do any of you have questions?

MS. SILVEY: I do. I have a few comments. First of all, with reference to I think your first comment on the Stedman reference that we included in the preamble --

MR. KENNEDY: Yes. Yes.

MS. SILVEY: -- footnotes. It would be footnotes 1 and 2. I think in my opening statement I said that we should have referenced the NIOSH report and not the Stedman reference, so that was an incorrect reference. So I wanted to -- And for all of you, I mentioned two things in my opening
statement; one was the reference to the Stedman report, and we had two references in there, and that was an incorrect reference; and the other one was to a Department of Defense standard that we cited to, an incorrect reference -- not an incorrect but we more specifically included a specific reference in my opening statement. But as I said to each of you, so that you don't have to take these specifics down, the transcript will be on the website in about a week so you can see exactly what's included in the opening statement, as to the correct reference. So that was one thing I wanted to say.

The second thing is, you comment on the practicality of -- and we've heard that, too, of performing certain tasks within certain timeframes under emergency conditions. And you talked about the ten minutes for activating and the 20 minutes to get it purged. As a manufacturer, and you talk about your -- you have chambers in West Virginia -- do you have a recommendation on a time period for doing -- performing these activities? When you point it out, when you sell yours -- I know that oftentimes when people buy things the manufacturer has certain recommendations for certain things. Is that included
in one of your manufacturer's recommendations?

MR. KENNEDY: I will add that. I don't know that I put it in the comments that you have already, but I will take a look at that. I will tell you, as a point of interest, or I think all of you may find it of interest, when we designed the door latch, we were concerned about how long it would take a guy to operate it with a broken arm. We're not talking about minutes here. I don't --

I don't want to say something that I haven't tested, but I strongly suspect that with one arm, and having done it at least once before in some sort of training, I could get in a Kennedy chamber and be in good atmosphere in less than one minute, and certainly in a minute or two I could have the oxygen on and have a lot of time to think about what I'm doing and maybe read some placards inside there or something like that.

And I think that we need to be thinking in terms of numbers like that. You need to really be able to -- by the time you get to that thing, it needs to be deployed and ready to go, in my opinion. If you -- I am terribly afraid that sometime in the future we're going to have some kind of event where
people are trying to -- you know, they have already tried to get out, they have already used up a lot of resources. They may have gone some considerable distance before they found out, you know, they couldn't go any further and then they come back.

They have used an awful lot of the capability that they have and then they get, you know, to the refuge location and if they've still got a bunch of work to do, they've got a problem.

If the refuge is sitting there ready to go, then, you know, the problem they have, honestly, is getting the door open and getting in.

MS. SILVEY: Thank you. The next thing I have is, you -- I have a question to you about a comment that was earlier raised about a statement -- and any time I ask anybody a question or if they would provide a comment, you can either do it now or you can do it before the comment period closes on August the 8th. It's not the 8th.

MR. SHERER: It's the 18th.

MS. SILVEY: The 18th. Thank you. I knew it wasn't the 8th. August the 18th. And that is the training for miners. They made the comment that they didn't think we should allow them to -- the
requirement that they be exposed to expected heat and humidity. In terms of -- I assume, now, that you have some training materials that come with your unit.

MR. KENNEDY: Yes, ma'am, that's correct.

MS. SILVEY: Do they talk -- Do you address at all miners being inside and exposed to expected heat and humidity?

MR. KENNEDY: Yes, I'm sure we do, but I would like to answer your question, though. As far as training is concerned, when -- the training that's important is getting the chamber operational, getting it going. Afterward, for the most part, you just sit there. So when they first get there, they don't have a lot of heat and humidity to deal with, and actually, they really never do. But the conditions that they would find inside the chamber are basically the conditions they would have found outside the chamber, minus the effects of the recent event.

So, you know, when they're going in there, turning the knob to turn on the oxygen -- and in the Kennedy chamber, that literally is all you do, you turn a knob on a flow meter, and that's it,
you're ready to go right then -- the action of
hanging CO₂ absorbing curtains and so forth, all of
those things are done relatively quickly when you
first go in there. You may be under considerable
duress, but it won't be because of the atmosphere in
the chamber.

So I don't think it's reasonable, for
instance, in training for you to say, "Oh, well, if
you have to have a closet with a heater and
humidifier and the guy has to go in there and turn
the oxygen on and hang up a curtain, well, he didn't"
-- those are not conditions that are present when
he's doing those things.

And did I answer that adequately?

MS. SILVEY: I guess what I want to
make sure that everybody here does is comment on the
requirements that we had in the proposal, whether you
agree with them or whether you disagree and whether
you have any alternatives. I'm not -- I don't know
that -- I would say, I guess, that I'm not sure you
answered it exactly. I think I heard West Virginia
clearly say that they didn't think -- they disagreed
with our proposed requirement that during the
training miners being in there be exposed to expected
heat and humidity. They thought that we should not do that, there was no need to do that.

MR. KENNEDY: I will make that more clear. I concur with the State of West Virginia. I do not believe that there is reason at all to expose the miners to the maximum heat and humidity they may get after it ekes out hours later.

MS. SILVEY: I think that's where we were going. Okay. All right.

On this service life -- You commented on the service life, but what I would like you to do is to specifically suggest to us -- and I say it to everybody -- what is your suggested alternative for what we did in the proposed rule of what a service life -- estimated service life. It appears to me from what I heard you say that your recommendation is that we go with the service life of the unit as recommended by the manufacturer.

MR. KENNEDY: Yes, ma'am, that's correct.

MS. SILVEY: For everybody, I just want you to say -- when you give us your comments, you let us know what your -- if you disagree with us -- we have a maximum of ten years for a prefabricated and
five years for a component. If you disagree with
that -- because that's another thing. One of the
things I raised in the opening statement, in that
myriad of questions I raised, about 15 or 16,
something like that, I did ask that we ask for
further comments on the estimated service life of the
refuge alternatives and the components. And
obviously, whenever we ask for comments and you
provide us comments, it you would please include, you
know, your rationale, your suggestion, but why you
believe -- why you are suggesting what you're
suggesting.

MR. KENNEDY: May I go back to your
first comment regarding Stedman?

MS. SILVEY: Yes.

MR. KENNEDY: I didn't think that was so
far out of line in your initial comments because the
Stedman chart is what are used initially. So that's
what NIOSH used. That's where they got the first
number. They revised that, I believe, after the
State of West Virginia suggested yet a third method,
that is -- that comes from the Australian Weather
Bureau, that is an approximation. And those are the
words -- that's the word they use, an approximation
of the WVGT, the ISO standard.

And, again, I would like to reiterate that I think MSHA should use the real standard, not some approximation of it. That's a real wishy-washy thing. If you look at that standard, you'll see it has been carefully devised over a number of years for situations just like that. It takes into account factors that the others only approximated.

MS. SILVEY: Okay. Thank you. Does anybody else have anything?

MR. EPPERLY: I have just one question concerning the South African units that they choose on the computer to study.

MR. KENNEDY: Yes, sir.

MR. EPPERLY: Were those portable or were those in place?

MR. KENNEDY: They have both, and we looked at the design of both. Actually, the standard that I referenced was a standard that the South African government had an engineering company develop.

MR. EPPERLY: Yeah, I saw that. Of course, they had a range, also. They had two different numbers. They had six and a half, and they
MR. KENNEDY: Yes. And I was talking about the minimum number. To go into that a little more deeply, and maybe it's important that this be done, what we proposed and the way that we would normally specify a Kennedy chamber for a given mining operation, is to first determine the rock temperature, the ambient rock temperature.

The State of West Virginia has the luxury of having a pretty consistent coal temperature throughout the state and so they had only one set of criteria.

Kennedy Metal Products is an international manufacturer. Our equipment people are on four continents. We have to look at a lot bigger picture. But even within the United States, that you would be looking at, there's a large variation in the rock temperature. The rock temperature is important because chambers pretty much cool by radiation only. In other words, you would think that if a chamber was sitting in an entry and there was air flow by it because of the ventilating system in the mine, that it would get some convective cooling because of the air flow.

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Well, we have to assume that the air flow is going to be lost in the mine in this event, you know. We have to make that assumption. Really, if it wasn't lost, you probably don't have a very serious event to begin with, you know. The dust and CO and so forth would get blown away a few minutes, and your SCSR would have been all you needed.

The other method that some heat is transferred away, yes, by conduction, you know, from the unit to the floor. But most of what you're dealing with is radiation; therefore, the rock temperature is absolutely critical. You know, we wouldn't take an order from somebody for a chamber, you know, without them telling us what the rock temperature is so that we can make sure that we would be within the ISO Standard as far as the inside of the chamber was concerned when it was fully occupied.

Now, the reason I started on this is because we have two standards. One is for mines that do a hot seat shift change. That is when the next shift comes to the face before the working shift leaves. And, therefore, you have twice as many people at the face at that time. So the chamber capacity has to be sufficient for all of those people...
under the West Virginia standard, and there's nothing wrong with that.

The problem is that that's only a few percent of the time. So we allow -- if we can radiate the heat satisfactorily, we allow a seat spacing of 18 inches per man for those conditions; otherwise, it's 24. And there's your double standard, Howard.

The 18 inches is just fine, honestly. It's the same -- about the same seat space that you have in airline seat. Lots of times people sit in coach seats and go for 24 hours to Australia, for instance, and maybe they -- maybe I can't say they don't think a thing about, but they all survive it.

There is enough space -- and, again, I'm speaking only of the Kennedy chamber because it's the only one that I feel that I could speak about. There is enough space, for instance, for the guy to get -- even in a short chamber, for a guy to -- like we have deployed here in West Virginia, for instance, for a guy to get up out of the seat, so down the aisle, go to the restroom, return, come back, lay down in the aisle if he has to, to sleep or maybe you would have somebody in there on a stretcher that can't get out.
of the seat that is in the aisle.

So, you know, we do have two separate standards. I think the one that's important here, probably, is the minimum. But, again, as the people from West Virginia stated, you could just drop it, because you have other criteria that are more important in determining the size of the chamber than something on number of square feet. It only becomes important if you set it to a high number of establish country club conditions. If you're not concerned about whether or not, you know, the guy can do his exercises, then you really don't need that standard.

MS. SILVEY: So the ones that are -- that are approved in West Virginia, what's the space requirement in them? I mean, just take your order, for example. What's the space requirement? Is that 6.4?

MR. KENNEDY: That happens to be approximately our minimum, about six and a half square feet, but --

MS. SILVEY: That's the ones that are in the mines in West Virginia today?

MR. KENNEDY: Yeah, but West Virginia doesn't have that requirement.
MS. SILVEY: I understand that. That's what I'm trying to get at.

MR. KENNEDY: Oh, that's the minimum we would use, yes.

MS. SILVEY: Well, you keep -- you say the minimum. Minimum connotes there could be a maximum that you could have. So I'm asking you if you would think -- I want to know specifically one that's deployed in the mines right now, what's the state requirement in them?

MR. KENNEDY: That is very close to the 6.5 square feet.

MS. SILVEY: Okay. Okay.

MR. KENNEDY: It varies a little from chamber to chamber.

MS. SILVEY: Okay.

MR. KENNEDY: And this is a little bit more complex topic than you might think. If you figured a chamber 8 feet wide with people sitting across from each other as you and I are now, with the outside of the chamber being 8 feet, and we -- and with us sitting in a pitch spacing of seats that we assume to be 18 inches, that means I have 4 feet by 1 and 1/2 feet, right, so there's about 6.4 feet. Your
feet, however, go past each other, so there's some

economy in space in that center aisle that is used by

both sides.

We did quite a bit of ergonomic work

regarding the design of the seats, in particular the

seats in low chambers. And what actually becomes

important and what is the difference between sitting

in an airline seat and sitting in a chamber is that we

considered it critical that the guy be able to stretch

his legs out. That's what gets you in sitting in the

airline seat for too long, you know, you can't put

your legs out straight.

So in all arrangements we used the

square footage from one guy as part of the square

footage for the other guy, so the six and a half, you

might say is a little bit bigger number than that,

even though the space does not exist for the chamber

because your legs can all occupy the same space as you

stretch out and move around.

MS. SILVEY: Okay.

MR. KENNEDY: Okay. Thank you very much.

MS. SILVEY: Thank you, Mr. Kennedy.

Our next speaker will be Chris Hamilton, West Virginia

Coal Association.
MR. HAMILTON: Good Morning.

MS. SILVEY: Good morning.

MR. HAMILTON: I'm Chris Hamilton, Vice President, West Virginia Coal Association, and we're a trade association here in West Virginia comprised of coal-producing companies that collectively account for nearly 80 percent of the state's overall coal production, and that's consistently averaging about 100,000 -- about 100 million tons on an annual basis from underground mining operations alone.

We appreciate the opportunity to comment on your proposed rule. We would initially note for the record today that no other state is impacted quite the same as the State of West Virginia as it relates to your proposed rule, and you've heard that already. You've heard that for a variety of reasons; namely, because of the impact in the number of underground operations we've had and, secondly, and perhaps more pertinent to this rule making, West Virginia has mandated refuge chambers over two years ago now and today are nearly full -- or nearing full implementation, with over 90 percent of the state's 280 underground mines expecting to be equipped with
shelters by the end of the year and a near 100 percent compliance -- or 100 percent compliance, rather, in early 2009.

That's a different set of numbers than what Director Wooten provided earlier. I recognize that there are some subtle differences in the overall volume. We'll correct that within our written statements and be consistent with the state.

But those statements underscore our heightened interest in your proposed rule and serves as the underlying basis for most, if not all of our comments today. It should also be noted that it was the State of West Virginia, through the passage of Senate Bill 247, immediately following Sago, that provided the template for many provisions, including the one calling for refuge chambers subsequently found in the MINER Act which passed in the spring of 2006.

Furthermore, it was the same rational basis, combined with all the positive progress made in this home state here in West Virginia, that prompted Senator Byrd to advance the appropriations language to expedite the deployment of shelters in all underground mines throughout the country. We think the congressional record is clear with Senator Byrd's
quest to extend the same level of miner protection that exists in West Virginia to all other states.

Let the record show that we fully embrace the work of the West Virginia Mine Safety Technology Task Force in this important area and compliment them publicly today for their dedication to the task at hand, their overall competence in safety leadership.

MSHA and, consequently, the nation would be better served if the agency would accept West Virginia's repeated offers to work with them in this critical area of miner safety.

We're still waiting today for a sign off on our wireless communications systems that are, likewise, in almost every single underground mine in this state, with full compliance expected next year as well.

We're also working in an expedited manner on proximity devices and have reached out to MSHA on numerous occasions and NIOSH on numerous occasions to come work with us today. Don't wait until we're on the verge of implementation, so that we can learn from one another, so that we can factor any concern that each of had into that final work product.
Again, we can't express that, we can't urge your participation -- I'm talking about real underground participation, where we roll up our sleeves and go underground together and really ascertain the operational issues associated with these devices so as to avoid a situation we're in exactly today as it relates to refuge shelters.

We are pleased to see that the proposed rule purports to grandfather state approved units. We believe it's absolutely imperative that the final rule clearly and unconditionally accepts current state approved units as meeting all requirements of MSHA's rule on refuge alternatives, especially and including the footage and volume requirements found in the proposed rule, and that such grandfathering extends for the life of the units.

That is our primary concern and comment today, that the final rule clearly and unconditionally accepts all the units heretofore approved and deployed in West Virginia's mines. We don't make the proposed rule as clear on this point as it needs to be and, consequently, widespread confusion reigns within the industry as to the agency's intent.

I've heard several questions. I've
heard several responses. I would like to stop for a
minute and perhaps engage you on that important issue.
The fundamental question that has not been answered is
will these units be unequivocally approved? Will a
35-man unit I have underground today be a 35-man unit
at this time next year or the years after?

MS. SILVEY: I'm going to give you the
content that I gave to Director Wooten, which was that
-- and I will say that unequivocally, and I think I
said -- this is the third time now today that I've
said it -- MSHA will accept state approved units,
units that have prior to the date of promulgation of
this rule -- now, after this rule goes into effect,
everybody knows all bets are -- then the new units are
required, but prior to then MSHA will be accepting
units that are approved by the states and approved --
and only one state, I think, has them approved, and
that's West Virginia -- and approved by MSHA --
accepted by MSHA and approved ERP. I made that
statement. MSHA will do that, and we will do that.
And I will say that that is our intent.

Now, I say that that's our intent and I
will say that to you today. There are no guarantees.
I've known a long time ago, there are no guarantee of
anything. So if the final rule comes out and it's
different than what I said here today, I don't
guarantee, but at this point in the rule making
process, that's MSHA's position on this.

MR. HAMILTON: Will that include cubic
footage, square footage space --

MS. SILVEY: Well, I've said MSHA would
accept units approved by West Virginia. Now, what
people -- I happen to know that people have gone
around and asked different people different questions,
and sometimes when you ask different questions, you
get different answers, so you set yourself up with
going different answers. But I'm saying to you that
MSHA will accept approved -- state approved units, and
that's our intent and --

MR. HAMILTON: Here's what we're dealing
-- Here's what we're hearing. We're hearing by
representatives of this agency that those units will
probably be approved as they currently exist but for
the square footage and cubic footage requirements in
the proposed rule. And what that means is --

MS. SILVEY: I didn't say that.

MR. HAMILTON: -- and what creates a
concern for us is that we're way ahead of the curve,
we have a lot of shelters already deployed in underground mining operations, and they meet the requirements of law and they provide protection for adequate protection for every single person likely to be in the working area underground. Those are there today.

Now, what we're concerned with is the units approved but for these caveats, which means we now have to deploy, install two. Some of these systems are de-rated by as much as 66 percent, near 70 percent. So --

MS. SILVEY: Now, I don't understand when you say de-rated, as West Virginia uses that term.

MR. HAMILTON: You have a unit today that will accommodate 35 people, and it's maybe predicated on this 6 and a 1/2 square footage requirement. Well, you apply your number to it, and all of a sudden that 35 is maybe a 12-person shelter. So we have to -- under that apparent conflict, we would then be required to purchase and install a second, maybe a third shelter.

MS. SILVEY: Okay.

MR. HAMILTON: That's the point. That's
the de-rating of the unit. Now, we're having difficulty here learning and trying to figure out where to put one shelter. Is it within the 1,000 feet? Is it between 1,000 and 2,000? Is it in a cross-cut? Is it up the straight?

MS. SILVEY: Well, right now, you know, you would put it within 1,000 feet, I think.

MR. HAMILTON: You know, we all laughed two years ago when someone suggested that every coal miner have self-rescuers on. If we take your law as proposed, worst case scenario, coupled with the West Virginia law, we will have a shelter inby 1,000 feet, we will have a second shelter between 1,000 foot and 2,000 feet, and if we de-rate it, based on the science that sustains x amount of people in a submarine for x amount of days or weeks, if we base it on the science that drove the construction of family bomb shelters in the fifties, which is solely and exclusively predicated on comfort not survivability, then in that worst case scenario we have one inby 1,000 feet, we have one, two, maybe a third outby 1,000 feet or between 1,000 feet and 2,000 feet. That's our concern.

MS. SILVEY: I appreciate -- I hear you.
Believe you me, I hear you. I heard Director Wooten. I heard him and I heard you, and that's why I want to assure you that we will --

MR. HAMILTON: Just tell me that the 35 person will continue a 35 person.

MS. SILVEY: Well, you know, sometimes people want more than you can give them. When I said we would accept and approve units by the states, we would accept them and we will do that.

MR. HAMILTON: It's taken --

Understand -- Understand that we've displayed real excellent leadership, and it's been a state program. Director Wooten was right on --

MS. SILVEY: And we appreciate that.

MR. HAMILTON: You know, labor, industry, the chamber -- the manufacturer, usually, our government, our federal government. We worked hand in hand. Never before has there been that level of unprecedented cooperation, because everybody -- everybody, you know, bought into the task at hand, was fully supportive of it.

Now, we had a problem. We had a problem and we still have a problem we're beginning to work through. You know, there's a time to debate, there's
a time to argue and there's a time to move forward.

    MS. SILVEY: Right.

MR. HAMILTON: We have moved forward into our very carefully, methodically, planned out training sessions. We're reconditioning thousands and thousands and thousands of working miners here in West Virginia. We're reconditioning their thinking. My thinking has been reconditioned over the past two years. I've been in the business for thirty-some years. We're beginning to accept shelters as a viable resource in the event that all else fails.

    I agree with Jim Dean. I've yet to come across a single miner in the State of West Virginia that says, "I can't wait to use one of those." But we've reconditioned their thinking, you know. A year and a half ago we heard things like, "Dog rocks." We heard things like, "Why in the world would you run into a closet when a house is on fire?"

    It's taken a lot of time, energy and effort to recondition thousands miners that these may be a viable resource. Now what we're doing by setting a different standard than the one that exists in West Virginia, we're saying, "This one here, the new standard promulgated under MSHA rule, is a superior
unit," or conversely, "This one that we have in place and have had in place here in West Virginia for two years now might not be very good. It might not be fully acceptable in that state. So we're going to have good units and bad units and it's going to destroy -- it's totally going to eradicate the positive change that's been made here over the past several months. And it's taken a lot of work and we're still not there.

With respect to that specific location of the shelters -- and by the way, Jim Dean made a lot of good arguments on the 48 versus 96 hours. He's included some references. A lot of the material I was prepared to present here is redundant at this point based on what Randy Harris and Jimmy Dean indicated.

I also will include with me written testimony references to some of these studies, some of the scientific facts that we've looked at, that we argue against, that we support. We'll provide you copies of all that.

With respect to location, again, to avoid this apparent, glaring problem, you simply say that the chamber must be within 2,000 feet. That would accommodate the West Virginia law. Where they
need to be in a shelter or a breakthrough, again, I think we need a little more experience. We need some underground experience from people that handle these, work with these.

We have a lot of mining standards that are driven by specific mining conditions, geologic conditions, layout and design, size and complexity of mines. All that comes into play here. Whether we have entries, three entries, all that comes into play. The type of mining operation, your extracting methods should all be factored in where that location is.

And I submit to you there's not a person in this room that knows the ideal place where a shelter ought to be located today. We all have our ideas. We all have our opinions, but we really need what's often referred to in the world of athletics, we need some playing time. We need a little bit -- Look how far we've come here in the last two years, and we need a little bit of practical experience with these units, handling them, moving them, seeing which ones, if any, are susceptible to some harm because of the movement.

Again, I think the data, the historical studies will support inby 1,000 feet as well as outby
1,000 feet. We have petitions here in West Virginia, site specific petitions that have been submitted by management and labor to move these shelters out to 5,000 feet. So they're not moving them every week like they're moving the power stations and transformers, tailpieces and subjecting them to the rigid conditions of moving them repeatedly underground.

You have petitions to allow shelters that are designed to be within 1,000 feet of the face area asking that they be -- by management and labor at the coal mines -- at unionized operations they're asking that we move these shelters back to 5,000 feet. Again, it's a site -- those were under consideration for a time.

MR. SHERER: Any specific conditions to help promote that distance or is this a trade-off.

MR. HAMILTON: I'm not sure. We'll have to find that out. We can certainly provide that.

MR. SHERER: Let's see if there's anything else.

MR. HAMILTON: I think you've answered the main concern that we have. I think you've attempted to answer. We hope that the entire agency
shares in that concern or in that issue. We just --
This de-rating of it, you're going to hear from some
manufacturers on that, how the cubic footage, the
square footage requirements de-rate those systems.
And if it was necessary for survival, I think we would
all be holding hands with you, suggesting that we, you
know, embark upon such a requirement, but when we find
nothing as it relates to survivability and its only
basis is derived from comfort. As I believe Mr.
Kennedy indicated or one of the previous speakers,
that should be way down on the list, particularly when
that increased space compromises the fundamental
purpose of survivability and the integrity and
maintaining the integrity of these units.

I'll stop here and subject myself to
other questions if you have any. I appreciate the
opportunity to address the panel. I appreciate the
opportunity to comment on these proposed rules, and I
will follow up with a prepared written document as
well as all the attachments to it.

MS. SILVEY: I don't have any further
comments. Anything from the panel? Thank you, Mr.
Hamilton.

MR. HAMILTON: You're welcome.
MS. SILVEY: Our next speaker will be Jack McVey, Life pod International.

MR. McVEY: My name is Jack McVey, M-c-V-e-y. Thank you for this opportunity to present my comments and concerns about the proposed rule making for underground refuge alternatives that MSHA proposes in their 30 CFR Part 7 and 75.

I join others in this room to thank you for holding one of your important public hearings in West Virginia, which has a rich tradition of leadership in all matters related to the mining of coal. This is most certainly true in the emerging mine refuge industry.

To that end, I commend Governor Manchin, Director Wooten, Task Force Chair Jim Dean, technology consultant Randy Harris, the entire Task Force and the West Virginia Legislature for their leadership in the past two and one-half years.

As the inventor, developer, principal, officer and spokesperson of the Lifepod Emergency Systems, which is a part of Lifepod International, I might tell you that the night before I named the company I had read Senator Obama's Audacity of Hope.
so maybe that's where the Lifepod International came from. But we always have hope.

So I want to expound briefly on the uniqueness of my product. The Lifepod has the distinction of being an un-shelter, a hybrid, if you will, in that it provides each miner with his own shelter. The Lifepod has the ability, being that it's modular to provide shelter for 4 people that might be out by your belt head and tailpieces and up to 25 miners.

As you'll find out next week hearing the problems in the Commonwealth of Kentucky, the Lifepod can provide refuge for coal miners in Kentucky's 37 coal mines that are fewer than 30 inches in coal seam height with our 18 inch high model.

As well, the Lifepod can provide refuge in Alabama's inherent hot temperatures without raising the temperature.

And now envision, if you will, that the miners have gathered at the Lifepod, which is a series of cylinders of breathable air, all connected, obviously, by stainless hardware to a centralized air control panel, from which emanate throughout the
shelter, which is a in cross-cut, four mounted balls, each of which five miners can plug into, so there are 20 miners in this particular version, which is the 16 miner version.

The Lifepod is mobile, and can be removed from the mine while the miners continue to receive breathable air during egress.

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And now envision, if you will, that the miners have gathered at the Lifepod, which is a series of cylinders of breathable air, all connected, obviously, by stainless hardware to a centralized air control panel, from which emanate throughout the shelter, which is in cross-cut, four mounted balls, each of which five miners can plug into, so there are
20 miners in this particular version, which is the 16 miner version.

They receive breathable air directly from the air cylinders and the cylinders are adequate to maintain a miner for 96 hours.

Now, let's suppose that they find that -- they do a head count and somebody is missing. You disconnect from the manifold, still with your mask on, and instantaneously your hip pack comes on, which has about 30 minutes. And you can get 15, 30, 60 minute hip packs. And they go to the separate box where there's food and water and the one-hour cylinders are located. They plug into that, put one on their back and perhaps carry one with them and they can do a sortie out into the mine to find the missing miner and hopefully bring him back alive and reconnect.

Now, at that point you have two cylinders which you can use, perhaps, and you simply refill them from the bank of cylinders because there's a central refill cord attached thereto.

The future Lifepod, by the way, would handle a Quecreek problem, so this would be with an SCBA mask, which is now a scuba mask.
The Lifepod has the distinction of probably being the only refuge system that has been vetted by NIOSH, in that I had to go before their National Personal Protection Laboratory for respirators. I went before Doctor Heinz Ahlers, the chief of that particular branch, and then he took me before some nine or ten experts in respirators and they discussed the merits of the system.

At the end of the conversation, about an hour and a half later, they determined that this was, indeed, a NIOSH 13F system, which is basically a pressure demand -- positive pressure demand, full face mask with a hip pack. That's a 13F, which enables you to escape from a hazardous environment to safety.

The next step that you do after that, of course, is you go to a manufacturer. And this is what Doctor Ahlers said, "Find a manufacturer who will manufacture that system, have it vetted to make sure that it works, that his system is designed for the way that you're using it."

So, basically, that is what we're using, a system that has been approved by NIOSH. We've worked closely with Tridelphia Group. They've seen the product. It's been through a task force three or
four times. We continue to work toward an approval process.

The Lifepod is mobile, it's on wheels. It's 7 feet wide by 13 feet long, for the 16 miner version. It can be rehooked to a scoop and pulled out and the miners -- there's no duration, you can take your time. It might take ten hours but at least you're going toward the rescue person as you exit.

And the manifolds are simply removed and they're clamped down on a bank of cylinders and the miners escape and are crawling or walking beside of the system, breathing air as they go out.

The Lifepod includes a roof control plan. There are screw jacks on the system, enough for every five square feet.

And, again, we continue to work with the State of West Virginia for approval on this.

So you discuss new technology as you do and you talk about the unique complications attached to low coal. It's not that far in the future, you know. Whether or not inflatables or rigid structures can work in 30 inch coal hasn't been determined, but with our system, it's not required.

And certainly, in terms of the proposed
rules, as they now read, the various sections are sort of disjointed and difficult to interpret. And as others have said, I see no credible rationale as to how MSHA arrived at the 96 hour rule. Simplistically, did they just double West Virginia's 48 hours? I'm not sure. Clearly the average recovery time approximates 41 or 42 hours. Perhaps for a margin of error the number could be reduced to 60 hours or 2 1/2 days. That seems like a very adequate time.

While the Lifepod Emergency System can fully comply with the cubic and square footage requirements, I recommend that these numbers be reduced for the inflatable shelters to enable them to provide refuge for their stated capacities without having to re-engineer their shelter lengths and breathable air and oxygen components. And I think somewhere between 8 and 10 square feet and 30 cubic feet, perhaps, seem to be an adequate number.

I just want to speak specifically to one section, Section 7.506, Breathable Air Components, at Page 34151. This section under Paragraph (g) with its following four subparagraphs almost exactly describe and define the Lifepod Emergency System. I recommend that the paragraph specify the supplied air respirator...
(SAR) 13F designation. From working closely with NIOSH we came up with more specificity as I had to do for the type of respirator that must be used. This designation enables a miner to escape from a hazardous environment because of the system designed full-face SCBA mask with the required hip pack air cylinder.

In Paragraph (g), MSHA authorizes the usage of this system, but it is ambiguous if an airlock must also be used. Under Section 7.505, Paragraph (a)(3) at Page 34146, column three, states, "The proposed rule includes an exception for an airlock if the refuge alternative is capable of maintaining adequate positive pressure. The positive pressure would prevent outside air from contaminating the refuge alternative. Therefore, an airlock would not be necessary."

I interpret this paragraph and statement to directly relate to the Lifepod Emergency System, which uses an open circuit positive pressure demand full face mask. This system, under Paragraph (g) should be recognized specifically as meeting the exception as discussed herein if it uses a NIOSH approved 13F positive pressure full face mask.

Perhaps the respirator breathing
apparatus used with the breathable air component should be relocated in the rule, along with the exception, so there's no disjointedness in interpretation of this important section.

In other words, I had to search back to see where there is an exception to this if you have a positive pressure system, and I did find that paragraph that I just quoted to you, the exception to the airlock.

In conclusion, my educational and experience background are in the medical and healthcare industry, and I approached the development of the Lifepod Emergency System first and foremost as to do no harm to the coal miner.

Again, thank you for this opportunity to comment on the proposed rule for refuge alternatives for underground coal mines. I reserve the right to revise and extend my remarks prior to the conclusion of the review and comment period.

Thank you very much.

MS. SILVEY: Thank you.

MR. SHERER: Mr. McVey, yours is a compressed air based system?

MR. McVEY: It is.
MR. SHERER: What's the average air consumption that you're basing this on?

MR. McVEY: The air consumption is based on the manufacture of a mask. We're using MSHA's PIB of 703 and their definition of minimum oxygen requirements, and based on that, we're giving 60 percent more air than the MSHA allowed.

MR. SHERER: Are you aware that we have a requirement for compressed air based systems of 12.5 cubic feet per man?

MR. McVEY: I am aware of that and I think your system is really based on free flowing air into a system; it's not based on coming directly into a full face mask, and I think you need to look at that.

MR. SHERER: Can you comment on that, please?

MR. McVEY: Well, I think that you're certainly reasonable to give 12 and 1/2 cubic feet, if you're free flowing it through a four inch line into an open shelter that's been barricaded, but it's certainly, absolutely not necessary if you're receiving 5 liters of oxygen per minute, which is 60 percent more than MSHA's minimum requirement.
MR. SHERER: Now, your system is basically one breath and then the exhaled carbon dioxide is dumped to the surrounding atmosphere, I would assume.

MR. McVEY: That's correct.

MR. SHERER: Thank you.

MS. SILVEY: Thank you.

MR. McVEY: Thank you.

MR. SILVEY: All right. I think that at this point we will break for lunch, and could we reconvene, please, at one o'clock.

(WHEREUPON, a recess was taken, after which the following proceedings were had.)

MS. SILVEY: We will reconvene the Mine Safety and Health Administration's public hearing on refuge alternatives for underground coal mines, the agency proposed rule.

Our first speaker this afternoon is Mr. Ed Roscioli with ChemBio Shelter, Inc. and we will now hear from him. Mr. Roscioli.

MR. ROSCIOLI: Thank you. My name is Ed Roscioli, R-o-s as in Sam, c as in Charlie, i-o-l-i. It's an Irish name. I am with ChemBio Shelter,
Inc. and I thank you for this opportunity to express my views in the proposed regulation.

Everyone in this room has a common goal and that's to save lives, and so with that in mind, we respectfully offer the following comments:

I would like to start by commenting on the NIOSH testing that was done at Lake Lynn that's been referred to numerous times in your proposed regulation.

Earlier people had mentioned that this testing was a learning experience for both NIOSH and the manufacturers. This is true, it's the first time it's ever been done and so I'm not degrading the NIOSH people, but I want to tell you some of the things that happened during that test of our particular shelter.

First of all, prior to the test we offered to go to Lake Lynn and train the NIOSH people on how to operate our shelter. They declined. Secondly, when we got to Lake Lynn with the shelter, they realized that they hadn't considered a particular issue and wanted us to do a design change on the spot right before this test. What the issue was was the normal plumbing configuration of the
shelter is that the oxygen would go and exhaust into the interior of the shelter, obviously because that's what it needed, but during the test NIOSH didn't have any people in there and they didn't have any way to use that oxygen up, so they wanted us to reroute our plumbing so that instead of going into the shelter, it's just exhausted out into the mine atmosphere so that the oxygen in the shelter wouldn't get too high.

Well, that created a little bit of a problem because the plumbing was all balanced and set up to operate in its normal mode, so we had some difficulty with the flow rate of the oxygen during the test.

Another thing I wanted to mention was our marching orders were to come up to Lake Lynn, deploy the shelter, set up the equipment and then get off site. We were not to be around during the testing. So we deployed the shelter and we found out after the testing that one of the first problems they had with our shelter was the NIOSH people went into the shelter and knocked over the scrubbing curtains that we used to scrub carbon dioxide into puddles of water on the floor. Again, this is partially due to lack of training.
I want to read you now the email, which is a follow-up of the testing that was done at NIOSH. This is an email from Eric Bowyer of NIOSH addressed to Randy Harris, who you heard earlier today talk. It was sent on Thursday, January 3rd, 2008 and a carbon copy to Jeff Kohler and Rick Rutledge.

Subject: Oxygen flow test results.

There are two attachments, one is the oxygen rate data in Excel spreadsheet format and the other one is the oxygen rate data in a Word document. The email says:

"Randy: This is all the data from the 96 hour test of the ChemBio ALD redesigned oxygen delivery system. The data indicates a constant flow rate that lasted for 96 hours. Thus, it appears that they have resolved the problems noted during our evaluations. The three main problems noted during our evaluations have now been addressed. They were:

(1) The curtain stands have been redesigned and are sturdier and less likely to tip over; (2) the patch kit now includes several sizes of mechanical patches that will fix main air leaks more efficiently than either duct tape or rubberized tape; (3) the oxygen flow rate has been stabilized and is of sufficient
quantity to last for 96 hours at the rate of capacity.

I apologize for the slowness of getting this information to you. If there is any other information you need concerning these items, please email me at ebowyer@cbc.gov or call me at 412-386-6518. Eric Bowyer.”

Now, one of the problems we had was when that report came out on December 15th, we didn’t have the results of these follow-up things, so we looked pretty bad and we harped and harped on NIOSH to get this done and to get it in writing and so far the only thing we’ve got is an informal email and I just read it to you.

I think MSHA should require that NIOSH redo their report and include the follow-up data so that the record can be set straight.

Okay. Now what I would like to do is go through your regulation, your proposed regulation and more or less in a chronological order and I will make comments as we go through it.

On Page 34142 at the bottom of the third paragraph it says, “Air monitoring would provide occupants in the refuge alternative with
devices to measure the concentrations of oxygen, carbon dioxide, carbon monoxide, methane and other harmful gases." Well, other "harmful gases" is not specific. Monitors are gas specific, so any gas that would need to be monitored would need to be identified in advance and a monitor capable of detecting that specific gas would need to be provided. MSHA should delete other harmful gases.

Further on in that same page, there is a statement in there "Proposed regulations". Acceptable breathable oxygen is frequently supplied by a compressed gas cylinder as U.S. Pharmacopoeia medical oxygen or as aviator breathing oxygen.

MSHA should limit the required regulations to provide performance based approval criteria and promote innovative and new technology. Specifying the amount and quality of the needed oxygen with a method of testing both the amount and the quality of the oxygen and the pass/fail limit on each should be sufficient. Specifying how to provide the oxygen is unnecessarily restrictive. This prescriptive requirement actually stifles creativity and eliminates innovative new technology.

Other methods of supplying oxygen could
be perfectly acceptable. Therefore, providing oxygen from a compressed gas cylinder does not affect performance of the refuge alternative to meet the requirement that it sustain persons for 96 hours. The text that I read should be stricken from the rulemaking.

Page 34144, there is a statement at the end of the one paragraph that says: However, when miners enter the airlock following an emergency, it will be necessary to monitor and purge the air to remove any contaminants. MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the quality of the air in the airlock in terms of limits of contaminants and a method to test it should be sufficient. Specifying how to improve the quality of air in the airlock is unnecessarily requirement. This prescriptive requirement actually stifles creativity and eliminates innovation new technology. Other methods of improving the quality of air in the airlock could be acceptable. The text and purge the air to remove any contaminants should be stricken from the regulation.
The next paragraph on the same page, the bottom of the paragraph, Paragraph (d) would require that the application specify the volume of breathable air available for removing harmful gas, both at startup and while persons enter or exit through the airlock and the maximum volume of each gas that the component is designed to remove on a per miner per day basis.

MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the quality of the air in the shelter both at startup and while persons enter or exit through the airlock in terms of limits of contaminants and a method to test it should be sufficient. Specifying how to improve the quality of air in the shelter both at startup and while persons enter or exit through the airlock is unnecessarily restrictive. This prescriptive requirement actually stifles creativity and eliminates innovation new technology. Other methods of improving the quality of air in the shelter both at startup and while persons enter or exit through the airlock could be acceptable. So the text that I read should be stricken from the
regulations.

The same page, next two paragraphs down, the statement in the proposed regulation of constructed of suitable materials is of good quality workmanship is based on sound engineering principles is safe for its intended use and is designed to be compatible with other components in the refuge alternative. This text describes only subjective qualities of various components. The following items are not descriptive enough: “Suitable materials”, “good quality workmanship”, “sound engineering principles”, “safe for its intended use”, compatible with other components in the refuge alternative”.

Subjective opinions have no place in rulemaking. All required items must have specific parameters that are measurable and have a clear limit beyond which they fail. MSHA should either provide parameters that are measurable and have a clear limit beyond which they fail or strike this language from the rulemaking.

Page 34145, Statement: The proposed rule would require that materials used in a refuge alternative or component be tested and evaluated to determine that the nonmetallic materials do not release irritating odors or toxic gases when
subjected to a flash fire test.

When the shelter is in the stored configuration, only the externally exposed components need to be tested for toxic gases when exposed to a flash fire test. When the materials in use inside the shelter, when the shelter is in the deployed configuration, are subjected to a flash fire, the toxic gases will be the least of the problems the inhabitants will have. MSHA should clarify the wording to indicate this only applies to materials potentially exposed to flash fires in the storage configuration.

Page 34146, the statement, MSHA recommends a minimum of one foot candle of lighting be provided per miner per day.

In a 35-man shelter, this wording would require the lighting throughout the entire shelter to be 35 foot candles. Also, the unit of one foot candle per miner per day does not make any sense. A foot candle is a measure of illumination at any given moment in time. A foot candle per day makes no sense. MSHA should change the wording of the units to be in absolute foot candles since one person needs just as much light as 35 to read instructions. The
minimum illumination should not be a variable
depending on the number of people in the shelter.
Also, MSHA should correct the erroneous units of foot
candle per miner per day.
The next paragraph on the same page:
Provisions should include individually packaged
sanitation supplies, including toilet paper and hand
sanitizer. MSHA should limit the required
regulations to provide performance based approval
criteria and promote innovative new technology.
Specifying the functional requirements for waste
disposal should be sufficient. Specifying
individually packaged sanitation supplies, including
toilet paper and hand sanitizer is unnecessarily
restrictive. This prescriptive requirement actually
stifles creativity and eliminates innovative new
technology. Other methods of providing for waste
disposal could be acceptable. The text highlighted
that I read should be stricken from the rulemaking.
The same page a little further down.
Some contents should be individually packaged and
stored in containers. For example, food and water
should be provided in individual, disposable packages
and stored in a container.
MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the functional requirements for containers used for storage of refuge alternative components should be sufficient. Specifying individual, disposable packages is unnecessarily restrictive. This prescriptive requirement actually stifles creativity and eliminates innovative new technology. Proven alternatives could be available. Therefore, providing food and water in individual, disposable packages does not affect the performance of the refuge alternative to meet the requirement that it sustain persons for 96 hours. The text that I read should be stricken from the rulemaking.

The next paragraph, Paragraph (a)(1) would require that refuge alternatives provide a minimum of 15 square feet of usable floor space and a minimum of 60 cubic feet of usable volume per person. The amount of usable floor space of 15 square feet is excessive. We have done some layout and photography that I’m going to submit to you the pictures. The first several of them are pictures of our 35-man shelter that has been deployed in the
configuration and the first picture is empty. The second picture has 35 men in it. The third picture is another shot of 35 men in the shelter. The next picture is a picture of the outline of the shelter on the floor using blue tape and then we took a photograph of an angle from above and in these pictures we have 35 men in the shelter or in the area that the shelter would occupy, plus all the carbon dioxide scrubbing curtains that would be used in the shelter for the entire four days, and you can see from these pictures there is plenty of room. The last picture is, again, a shot from above with the outline of the shelter delineated on the floor.

What we found was in this 35 man shelter we actually have a little over nine square feet per person and we feel that that is acceptable, that should be plenty of room on the floor.

The other issue about the volume, there seems to be no reason to specify any kind of volume because of the mine height issue. A person in a two-foot mine that has nine square feet on the floor has the same amount of room basically as a person in an eight foot mine height, because all that room above the guy is useless. He can't use that space above
his head. So we feel that the volume requirement is not necessary at all.

The same page a little further on:

Also larger volumes seem to be more effective at dissipating heat. The existence of a limit on the internal apparent temperature of the shelter is all that is necessary to ensure miners are not subjected to excessive heat. MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the use of larger volume shelters to dissipate heat is too prescriptive and not necessary. This prescriptive requirement actually stifles creativity and eliminates innovative new technology. Other methods of maintaining the apparent temperature below the limit could be acceptable.

34147: The remaining 20 minutes of breathable air provided by the SCSR will allow refuge alternative purging to establish a breathable atmosphere. 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.

MSHA should limit the required
regulations to provide performance based approval
criteria and promote innovative new technology.
Specifying the quality of the air in the shelter at
startup in terms of limits of contaminants and a
method to test it should be sufficient. Specifying
how to improve the quality of air is unnecessarily
restrictive. I'm referring here to the purging.
There may be other ways to improve that quality other
than purging, which is not a very efficient way to do
it anyhow.

Page 34148, the text reads: Compressed
air cylinders -- let me start a little earlier.
Section 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.

MSHA should limit the required
regulations to provide performance based approval
criteria and promote innovative new technology.
Specifying the quantity and quality of the air or
oxygen entering the shelter in terms of cubic feet
per minute and the limits of contaminants and a
method to test them should be sufficient. Specifying
how to provide the quantity and quality of air or oxygen entering the shelter is unnecessarily restrictive. This prescriptive requirement actually stifles creativity and eliminates innovative new technology. Other methods of providing the quantity and quality of air could be acceptable. This text should be stricken from the regulations and a method of testing the quantity and quality of the air or oxygen entering the shelter along with pass/fail limits should be included.

The same paragraph: Currently MSHA will accept compressed air cylinders and compressed breathable oxygen cylinders as a means to supply breathable air in underground coal mines. MSHA will also accept fans or compressors installed on the surface as a means to supply breathable air in these mines. MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the quantity and quality of the air or oxygen entering the shelter in terms of cubic feet per minute and limits of contaminants, and a method to test them should be sufficient. Specifying how to provide the quantity and quality of air or oxygen is
unnecessarily restrictive. This requirement actually stifles creativity and eliminates innovative new technology. Other methods could be perfectly acceptable. The text that I just read should be stricken from the rulemaking.

Acceptable breathable oxygen is frequently supplied from a compressed gas cylinder as U.S. Pharmacopoeia medical oxygen or as aviator breathing oxygen. Again, MSHA should limit the required regulations to provide performance based approval criteria and promote innovative new technology. Specifying the quantity and quality of oxygen in terms of cubic feet per minute and limits of contaminants and a method to test them should be sufficient. Specifying how to provide the quantity and quality of oxygen is unnecessarily restrictive. This actually stifles creativity and eliminates innovative new technology. Other methods can be available that are acceptable so the text that I read should be stricken from the regulation.

Page 34149: 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. It is not clear that the 12.5 cubic feet per minute of breathable air for each miner only applies when carbon dioxide is not scrubbed. The words should be made clear that this flow rate only applies to shelter alternatives that do not scrub carbon dioxide.

Page 34150: The Foster Miller report specifies a minimum of five inches of water gauge overpressure in the refuge alternative which is equivalent to approximately 0.18 psi. Currently, most manufactured refuge alternatives have relief valves set at 0.25 psi. Inflatable shelters do not have nearly the .25 psi pressure listed here. To pressurize a shelter that is 32 feet long by 14 feet wide to .25 psi would place a force of 16,128 pounds on the roof of the shelter. This text should be modified to reflect a more realistic measure of the pressure in the shelter, for example .02 inches of water.

The same page a little further down:
Paragraph (d)(4) would require that compressed, breathable oxygen include an independent regulator as a backup in case of failure. It is crucial to
maintain a continuous supply of breathable air to persons trapped underground. MSHA believes that redundant regulators would assure that the miners are maintained in the event of failure of one of these regulators. MSHA expects redundant oxygen control valves and regulators will be provided to assure continual availability of breathable oxygen. This provision is meant to assure that pre-connected valves and regulators are available. This will assure that miners will always have breathable air available in case of a component failure.

MSHA lists no data backing up the probability of failure of an oxygen regulator. These devices have been used for decades with an excellent safety record. The probability that one of these regulators would fail in the 96 hours of operation of the shelter is negligible. In addition, redundant regulators and the piping and fittings necessary for this would increase the risk of oxygen leaks. MSHA should back up their concern of oxygen regulator failure with a cost benefit analysis, including a probabilistic risk assessment of the failure of these devices during the 96 hours of use while the shelter is in operation. This cost benefit analysis should
include the added risks of oxygen leakage caused by additional piping, fittings and the redundant regulator.

34152: 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.

There is no reason to measure carbon dioxide in the mine atmosphere. Also, the measurements inside the airlock could be eliminated if the operating procedure and training program required miners to keep their SCSR on until after exiting the airlock and safely inside the shelter. This would also minimize the time the miners spend inside the airlock. In the case where the miners' SCSRs have little time remaining, processing through the airlock and into the shelter quickly without atmospheric monitoring in the airlock will take less time. MSHA should reword this section to eliminate the requirement to measure carbon dioxide in the mine air and to provide an exception to airlock monitoring when SCSRs are required to be worn in the airlock.
The same page, (2), the measurement error limits not exceed after startup, after 8 hours of continuous operation, after 96 hours of storage, and after exposure to atmospheres with a carbon monoxide concentration of 999 ppm full scale, a carbon dioxide concentration of three percent, and full scale concentrations of other gases.

The wording of this sentence is not clear. Also, the carbon monoxide level inside the shelter is limited to 25 ppm. There should be no time when the carbon monoxide level in the shelter reaches 999 ppm. If this occurs, the measurement accuracy of the monitors will not be the most important problem.

Page 34153: The bottom of the first paragraph says, ANSI Part 1, 1998 Performance Requirements for Carbon Monoxide Detection Instruments, 50 to 1000 ppm full scale, specifies carbon monoxide instrument range limits of 1000 ppm, 2000 ppm overload, and the standard specified instruments be able to withstand a carbon monoxide shock loading of 4000 ppm.

Again, the carbon monoxide level inside the shelter is limited to 25 ppm. There should be no
time when the carbon monoxide level in the shelter reaches 1000, 2000 or 4000 ppm. If this occurs, the measurement accuracy of the monitors will not be the most important problem.

The same page, Paragraph (a)(1) would require purging or other effective methods be provided for the airlock to dilute the carbon monoxide concentration to 25 ppm or less and the methane concentration to 1.5 percent or less as persons enter, within 20 minutes of miners activating the refuge alternative. The NIOSH recommended value of maximum concentrations of carbon monoxide is 25 ppm. This provision is intended to address evacuating contaminated air by forcing the contaminated air out of the refuge alternative environment. Airlocks are intended to speed up the process of ingress and egress, because this is a smaller volume as compared to the interior space to purge. MSHA believes that following the miners’ attempt to escape and time required for constructing and activating the refuge alternative, the SCSRs would allow 20 minutes for purging the airlock to establish a breathable air atmosphere. In addition, purge air should be provided from compressed air.
MSHA states that purging or other effective methods be provided for the airlock to dilute the carbon monoxide concentration to 25 ppm or less, but then goes on to require only purging equipment. This eliminates the use of other effective methods. The goal here is to minimize the effect of carbon monoxide and other harmful gases from entering the shelter from the airlock. MSHA should limit the required regulation to provide performance based approval criteria and promote innovative new technology. Specifying the method to minimize the effect of carbon monoxide or other harmful gases from entering the shelter from the airlock is unnecessarily restrictive. This prescriptive requirement actually stifles creativity and eliminates innovative new technology. Other methods of minimizing the effect of carbon monoxide or other gases from entering the shelter from the airlock could be acceptable. MSHA should reword this paragraph to allow other effective methods of lowering the effect of carbon monoxide or other harmful gases from entering the shelter from the airlock. For example: Each entry through the cylinders.
Airlock will not increase the carbon monoxide level in the shelter by more than X ppm.

Page 34157: 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. I think I did address this one earlier.

Nine square feet is our recommendation. No requirement on volume.

The same page a little further down:

Another important factor in the volume design is the need to control the apparent temperature in the interior space of the refuge alternative. Larger volumes are more effective at dissipating heat because of increased surface area. Again, I addressed that same one. MSHA shouldn’t be redundant in this rulemaking. These are the exact same requirements that were read earlier.

34160: Paragraph (a)(5) would require that the ERP include methods to provide ready backup oxygen controls and regulators. The term "ready" is meant to be pre-connected valves and regulators. Redundant oxygen control valves and regulators are necessary to assure that miners will always have breathable air available in case of component
failures. I did address this issue earlier on with the redundant oxygen regulator.

Paragraph (a)(6) would require that the ERP include the methods for providing an airlock and methods for providing breathable air in the airlock. Refuge alternatives that require an airlock would be required to provide breathable air in the airlock at all times. However, 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. Sufficient purge air is necessary to clear the airlock of contaminants.

MSHA states that purging or other effective methods be provided for the airlock to dilute the carbon monoxide concentration to 25 ppm or less, but then goes on to require only purging equipment. And again, I think I've already addressed this same issue earlier on and it is therefore redundant.

In conclusion, I hope these comments assist in the development of a comprehensive specification conducive to the employment of innovative ideas and the development of new products and processes. Thank you for your time.
MS. SILVEY: Thank you, Mr. Roscioli.

One of the things I would like to say at the outset is that some of the comments that Mr. Roscioli was referencing you will see how they are proposed.

There are two parts to it, there is an approval part and there we ask the manufacturer or third-party to test the refuge chamber alternative and submit a test result to MSHA and MSHA can go out and audit the test result. Then there’s the part the 75 safety standards that set forth the requirements for refuge alternatives and certain requirements have to be included in the approved emergency response plan. I expect that he was commenting on duplicates that require some tie-ins so the two will fit together.

We include the third requirement that has to be approved, it tested out approved to go through the approval process and then some of those same requirements were to be included in the Part 75 Safety standards.

Now, to the extent that your comments limited solely to the approval, the testing and the approval and don’t have any relevance to the safety requirements, then we will view those as such, but to the extent that you made comments on the approval
ones and they are relevant to the requirements and the safety standards, we will take them in their original request. You did comment on several things twice, but that’s why you were doing it because of the way the rule is structured.

I would like to make one more general comment and I’ve heard -- well, I think Mr. Dean is still here, I think. He just left. And so I’m hearing complete that you want us to perform the standards. You heard me say this before and I’m going to say it again because to some extend it put us in a no win situation to promote innovations and creativity in technology and I think I’ve said this in my opening statement, you know, to some extent this is a development in technology, so to the extent that people have been and organizations have been innovative and creative, obviously we appreciate that.

On the other hand, I heard Mr. Roscioli say to one of our provisions and I can’t remember it verbatim, but one of the provision I believe that I believe was in the approval requirements for refuge alternatives was that it needed to be constructed -- do you remember that provision, constructed of
suitable materials safe for its intended use and there were about four other performances or provisions? To those you said, you know, be specific on those. You said those are very subjective terms. You were right, they are, and that was my earlier point about to some extent performance or requirements are subjective and you will find one person saying I don’t want those. You just tell me specifically what you want me to do. On the other hand, you will find people asking for performance standards sometimes. But in the final analysis when you’re a regulatory agency and you know you are setting standards that you are going out and enforce, then you have an obligation to put people on at least as good of notice as possible about what you compliance requirements are. So with that, I will --

MR. ROSCIOLOI: Can I comment on that?

MS. SILVEY: Sure.

MR. ROSCIOLOI: Well, the items that you referred to were constructed of suitable materials is of good quality workmanship is based on sound engineering principles is safe for its intended use and is designed to be compatible with other components in the refuge alternative.
I guess my point here is that doesn’t specify anything unless you define exactly what those terms mean in terms of a measurement.

MS. SILVEY: Okay. To some extent I would say those requirements I think we have used in our textbooks to support approval requirements for years and I’m not an engineer. By profession I’m not an engineer, but I think that some of those provisions are consistent with sound engineering practices, and generally speaking, if you are in the business of developing something, you are generally familiar with those terms.

I mean, we welcome your comments and clearly in a way I’m just talking to you now in terms of how and why it was included. So we welcome your comments, but I think if you’re in the business of manufacturing certain things, some of those statements or phrases that we included are generally specific with sound engineering practices. But I take your comments and your consideration. And on that, talking about performance and prescriptive standards, there are some things you read, for example, our recommendations on lighting and sanitation, if you look in the standards, in the
standard itself, the regulatory language, we did not include one foot candles or we did not include sanitizing. You were reading from the preamble.

Now, the preamble can be suggestive of what the agency is looking for, but oftentimes we include suggestions in the preamble for what people might use to meet the requirements. So you were reading some things from the preamble, and so if we were go out and try to cite against having one foot candle and somebody else chose — just like you said, be creative and have improved technology better than this one foot candle, but it provided lighting sufficient for a miner to perform the duties and if it provided the lighting to do that, then that’s all that would be required.

So that’s sort a little bit of interplay, but when we go back and look at it, we will look at both of the things we included in the rule, the regulation itself and the things we included in the preamble, but oftentimes we are including things in the preamble just to be useful to people who are developing these units. I appreciate your recommendation on the square footage. So your recommendation is nine square feet.
Let me ask you a question here, Mr. Roscioli. How many are your units are deployed now?

MR. ROSCIOLOLI: Approximately 80.

MS. SILVEY: And they are in the mines now?

MR. ROSCIOLOLI: Some of them are.

MS. SILVEY: How many do you have in the mines? If you don't know exactly --

MR. ROSCIOLOLI: About 75 are in the mines.

MS. SILVEY: In West Virginia or in other mines?

MR. ROSCIOLOLI: West Virginia.

MR. EPPERLY: I wanted to ask, too, in relation to that square footage in those pictures, are you going to present those?

MR. ROSCIOLOLI: Yes.

MR. EPPERLY: Can you be more descriptive about the dimensions that we would be looking at in that picture? You know, what your view of the picture is may be a little different than what we would perceive.

MS. SILVEY: And before you answer that, on the nine square feet, I have one further
question. That is the square footage in the ones, all the 80 that you have?

MR. ROSCIOLI: I'm sorry, I did not hear you.

MS. SILVEY: Is that the square footage setup scenario, nine square feet in the ones you have?

MR. ROSCIOLI: Well, some of our models have -- actually the models that are for less people actually have more square feet per person, whereas I picked one of the larger models, the 35 man shelter and that has actually 9.2 square feet per person.

MS. SILVEY: Well, now I'm a little bit confused. Do you have standard recommendation for the space?

MR. ROSCIOLI: At least nine.

MS. SILVEY: Okay. So your minimum is nine?

MR. ROSCIOLI: And that should apply to every shelter.

MS. SILVEY: Otherwise, it goes up from there?

MR. ROSCIOLI: Well, ours happened to
Ms. Silvey: Okay. All right.

Mr. Epperly: Did you understand what I was asking you?

Mr. Roscioli: Yes.

Mr. Epperly: Just describe what we would be looking at in the picture, the dimensions.

Mr. Roscioli: Right. We have laid out the drawing and things like that. We have a total on the model I was talking about, 35 men model, a total unrestricted square feet of 320 and I can get you the dimensions of that, if you want it, and that equates to 9.2 square feet per person.

Mr. Sherer: Are you employing an airlock in that or not?

Mr. Roscioli: No. No, sir, no airlock. No part of the storage box, nothing.

Mr. Epperly: The more information, Ed, that can you provide for that picture so we know what we are seeing there.

Mr. Roscioli: Okay. I’ll get you the dimensions and the layout of the actual model.

Mr. Epperly: You mentioned items
that are in there like curtains and things that we
would be looking at in the picture and the positions
and just tell us.

MR. ROSCIOLI: Okay. I don't know if
you can see this, but the curtains are set up and in
addition to the curtains there are 35 men sitting in
that area that the shelter takes up. Let me pass
this up to you.

MR. EPPERLY: Ed, if you could just
provide for each individual picture just more
descriptions like which angle we're viewing from and
which angle we're reviewing from and that would be
helpful, just for the record.

MR. ROSCIOLI: I don't know how to
identify those pictures. I didn't write a number on
them. I guess I should have.

MR. EPPERLY: You don't have to do it
today.

MR. ROSCIOLI: Oh, okay. I thought
you wanted me to do it now.

MR. EPPERLY: No.

MS. SILVEY: Do we have any more
questions?

MR. EPPERLY: No.
MS. SILVEY: Thank you.

MR. ROSCIOLI: There is one more item here. It’s a tiny issue.

MS. SILVEY: Excuse me just a minute. We are going to provide your pictures to the reporter, so can you put something on the back of them that describes exactly what stage it is, and like fully occupied. It seems to me one is fully occupied.

MR. ROSCIOLI: No, they all are.

MS. SILVEY: One is at the beginning.

MR. ROSCIOLI: Okay.

MS. SILVEY: Thank you. Well, something because we are going to give those to the reporter.

MR. ROSCIOLI: We will identify them and put what is in the picture, too.

MS. SILVEY: All right. Thank you.

MR. ROSCIOLI: We will number them and put what it is.

MS. SILVEY: That will be fine.

MR. ROSCIOLI: One more item that I forgot is a timing issue. If MSHA finalizes this rule by the end of the year, none of the
manufacturers are going to start redesigning it until we know what the parameters are on your final rule.

So that means it's going to take us maybe three to six months to redesign depending on how much of a change your regulations are to what we currently have and it's going to take another couple of months, two or three months to test the redesign to make sure it complies. And so we're in to possible September of '09 before the first new version of the shelter is available. What happens before January 1 of '09 and September '09 or whatever the first shelters that meet the new regulations are available if the mine operator needs a new shelter?

MS. SILVEY: Well, I think in the preamble we raised the question and knew that we were going to have to have some phase-in time period for approving these units, and so during that phase-in time period, we will have to have regulatory requirements for what happens during that period and I mean people can make suggestions if they would like to or whatever.

MR. ROSCIOLI: I will make a suggestion. You use the old models.

MS. SILVEY: Okay. But we will have -
we understand that we will have to phase-in period.
Thank you.

MR. SHERER: What would be very helpful for us is to suggest a transition period.

MR. ROSCIOLOI: We can’t really do that until you come up with the regulation because we don’t know what the changes are.

MS. SILVEY: We understand. Our next speaker is Stuart McLean, Mine Site Technologies

MR. MCLEAN: Director Silvey, Members of the Panel. My name is Stuart McLean, M-c-L-e-a-n. I am an engineering manager at Mine Site Technologies. I’m here today to provide you some information that you were soliciting with regards to communication systems in refuge pits.

We appreciate the opportunity to pass comment here. Mine Site Technologies has spent 20 years designing and developing mine specific communication systems particularly for the use in underground coal environments and always with an emphasis on safety.

MSHA is looking to solicit comments from entities such as myself with regards to communications and I have provided you there with a
record of how we would see what we call a refuge pit, a communication system.

Mine Site Technologies is attending these MSHA's public hearings and making comment to inform MSHA that they are actively working on a dedicated and truly wireless solution for communications with refuge structures.

Having already developed and demonstrated a "Proof of Concept" system developed in conjunction with Australia's Commonwealth Scientific and Industrial Research Organization, Mine Site Technologies are now in the development phase of production ready units for submission to MSHA and other intrinsically safe approved entities.

MST proposes a communications system suited to a refuge and rescue environment consisting of a near field magnetic bi-directional, two-way synchronous Through the Earth communications link. This link will provide the miner retreating to a refuge with the ability to send and receive text messages from the surface without any dependence on mine wide and possibly destroyed and disabled infrastructure.

The communication link's proprietary
Protocol and modulation scheme are noise tolerant, advantageous, self-adjusting and specifically devised to provide a robust transfer of data considerate of the noise and geophysical strata typically associated with underground coal mining environments.

The system consists of a permanently fixed refuge based unit and can be termed as a "Slave" whilst the "Master" unit is intended to be portable and would be deployed on the surface above the refuge in a situation where it's meant to be deployed. The Master unit can also be deployed beside the refuge, for example, on the side of the rock-fall, mine collapse or hazard.

Other than distinctly different power requirements and components, both units have three primary elements and the elements are high sensitivity magnetic moment receiver, a simple single turn transmit antenna and the actual Slave/Master units themselves consisting of the electronics hardware and the user interface.

The rest of the system description will be technical and probably beyond this committee and the records I have provided to review give the concept of the system and how the system can be
deployed, but the main thing that we want to convey
to you today is that we do have a system that is
truly wireless and independent of infrastructure and
has no lights on any of the ones or current
communications or other (inaudible) structures. I am
happy for a lot of questions.

MS. SILVEY: You are saying it is
truly wireless?

MR. McLEAN: It is truly wireless.

MS. SILVEY: I'm looking at this
graphic that you gave and Number 9 of these keys that
you provided show that there's a permanent refuge
loop buried, usually small area, heavy gauge wire
with multiple turns.

MR. McLEAN: Yes.

MS. SILVEY: That's buried?

MR. McLEAN: Yes.

MS. SILVEY: So is that truly wireless
in my layman's --

MR. McLEAN: I think wireless in itself
is probably a difficult subject to start with.

MS. SILVEY: Probably.

MR. McLEAN: More often than not.

Most communication systems are kilometers of wire and
still call themselves wireless. This system runs in
a loop that might be something the size of this room
that sits near the refuge. It's simple in its
nature. It is not kilometers of wire. The refuge is
in a semi-safe area or position and nature of it
would be hard to damage entity.

MR. SHERER: Have you installed these
anywhere?

MR. MCLEAN: No. What we’ve done is
developed a proof of concept system. Our system is
going to be demonstrated by our representative in a
few weeks and we will be inviting members from MSHA
and NIOSH and other mine entities that are interested
in such a system to attend these demonstrations.

MS. SILVEY: I think NIOSH has some
requests. I’m not sure exactly what stage some of
the requests are proposed on certain wireless
communication devices. Have you all participated in
the NIOSH research any?

MR. MCCLEAN: We haven’t participated
directly with NIOSH. We’re a company that has
participated a lot with MSHA. We have participated
with Randy Harris and his group. We have had very
little to do with NIOSH as such. If they have an
interest in the system, we have an interest to show them the system.

MR. SHERE: What would be the reasonable depth on those types of systems?

MR. MCLEAN: The current depth is around 300 feet. We're looking to extend that to the point the system exists maybe a few more hundred feet than that.

MR. EPPERLY: As related to the rule as far as entering the cables or wires through the shale or rocks, do you foresee any problems?

MR. MCLEAN: No. It is only a wire. It's not carrying multiple signals. It's not carrying power. It's driven by a transmitter at the end of the day and it's just carrying the one conductor.

MR. EPPERLY: What about a portable chamber?

MR. MCLEAN: The surface unit is detailed in graphic unit and that could be used above or underground. It is designed to follow forensic safety restrictions or requirements.

MR. SHERER: I mean portable refuge. If it was moved would there be wires that are
entering out through that to be accomplished through safety?

MR. MCLEAN: The loop that we talked about, it's not more money and it's not a lot of effort to deploy the loop. Again, it's only a piece of wire.

MS. SILVEY: Thank you.

MR. MCLEAN: Thank you.

MS. SILVEY: At this point is there anybody in the audience that wishes to make a statement? Anybody in the audience? If there is nobody else that wishes to make a statement, then I would like to say that we appreciate very much all of you who have attended this hearing today. We are most grateful for the ones who attended and provided us with testimony, but we are equally appreciative of the ones who came and showed us that you have an interest in these hearings. I know that some of you will probably provide testimony to us before the hearing on August 18th and we encourage you to do that.

Again, on behalf of acting assistant secretary, I want to thank you very much and thank you all for the ones who stayed until the conclusion...
of the hearing and thank you very much for being so attentive. We appreciate it.

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Concluded at 2:30 p.m.

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REPORTER’S CERTIFICATE

STATE OF WEST VIRGINIA,
COUNTY OF KANAWHA, to wit:

We, Evalyn Garrett Bibbee and Dena A. Belisle, Certified Court Reporters, hereby certify that the foregoing is, to the best of our skill and ability, a correct verbatim transcription of the July 31, 2008 public hearing.

Given under my hand this 5th day of August, 2008.

Evalyn Garrett Bibbee, CCR
Notary Public

My commission expires June 8, 2018.

Dena A. Belisle, CCR
Notary Public

My commission expires April 8, 2012.