

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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CHARLESTON, WEST VIRGINIA

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MODERATOR

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MINE SAFETY AND HEALTH ADMINISTRATION
OFFICE OF STANDARDS, REGULATIONS AND VARIANCES

PANEL MEMBERS

HOWARD EPPERLY
ERIC SHERER
CHERIE HUTCHISON
RON FORD
JACK POWASNIK

1 MS. SILVEY: Good morning. My name is
2 Patricia W. Silvey and I am the Director of the Mine
3 Safety and Health Administration's Office of
4 Standards, Regulations and Variances. I will be the
5 moderator of this public hearing on MSHA's proposed
6 rule for Refuge Alternatives for Underground Coal
7 Mines. On behalf of Acting Assistant Secretary
8 Richard E. Stickler, I want to welcome all of you to
9 this hearing today.

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

18 The MSHA members of the panel are: on my
19 right, Howard Epperly, who is the MSHA team leader of
20 this Refuge Alternative Proposed Rule Making; to his
21 right, Jack Powasnik, who is with the Office of the
22 Solicitor; and to his right, Cherie Hutchison, who is
23 a Regulatory Specialist in my office; on the left,
24 Eric Sherer, who is with our Office of Coal Mining

1 Safety and Health; and to his left, Ronald Ford, who
2 is an economist in my office.

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

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

15 The proposal, as many of you know, would
16 implement the provisions of Section 13 of the Mine
17 Improvement and New Emergency Response (MINER) Act of
18 2006 and would apply only to underground coal mines.
19 The MINER Act required that the National Institute
20 for Occupational Safety and Health (NIOSH) conduct
21 research on refuge alternatives. NIOSH issued this
22 report in January of '08 and MSHA's proposed rule is
23 based on the Agency's data and experience,
24 recommendations from the NIOSH report, research on

1 available and developing technology and the
2 regulations of several states.

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

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

21 Under the proposal, three types of
22 refuge alternatives would be allowed: a pre-
23 fabricated self-contained unit; a secure space
24 constructed in place; and materials pre-positioned

1 for miners to use to construct a secure space.

2 Some of the major provisions of the
3 proposed rule are:

4 Refuge alternatives would need at least
5 15 square feet of floor space and 60 cubic feet of
6 volume per person.

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

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

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

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

22 Refuge alternatives and their components
23 would need to sustain persons for 96 hours or 48
24 hours if advance arrangements are made for additional

1 supplies, particularly, air from the surface. Food,
2 water, lighting, sanitation, first aid supplies and a
3 two-way communication system would need to be
4 provided.

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

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

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

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

22 MSHA has estimated the economic impact
23 of the proposal and has included a discussion of the
24 costs and benefits in the preamble and in the

1 Preliminary Regulatory Economic Analysis, or the
2 PREA. The PREA contains estimated supporting data on
3 costs and benefits.

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

9 The estimated service life of pre-
10 fabricated self-contained refuge alternatives and
11 estimated service life of components.

12 The proposed definition for "breathable
13 oxygen" as 99 percent pure oxygen, with no harmful
14 impurities, and the proposed definition -- the
15 proposed minimum of 96 hours of breathable air.

16 The sources of heat generation within a
17 refuge alternative, methods for mitigating heat
18 stress and heat stroke, and methods for measuring
19 heat stress on persons occupying refuge alternatives.
20 The proposed rule would require that the apparent
21 temperature within refuge alternatives in use at full
22 capacity not exceed 95 degrees Fahrenheit.

23 And in Footnotes 1 and 2 in the
24 preamble, the reference should have been to the NIOSH

1 report as the basis for the Agency's proposal on
2 apparent temperature.

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

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

17 I would like to clarify that proposed
18 approval requirements should reflect the same
19 language as in the proposed safety standards in
20 75.1600-3.

21 We also ask for your comment on the
22 types, sources, and magnitude of lighting needed for
23 refuge alternatives. On this issue, Footnote 3 in
24 the preamble should have cited pages 124 and 25 from

1 the August 23rd, 1999 Department of Defense standard.

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

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

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

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

20 The visual damage that would be revealed
21 during pre-shift examinations. The Agency is
22 concerned with the feasibility and practicality of
23 having to visually check the status of refuge
24 alternatives without having to enter the structure or

1 break the tamper-evidence seal.

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

9 The proposed approach to the capacity of
10 refuge alternatives in inby and outby areas and the
11 proposed approach to locating refuge alternatives in
12 outby areas, including minimum and maximum distances.

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

20 The proposed training requirements for
21 persons assigned to examine, transport, maintain and
22 repair refuge alternatives and components and whether
23 it would be more appropriate to include that
24 requirement in Part 48.

1 The proposed approach to annual
2 expectations training for miners in the construction,
3 where applicable, activation and use of refuge
4 alternatives and components. Comments should address
5 the proposed strategy and the proposed elements of
6 training.

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

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

23 The Agency will use this information to
24 help evaluate the requirements in the proposal and

1 produce a final rule that will improve safety and
2 health for underground coal miners in the event of a
3 mine emergency in a manner that is responsive to the
4 needs and concerns of the mining public.

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

10 MSHA will make a transcript of the
11 hearing available on the Agency's website within one
12 week of the hearing. And I underscore that, too,
13 within one week of the hearing. As most of you know,
14 time will be of the essence. I underscore that,
15 again. Time will be of the essence in developing the
16 final rule, which must be finalized by December 31,
17 2008.

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

23 We ask that everyone in attendance sign
24 the attendance sheet, and if you have a hard copy --

1 you signed up to speak and have a hard copy or
2 electronic version of your presentation, we would
3 appreciate it if you would provide a copy to the
4 court reporter.

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

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

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

22 It is important that I point out here
23 that the lion's share of the work performed by this
24 Task Force has been and is being done by the co-

1 chairman, Jim Dean, and the other members of the Task
2 Force.

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

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

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

13 Following the tragic events of January
14 2006 at the Sago and Aracoma mines, legislation was
15 passed by the West Virginia legislature and signed by
16 Governor Manchin in record time. The Task Force
17 evolved following this enactment. I will leave
18 details of the establishment of the Task Force and
19 the details of the deliberations of the Task Force to
20 Jim Dean and Randy Harris.

21 Suffice it to say that in my mind the
22 establishment, the deliberations, the unprecedented
23 cooperation and, finally, the work products of this
24 group were truly remarkable. It is important to

1 remember that this group worked diligently to meet
2 the established timelines at a time and during a
3 period of intense pressure, that being immediately
4 following the tragedies at Sago and Aracoma.

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

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

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

24 Not until the West Virginia coal

1 industry and this Task Force came together on a
2 compromise over additional self-contained, self-
3 rescuers did shelters become a regulatory reality
4 anywhere in this country.

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

11 Jim Dean.

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

20 I would like to state that my comments
21 here today represent my own views and opinions,
22 having served as the Acting Director of the West
23 Virginia Office of Miners Health Safety and Training
24 from February of 2006 through September of that year.

1 During that time, as Ron has mentioned,
2 I was the original chairman of the West Virginia Mine
3 Safety Technology Task Force, which I currently co-
4 chair with Director Ron Wooten. If the panel has any
5 questions they may be forwarded to me in writing.

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

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

22 As you know, the West Virginia
23 legislature approved WV Senate Bill 247 on January
24 the 23rd, 2006, following the tragic accidents with

1 14 fatalities occurring at Sago and Aracoma.
2 Governor Manchin approved this legislation the
3 following day.

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

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

17 The original Emergency Legislative Rule
18 filed by the Office of Miners Health Safety and
19 Training was on February the 1st, 2006, which
20 addressed storage caches of SCSRs, strobe lights and
21 lifelines, wireless communication devices, and
22 wireless tracking devices, which almost all required
23 purchase orders or plans within 30 days of
24 notification of approval of these devices by the

1 Director.

2 Of key importance and relevance was the
3 requirement in this version of the emergency rules
4 for 16 SCSRs per person in a section cache, in
5 addition to other SCSRs contained outby for
6 breathable air. I have included this as Attachment I
7 to our comments.

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

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

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

21 During this time, many concerned
22 individuals from labor, industry and technology
23 vendors were working and providing input to better
24 refine these emergency rules. Several of these

1 individuals and others began working with me as the
2 Acting Director and eventually were named as WV Mine
3 Safety Technology Task Force members.

4 There was also a great deal of
5 discussion regarding mine shelters after the
6 successful rescue of 72 potash miners on January the
7 30th, 2006 at the Esterhazy potash mine in
8 Saskatchewan, Canada.

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

22 The revised version of these emergency
23 rules dated February the 27th, 2006 provided for the
24 use of emergency shelters and chambers in lieu of 16

1 SCSRs per person on the section, which I've attached
2 as Attachment 2. This version of emergency rules
3 also required the Director to establish the Mine
4 Safety Technology Task Force within 7 days of the
5 effective date of the rules, with, again, three
6 representatives from labor and three from industry
7 and chaired by the Director.

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

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

22 As the Acting Director, I announced the
23 names of the members of the Task Force on March the
24 9th, 2006 and appointed Randall Harris as technical

1 advisor and facilitator. The group held its first
2 meeting on March 13th and met a total of 36 full days
3 between March 13th and May 25th of 2006. The Task
4 Force met in open public forum with experts from
5 industry, labor, MSHA, NIOSH and other regulators, as
6 well as academia at five different locations
7 throughout the State to facilitate participation in
8 the open public meetings. In addition,
9 representatives of the Task Force visited various
10 vendors, research institutions, and underground
11 mines.

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

24 A list of organizations consulted and

1 whose material was reviewed during Task Force
2 deliberations and writing of the report may be found
3 on pages 112-113 of the final report.

4 The resulting final rules approved by
5 the WV legislature may be found on the West Virginia
6 Office of Miners Health Safety and Training's
7 website, which I've included as Attachment 3. This
8 document outlines the requirements for emergency
9 shelters as it was primarily defined in the amended
10 emergency rules filed June 9th, 2006 with the West
11 Virginia Secretary of State's Office following the
12 public hearing.

13 This document also went through the
14 Legislative Rule Making Committee and was authorized
15 by the West Virginia state legislature. This
16 authorization was cited in Section 64-10-1(a) of
17 House Bill 2670, which was passed March 10th, 2007
18 and later approved by Governor Manchin on March 28th,
19 2007.

20 Again, the technical advisor and
21 facilitator was Randy Harris. The final Task Force
22 report, which was issued on May the 29th, 2006 may
23 also be found on the Office of Miners Health Safety
24 and Training's website, which I've included as

1 Attachment 4.

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

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

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

1 addressed.

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

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

19 The scenario did not address these
20 issues because there was complete agreement at that
21 time that nothing would be capable of surviving these
22 events in close proximity. The miners will have made
23 every attempt to exit and found all escape ways
24 impassable. As a last resort, they have been forced

1 to return to the shelter or chamber to await rescue.

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

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

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

22 After reviewing the proposed MSHA
23 regulation, I believe that MSHA has missed this
24 important point in crafting the regulation and

1 appears to be more interested in protecting the
2 shelter, rather than looking realistically and solely
3 at protecting the miner.

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

8 As you know, West Virginia is the
9 leading underground coal producing state in the
10 nation. This program has been in place since June
11 the 9th, 2006, and is viewed by some as the model
12 program in the industry, with many states accepting
13 it, including MSHA, for breathable air. This program
14 is nearing complete implementation and will probably
15 be completed by the end of MSHA's rulemaking on
16 refuge alternatives that end this year or early in
17 2009.

18 We've discussed many times that if we
19 have overlooked some aspect or applied some incorrect
20 logic that might endanger a surviving miner, every
21 single member would agree to work to change that
22 standard. We also agreed that changing standards
23 just to be different is unnecessary. This would
24 delay the implementation process and deployment of

1 shelters underground.

2 I am also very concerned about the
3 apparent lack of MSHA's communication with our state
4 in the initial drafting of these proposed rules.

5 In reading the proposed rule by MSHA,
6 there appears to be some conflicting statements on
7 the use of the a refuge alternative or shelter. On
8 page 34142, Section 705 -- or excuse me -- Section
9 7.501 it states that, quote, "Under the proposal
10 refuge alternatives could also be used to facilitate
11 escape by sustaining trapped miners until they
12 receive communications regarding escape options."

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

19 I personally know of no US coal miner
20 that is in favor of a refuge alternative being the
21 first place to go and discuss an escape strategy.
22 They should already know their strategy. I believe
23 that if the unit was deployed and systems activated
24 it would shorten the designed service time and I

1 strongly encourage MSHA to consistently refer to
2 refuge alternatives and their use as a last resort
3 option in instances that previously would have called
4 for barricading.

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

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

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

1 may be shorter.

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

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

23 I believe that it's important to note
24 that there are mainly two primary types of portable

1 shelters approved in West Virginia; inflatable and
2 steel or rigid units. There are advantages and
3 disadvantages to each in the areas of
4 transportability, simplicity of use in a wide variety
5 of seam characteristics and reported functionality.

6 MSHA should be as flexible as possible
7 in allowing mines and miners to select an option and
8 not be swayed as vendors try to sell their product
9 by, in some cases, criticizing their competitors.
10 It's also my opinion that in no way should MSHA force
11 the purchase of one shelter over another just because
12 it's available.

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

24 We conducted an extensive review of past

1 incidents where barricading may have been
2 implemented. In the final report we cite, "From 1940
3 to 1980 US Bureau of Mines reported that 127 miners
4 survived behind barricades while 40 died." Each
5 accident was unique and the reporting was not
6 consistent, making it difficult to draw statistical
7 conclusions. However, of those that discussed
8 duration, the maximum was 54 hours at the Belva No. 1
9 mine in 1954 and the least was 4 hours at the
10 Pocahontas 31 mine in 1957. The majority were in the
11 20-30 hour range. Based on its findings, the Task
12 Force set a minimum duration of 48 hours.

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

22 I point this out only to indicate that
23 there is a substantial safety factor in the present
24 96 hours and then as time increases, so does the

1 complexity of sustaining those trapped miners.

2 I believe that there have been
3 substantial changes in the number of mine rescue
4 teams since 2006, which will reduce the time for
5 response. There has been a substantial increase in
6 the number of SCSRs and their distribution along
7 escape ways. There have also been substantial
8 improvements in training so that miners better
9 understand their escape options and many other
10 improvements, which collectively will substantially
11 reduce the miners' need to barricade, as well as
12 reduce mine rescue response time.

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

23 These emergency materials include
24 boards, brattice cloth, nails, tools, et cetera, for

1 mine emergency situations. In an emergency, these
2 materials would be used for providing emergency
3 barricades and for controlling or restoring
4 ventilation controls, end quote. This was the
5 standard since the passage of the 1969 Mine Act, for
6 approximately 39 years.

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

21 While the original Task Force report
22 recommended that shelters be placed in crosscuts, we
23 deliberated that this may not be valid due to the
24 view that most incidents that would prevent escape

1 would occur in outby locations and, therefore, it was
2 not included in the final WV rules. We have since
3 discussed the probability of damage occurring through
4 normal handling trying to place them in crosscuts
5 being much greater than the probability of a miner
6 being capable of surviving an event that would damage
7 a shelter designed to withstand a 15 psi event.

8 We communicated this to Mr. Kohler at
9 NIOSH in writing, which I've included as Attachment
10 7.

11 I would like to request that MSHA
12 explain why they have deviated from their stated
13 requirements for breathable air to date of requiring
14 3 times purge air and the proposed requirement in
15 7.505(3)(i) on page 34168 of the proposed rules,
16 which states, quote, "The airlock shall be designed
17 for multiple uses to accommodate the structure's
18 maximum occupancy." This is vague and it should not
19 be.

20 If it is a refuge alternative rated for
21 30 people, does that mean that it should be capable
22 of being purged 30 times? If that's the intended
23 meaning, it's unreasonable. I'm also interested in
24 any physical tests or computer modeling that MSHA is

1 aware of that indicate the effectiveness of purging
2 on various size spaces, especially those greater than
3 50 square feet in area.

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

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

22 How does MSHA know what the expected
23 conditions within the refuge alternative will be?
24 Based on my understanding, a range of temperatures of

1 some quality -- quantity X with a range of relative
2 humidity readings of Y would result in an apparent
3 temperature of 95 degrees F. Miners certainly can
4 relate and understand this through their personal
5 exposure to conditions such as this and even higher
6 on hot humid days. I have personally heard many
7 "considered opinions" about the use of the apparent
8 temperature versus some other means. It is important
9 that miners be protected from heat stress and in West
10 Virginia apparent temperature is used.

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

20 I strongly encourage the agency to
21 invest in the necessary upgrades and more timely
22 delivery of its seismic technology and discuss the
23 current limitations of seismic detection in order for
24 working miners to better understand these

1 limitations. I believe that it should not be present
2 in the final rule unless MSHA is willing to obtain
3 the significant upgrades, test them and the testing
4 results be widely disseminated.

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

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

20 Given the past history of MSHA's rule
21 development, if that same historical process would
22 have been followed in these rules, it would appear
23 that MSHA would have been developing these rules at
24 the time WV was implementing its rules. It is also

1 important to note that the NIOSH evaluation studies
2 were being finalized after the shelters were being
3 placed in West Virginia's mines. If this is factual,
4 MSHA certainly, in my opinion, should have
5 communicated with the WV Office of Miners Health
6 Safety and Training regarding potential conflicts and
7 impacts of its proposed rules.

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

19 If MSHA is planning on de-rating these
20 units and will not change the location requirement to
21 language similar to, quote, "Within 2,000 feet of the
22 nearest working face," end quote. I personally do
23 not agree with the statement on page 34167 of the
24 proposed rule, which reads, quote, "MSHA acknowledges

1 that West Virginia and Illinois have laws and/or
2 regulations on refuge alternatives and has drafted
3 the proposed rule to minimize conflict with these
4 laws and regulations.

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

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

22 I believe that our process was
23 comprehensive, practical, and well founded and that
24 it greatly improved mine safety in the area of post-

1 event survival from where it was in 2005, and it
2 should not be delayed by conflicting federal
3 guidelines. I appreciate the opportunity to share my
4 concerns, observations and suggestions with you
5 today.

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

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

19 I would appreciate MSHA reviewing the
20 information and comments presented today and respond
21 to the requests made in a timely manner so that I
22 might submit additional written comments prior to the
23 closing date. I'm very concerned about the lack of
24 clear communication from MSHA regarding the impact of

1 the proposed rules on our progress to improving our
2 miners' safety, but am willing to work with MSHA in
3 looking at ways technology can improve miner safety.
4 Thank you.

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

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

19 Director Wooten and Mr. Dean have
20 already articulated the background of the West
21 Virginia law and the means by which recommendations
22 were arrived at and promulgated into rules. I will
23 not revisit those. Rather, I will predominately
24 focus on the processes followed during the

1 implementation of the law and highlight some aspects
2 of the many technical issues facing those challenged
3 with drafting the MSHA proposed rules. I will
4 supplement my remarks with written section-by-section
5 comments on the proposed rule following this
6 testimony.

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

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

22 Before my implementation observations, I
23 would like to expand upon Director Wooten's and Mr.
24 Dean's comments with observations from my time

1 advising the Taskforce and the West Virginia
2 rulemaking process that I believe are relevant to
3 your comparison of the West Virginia process to the
4 proposed federal rules.

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

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

17 The elevation of this subject to the
18 national stage has heightened the interjection into
19 the process of these external influences. It has
20 been detrimental to professional and timely decision
21 making of the body. Moreover, it limits its ability
22 to reproduce the progress of that first effort.
23 Despite obvious pressures, the MSHA career
24 professionals need to guard against the same.

1 My second observation is that the
2 Taskforce was focused on the mining conditions in
3 West Virginia. We did not attempt to develop
4 solutions that are universally applicable. Many
5 vendors and experts from outside the U.S. presented
6 forceful positions concerning, for instance, the
7 inability of a shelter to maintain internal
8 temperatures without mechanical cooling, which while
9 valid in many mining environments were not applicable
10 to the conditions in West Virginia.

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

22 My third observation is that comfort was
23 not and should not be the concern when setting
24 performance standards for emergency shelters. The

1 concept of shelters was approached with one
2 objective; isolate the miner from the toxic
3 atmosphere if and only if escape is not an option. I
4 along with those that worked through this viewed this
5 shelter as a big SCSR a miner could crawl into.

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

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

22 My fourth observation is that we did
23 indeed recognize the necessity to ensure that miners
24 occupying the shelter were not subjected to the

1 build up of life threatening temperatures due to heat
2 generated by their own bodies. However, in solving
3 one problem we did not want to create the unintended
4 consequence of adding an explosion hazard with large
5 battery packs necessary to operate air conditioning
6 once the power was turned off.

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

15 Under West Virginia mine conditions
16 inflatable shelters generally can provide a larger
17 surface area per occupant for a larger numbers of
18 occupants than hard-sided solutions. This smaller
19 size prior to occupancy increases the maneuverability
20 during normal operations, which has made them popular
21 in lower height mines that predominate in West
22 Virginia. While some still argue that hard-sided
23 shelters provide greater protection against secondary
24 explosions, the analysis of accidents done by West

1 Virginia and others have indicated the in the few
2 instances where secondary explosion occurs, those
3 affected were more often rescuers rushing to their
4 co-workers' aid than those that survived the initial
5 event. And I've lost my place.

6 MS. SILVEY: Shelters --

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

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

22 Transitioning to comments on the
23 proposed rule, I would like to highlight a few areas
24 of particular concern and, as stated, I will

1 supplement these with some 90 pages of detailed
2 written comments. I finished at midnight last night.

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

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

21 Consistent with this objective of a
22 shelter, West Virginia performance based standards
23 reflect the analysis of accident reports from over 40
24 years in which the survivors of the initial event

1 attempted to barricade. This review of the West
2 Virginia Bureau of Mines, NIOSH, and MSHA documents
3 revealed that in only one instance did miners survive
4 beyond 48 hours in barricades.

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

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

24 In a NIOSH report referenced in the

1 proposed rule on the evaluation of shelters, NIOSH's
2 comments were not included. Those comments offered
3 explanation as to why some of the key values exceeded
4 the levels anticipated. Having been personally
5 involved with NIOSH's development of the evaluation
6 protocol leading to and the discussions after the
7 evaluations, I must point out that the comments
8 accompanying that spreadsheet, while brief, are
9 critical to understanding the results. However, even
10 though those brief notes -- even those brief notes do
11 not reflect the testing difficulty that was more
12 often the root of the failure of the product
13 evaluated.

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

23 While from an implementation basis, West
24 Virginia considered this testing informative, we did

1 not then, nor do we now consider them representative
2 of the performance of the shelters involved. We
3 request that MSHA's reference to this document in
4 this rule or future documents be omitted or
5 references to the intent of the evaluations, the
6 resolution of all the issues raised and the
7 limitations of their significance be included.

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

14 Of the over three dozen companies that
15 contacted West Virginia about approval, only six made
16 it through the approval process to the last step and
17 to date only four have been issued approvals. The
18 last step involved a multi-hour grilling patterned
19 after the PhD thesis defense panel in which they
20 defended their assertions that their shelters -- of
21 their shelter's ability to meet the West Virginia and
22 the MSHA PIB 07-03 standards. The panel consisted of
23 several university professors with relevant
24 experience and myself.

1 Early in the evolution of the West
2 Virginia approval process it was decided that human
3 subject testing would not be necessary nor was it the
4 best proof of viability. During the study of the
5 joint NIOSH/MSHA approval process of SCSR's, we
6 concluded that manufacturers spent significantly more
7 time debating with the agencies which human subjects
8 would be used in the approval testing than preparing
9 their product for the test. The result was that the
10 human subject was often the one that best fit the
11 capabilities of the devices instead of the one that
12 was most representative of the mining population that
13 would have to use the device.

14 When discussing how a human shelter test
15 might be conducted the conversation inevitably came
16 back to who should be in the shelter and who would
17 make that decision. In addition, we struggled with
18 how we would know that the participant's metabolic
19 characteristics would be representative of those
20 miners that might actually use the shelter in an
21 emergency. However, mostly we struggled with how we
22 could get participants to duplicate the mental and
23 physiological conditions of those that would have
24 just survived an explosion, unsuccessfully tried to

1 escape and were now facing death.

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

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

23 Two months ago, I participated in a
24 demonstration in Huntington, Utah with the Modern

1 Mine Safety Company. With the assistance of
2 observers from the University of Utah mining
3 department, 26 volunteers, including myself, occupied
4 a West Virginia approved shelter. Simulating the
5 ambient mine temperatures used in the West Virginia
6 approval process, the interior temperature stabilized
7 at an apparent 84 degrees Fahrenheit within 90
8 minutes. We conducted -- continued the test for an
9 additional 90 minutes to ensure that the temperatures
10 would not change. During that time, a paramedic
11 checked the 26 occupants hourly. The only change
12 noted was a decrease in pulse and blood pressure.

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

23 While debate is valid concerning if the
24 volunteers were representative of the mining

1 population and was their metabolic rates
2 representative of miners who had tried to escape, the
3 fact is that the results tracked exactly with the
4 computational values developed during the West
5 Virginia approval process. MSHA and NIOSH were
6 invited to the test but the staff were told by
7 management they could not attend because it involved
8 human subject testing.

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

22 This brings me to a subject that is
23 covered in the preamble but not in the proposed
24 rules. West Virginia moved first. West Virginia

1 reached out to MSHA throughout the process. West
2 Virginia conducted a comprehensive approval process.
3 West Virginia was never notified by MSHA formally or
4 informally that neither the standards nor the
5 approval process it followed were flawed.

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

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

23 On multiple occasions, I along with
24 others have expressed concern to MSHA and NIOSH

1 officials regarding the underlying assumptions behind
2 PIB 07-3 that now have been carried forward into this
3 proposed rule. The assumption that a barricade can
4 be erected in a toxic atmosphere, purged with the use
5 of pre-positioned compressed air bottles is not
6 valid. Concentrations of carbon monoxide are likely
7 to be present at levels significantly higher than
8 that supporting human life.

9 Tests conducted by several manufactures
10 and even preliminary evaluations conducted in a
11 simulated crosscuts by MSHA itself demonstrated the
12 difficulty of purging a significant concentration of
13 a gas from a space using conditions in this PIB.
14 West Virginia commissioned a computational fluid
15 dynamics model of the conditions laid out in PIB 07-
16 03 and found it not possible to purge a space of
17 toxic levels of carbon monoxide following the
18 suggestions in this document.

19 Using the computational model, we were
20 able to simulate indefinitely full compressed air
21 bottles. Even when we did that and allowed air to
22 enter for 50 minutes, three times the duration
23 possible with the supplied air, there was still large
24 areas within the space with toxic levels of carbon

1 monoxide. Yet having reported these results to MSHA,
2 this option remains in the proposed rule. In the
3 strongest terms possible, I urge that this option be
4 omitted in the final rule.

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

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

23 In closing, I want to say that I make
24 these comments under no illusions that they represent

1 the only or best conclusions to the issues I raise.
2 As one who has been intimately involved in the
3 processes leading to this point, I know that no one
4 has all the answers and that the best solutions are
5 those resulting from the most open and inclusive
6 evaluation possible.

7 While the timing imposed by the 2006
8 MINER Act may have abbreviated the typical MSHA rule
9 writing process, the subject has long been known to
10 the agency. The Federal Coal Mine Health and Safety
11 Act of 1969 and the Federal Mine Safety Health Act of
12 1977 had also required MSHA to review the subject of
13 shelters and promulgate appropriate rules.

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

23 MS. SILVEY: Thank you.

24 MR. WOOTEN: Just a couple of closing

1 comments, if I may. As the panel can readily see,
2 there are some very serious concerns with the
3 proposed regulation. In fact, we did not see that it
4 clearly represents a safety improvement over that
5 which the Task Force in West Virginia has developed
6 and promulgated.

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

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

22 As you can see, West Virginia coal
23 operators and operations are well on their way to
24 compliance with the Task Force requirements. As was

1 previously stated, it is truly unfortunate that MSHA
2 did not request input from the sovereign states,
3 especially those states who have already dealt with
4 many of the issues that you are addressing in this
5 proposal. This is something that, frankly, I just
6 cannot understand.

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

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

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

21 First of all I have a few comments to
22 make and maybe we can accomplish what is our most
23 important purpose here today, and that is to advance
24 the rule making process in a manner that -- as I said

1 in my opening statement, that will deliver a rule
2 that provides the most effective safety hazard
3 protection for miner's in a manner, and I meant that,
4 that is responsive to the needs and concerns of the
5 mining public.

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

21 The MINER Act specifically says for
22 NIOSH to conduct research and for MSHA to issue its
23 regulations based on the NIOSH report, to the extent
24 possible. And I think we did say that in the

1 preamble that we tried to be consistent with the
2 NIOSH report. In a few areas we were different. We
3 considered the NIOSH recommendations and we
4 considered -- just like you three gentlemen said, we
5 considered the many conditions in the nation's
6 underground coal mines and we made a reasoned agency
7 position that in some areas we would be different
8 than NIOSH. Well, we tried to explain that.

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

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

24 You are right. West Virginia moved and

1 took the lead in the area of underground shelters
2 and, as an agency, appreciate that. So with that
3 being said, and knowing that we have -- you know, I
4 knew today when I came here today that we have some
5 issues that have been raised in the movement here
6 already, and some issues that we have to resolve.

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

22 Maybe we didn't as awkwardly write our
23 preamble as you wrote your statement here, Mr.
24 Harris. And you said, "Until conditions allow escape

1 or rescue could arrive." I think that we meant no
2 other thing than that. So that nobody leaves without
3 understanding that that was our -- that's our
4 agency's principle.

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

12 MR. WOOTEN: Yes, you will receive
13 comments from the Office of Miners Health Safety and
14 Training. These are not comments of the Task Force.
15 There were members of the Task Force who did not want
16 to offer verbal comments today. These are comments
17 of the co-chairman and the individual who chaired the
18 Task Force through deliberations of our regulation
19 56-4, and the technical advisor to the Task Force.

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

22 MR. WOOTEN: You will receive -- You
23 will receive written comments from the Office of
24 Miners Health Safety and Training, which will include

1 any of the comments that you heard today.

2 MS. SILVEY: Okay.

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

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

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

21 MR. HARRIS: Well, we're not quite sure
22 what the NIOSH testing requirement is. The
23 evaluation protocol, as it was called, was just that,
24 it was a protocol to figure out, among other things,

1 how you test shelters. They -- The issues that arose
2 during those initial evaluations -- and they wrote
3 that letter out before all of the issues were
4 resolved -- have, indeed, all been resolved and I
5 have emails from Eric for each and every one of those
6 issues.

7 MS. SILVEY: Okay.

8 MR. HARRIS: So I mean --

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

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

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

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

24 MR. DEAN: Yes, ma'am.

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

6 MR. DEAN: I think they'll --
7 probably by the end of the day, you'll hear a great
8 deal of information. And, again, in my comments I
9 point out that we left that as a performance based
10 standard. We did not specify that. In our
11 deliberations we decided to allow the temperature and
12 space necessary to store items within the shelter to
13 dictate size.

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

19 MS. SILVEY: Yeah, I got that.

20 MR. DEAN: Okay. That's totally
21 wrong. There is a South African standard issued by
22 their director of mines there that comes in at around
23 6 and a half square foot per person. I truly believe
24 that -- and just de-rating -- and, again, is that a

1 rumor or are you considering doing that? I think --
2 I think people in this room, people in this industry
3 need to know the answer to that, because if you're
4 planning on de-rating existing units, that's totally
5 unacceptable. And, again, this is my personal
6 opinion. Totally unacceptable based on some -- I
7 know you're basing this on NIOSH's report. If you
8 follow through the references that were used, there
9 was a 1971 Westinghouse study -- I forget -- I think
10 it's on Page 34 -- that lists their references, and
11 if you go back and check those references you'll find
12 a 1958 or 59 fallout shelter recommendation for
13 families.

14 MS. SILVEY: Yeah, I understand.

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

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

24 MS. SILVEY: Okay.

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

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

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

1 and I'll do that.

2 Then on the other hand you get people
3 who say, "You just tell me, 'Make a chocolate cake.'
4 Don't tell me how to make it. You tell me how to
5 make it and I'll make you the best chocolate cake."
6 And somebody else would say, "You tell me exactly
7 what you want, because somewhere along the way I'll
8 go wrong. I won't put the right sugar in," or "I
9 won't put this in."

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

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

1 that we have.

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

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

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

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

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

24 MR. WOOTEN: There are three. There are

1 three types that have been delivered in West
2 Virginia. Do you want to know the manufacturer?

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

5 MR. WOOTEN: They're all prefabricated.

6 MS. SILVEY: They're all prefabricated.
7 That's right, because you only --

8 MR. WOOTEN: That's correct.

9 MS. SILVEY: Your law is prefabricated.
10 Right. Okay. I've got one more comment.

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

23 So, you know, you all came and we
24 appreciate your comments. I felt obligated to say

1 that.

2 MR. WOOTEN: Ms. Silvey, I think our
3 concern here is just mainly as it associates or
4 refers to de-rating of the existing shelters that
5 have been approved by the Task Force. In other
6 words, are we going to be -- are these shelters going
7 to be grandfathered in total or are they going to be
8 -- if they're built for 20 individuals, designed for
9 20 individuals, is that going to be acceptable to
10 MSHA?

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

14 MR. WOOTEN: Very good. Very good.

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

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

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

24 (WHEREUPON, a recess was

1 taken, after which the following
2 proceedings were had.)

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

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

10 MR. KENNEDY: Good morning.

11 MS. SILVEY: Good morning.

12 MR. KENNEDY: My name is Bill Kennedy,
13 K-e-n-n-e-d-y. I am the president and chief
14 executive officer of Kennedy Metal Products. We
15 manufacture mining ventilation equipment and the
16 Kennedy chamber. It, incidentally, is one of the
17 West Virginia approved chambers, has been deployed in
18 the State of West Virginia, Illinois, Indiana and a
19 number of other states.

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

22 MS. SILVEY: We do.

23 MR. KENNEDY: Good. There are a few
24 things that I thought probably should be reiterated

1 this morning. Most of what I'm going to talk about
2 is in those written comments that you have. I'd like
3 to give you a little bit of background about our
4 company and the development of the chamber.

5 My entire career has been in mining
6 ventilation and visionary related to it. The Kennedy
7 chamber was sort of a natural for us, really, from
8 the concepts that would have been evident since about
9 1969.

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

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

23 Some things that I have written down
24 here that are of concern are related mostly to the

1 practicality of what may find its way into the final
2 rule. For instance, there are some time periods
3 given in there where you have ten minutes to get a
4 chamber ready to go, twenty minutes to get it purged
5 and so forth.

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

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

24 I certainly agree with the West Virginia

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

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

21 I would like to emphasize that the
22 temperature standard need not be the Stedman
23 reference which is, in my opinion, a nonsensical
24 temperature and humidity chart best used by TV

1 weathermen and instead substitute the ISO Standard
2 7243. That is, indeed, the world standard for
3 temperature measurement. It's used by the U.S.
4 government extensively. The Armed Forces developed
5 it. It is an OSHA standard, for instance, for people
6 in factories and tight spaces that are hot and so
7 forth. And it is really applicable because it takes
8 into account all of the factors involved.

9 The Stedman chart, for instance, gives a
10 number of 150 degrees for normal summertime
11 conditions where I live in Illinois. There is no
12 time in Illinois when farmers cannot work in the
13 field or when the construction workers cannot work
14 outside, yet Stedman reports that with a number of
15 150.

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

22 This is important for a number of
23 reasons. When you look at chamber design, as I think
24 we're all starting to realize, you're dealing with a

1 number of engineering compromises. You're not going
2 to have the best of everything, and that's really
3 typical in most engineering work.

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

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

22 I think you may be starting to see now
23 how these things are start running into each other;
24 one is dependent upon the other.

1 Between the difficulty in moving a
2 chamber around and the space available in the mines,
3 which varies greatly from mine to mine, depending on
4 seam thickness and some other things, and the
5 temperature restraints in the rock, which is
6 basically going to tell you what you're going to be
7 able to radiate away from the chamber and, therefore,
8 what the thermal dynamic characteristics of the
9 chambers must be, you have a lot of design criteria
10 made for you.

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

16 If you make the chamber bigger,
17 arbitrarily, because of comfort of some other
18 criteria, you are no longer in line with the purpose
19 that you had, you know. We need to make these
20 chambers so that we give the maximum survival
21 characteristic that we can. Comfort needs to be down
22 the line considerably. We need people to survive; we
23 don't need them to be in a country club. If we could
24 have a country club, we would want it, but in this

1 case we must balance that with the engineering
2 considerations that we have, the space constraints in
3 the mine and so forth.

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

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

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

24 If you follow that one step further and

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

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

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

22 In the proposed rule there are
23 statements about putting the chambers in cross-cuts
24 and not having them in the main entrance. While it

1 would probably be advantageous to not put them around
2 the seals or in a direct line with sealed areas,
3 there is no real logic to putting them in the cross-
4 cuts and saying that you have made everything better.

5 The difficulty in maneuvering them in
6 and out of the cross-cuts is hard on the chambers,
7 it's easy to pull them into the corner of the pillar
8 and damage them and so forth. It requires a lot more
9 handling, probably doubles the amount of handling
10 that the chamber sees. And I suspect with adequate
11 end armor on a chamber, which is something that we
12 offer, any concerns about flying projectiles and so
13 forth could be adequately handled.

14 In thinking about all of that -- and to
15 us, you know, this is just something we write in our
16 specification, that the chamber has to be in a cross-
17 cut or it does not have to be in a cross-cut. It's
18 not a big deal to us. It doesn't make any difference
19 too much in the design of the chamber. But from a
20 practical point of view from the people that may have
21 to use the chamber, you are probably as well off to
22 have it moving along with the long wall train or
23 sitting in a main entry, as reasonably far back from
24 the face as you would be if you would put it in a

1 cross-cut. The disadvantages of having to maneuver
2 it in and out and provide that space for it probably
3 equate the advantages you would get, if any, from it
4 being out of the direct line of ignition forces.

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

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

22 Really, you had that provision available
23 in the 1969 law. This could improve it, certainly,
24 but it's not practical to expect us to be able to go

1 to a space and do a bunch of work getting purged of
2 CO and then be able to stay there for a long period
3 of time.

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

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

22 As a matter of fact, I took one Kennedy
23 chamber and put it through a 20 psi and 36 psi
24 explosion twelve times and that chamber would still

1 function. You know, and to me, to say that thing is
2 going to have only a ten-year life, of something the
3 mining industry has a significant investment in, is
4 kind of foolish.

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

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

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

18 MR. KENNEDY: Yes. Yes.

19 MS. SILVEY: -- footnotes. It would be
20 footnotes 1 and 2. I think in my opening statement I
21 said that we should have referenced the NIOSH report
22 and not the Stedman reference, so that was an
23 incorrect reference. So I wanted to -- And for all
24 of you, I mentioned two things in my opening

1 statement; one was the reference to the Stedman
2 report, and we had two references in there, and that
3 was an incorrect reference; and the other one was to
4 a Department of Defense standard that we cited to, an
5 incorrect reference -- not an incorrect but we more
6 specifically included a specific reference in my
7 opening statement. But as I said to each of you, so
8 that you don't have to take these specifics down, the
9 transcript will be on the website in about a week so
10 you can see exactly what's included in the opening
11 statement, as to the correct reference. So that was
12 one thing I wanted to say.

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

1 in one of your manufacturer's recommendations?

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

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

19 And I think that we need to be thinking
20 in terms of numbers like that. You need to really be
21 able to -- by the time you get to that thing, it
22 needs to be deployed and ready to go, in my opinion.
23 If you -- I am terribly afraid that sometime in the
24 future we're going to have some kind of event where

1 people are trying to -- you know, they have already
2 tried to get out, they have already used up a lot
3 resources. They may have gone some considerable
4 distance before they found out, you know, they
5 couldn't go any further and then they come back.
6 They have used an awful lot of the capability that
7 they have and then they get, you know, to the refuge
8 location and if they've still got a bunch of work to
9 do, they've got a problem.

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

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

20 MR. SHERER: It's the 18th.

21 MS. SILVEY: The 18th. Thank you. I
22 knew it wasn't the 8th. August the 18th. And that
23 is the training for miners. They made the comment
24 that they didn't think we should allow them to -- the

1 requirement that they be exposed to expected heat and
2 humidity. In terms of -- I assume, now, that you
3 have some training materials that come with your
4 unit.

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

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

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

21 So, you know, when they're going in
22 there, turning the knob to turn on the oxygen -- and
23 in the Kennedy chamber, that literally is all you do,
24 you turn a knob on a flow meter, and that's it,

1 you're ready to go right then -- the action of
2 hanging CO₂ absorbing curtains and so forth, all of
3 those things are done relatively quickly when you
4 first go in there. You may be under considerable
5 duress, but it won't be because of the atmosphere in
6 the chamber.

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

14 And did I answer that adequately?

15 MS. SILVEY: I guess what I want to
16 make sure that everybody here does is comment on the
17 requirements that we had in the proposal, whether you
18 agree with them or whether you disagree and whether
19 you have any alternatives. I'm not -- I don't know
20 that -- I would say, I guess, that I'm not sure you
21 answered it exactly. I think I heard West Virginia
22 clearly say that they didn't think -- they disagreed
23 with our proposed requirement that during the
24 training miners being in there be exposed to expected

1 heat and humidity. They thought that we should not
2 do that, there was no need to do that.

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

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

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

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

21 MS. SILVEY: For everybody, I just want
22 you to say -- when you give us your comments, you let
23 us know what your -- if you disagree with us -- we
24 have a maximum of ten years for a prefabricated and

1 five years for a component. If you disagree with
2 that -- because that's another thing. One of the
3 things I raised in the opening statement, in that
4 myriad of questions I raised, about 15 or 16,
5 something like that, I did ask that we ask for
6 further comments on the estimated service life of the
7 refuge alternatives and the components. And
8 obviously, whenever we ask for comments and you
9 provide us comments, if you would please include, you
10 know, your rationale, your suggestion, but why you
11 believe -- why you are suggesting what you're
12 suggesting.

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

15 MS. SILVEY: Yes.

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

1 of the WVG, the ISO standard.

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

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

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

14 MR. KENNEDY: Yes, sir.

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

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

22 MR. EPPERLY: Yeah, I saw that. Of
23 course, they had a range, also. They had two
24 different numbers. They had six and a half, and they

1 also used 9 to 12.

2 MR. KENNEDY: Yes. And I was talking
3 about the minimum number. To go into that a little
4 more deeply, and maybe it's important that this be
5 done, what we proposed and the way that we would
6 normally specify a Kennedy chamber for a given mining
7 operation, is to first determine the rock
8 temperature, the ambient rock temperature.

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

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

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

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

18 Now, the reason I started on this is
19 because we have two standards. One is for mines that
20 do a hot seat shift change. That is when the next
21 shift comes to the face before the working shift
22 leaves. And, therefore, you have twice as many
23 people at the face at that time. So the chamber
24 capacity has to be sufficient for all of those people

1 under the West Virginia standard, and there's nothing
2 wrong with that.

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

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

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

1 of the seat that is in the aisle.

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

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

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

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

23 MR. KENNEDY: Yeah, but West Virginia
24 doesn't have that requirement.

1 MS. SILVEY: I understand that. That's
2 what I'm trying to get at.

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

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

11 MR. KENNEDY: That is very close to the
12 6.5 square feet.

13 MS. SILVEY: Okay. Okay.

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

16 MS. SILVEY: Okay.

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

1 feet, however, go past each other, so there's some
2 economy in space in that center aisle that is used by
3 both sides.

4 We did quite a bit of ergonomic work
5 regarding the design of the seats, in particular the
6 seats in low chambers. And what actually becomes
7 important and what is the difference between sitting
8 in an airline seat and sitting in a chamber is that we
9 considered it critical that the guy be able to stretch
10 his legs out. That's what gets you in sitting in the
11 airline seat for too long, you know, you can't put
12 your legs out straight.

13 So in all arrangements we used the
14 square footage from one guy as part of the square
15 footage for the other guy, so the six and a half, you
16 might say is a little bit bigger number than that,
17 even though the space does not exist for the chamber
18 because your legs can all occupy the same space as you
19 stretch out and move around.

20 MS. SILVEY: Okay.

21 MR. KENNEDY: Okay. Thank you very much.

22 MS. SILVEY: Thank you, Mr. Kennedy.

23 Our next speaker will be Chris Hamilton, West Virginia
24 Coal Association.

1 MR. HAMILTON: Good Morning.

2 MS. SILVEY: Good morning.

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

12 We appreciate the opportunity to comment
13 on your proposed rule. We would initially note for
14 the record today that no other state is impacted quite
15 the same as the State of West Virginia as it relates
16 to your proposed rule, and you've heard that already.
17 You've heard that for a variety of reasons; namely,
18 because of the impact in the number of underground
19 operations we've had and, secondly, and perhaps more
20 pertinent to this rule making, West Virginia has
21 mandated refuge chambers over two years ago now and
22 today are nearly full -- or nearing full
23 implementation, with over 90 percent of the state's
24 280 underground mines expecting to be equipped with

1 shelters by the end of the year and a near 100 percent
2 compliance -- or 100 percent compliance, rather, in
3 early 2009.

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

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

18 Furthermore, it was the same rational
19 basis, combined with all the positive progress made in
20 this home state here in West Virginia, that prompted
21 Senator Byrd to advance the appropriations language to
22 expedite the deployment of shelters in all underground
23 mines throughout the country. We think the
24 congressional record is clear with Senator Byrd's

1 quest to extend the same level of miner protection
2 that exists in West Virginia to all other states.

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

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

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

18 We're also working in an expedited
19 manner on proximity devices and have reached out to
20 MSHA on numerous occasions and NIOSH on numerous
21 occasions to come work with us today. Don't wait
22 until we're on the verge of implementation, so that we
23 can learn from one another, so that we can factor any
24 concern that each of had into that final work product.

1 Again, we can't express that, we can't
2 urge your participation -- I'm talking about real
3 underground participation, where we roll up our
4 sleeves and go underground together and really
5 ascertain the operational issues associated with these
6 devices so as to avoid a situation we're in exactly
7 today as it relates to refuge shelters.

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

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

24 I've heard several questions. I've

1 heard several responses. I would like to stop for a
2 minute and perhaps engage you on that important issue.
3 The fundamental question that has not been answered is
4 will these units be unequivocally approved? Will a
5 35-man unit I have underground today be a 35-man unit
6 at this time next year or the years after?

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

22 Now, I say that that's our intent and I
23 will say that to you today. There are no guarantees.
24 I've known a long time ago, there are no guarantee of

1 anything. So if the final rule comes out and it's
2 different than what I said here today, I don't
3 guarantee, but at this point in the rule making
4 process, that's MSHA's position on this.

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

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

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

22 MS. SILVEY: I didn't say that.

23 MR. HAMILTON: -- and what creates a
24 concern for us is that we're way ahead of the curve,

1 we have a lot of shelters already deployed in
2 underground mining operations, and they meet the
3 requirements of law and they provide protection for --
4 adequate protection for every single person likely to
5 be in the working area underground. Those are there
6 today.

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

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

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

23 MS. SILVEY: Okay.

24 MR. HAMILTON: That's the point. That's

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

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

8 MR. HAMILTON: You know, we all laughed
9 two years ago when someone suggested that every coal
10 miner have self-rescuers on. If we take your law as
11 proposed, worst case scenario, coupled with the West
12 Virginia law, we will have a shelter in by 1,000 feet,
13 we will have a second shelter between 1,000 foot and
14 2,000 feet, and if we de-rate it, based on the science
15 that sustains x amount of people in a submarine for x
16 amount of days or weeks, if we base it on the science
17 that drove the construction of family bomb shelters in
18 the fifties, which is solely and exclusively
19 predicated on comfort not survivability, then in that
20 worst case scenario we have one in by 1,000 feet, we
21 have one, two, maybe a third out by 1,000 feet or
22 between 1,000 feet and 2,000 feet. That's our
23 concern.

24 MS. SILVEY: I appreciate -- I hear you.

1 Believe you me, I hear you. I heard Director Wooten.
2 I heard him and I heard you, and that's why I want to
3 assure you that we will --

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

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

10 MR. HAMILTON: It's taken --
11 Understand -- Understand that we've displayed real
12 excellent leadership, and it's been a state program.
13 Director Wooten was right on --

14 MS. SILVEY: And we appreciate that.

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

22 Now, we had a problem. We had a problem
23 and we still have a problem we're beginning to work
24 through. You know, there's a time to debate, there's

1 a time to argue and there's a time to move forward.

2 MS. SILVEY: Right.

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

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

19 It's taken a lot of time, energy and
20 effort to recondition thousands miners that these may
21 be a viable resource. Now what we're doing by setting
22 a different standard than the one that exists in West
23 Virginia, we're saying, "This one here, the new
24 standard promulgated under MSHA rule, is a superior

1 unit," or conversely, "This one that we have in place
2 and have had in place here in West Virginia for two
3 years now might not be very good. It might not be
4 fully acceptable in that state. So we're going to
5 have good units and bad units and it's going to
6 destroy -- it's totally going to eradicate the
7 positive change that's been made here over the past
8 several months. And it's taken a lot of work and
9 we're still not there.

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

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

21 With respect to location, again, to
22 avoid this apparent, glaring problem, you simply say
23 that the chamber must be within 2,000 feet. That
24 would accommodate the West Virginia law. Where they

1 need to be in a shelter or a breakthrough, again, I
2 think we need a little more experience. We need some
3 underground experience from people that handle these,
4 work with these.

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

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

23 Again, I think the data, the historical
24 studies will support inby 1,000 feet as well as outby

1 1,000 feet. We have petitions here in West Virginia,
2 site specific petitions that have been submitted by
3 management and labor to move these shelters out to
4 5,000 feet. So they're not moving them every week
5 like they're moving the power stations and
6 transformers, tailpieces and subjecting them to the
7 rigid conditions of moving them repeatedly
8 underground.

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

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

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

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

22 MR. HAMILTON: I think you've answered
23 the main concern that we have. I think you've
24 attempted to answer. We hope that the entire agency

1 shares in that concern or in that issue. We just --
2 This de-rating of it, you're going to hear from some
3 manufacturers on that, how the cubic footage, the
4 square footage requirements de-rate those systems.
5 And if it was necessary for survival, I think we would
6 all be holding hands with you, suggesting that we, you
7 know, embark upon such a requirement, but when we find
8 nothing as it relates to survivability and its only
9 basis is derived from comfort. As I believe Mr.
10 Kennedy indicated or one of the previous speakers,
11 that should be way down on the list, particularly when
12 that increased space compromises the fundamental
13 purpose of survivability and the integrity and
14 maintaining the integrity of these units.

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

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

24 MR. HAMILTON: You're welcome.

1 MS. SILVEY: Our next speaker will be
2 Jack McVey, Lifepod International.

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

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

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

19 As the inventor, developer, principal,
20 officer and spokesperson of the Lifepod Emergency
21 Systems, which is a part of Lifepod International, I
22 might tell you that the night before I named the
23 company I had read Senator Obama's Audacity of Hope,

1 so maybe that's where the Lifepod International came
2 from. But we always have hope.

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

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

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

20 And now envision, if you will, that the
21 miners have gathered at the Lifepod, which is a series
22 of cylinders of breathable air, all connected,
23 obviously, by stainless hardware to a centralized air
24 control panel, from which emanate throughout the

1 shelter, which is a in cross-cut, four mounted balls,
2 each of which five miners can plug into, so there are
3 20 miners in this particular version, which is the 16
4 miner version.

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

8
9 I join others in this room to thank you
10 for holding one of your important public hearings in
11 West Virginia, which has a rich tradition of
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20 of cylinders of breathable air, all connected,
21 obviously, by stainless hardware to a centralized air
22 control panel, from which emanate throughout the
23 shelter, which is in cross-cut, four mounted balls,
24 each of which five miners can plug into, so there are

1 20 miners in this particular version, which is the 16
2 miner version.

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

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

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

22 The future Lifepod, by the way, would
23 handle a Quecreek problem, so this would be with an
24 SCBA mask, which is now a scuba mask.

1 The Lifepod has the distinction of
2 probably being the only refuge system that has been
3 vetted by NIOSH, in that I had to go before their
4 National Personal Protection Laboratory for
5 respirators. I went before Doctor Heinz Ahlers, the
6 chief of that particular branch, and then he took me
7 before some nine or ten experts in respirators and
8 they discussed the merits of the system.

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

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

21 So, basically, that is what we're using,
22 a system that has been approved by NIOSH. We've
23 worked closely with Tri delphi a Group. They've seen
24 the product. It's been through a task force three or

1 four times. We continue to work toward an approval
2 process.

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

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

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

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

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

24 And certainly, in terms of the proposed

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

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

19 I just want to speak specifically to one
20 section, Section 7.506, Breathable Air Components, at
21 Page 34151. This section under Paragraph (g) with its
22 following four subparagraphs almost exactly describe
23 and define the Lifepod Emergency System. I recommend
24 that the paragraph specify the supplied air respirator

1 (SAR) 13F designation. From working closely with
2 NIOSH we came up with more specificity as I had to do
3 for the type of respirator that must be used. This
4 designation enables a miner to escape from a hazardous
5 environment because of the system designed full-face
6 SCBA mask with the required hip pack air cylinder.

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

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

24 Perhaps the respirator breathing

1 apparatus used with the breathable air component
2 system should be relocated in the rule, along with the
3 exception, so there's no disjointedness in
4 interpretation of this important section.

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

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

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

20 Thank you very much.

21 MS. SILVEY: Thank you.

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

24 MR. McVEY: It is.

1 MR. SHERER: What's the average air
2 consumption that you're basing this on?

3 MR. McVEY: The air consumption is
4 based on the manufacture of a mask. We're using
5 MSHA's PIB of 703 and their definition of minimum
6 oxygen requirements, and based on that, we're giving
7 60 percent more air than the MSHA allowed.

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

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

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

18 MR. McVEY: Well, I think that you're
19 certainly reasonable to give 12 and 1/2 cubic feet, if
20 you're free flowing it through a four inch line into
21 an open shelter that's been barricaded, but it's
22 certainly, absolutely not necessary if you're
23 receiving 5 liters of oxygen per minute, which is 60
24 percent more than MSHA's minimum requirement.

1 MR. SHERER: Now, your system is
2 basically one breath and then the exhaled carbon
3 dioxide is dumped to the surrounding atmosphere, I
4 would assume.

5 MR. McVEY: That's correct.

6 MR. SHERER: Thank you.

7 MS. SILVEY: Thank you.

8 MR. McVEY: Thank you.

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

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

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

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

22 MR. ROSCIOLI: Thank you. My name is
23 Ed Roscioli, R-o-s as in Sam, c as in Charlie, i-o-l-
24 i. It's an Irish name. I am with ChemBio Shelter,

1 Inc. and I thank you for this opportunity to express
2 my views in the proposed regulation.

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

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

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

17 First of all, prior to the test we
18 offered to go to Lake Lynn and train the NIOSH people
19 on how to operate our shelter. They declined.
20 Secondly, when we got to Lake Lynn with the shelter,
21 they realized that they hadn't considered a
22 particular issue and wanted us to do a design change
23 on the spot right before this test. What the issue
24 was was the normal plumbing configuration of the

1 shelter is that the oxygen would go and exhaust into
2 the interior of the shelter, obviously because that's
3 what it needed, but during the test NIOSH didn't have
4 any people in there and they didn't have any way to
5 use that oxygen up, so they wanted us to reroute our
6 plumbing so that instead of going into the shelter,
7 it's just exhausted out into the mine atmosphere so
8 that the oxygen in the shelter wouldn't get too high.

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

14 Another thing I wanted to mention was
15 our marching orders were to come up to Lake Lynn,
16 deploy the shelter, set up the equipment and then get
17 off site. We were not to be around during the
18 testing. So we deployed the shelter and we found out
19 after the testing that one of the first problems they
20 had with our shelter was the NIOSH people went into
21 the shelter and knocked over the scrubbing curtains
22 that we used to scrub carbon dioxide into puddles of
23 water on the floor. Again, this is partially due to
24 lack of training.

1 I want to read you now the email, which
2 is a follow-up of the testing that was done at NIOSH.
3 This is an email from Eric Bowyer of NIOSH addressed
4 to Randy Harris, who you heard earlier today talk.
5 It was sent on Thursday, January 3rd, 2008 and a
6 carbon copy to Jeff Kohler and Rick Rutledge.

7 Subject: Oxygen flow test results.
8 There are two attachments, one is the oxygen rate
9 data in Excel spreadsheet format and the other one is
10 the oxygen rate data in a Word document. The email
11 says:

12 "Randy: This is all the data from the
13 96 hour test of the ChemBio ALD redesigned oxygen
14 delivery system. The data indicates a constant flow
15 rate that lasted for 96 hours. Thus, it appears that
16 they have resolved the problems noted during our
17 evaluations. The three main problems noted during
18 our evaluations have now been addressed. They were:
19 (1) The curtain stands have been redesigned and are
20 sturdier and less likely to tip over; (2) the patch
21 kit now includes several sizes of mechanical patches
22 that will fix main air leaks more efficiently than
23 either duct tape or rubberized tape; (3) the oxygen
24 flow rate has been stabilized and is of sufficient

1 quantity to last for 96 hours at the rate of
2 capacity.

3 I apologize for the slowness of getting
4 this information to you. If there is any other
5 information you need concerning these items, please
6 email me at ebowyer@cbc.gov or call me at 412-386-
7 6518. Eric Bowyer."

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

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

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

22 On Page 34142 at the bottom of the
23 third paragraph it says, "Air monitoring would
24 provide occupants in the refuge alternative with

1 devices to measure the concentrations of oxygen,
2 carbon dioxide, carbon monoxide, methane and other
3 harmful gases." Well, other "harmful gases" is not
4 specific. Monitors are gas specific, so any gas that
5 would need to be monitored would need to be
6 identified in advance and a monitor capable of
7 detecting that specific gas would need to be
8 provided. MSHA should delete other harmful gases.

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

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

24 Other methods of supplying oxygen could

1 be perfectly acceptable. Therefore, providing oxygen
2 from a compressed gas cylinder does not affect
3 performance of the refuge alternative to meet the
4 requirement that it sustain persons for 96 hours.
5 The text that I read should be stricken from the
6 rulemaking.

7 Page 34144, there is a statement at the
8 end of the one paragraph that says: However, when
9 miners enter the airlock following an emergency, it
10 will be necessary to monitor and purge the air to
11 remove any contaminants. MSHA should limit the
12 required regulations to provide performance based
13 approval criteria and promote innovative new
14 technology. Specifying the quality of the air in the
15 airlock in terms of limits of contaminants and a
16 method to test it should be sufficient. Specifying
17 how to improve the quality of air in the airlock is
18 unnecessarily requirement. This prescriptive
19 requirement actually stifles creativity and
20 eliminates innovation new technology. Other methods
21 of improving the quality of air in the airlock could
22 be acceptable. The text and purge the air to remove
23 any contaminants should be stricken from the
24 regulation.

1 The next paragraph on the same page,
2 the bottom of the paragraph, Paragraph (d) would
3 require that the application specify the volume of
4 breathable air available for removing harmful gas,
5 both at startup and while persons enter or exit
6 through the airlock and the maximum volume of each
7 gas that the component is designed to remove on a per
8 miner per day basis.

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

1 regulations.

2 The same page, next two paragraphs
3 down, the statement in the proposed regulation of
4 constructed of suitable materials is of good quality
5 workmanship is based on sound engineering principles
6 is safe for its intended use and is designed to be
7 compatible with other components in the refuge
8 alternative. This text describes only subjective
9 qualities of various components. The following items
10 are not descriptive enough: "Suitable materials",
11 "good quality workmanship", "sound engineering
12 principles", "safe for its intended use", compatible
13 with other components in the refuge alternative".
14 Subjective opinions have no place in rulemaking. All
15 required items must have specific parameters that are
16 measurable and have a clear limit beyond which they
17 fail. MSHA should either provide parameters that are
18 measurable and have a clear limit beyond which they
19 fair or strike this language from the rulemaking.

20 Page 34145, Statement: The proposed
21 rule would require that materials used in a refuge
22 alternative or component be tested and evaluated to
23 determine that the nonmetallic materials do not
24 release irritating odors or toxic gases when

1 subjected to a flash fire test.

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

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

16 In a 35-man shelter, this wording would
17 require the lighting throughout the entire shelter to
18 be 35 foot candles. Also, the unit of one foot
19 candle per miner per day does not make any sense. A
20 foot candle is a measure of illumination at any given
21 moment in time. A foot candle per day makes no
22 sense. MSHA should change the wording of the units
23 to be in absolute foot candles since one person needs
24 just as much light as 35 to read instructions. The

1 minimum illumination should not be a variable
2 depending on the number of people in the shelter.
3 Also, MSHA should correct the erroneous units of foot
4 candle per miner per day.

5 The next paragraph on the same page:
6 Provisions should include individually packaged
7 sanitation supplies, including toilet paper and hand
8 sanitizer. MSHA should limit the required
9 regulations to provide performance based approval
10 criteria and promote innovative new technology.
11 Specifying the functional requirements for waste
12 disposal should be sufficient. Specifying
13 individually packaged sanitation supplies, including
14 toilet paper and hand sanitizer is unnecessarily
15 restrictive. This prescriptive requirement actually
16 stifles creativity and eliminates innovative new
17 technology. Other methods of providing for waste
18 disposal could be acceptable. The text highlighted
19 that I read should be stricken from the rulemaking.

20 The same page a little further down.
21 Some contents should be individually packaged and
22 stored in containers. For example, food and water
23 should be provided in individual, disposable packages
24 and stored in a container.

1 MSHA should limit the required
2 regulations to provide performance based approval
3 criteria and promote innovative new technology.
4 Specifying the functional requirements for containers
5 used for storage of refuge alternative components
6 should be sufficient. Specifying individual,
7 disposable packages is unnecessarily restrictive.
8 This prescriptive requirement actually stifles
9 creativity and eliminates innovative new technology.
10 Proven alternatives could be available. Therefore,
11 providing food and water in individual, disposable
12 packages does not affect the performance of the
13 refuge alternative to meet the requirement that it
14 sustain persons for 96 hours. The text that I read
15 should be stricken from the rulemaking.

16 The next paragraph, Paragraph (a)(1)
17 would require that refuge alternatives provide a
18 minimum of 15 square feet of usable floor space and a
19 minimum of 60 cubic feet of usable volume per person.
20 The amount of useable floor space of 15 square feet
21 is excessive. We have done some layout and
22 photography that I'm going to submit to you the
23 pictures. The first several of them are pictures of
24 our 35-man shelter that has been deployed in the

1 configuration and the first picture is empty. The
2 second picture has 35 men in it. The third picture
3 is another shot of 35 men in the shelter. The next
4 picture is a picture of the outline of the shelter on
5 the floor using blue tape and then we took a
6 photograph of an angle from above and in these
7 pictures we have 35 men in the shelter or in the area
8 that the shelter would occupy, plus all the carbon
9 dioxide scrubbing curtains that would be used in the
10 shelter for the entire four days, and you can see
11 from these pictures there is plenty of room. The
12 last picture is, again, a shot from above with the
13 outline of the shelter delineated on the floor.

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

18 The other issue about the volume, there
19 seems to be no reason to specify any kind of volume
20 because of the mine height issue. A person in a two-
21 foot mine that has nine square feet on the floor has
22 the same amount of room basically as a person in an
23 eight foot mine height, because all that room above
24 the guy is useless. He can't use that space above

1 his head. So we feel that the volume requirement is
2 not necessary at all.

3 The same page a little further on:
4 Also larger volumes seem to be more effective at
5 dissipating heat. The existence of a limit on the
6 internal apparent temperature of the shelter is all
7 that is necessary to ensure miners are not subjected
8 to excessive heat. MSHA should limit the required
9 regulations to provide performance based approval
10 criteria and promote innovative new technology.
11 Specifying the use of larger volume shelters to
12 dissipate heat is too prescriptive and not necessary.
13 This prescriptive requirement actually stifles
14 creativity and eliminates innovative new technology.
15 Other methods of maintaining the apparent temperature
16 below the limit could be acceptable.

17 34147: The remaining 20 minutes of
18 breathable air provided by the SCSR will allow refuge
19 alternative purging to establish a breathable air
20 atmosphere. It is expected that the testing under
21 this paragraph would be conducted using simulated
22 real-life situations and conditions, such as smoke,
23 heat, humidity and darkness using SCSRs.

24 MSHA should limit the required

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

11 Page 34148, the text reads: Compressed
12 air cylinders -- let me start a little earlier.
13 Section 7.506 Breathable Air Components Paragraph (a)
14 would require that breathable air be supplied by
15 compressed air cylinders, compressed breathable
16 oxygen cylinders, fans installed on the surface or
17 compressors installed on the surface.

18 MSHA should limit the required
19 regulations to provide performance based approval
20 criteria and promote innovative new technology.
21 Specifying the quantity and quality of the air or
22 oxygen entering the shelter in terms of cubic feet
23 per minute and the limits of contaminants and a
24 method to test them should be sufficient. Specifying

1 how to provide the quantity and quality of air or
2 oxygen entering the shelter is unnecessarily
3 restrictive. This prescriptive requirement actually
4 stifles creativity and eliminates innovative new
5 technology. Other methods of providing the quantity
6 and quality of air could be acceptable. This text
7 should be stricken from the regulations and a method
8 of testing the quantity and quality of the air or
9 oxygen entering the shelter along with pass/fail
10 limits should be included.

11 The same paragraph: Currently MSHA
12 will accept compressed air cylinders and compressed
13 breathable oxygen cylinders as a means to supply
14 breathable air in underground coal mines. MSHA will
15 also accept fans or compressors installed on the
16 surface as a means to supply breathable air in these
17 mines. MSHA should limit the required regulations to
18 provide performance based approval criteria and
19 promote innovative new technology. Specifying the
20 quantity and quality of the air or oxygen entering
21 the shelter in terms of cubic feet per minute and
22 limits of contaminants, and a method to test them
23 should be sufficient. Specifying how to provide the
24 quantity and quality of air or oxygen is

1 unnecessarily restrictive. This requirement actually
2 stifles creativity and eliminates innovative new
3 technology. Other methods could be perfectly
4 acceptable. The text that I just read should be
5 stricken from the rulemaking.

6 The same page, a little further down:
7 Acceptable breathable oxygen is frequently supplied
8 from a compressed gas cylinder as U.S. Pharmacopoeia
9 medical oxygen or as aviator breathing oxygen.
10 Again, MSHA should limit the required regulations to
11 provide performance based approval criteria and
12 promote innovative new technology. Specifying the
13 quantity and quality of oxygen in terms of cubic feet
14 per minute and limits of contaminants and a method to
15 test them should be sufficient. Specifying how to
16 provide the quantity and quality of oxygen is
17 unnecessarily restrictive. This actually stifles
18 creativity and eliminates innovative new technology.
19 Other methods can be available that are acceptable so
20 the text that I read should be stricken from the
21 regulation.

22 Page 34149: Breathable air supplied
23 by compressed air from cylinders, fans or compressors
24 provide a minimum flow rate of 12.5 cubic feet per

1 minute of breathable air for each miner. It is not
2 clear that the 12.5 cubic feet per minute of
3 breathable air for each miner only applies when
4 carbon dioxide is not scrubbed. The words should be
5 made clear that this flow rate only applies to
6 shelter alternatives that do not scrub carbon
7 dioxide.

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

21 The same page a little further down:
22 Paragraph (d)(4) would require that compressed,
23 breathable oxygen include an independent regulator as
24 a backup in case of failure. It is crucial to

1 maintain a continuous supply of breathable air to
2 persons trapped underground. MSHA believes that
3 redundant regulators would assure that the miners are
4 maintained in the event of failure of one of these
5 regulators. MSHA expects redundant oxygen control
6 valves and regulators will be provided to assure
7 continual availability of breathable oxygen. This
8 provision is meant to assure that pre-connected
9 valves and regulators are available. This will
10 assure that miners will always have breathable air
11 available in case of a component failure.

12 MSHA lists no data backing up the
13 probability of failure of an oxygen regulator. These
14 devices have been used for decades with an excellent
15 safety record. The probability that one of these
16 regulators would fail in the 96 hours of operation of
17 the shelter is negligible. In addition, redundant
18 regulators and the piping and fittings necessary for
19 this would increase the risk of oxygen leaks. MSHA
20 should back up their concern of oxygen regulator
21 failure with a cost benefit analysis, including a
22 probabilistic risk assessment of the failure of these
23 devices during the 96 hours of use while the shelter
24 is in operation. This cost benefit analysis should

1 include the added risks of oxygen leakage caused by
2 additional piping, fittings and the redundant
3 regulator.

4 34152: Proposed 7.507(a) would include
5 requirements for an air-monitoring component that
6 provides persons inside the refuge alternative with
7 the ability to determine the concentrations of carbon
8 dioxide, carbon monoxide, oxygen and methane inside
9 and outside the structure, including the airlock.

10 There is no reason to measure carbon
11 dioxide in the mine atmosphere. Also, the
12 measurements inside the airlock could be eliminated
13 if the operating procedure and training program
14 required miners to keep their SCSR on until after
15 exiting the airlock and safely inside the shelter.
16 This would also minimize the time the miners spend
17 inside the airlock. In the case where the miners'
18 SCSRs have little time remaining, processing through
19 the airlock and into the shelter quickly without
20 atmospheric monitoring in the airlock will take less
21 time. MSHA should reword this section to eliminate
22 the requirement to measure carbon dioxide in the mine
23 air and to provide an exception to airlock monitoring
24 when SCSRs are required to be worn in the airlock.

1 The same page, (2), the measurement
2 error limits not exceed after startup, after 8 hours
3 of continuous operation, after 96 hours of storage,
4 and after exposure to atmospheres with a carbon
5 monoxide concentration of 999 ppm full scale, a
6 carbon dioxide concentration of three percent, and
7 full scale concentrations of other gases.

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

15 Page 34153: The bottom of the first
16 paragraph says, ANSI Part 1, 1998 Performance
17 Requirements for Carbon Monoxide Detection
18 Instruments, 50 to 1000 ppm full scale, specifies
19 carbon monoxide instrument range limits of 1000 ppm,
20 2000 ppm overload, and the standard specified
21 instruments be able to withstand a carbon monoxide
22 shock loading of 4000 ppm.

23 Again, the carbon monoxide level inside
24 the shelter is limited to 25 ppm. There should be no

1 time when the carbon monoxide level in the shelter
2 reaches 1000, 2000 or 4000 ppm. If this occurs, the
3 measurement accuracy of the monitors will not be the
4 most important problem.

5 The same page, Paragraph (a)(1) would
6 require purging or other effective methods be
7 provided for the airlock to dilute the carbon
8 monoxide concentration to 25 ppm or less and the
9 methane concentration to 1.5 percent or less as
10 persons enter, within 20 minutes of miners activating
11 the refuge alternative. The NIOSH recommended value
12 of maximum concentrations of carbon monoxide is 25
13 ppm. This provision is intended to address
14 evacuating contaminated air by forcing the
15 contaminated air out of the refuge alternative
16 environment. Airlocks are intended to speed up the
17 process of ingress and egress, because this is a
18 smaller volume as compared to the interior space to
19 purge. MSHA believes that following the miners'
20 attempt to escape and time required for constructing
21 and activating the refuge alternative, the SCSRs
22 would allow 20 minutes for purging the airlock to
23 establish a breathable air atmosphere. In addition,
24 purge air should be provided from compressed air

1 cylinders.

2 MSHA states that purging or other
3 effective methods be provided for the airlock to
4 dilute the carbon monoxide concentration to 25 ppm or
5 less, but then goes on to require only purging
6 equipment. This eliminates the use of other
7 effective methods. The goal here is to minimize the
8 effect of carbon monoxide and other harmful gases
9 from entering the shelter from the airlock. MSHA
10 should limit the required regulation to provide
11 performance based approval criteria and promote
12 innovative new technology. Specifying the method to
13 minimize the effect of carbon monoxide or other
14 harmful gases from entering the shelter from the
15 airlock is unnecessarily restrictive. This
16 prescriptive requirement actually stifles creativity
17 and eliminates innovative new technology. Other
18 methods of minimizing the effect of carbon monoxide
19 or other gases from entering the shelter from the
20 airlock could be acceptable. MSHA should reword this
21 paragraph to allow other effective methods of
22 lowering the effect of carbon monoxide or other
23 harmful gases from entering the shelter from the
24 airlock. For example: Each entry through the

1 airlock will not increase the carbon monoxide level
2 in the shelter by more than X ppm.

3 Page 34157: Paragraph (a)(1) would
4 require at least 15 square feet of usable floor space
5 and at least 60 cubic feet of usable volume per
6 person. I think I did address this one earlier.
7 Nine square feet is our recommendation. No
8 requirement on volume.

9 The same page a little further down:
10 Another important factor in the volume design is the
11 need to control the apparent temperature in the
12 interior space of the refuge alternative. Larger
13 volumes are more effective at dissipating heat
14 because of increased surface area. Again, I
15 addressed that same one. MSHA shouldn't be redundant
16 in this rulemaking. These are the exact same
17 requirements that were read earlier.

18 34160: Paragraph (a)(5) would require
19 that the ERP include methods to provide ready backup
20 oxygen controls and regulators. The term "ready" is
21 meant to be pre-connected valves and regulators.
22 Redundant oxygen control valves and regulators are
23 necessary to assure that miners will always have
24 breathable air available in case of component

1 failures. I did address this issue earlier on with
2 the redundant oxygen regulator.

3 Paragraph (a)(6) would require that the
4 ERP include the methods for providing an airlock and
5 methods for providing breathable air in the airlock.
6 Refuge alternatives that require an airlock would be
7 required to provide breathable air in the airlock at
8 all times. However, when miners enter the airlock,
9 it is necessary to monitor and provide purge air to
10 remove any contaminants and minimize contamination
11 inside the refuge alternative. Sufficient purge air
12 is necessary to clear the airlock of contaminants.

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

20 In conclusion, I hope these comments
21 assist in the development of a comprehensive
22 specification conducive to the employment of
23 innovative ideas and the development of new products
24 and processes. Thank you for your time.

1 MS. SILVEY: Thank you, Mr. Roscioli.
2 One of the things I would like to say at the outset
3 is that some of the comments that Mr. Roscioli was
4 referencing you will see how they are proposed.
5 There are two parts to it, there is an approval part
6 and there we ask the manufacturer or third-party to
7 test the refuge chamber alternative and submit a test
8 result to MSHA and MSHA can go out and audit the test
9 result. Then there's the part the 75 safety
10 standards that set forth the requirements for refuge
11 alternatives and certain requirements have to be
12 included in the approved emergency response plan. I
13 expect that he was commenting on duplicates that
14 require some tie-ins so the two will fit together.
15 We include the third requirement that has to be
16 approved, it tested out approved to go through the
17 approval process and then some of those same
18 requirements were to be included in the Part 75
19 Safety standards.

20 Now, to the extent that your comments
21 limited solely to the approval, the testing and the
22 approval and don't have any relevance to the safety
23 requirements, then we will view those as such, but to
24 the extent that you made comments on the approval

1 ones and they are relevant to the requirements and
2 the safety standards, we will take them in their
3 original request. You did comment on several things
4 twice, but that's why you were doing it because of
5 the way the rule is structured.

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

19 On the other hand, I heard Mr. Roscioli
20 say to one of our provisions and I can't remember it
21 verbatim, but one of the provision I believe that I
22 believe was in the approval requirements for refuge
23 alternatives was that it needed to be constructed --
24 do you remember that provision, constructed of

1 suitable materials safe for its intended use and
2 there were about four other performances or
3 provisions? To those you said, you know, be specific
4 on those. You said those are very subjective terms.
5 You were right, they are, and that was my earlier
6 point about to some extent performance or
7 requirements are subjective and you will find one
8 person saying I don't want those. You just tell me
9 specifically what you want me to do. On the other
10 hand, you will find people asking for performance
11 standards sometimes. But in the final analysis when
12 you're a regulatory agency and you know you are
13 setting standards that you are going out and enforce,
14 then you have an obligation to put people on at least
15 as good of notice as possible about what you
16 compliance requirements are. So with that, I will --

17 MR. ROSCIOLI: Can I comment on that?

18 MS. SILVEY: Sure.

19 MR. ROSCIOLI: Well, the items that
20 you referred to were constructed of suitable
21 materials is of good quality workmanship is based on
22 sound engineering principles is safe for its intended
23 use and is designed to be compatible with other
24 components in the refuge alternative.

1 I guess my point here is that doesn't
2 specify anything unless you define exactly what those
3 terms mean in terms of a measurement.

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

13 I mean, we welcome your comments and
14 clearly in a way I'm just talking to you now in terms
15 of how and why it was included. So we welcome your
16 comments, but I think if you're in the business of
17 manufacturing certain things, some of those
18 statements or phrases that we included are generally
19 specific with sound engineering practices. But I
20 take your comments and your consideration. And on
21 that, talking about performance and prescriptive
22 standards, there are some things you read, for
23 example, our recommendations on lighting and
24 sanitation, if you look in the standards, in the

1 standard itself, the regulatory language, we did not
2 include one foot candles or we did not include
3 sanitizing. You were reading from the preamble.

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

16 So that's sort a little bit of
17 interplay, but when we go back and look at it, we
18 will look at both of the things we included in the
19 rule, the regulation itself and the things we
20 included in the preamble, but oftentimes we are
21 including things in the preamble just to be useful to
22 people who are developing these units. I appreciate
23 your recommendation on the square footage. So your
24 recommendation is nine square feet.

1 Let me ask you a question here, Mr.
2 Roscioli. How many are your units are deployed now?

3 MR. ROSCIOLI: Approximately 80.

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

6 MR. ROSCIOLI: Some of them are.

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

9 MR. ROSCIOLI: About 75 are in the
10 mines.

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

13 MR. ROSCIOLI: West Virginia.

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

17 MR. ROSCIOLI: Yes.

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

23 MS. SILVEY: And before you answer
24 that, on the nine square feet, I have one further

1 question. That is the square footage in the ones,
2 all the 80 that you have?

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

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

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

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

17 MR. ROSCIOLI: At least nine.

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

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

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

24 MR. ROSCIOLI: Well, ours happened to

1 go up from there, but all we would need is a
2 requirement on the minimum of nine per every shelter.

3 MS. SILVEY: Okay. All right.

4 MR. EPPERLY: Did you understand what
5 I was asking you?

6 MR. ROSCIOLI: Yes.

7 MR. EPPERLY: Just describe what we
8 would be looking at in the picture, the dimensions.

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

15 MR. SHERER: Are you employing an
16 airlock in that or not?

17 MR. ROSCIOLI: No. No, sir, no
18 airlock. No part of the storage box, nothing.

19 MR. EPPERLY: The more information,
20 Ed, that can you provide for that picture so we know
21 what we are seeing there.

22 MR. ROSCIOLI: Okay. I'll get you
23 the dimensions and the layout of the actual model.

24 MR. EPPERLY: You mentioned items

1 that are in there like curtains and things that we
2 would be looking at in the picture and the positions
3 and just tell us.

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

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

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

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

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

21 MR. EPPERLY: No.

22 MS. SILVEY: Do we have any more
23 questions?

24 MR. EPPERLY: No.

1 MS. SILVEY: Thank you.

2 MR. ROSCIOLI: There is one more item
3 here. It's a tiny issue.

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

10 MR. ROSCIOLI: No, they all are.

11 MS. SILVEY: One is at the beginning.

12 MR. ROSCIOLI: Okay.

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

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

18 MS. SILVEY: All right. Thank you.

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

21 MS. SILVEY: That will be fine.

22 MR. ROSCIOLI: One more item that I
23 forgot is a timing issue. If MSHA finalizes this
24 rule by the end of the year, none of the

1 manufacturers are going to start redesigning it until
2 we know what the parameters are on your final rule.
3 So that means it's going to take us maybe three to
4 six months to redesign depending on how much of a
5 change your regulations are to what we currently have
6 and it's going to take another couple of months, two
7 or three months to test the redesign to make sure it
8 complies. And so we're in to possible September of
9 '09 before the first new version of the shelter is
10 available. What happens before January 1 of '09 and
11 September '09 or whatever the first shelters that
12 meet the new regulations are available if the mine
13 operator needs a new shelter?

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

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

24 MS. SILVEY: Okay. But we will have -

1 - we understand that we will have to phase-in period.
2 Thank you.

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

5 MR. ROSCIOLI: We can't really do that
6 until you come up with the regulation because we
7 don't know what the changes are.

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

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

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

22 MSHA is looking to solicit comments
23 from entities such as myself with regards to
24 communications and I have provided you there with a

1 record of how we would see what we call a refuge pit,
2 a communication system.

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

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

15 MST proposes a communications system
16 suited to a refuge and rescue environment consisting
17 of a near field magnetic bi-directional, two-way
18 synchronous Through the Earth communications link.

19 This link will provide the miner
20 retreating to a refuge with the ability to send and
21 receive text messages from the surface without any
22 dependence on mine wide and possibly destroyed and
23 disabled infrastructure.

24 The communication link's proprietary

1 protocol and modulation scheme are noise tolerant,
2 advantageous, self-adjusting and specifically devised
3 to provide a robust transfer of data considerate of
4 the noise and geophysical strata typically associated
5 with underground coal mining environments.

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

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

21 The rest of the system description will
22 be technical and probably beyond this committee and
23 the records I have provided to review give the
24 concept of the system and how the system can be

1 deployed, but the main thing that we want to convey
2 to you today is that we do have a system that is
3 truly wireless and independent of infrastructure and
4 has no lights on any of the ones or current
5 communications or other (inaudible) structures. I am
6 happy for a lot of questions.

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

9 MR. MCLEAN: It is truly wireless.

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

15 MR. MCLEAN: Yes.

16 MS. SILVEY: That's buried?

17 MR. MCLEAN: Yes.

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

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

22 MS. SILVEY: Probably.

23 MR. MCLEAN: More often than not.

24 Most communication systems are kilometers of wire and

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

7 MR. SHERER: Have you installed these
8 anywhere?

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

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

20 MR. MCCLEAN: We haven't participated
21 directly with NIOSH. We're a company that has
22 participated a lot with MSHA. We have participated
23 with Randy Harris and his group. We have had very
24 little to do with NIOSH as such. If they have an

1 interest in the system, we have an interest to show
2 them the system.

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

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

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

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

17 MR. EPPERLY: What about a portable
18 chamber?

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

23 MR. SHERER: I mean portable refuge.
24 If it was moved would there be wires that are

1 entering out through that to be accomplished through
2 safety?

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

7 MS. SILVEY: Thank you.

8 MR. MCLEAN: Thank you.

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

22 Again, on behalf of acting assistant
23 secretary, I want to thank you very much and thank
24 you all for the ones who stayed until the conclusion

1 of the hearing and thank you very much for being so
2 attentive. We appreciate it.

3 * * * * *

4 *Concluded at 2:30 p.m.*

5 * * * * *

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.