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Stakeholders' Meeting on

Refuge Alternatives for

Underground Coal Mines

at

National Mine Health & Safety Academy

Beaver, West Virginia

Taken

on

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BAY AREA REPORTING, INC.
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APPEARANCES:

MODERATOR:

Sheila McConnell

PANEL MEMBERS:

Joseph A. Main, Assistant Secretary
Rodney Adamson
Wesley Shumaker
Steve Turow

SPEAKERS:

Randall Harris
Braden Lusk
Todd Moore
Dennis O'Dell
Mike Parris
Kyle Perry

P R O C E E D I N G S

MS. McCONNELL: We'll go ahead and begin this public meeting.

My name is Sheila McConnell. I am the acting director of the Office of Standards, Regulations, and Variances at the Mine Safety and Health Administration.

I will be the moderator for this stakeholder meeting on refuge alternatives for underground mines, which is part of the ongoing record for MSHA's request for information on this important subject.

On behalf of Assistant Secretary of Labor for MSHA, Joseph A. Main, I am pleased to welcome you here today and thank you for your attendance and participation.

First, I'd like to introduce our MSHA panel. We have Rodney Adamson from MSHA's Coal Mine Safety and Health, Wes Shumaker from Approval and Certification Center, Technical Support, Steve Turow from our Office of Solicitors.

We are also pleased to welcome our colleagues from the National Institute for Occupational Safety and Health, NIOSH. We thank NIOSH and its

researchers for their ongoing efforts to provide research into the technology, engineering, and application of refuge alternatives.

This is the only meeting of its kind, in part because MSHA has already received comments through the publication of the Agency's request for information in the Federal Register, which held the comment period open from August 8th, 2013 to April 2nd, 2015, approximately 20 months.

The comments received today will be collected as part of the record, and MSHA will hold the comment period open until November 16th, 2015 to allow participants to submit additional information, comments, and materials. You can review the RFI comments on the Agency's website on MSHA.gov or on regulations.gov.

The refuge alternative rule became effective on March 2nd, 2009. Over the past six years, stakeholders have gained experience and research that has led to technological advancements and innovations. There are several types of MSHA-approved refuge alternatives now in use.

To benefit from stakeholders' experience and research, MSHA published a request for information

in the Federal Register asking for data, comments, and information on options that may present even more effective solutions for miners' survival during underground coal mine emergencies than the projections provided by the existing refuge alternative rule.

First, I want to underscore an important mine emergency principle, embodied by both MSHA and the mining community. It is a longstanding principle that, in the event of a mine emergency underground, the first line of defense is for the miner to try to escape.

Only if escape is impossible should the refuge alternative be used. If that situation does occur, a refuge alternative must provide a protected, secure space with an isolated atmosphere that creates a life-sustaining environment to protect miners until rescue or until they can escape.

Today, we are asking coal mine operators, miners, equipment manufacturers, academia and the members of the public to provide us information on two critical issues on refuge alternatives.

First, MSHA is seeking solutions for providing a clean air supply and sufficient air pressure into a built-in-place shelter when a borehole directly into the refuge is unavailable. We are

seeking solutions for piping air safely through a mine to a built-in-place shelter.

If air is piped through a mine over several miles, protection of that piping from routine mining activities can become an impediment to use for a built-in-place shelter.

Second, miners' ability to communicate with each other is critical during mine emergencies. Miners must remove the mouthpiece of a self-contained self-rescue device to speak or remove the full-face respirator mask of a self-contained breathing apparatus to clearly communicate.

These actions expose miners to deadly gas in the mine and atmosphere. We are seeking solutions that would allow two-way communication between miners wearing breathing apparatus.

In addition, in the notice of this meeting, MSHA also requested information on impediments and solutions related to the use of built-in-place shelters, the advantages and disadvantages of using self-contained breathing apparatus with refill stations as an escape strategy, and the scope and status of new technology for recent research related to the installation and use of built-in-place refuge.

In its report "Facilitating the Use of Built-In-Place Refuge Alternatives in Mines," NIOSH made recommendations on the use of built-in-place shelters as a type of refuge with a superior environment when compared to tent and steel fabricated structures.

NIOSH's recommendations included allowing built-in-place shelters meeting certain conditions to be placed farther away from the working face than under current regulations which require a refuge alternative within one thousand feet of the face.

MSHA encourages all stakeholders to review NIOSH's report and recommendations and to comment on the advantages and disadvantages of NIOSH's recommended approach,

the feasibility of installing built-in-place shelters in different mine conditions and the use of surface-supplied air and other concerns with built-in-place shelters.

MSHA also requests discussion on the advantages and disadvantages of using a self-contained breathing apparatus with refill stations, as compared to a self-contained self-rescue device with caches in escapeways and how it will improve escape plans using enhanced respirator technologies.

Finally, on the topic of new technology and research, MSHA requests stakeholders discuss and describe new and improved technology for built-in-place refuge designs, including the impact of these designs on the economic and technological feasibility of using built-in-place shelters.

This stakeholder meeting will be conducted in an informal manner. The panel may ask questions of the participants, and the participants may ask questions of the panel. MSHA is making a transcript of this stakeholder meeting and will post it on the Agency's website within two weeks.

If you wish to present written statements, questions, or information today, please clearly identify your material and give it to the court reporter. You may also submit comments following the hearing by any of the methods identified in the Addresses section in the stakeholder meeting notice.

Those of you that have notified MSHA in advance of your intent to speak will make your presentations first, followed by those who signed up to speak today. After all of the scheduled speakers have finished, others can request to speak.

If you have a hard copy or an electronic

version of your presentation, we would appreciate that you give a copy of that to the court reporter as well. I hope everyone has signed the attendance sheet.

Before we begin our discussion today and hear from you, I would like to introduce Joseph A. Main, Assistant Secretary of Labor for Mine Safety and Health.

Mr. Main?

MR. MAIN: Thanks, Sheila, and thanks for the work that you folks did to put today's session together. We have folks with us from - as Sheila mentioned - from Tech Support, SOL, and folks that's been working on the refuge alternative issue for quite some time.

So why are we holding this public meeting today? If you look at the one point that Sheila had raised, is that we have six years' experience now with the refuge alternative systems that went into effect post-Sago, and we've learned a lot from those, as we have deployment in the mines.

The good news is that, you know, we really haven't had one they had to use for survival, although there's a few cases that we wish that we have, in terms of the impact of the mining accidents.

If you look historically at mine rescue work, it tells us that in a number of these circumstances when we have a mine emergency, we don't get there really quick, and I just used in the benchmarks UBB from Monday to Saturday, Jim Walters, six weeks to locate the last miner.

Wilberg was one of the longest of modern history, took us more than a year to locate - or right at one year - to locate the last victim.

So there's reasons why we encourage a system to be in place that has the first action of the miners to escape the section. A second action is for the miners to escape.

The third action is for the miner to escape when all else fails, look at the alternatives that we have, because in some of these, we're not quick to rescue and that's for all the obvious reasons.

We spent a lot of money and time over the last four to five years to go over all our mine emergency response capabilities, and we have probably the best we've ever had in mine emergency history.

We've developed the technologies to have direct communication between the advancing team and the command center, and Todd Moore, who is here, we had a

chance to spend about a week this spring up at the Harvey Complex to work with all of the CONSOL teams and to test out the equipment and to look at the bugs we have and to build a better mousetrap.

You know, that's going to be a major change in how we do mine rescuing for the first time and to have actual direct communications between the command center and rescue teams. That's going to give us the opportunity to do things quicker and safer.

We've also redesigned our mapping process, and so that the waiting for the handheld map to come out, maybe hours later, and just to verify, "Oh, that's not what we thought."

We're gonna do mapping at the command center and sending it back to the fresh air face, which is gonna speed up the process of knowing what we know, so to speak.

But, you know, with all of those and all of the other improvements, we still have this dilemma about how we can get the miner out of the mine as quick as we can and to set up a strategy to give the miners every opportunity for survival as they do that, and that's the reason we have the two issues that's front and center.

We looked at the information that came back through the request for information that we put out, and we extended that four times since we've began in an effort to just keep getting more information in, but I think to fix the problem of that in a refuge area, we've got to figure out an engineering solution to how we manage supplying air to those facilities for both breathable air and for both pressurizing a refuge area to keep the contaminants out, and that's one of the reasons we'd really like to hear from folks about how we can do that.

And if you look at some of the mining set-ups we have today and think about some of these super-longwall gate roads that are 20,000 feet long and what you think about decisions that miners have to make to run back to that face to get out of here, "Where do I get out?"

And building some systems like I saw at the Billiton Mine out in New Mexico where they went to a safe haven area as part of their concept, essentially, I think we really need to take a look at how can we design a system that lets miners have an advantage as to get out of the mine to have a place to go to, as opposed to, you know, heading back in to get

out, which, you know, there has been folks that have questioned that, a lot of people, and I think rightfully so.

So we're looking for all of the input we can get on how we can -- to have, in the future, some refuge alternative concepts that would include safe havens, and I asked folks quite a bit, "Do you like the US model or the Chilean model," and that gets to this concept of having a wider area to be able to manage.

We've never faced a situation where you may have an event where miners are injured or in masks and locked into a refuge alternative and what happens psychologically as people spend time there, laying beside each other with whatever, you know, and how long do they stay there before we make a decision after they made a decision to go, to stay there.

And there's a lot of things that I think we have to think about, and we have an opportunity to take a pause here and figure out what is it we could do to build a better mousetrap for escape and opportunities and safe haven opportunities and refuge opportunities for miners, and how does that work within the confines of the systems we already have in place that a lot of mines are gonna be running probably for

quite some time.

We have a deadline coming up on December of 2018 when all of these refuge alternatives have to be certified.

Our folks are working on getting guidance together - and that will be coming out in the next few months - to make sure that we have everybody on board and understanding what that certification requirement is gonna be.

And it's my hope that we don't do what we did last time, 'cause last time the certification, we were running to the wire to get ourselves there, but to have a plan of action that gets those certifications in place, whatever they may be, in time to reach those.

But the primary purpose today is really to talk about the engineering things we need to develop and understand to get us to a better refuge alternative system for the miners.

The second issue, this is the one I've been on a number of mine emergencies in my life, and I could tell you, I have this real clear, that with all that we're doing, we're not giving our miners the kind of opportunity that we need to give.

About two weeks ago, a week ago, whatever

it was, I was at the Cumberland Mine in Pennsylvania, and we had the opportunity to go through the smoke trailer, which many folks who have not been through smoke won't understand what that means, and I had the chief of staff for the Department of Labor with us and the lady who just became our new deputy with MSHA, and I had to tell them about what we was holding this meeting for.

So when we get the opportunity to go into the smoke trailer, and we're tethered together, and the chief of staff, or Secretary Perez was, like, two or three feet behind me, and the person right ahead of me was the one who was trying to, like, tell us, 'cause we had a little more twists and turns, and in the smoke, you can't see.

You know, you see clear at the fog light, and when everybody come out of there, they understood exactly what I was talking about. The fellow that was ahead of me, two back, goes, "What was he saying? What was" --

I said, "Yeah, just picture yourself in a mine, you've got a mile to go, and you're caught in smoke, and what are you gonna do with that mouthpiece?"

I mean, it's -- so I would like to focus

our attention on trying to figure out how we can build communications into the mouthpiece, into the circuit, into the system, where miners can actually communicate without breaking that closed circuit breathing system that we now have.

So those are two things I think are really critical as we move forward. We really would like to get some feedback from folks on how do we fix those and what is the real opportunity here, because I think just putting money into a system to say that we have a system that meets a certain standard is not good enough.

I think we have to take a step back, what do the miners really need in this country and what do we really need to do to get those systems in place so they really work for miners if they have to have them.

That's the challenge, that's what we're trying to get back into us so that we can make some good decisions about how we move forward.

And with that, Sheila, I will turn the pulpit back over to you.

But we really need input from the public, from the folks who are at this hearing, folks in the mining community, and the manufacturers to help us find

some answers. Thank you.

MS. MCCONNELL: Thank you, Mr. Main. We have a few speakers who have signed up. Our first speaker today is Mike Parris.

Mr. Parris, if you will say your name to the court reporter and spell it.

MR. PARRIS: Mike Parris, P-A-R-R-I-S.

I'd like to thank MSHA for reopening the record and holding today's meeting.

While I hope to submit comments that address particularly the questions raised by MSHA today, I want to make some general comments, and I've worked with some of the people here in the room in an official capacity and perhaps as an adversarial capacity.

And the comments I'm making today, I'm making in an individual capacity, in that I don't presume to be speaking for the operator to whom I work today, although I hope in working with my employer, that we may provide comments on the record. The comments I make today are my own as an individual.

First, I recommend that MSHA extend the December 31st, 2018 deadline for parts and structure approvals for operators who are willing to partner with

the Agency and work on a practical game plan in their mines to address the integration of these new emerging technologies in their emergency response plans that is related to the December 31st, 2018 deadline.

This consideration is provided in that manner. Those operators may continue to use their currently deployed refuge alternatives and not be forced into adopting a compliant solution far enough in advance so that everything is in place on that deadline.

I think that the effect will be -- well, one of the things that I personally don't want to see is any of the technologies that are discussed in the request for information fail to be adopted because of problems in the approval process that lead to a delayed adoption by operators.

That I believe if we work together in a real -- in a meaningful way as operators with the Agency, with NIOSH, and with manufacturers, we can work out how these systems actually will apply and work together in time so that they could be deployed widespread in our mines.

And on the other hand, operators who choose to continue to invest exclusively in portable

refuge alternatives will not necessarily need to be really involved in the December 31st, 2018 approval deadline.

My expectation is that there will be any number of options available to those operators, where they will be able to achieve or comply to some solution easily by December the 31st, 2018. So I do not believe that the Agency need unilaterally waive the upcoming deadline.

I believe that there can be good reasons to do so in specific instances that are advantageous to everybody, but I would not want to encourage a system that allowed dilatory action on the part of some operators to become even more delayed.

Second, even though I share NIOSH's hope for the widespread adoption of built-in-place refuge alternatives, we need to closely examine their proposal that built-in-place refuge alternatives be allotted distances as great as 5,000 feet from the face.

As part of NIOSH's early work on refuge alternatives, a NIOSH contractor performed an extensive study of several mine disasters and evaluated whether a refuge alternative of 1,000 feet, 2,000 feet, or further outby would have facilitated survival.

Notably, the NIOSH contractor concluded that a refuge alternative at either 1,000 or 2,000 feet from the face would've benefited the miners at Sago, and they concluded that an outby refuge may not have done so.

The location of the built-in-place refuge alternative should be supported by a careful review of a mine's emergency response plan. However, I believe that these and other potential issues can be addressed fairly simply.

MSHA should allow mines that deploy built-in-place refuge alternatives to continue to deploy their existing portable refuge alternatives as disabled miner emergency stations within a thousand feet of the face, provided that they can accommodate five miners under the part 7 structural requirements.

History has shown, time and again, on the devotion that miners have for each other and their heroism, a disabled miner may not be physically capable of traveling 5,000 feet to a built-in-place refuge alternative.

If operators are allowed to continue using their existing portable refuge alternatives as

disabled miner emergency stations, we can achieve the greatest degree of safety for all of our miners while also working to improve escape.

I really believe that it is vital that we contemplate refuge alternatives within the context of the miners who are most likely to require refuge, and those are the miners who are least likely to be able to escape, disabled miners.

So we need to work together to make sure that the emergency response plans that we've put together that integrate the current technology and this emerging technology appropriately factor in disabled miners and also to make sure that we don't end up with a solution that wouldn't have been deployed at Sago, and that, I think, is something that we need to consider closely.

Thank you.

MS. MCCONNELL: Thank you, Mr. Parris. I have one question, and then I'll turn it to the panel to see if they have any others.

As you began, you recommended extending the 2018 deadline to integrate some -- and consider new technologies. Could you discuss some of the new technologies you have seen that MSHA should consider?

MR. PARRIS: Oh, definitely. I think the --

MS. MCCONNELL: Could you provide some examples?

MR. PARRIS: Sure. The refillable self-rescuers and the self-rescuer technology that uses liquid air and have the full-face mask, these are very potentially life-saving technologies, that if they are developed, approved, marketed, and deployed should eliminate the need for miners to need to go into the refuge alternative.

The thing that we want to work toward is, we don't want to end up eliminating those technologies because of their relative point in development.

Some of these technologies are barely off the drawing board into the prototype stage, much less reaching the point where they are mature enough to be submitted to the Agency for various approvals, and then once -- and then once those approvals are in line, are mature enough to be mass-produced and marketed to operate.

So rather than -- well, in order to encourage operators to explore these technologies, rather than simply go and get a portable refuge

alternative design that is very mature and likely to receive its approval years in advance of the deadline.

I mean, that's the easiest way to achieve compliance, is going to be to do exactly that. There has to be some incentive for operators to go that extra mile with you, and I think that that's one way that we could do it.

MS. MCCONNELL: Okay, thank you.

Mr. Main, do you have --

MR. MAIN: That was one of my questions. What are the options? What are all the alternatives that we should be looking at, in terms of the overall escape strategy and, you know, how would we work at it.

I think what I hear you saying is that the fillable air with the face mask that has a communication system in it helps facilitate escape, there's a lesser need for refuge alternatives, something like that.

MR. PARRIS: Oh, yes. Exactly. Also, there -- the means for providing breathable air to built-in-place refuge alternatives are interesting, as far as the borehole delivery plans and the potential use of cryogenic air supply systems.

These are systems that -- well,

especially the cryogenic air supply systems that were developed for portable refuge alternatives, I think actually have a superior possibility for deployment in built-in-place refuge alternatives.

But these technologies may not be developed sufficiently to be deployed prior to December 31st, 2018, and we need to be in a position to actually put together a plan that contemplates their use in regard to the self-rescuers, the breathable air supplies, and everything else.

The -- again, for example, the compressed air systems that are contemplated, the questions about running compressed air lines through mines to either portable refuge alternatives or built-in-place refuge alternatives eventually will mature to a point where what we're contemplating is a breathable air system that has to be integrated into a stopping for a built-in-place refuge.

So that there will be, eventually, where not only would the MSHA district manager approving stopping walls, but also with Tech Support in approving the way that delivery system is plumbed into the -- through the wall into the built-in-place refuge alternative.

And this -- these things we've seen take time, and it's an easier trip to take. You're taking an operator that is willing to partner with you, rather than allow time to progress to the point where it becomes an adversarial relationship.

MR. MAIN: And, again, I think on that point as well, I mean, we do have the options now, the current standards, for built-in-place shelters, and we are encouraging folks to help the miners inside on that in a way that helps develop some kind of engineering style that can be innovated.

Do you know what I'm saying?

MR. PARRIS: No, I do.

MR. MAIN: You know, that doesn't, you know, require a lot of extra assessments.

MR. PARRIS: No, I agree.

I think that -- what's difficult for me to anticipate from the Agency is how the Agency will contend with the part 7 structural approvals for the existing and contemplated January 1st, 2019 portable designs, while at the same time providing the support necessary to develop the regulatory framework to have these other technologies introduced.

I don't know how you guys are going to do

that without help from operators and also from NIOSH. I think that we're going to have to work together.

MR. MAIN: And I think that's part of what this whole exercise is about, to learn and figure out what options are out there.

MS. MCCONNELL: Exactly.

Wes, do you have anything?

MR. SHUMAKER: No.

MS. MCCONNELL: Anyone?

Mr. Parris, thank you very much for your testimony today.

MR. PARRIS: Thank you.

MS. MCCONNELL: We appreciate you coming forward.

I'd like to introduce our next speaker, Kyle Perry.

MR. PERRY: Good afternoon.

MS. MCCONNELL: Mr. Perry, could you state your name and spell it for the court reporter and your organization.

MR. PERRY: Sure. My name is Kyle Perry, K-Y-L-E, P-E-R-R-Y.

I'm an assistant professor at the University of Kentucky in mining engineering, and

today, I'm going to kind of talk hopefully about the academic side and the research side, as far as the structural components for these refuge alternative built-in-place.

So about four years ago, we started looking at how can we come up with a structural wall to aid in built-in-place.

Kentucky funded myself and Doctor Lusk on a research project looking at polycarbonate safe haven walls, and the idea behind that was putting a wall in -- across that somewhere, and the polycarbonate, we've dealt with a lot for window systems, for glass resistance, for bunkers and things like that.

So we thought this is a newer technology, I guess, than brick and mortar, and it's even more so. The advantages of polycarbonate is that it's clear.

So, Mr. Main, you were talking about getting those guys out as quick as we can and the mine rescue teams going in. Having it clear, they'd be able to go in, look into this room, if nobody's in there, they can keep moving.

They don't have to waste their time opening a door that may have possibly been damaged or not functioning anymore.

So we came up with a polycarbonate wall system that worked out pretty well, and we installed it in a mine, and it gained the attention of an operator who already has components in place and approved for breathable air systems.

It caught their attention, they wanted to further the development of this and come up with what we've got now, which is an expandable polycarbonate wall, and it can be made out of polycarbonate or steel, we can interchange sections, with either, basically, a windowpane or a steel plate.

It can range from 41 inches tall up to -- 43 inches tall up to 71 inches tall, and, currently, we've got the application in to MSHA, we will receive the first comments back and just put in our revisions.

A couple things we saw, the Safety Factor 2 was applied to the design load of 15 PSI.

One question is why, with a safety factor of 2, is there a reason I know the 15 PSI was the 0-15 PSI over 100 milliseconds and back down from the -- from the data recorded, I think and I believe, but is -- why -- we don't understand kind of the arbitrary, "Why Safety Factor 2," whenever we don't know the last -- there's only gonna be a 15 PSI or not.

A couple things. The door itself within this wall is a circular door also made out of polycarbonate. All -- basically, instead of having a steel panel on there, you can put on the door. We just bolt it to a frame. It's basically a steel frame with interchangeable panels.

The door - we can also bolt in - is a 30-inch-diameter door sealed with -- there's a grouted area in the -- in the plate or backing, and that door has a rubber sealing on it enclosed with a simple latch.

With that, it may sound weak. We've tested that actually in an explosive chamber up beyond 30 PSI dynamic pressure, which I think's more than enough to sustain 15 or 30 PSI.

One of the comments we got back was the anchorage into the roof and floor and the coal ribs themselves, and as a practicing professional engineer, some of the comments that are made may not make engineering sense to the designers, but it seems like sometimes we overkill these things a little bit, we're putting a safety factor of two on it, and we're putting in supports that aren't gonna make a difference.

And I just want to -- I know Mr. Main

said something about you guys are gonna be finding guidance here pretty soon in a couple months, the process of getting these things approved, and I just want to make sure you guys are thorough and have a pretty good list of what we're gonna need to do to get these things approved, so I think that's it.

So thank you very much.

MS. MCCONNELL: Well, thank you.

MR. PERRY: Any questions for me, guys?

MS. MCCONNELL: Do you have anything else?

MR. SHUMAKER: The review of your structure, now, that procedure really isn't part of the 2018 structural requirement --

MR. PERRY: Okay.

MR. SHUMAKER: -- because that is a 15 PSI stopping that is really approved through the district --

MR. PERRY: Uh-huh.

MR. SHUMAKER: -- by the district manager. However, that's normally sent to our Pittsburgh Technology Center.

MR. PERRY: Right.

MR. SHUMAKER: Again, that's where our

structural guys are --

MR. PERRY: Uh-huh.

MR. SHUMAKER: -- and that's who's doing the review of your design right now.

MR. PERRY: Uh-huh.

MR. SHUMAKER: And I know you have some specific questions on your design, and I might have to talk to the engineer doing the review to see exactly.

MR. PERRY: Okay.

MR. SHUMAKER: I'm just -- I'm not familiar enough with --

MR. PERRY: Okay.

MR. SHUMAKER: -- your design package to be able to answer those questions right now.

MR. PERRY: Okay, no problem.

MS. MCCONNELL: I just have just a couple of questions. I'm vaguely familiar with your design, and not specifics, but it seems like this is a portable type of wall; is that correct?

MR. PERRY: Basically, we designed it to be expandable for certain designs up to about 12 inches.

So if a mine says, "Oh, we're mining 48 inches," you know it's not gonna be 48 everywhere. So

we can design one to be the average of 48 and can be installed, expanded, or shrunken down.

But, yes, we can put it in, we can uninstall it, move it, and reinstall it --

MS. MCCONNELL: So it can move --

MR. PERRY: -- all in under six hours.

MS. MCCONNELL: Okay. So it can move as the face advances.

MR. PERRY: If you want to, yeah.

MS. MCCONNELL: Okay. What would be the air supply going into the --

MR. PERRY: Breathable air system from the surface.

MS. MCCONNELL: And so this would be, like, a -- like a borehole that you would --

MR. PERRY: Either a borehole or piped-in air from the surface throughout the mine, yes.

MS. MCCONNELL: And thinking about some of the other NIOSH criteria, in terms of positive pressure, that's also part of it as well.

MR. PERRY: Yeah.

MS. MCCONNELL: Okay.

MR. MAIN: In terms of the pipeable air that was on that -- the distance that you've looked at

that you've been able to engineer all of the air in, the -- have you handled condensation and those kind of things?

MR. PERRY: I think the next presenter has a -- is gonna be talking a whole lot about the -- the distances and those kind of issues. I'm not familiar on the air side of it; I'm more on the structural part of it.

MR. MAIN: Yeah, and I think it would be helpful, too, with the issues you raised about the anchoring, where there's maybe some requirements that's being added that doesn't have any significant thing to do with --

MR. PERRY: With structural integrity of the wall.

MR. MAIN: And it would be interesting to see what those are --

MR. PERRY: Sure.

MR. MAIN: -- so we can take a look at them.

MR. PERRY: And I've got -- I can provide -- I'm not sure about the online submittal for written comments, if you can put in pictures or anything like that.

MS. MCCONNELL: Yes, you can put -- you can put videos --

MR. PERRY: I'll be happy to go back and provide a lot of those things in there and talk about the anchorage as well.

MR. MAIN: That would be good.

MR. PERRY: Okay.

MS. MCCONNELL: Thank you very much.

MR. PERRY: Okay. Thank you.

MS. MCCONNELL: Mr. Braden Lusk?

Please state your name and spell it for the court reporter and your --

MR. LUSK: Braden Lusk.

MS. MCCONNELL: -- and your organization.

MR. LUSK: Okay. Braden Lusk, B-R-A-D-E-N, L-U-S-K, and I'm also with the University of Kentucky. I'm a professor of mining engineering.

So what I would like to address with you guys today is some research that we've been performing on the protection of compressed air lines for breathable air into built-in-place refuge alternatives.

I think one of the things that has been mentioned a few times today is with regards to the 2018 approval for refuge alternatives and the deadline

that's looming on that.

I think the guidelines that you guys would produce are gonna be very, very important for successful implementation of engineering solutions.

One of the issues that you brought up about the differences in approval processes between 15 PSI walls and refuge alternative boxes is one of the major sticking points for a lot of these engineering solutions, in my opinion.

I think if you look at the level of investment that's going to be required to come up with an engineering solution for a built-in-place chamber, you really need to have some guidance as to how those approval processes are different and how each one of those needs to be addressed, whether you're looking at completing a plan with refuge boxes or if you're going with built-in-place refuge alternatives.

That's gonna allow the operators to make the decisions for their specific mine plans and make solutions that are, indeed, engineered solutions for each individual situation.

There's a large amount of current research that is going on right now with regards to built-in-place refuge alternatives at NIOSH. We're

doing projects on protecting compressed air lines.

I think there's other people that are also working on wall solutions for 15 PSI stoppings. So I think there are a fair amount of people that are involved with trying to provide solutions for this problem.

One of the things that I would suggest is looking at this as an engineering problem. In order to do that, we need to understand what we're trying to do with a refuge alternative, and if you look specifically at a built-in-place refuge alternative, the question is: What are we trying to protect from?

And I think if you look at the solution, maybe not in total, but I can name four specific things that we need to address, and those would include typical mine wear and corrosion.

So once you install these, you have operations going on in the mine where things would bump into them, equipment, just typical wear-and-tear equipment that would be in a mine.

You also have the blast pressure from an event that you're trying to protect these people from, if there is an explosion.

You have potential for debris impact in

one of those events, and then you also have protection following a disaster, whether there's fire or heat involved that could impair the ability of these solutions to provide their life-sustaining mission.

In order for us to come to a design that's appropriate to meet or exceed these standards, we need to develop some type of design basis for that, and what I mean by that is, what you -- what you guys -- you typically have as guidelines.

A design basis threat. We're looking at a 15 PSI. Is that, indeed, a 15 PSI threat that we're designing for, or is it a 15 PSI threat with a safety factor of two? What does the shape look like?

A lot of those things are currently in the regulations as it stands, but we also need to look at the other components as well, what type of wear and corrosion we're looking at, what type of impact are we trying to sustain, and these -- I think these can be developed through calculations and through research that is ongoing right now within NIOSH and other agencies.

Specifically, to speak to some of the tests that we're doing on protecting compressed air lines, some of the things that we're working on

specifically are varying types and grades of pipe exposed to blast pressures.

We're also looking at how they are exposed to different, varying levels of impact and calculating what energies we would suspect from a typical explosion and what loading would occur following that, and what type of protection is required to ensure the integrity of these lines.

The research is ongoing, and hopefully we're gonna have some concrete conclusions in the near future with that, but I think the point is, there's a lot of work going on in this area, and I think moving forwards towards 2018, my fear is that the research will not get completed in time for built-in-place alternatives to be a viable solution for compliance, and, thus, drive us to possibly an erroneous decision for some specific applications.

Now, I'm not saying that I know that built-in-place is the only alternative for all situations, but I think there is some combination, and I think that really needs to be investigated.

Thank you.

MS. MCCONNELL: Mr. Main?

MR. MAIN: In terms of, you know, the

basic question with supplying air, what particular research led you to believe that, and is that supported as far as the distance and to control condensation and those kind of things?

MR. LUSK: Yeah, I think there's definitely a lot -- there's a lot to look at there, and we are looking at some of that.

What I will say is, I think the individual solutions for compressed breathable air are as diverse as the mine plans that they'll be exposed to.

But it is an engineering design problem, and I think we can develop systems, whether it be the sizing of pipe or the storage of supplemental compressed air so that you're not basically emptying out the pipelines and not able to generate enough pressure to hold. All of these things can be designed.

We've actually run tests on pressure drop and flow drop. We've gone out to 10, 12 thousand feet, and we've seen calculations for doing 20, 25 thousand feet.

What you're looking at is what type of pipe, what type of resistances and flow that you need there, and those are the -- some of the types of things

that we're working on, supplemental to the, I guess, more direct impact things in our research right now.

And I'd be willing to share -- I've got just a little bit of information here. It's not really concrete conclusions, but it shows a little bit of the direction of the research that we're looking at.

MS. MCCONNELL: If you could provide that to the court reporter, we would appreciate that.

MR. LUSK: I will. And I will also --

MS. MCCONNELL: Submit it through the records at regulations.gov or --

MR. LUSK: Yeah, I'll try to submit some written comments and kind of detail what we're actually looking at in that respect.

MS. MCCONNELL: Okay, excellent.

MR. TUROW: When we talk about -- when we look at the December 2018 deadline, we're still talking about 26 months out.

I'm just interested in some of the hurdles that are in place that would make that date a hard deadline to reach, in terms of the research that you're doing, and then a sense for how long it would take to finish the kind of research you think is necessary to develop input necessary to figure out the

supply of air in built-in-place refuges.

MR. LUSK: Well, I think as far as the design of a system that you can put in place, as far as sizing pipe, what length you need, what size of compressor flow requirements, that's a relatively -- that's a relatively quick calculation that you can do.

The question is: What types of preparation will you have to do in order for that system to be approved to be installed? Will it need to be buried? Will there need to be a trench? Do you have to go across different crosscuts in a different, varying manner?

What type of elbows would be able to use, the actual interface between the built-in-place or refuge chamber and that breathable air? Does it have to come out of the trench and then into that at a 90-degree angle? Does it go underneath it?

There are a lot of things that, as engineers, we can design solutions for, but those solutions are really meaningless if they're not approved.

And that's not to say that they aren't good solutions, but sometimes, there are other information that's available to Tech Support that they

may not approve of those systems.

And it's -- it's a very long and arduous process to actually get those systems approved, not to mention the fact that there's research that will potentially be coming out in the next maybe 12 to 18 months where the reports are coming out basically less than a year before this approval needs to happen.

And it's -- it's really just hard to turn those research results into commercialized products in less than a year.

MS. MCCONNELL: I just have one -- this conversation provoked a question.

MR. LUSK: Sure.

MS. MCCONNELL: And excuse my naivete, but how would your -- your compressed air solution, as you discussed it, seemed somewhat permanent and labor-intensive and costly.

I mean, would that integrate -- would you be able to use your compressed air system with the previous discussion on the movable wall? Would that be something that could go hand in hand? And if you were having this movable wall, how easy would it be to extend those lines into that next built-in-place?

MR. LUSK: Yeah, that's a very good

question. Actually, I work very closely with those people, and that is actually the plan for this.

We would like to provide a complete solution for some mines to use our movable wall, the compressed breathable air system, and be able to move that up at the face as necessary.

So basically what you would have is a system where the pipe comes into the built-in-place refuge alternative, you have it manifolded so that you can introduce the flow into that area and provide breathable air.

When it's time to move that forward, because it's beyond a thousand feet, you can take the wall down, advance the pipe forward, build that built-in-place refuge alternative again. That's the plan for a complete solution.

MS. MCCONNELL: Okay.

MR. LUSK: Thank you.

MS. MCCONNELL: Thank you.

Okay. Mr. Lusk was our last signed-up speaker, but that doesn't prevent anyone from coming down and sharing some information with us on some of the issues we highlighted in our opening statement and in Mr. Main's remarks.

Is there anyone there who could speak to us about two-way communication in terms of when a miner has a SCSR or any solutions to that versus an SCBA?

Is there anyone that could speak to the use of built-in-place at their own mines or the refuge alternatives that are currently used in their mines? Recommendations for changes?

It's only really through your input that we can learn from your experience.

Come on down, Dennis.

MR. O'DELL: Good afternoon. My name is Dennis O'Dell, D-E-N-N-I-S, O'Dell, O, apostrophe, capital D-E-L-L. I am currently the administrator of Occupational Health and Safety for the United Mine Workers.

As I said this morning, I have 40 years experience in the mining industry, 20 as an underground coal miner, ten as a field representative for Mine Workers, and ten years in currently the administrator of Occupational Health and Safety.

So I really wasn't prepared to say anything this afternoon, and I promise you I won't be as long this afternoon as I was this morning, but when you opened this up, you said we were just going to have

kind of a general discussion about everything, and not necessarily on a technical end, but let's just talk about some general things that coal miners can identify with.

So one of the things that the Mine Workers believe at this time is that, No. 1, shelters as we have today, the chambers, we should still leave one on the section. We can't go back to the days of brattice cloth and post. We have to deal with the facts as what we know.

Nobody can speculate or guess what happened at Sago. We have to deal with the facts as we know them.

Miners throughout the world are taught escape first, then if you can't escape, barricade, and so since MSHA's taught that, since I've known that for 40 years, it would be my guess that those miners were taught the same thing at Sago.

Whatever reason, they felt they couldn't escape, so they had to turn around and barricade. That's the facts. That's what we have to deal with. Had there been shelters or chambers in place as we have today, we know now that those miners would be alive, without question.

And why do we know that? We know that because the units have been tested, there were a less number of miners that would've been in that facility as what we have them ready for today.

The other thing we know is that the explosion force was nothing like it was at Upper Big Branch, and when we tested units at Upper Big Branch, and with that massive force of explosion there, those shelters/chambers were fine.

People -- we know now that people would've survived had they have been barricaded in those. That's the facts. So we have to deal with the facts and the facts only. With saying that, I believe that we can also do better than what we're doing today.

As just a general discussion, it's my personal belief - if I may - that if I'm still working in the mines today, I'm gonna do everything in my power to escape, but knowing that I have a shelter or a chamber on the section gives me some satisfaction in knowing if I can't escape, I have an alternative.

So I believe those should be left where they are today, regardless of where we go moving forward. The other thing I believe is, can we go to hardened rooms or hardened shelters? I believe the

answer to that is yes as well, because I think it serves a great purpose.

It doesn't really serve a purpose for escape. Let's say -- let's take a situation, again, at UBB.

Had those miners have had the hardened rooms in place or the hardened shelters, they would've been able to go to that, regroup, change out the self-rescuers that they had, communicate with each other, and see what their next plan is.

So it's a place where miners can go and gather themselves, figure out what the next move is, communications are provided, they can communicate with the surface and find out what's ahead of them.

If air is provided, they can change out their SCSRs or replenish their units without being in contaminated air. So I believe that's an important step forward.

The other purpose, I think, that it would serve would be for miner rescue teams. In the event somebody were stuck on a section in a chamber, the mine rescue teams could utilize those hardened rooms or shelters or whatever you want to call them as preset fresh air bases.

They can use those to go in, they can replenish their units to where they could expand further on their search, they could communicate better with the outside.

If their communications aren't working -- and we know we're doing a lot better, Joe, with the communication systems that you have now today, but it's always good to have a backup plan, right? I mean, the best plans don't always work out, so it's always good to have Plan B.

So I think there's a lot that we can do, as far as utilizing built-in-place refuge chambers as well, for escape and for miner rescue.

Where applicable, I think that those places could be provided with a borehole from the surface to provide fresh air and communications, and we know that there are some mines that can do that without any problems, accessible.

There's also mines where that's a challenge, in the mountains or whether it be a problem with a landowner who doesn't necessarily want you to come on his property or you can't access it or it may take too long to access it, too.

Then we ought to consider the use of

compressed air lines. There's a lot of mines today that utilize compressed air lines. It's part of their everyday business. They're there.

So if they can't utilize a borehole from the surface, then utilize the compressed air lines that they already have in the mine, but just be smarter about the placement of it.

That's all it's -- I -- my manager told me one time, "The key to success is the six Ps: Prior Proper Planning Prevents Poor Performance."

And I think if smart mine managers would utilize that in the event of using compressed air lines, because I've heard that they can pretty well withstand a 15 PSI; it's just the flying objects that you have to protect them from, that they're not in the line of debris that may damage the lines.

So let's get smart about either burying them or putting them closer to the roof or whatever, but look at the different ways that those lines can be protected for use. Communications. It's always been a problem underground, communicating.

Anybody that's worked in a coal mine knows if I'm on one side of a piece of equipment, if somebody's on the other side, they're screaming,

they're yelling, you have earmuffs on, the machine's running, you can barely hear each other.

I mean, it's a difficult -- under normal circumstances, it's a difficult situation to where you can communicate with each other.

I think that there is room for full-face apparatus like they use in mine rescue, but I think it can be less complicated than those units that mine rescue people or firefighters use.

Anybody that lives in the area where I live and has to deal with Congress, they got this neat, little thing under their seats, it's a pullover hood.

Any member of Congress or Senate, under the seats that they sit on in the chambers, has this little -- you pull it out, and it's got a hood that you put over your head in the event they have to evacuate, and they have fresh air. I mean, have you seen this? It's there.

So if these Senators and Congressmen can use that and have access to that, why can't we as coal miners?

MS. MCCONNELL: How long is --

MR. O'DELL: Because --

MS. MCCONNELL: How long is the oxygen supply for that?

MR. O'DELL: I'm not -- that's a good question for you to find out. I'm not sure, but it alleviates another problem for coal miners. A lot of coal miners have facial hair, and so we don't go to work every day planning on fighting a fire or having to evacuate under self-contained self-rescuers.

We go to work to mine coal. That's our job on a day-to-day basis. But we have to be prepared in the event of an emergency, unlike a firefighter or a mine rescue team member who has to be clean-shaven because that's what they do.

Coal miners, I think it's a bit too much to ask coal miners to be clean-shaven every day, because it's not a daily part of their routine to fight a fire or to escape.

So this hood-type thing helps alleviate the problem of fit test, and I think there's been some pretty good success on most of the testing on those, and I think the communications can be implemented in those units to where miners can talk back and forth with each other and understand what the -- what's being said.

That's pretty much what I just wanted to throw out there, as far as just some common sense things to think about.

I appreciate the time that you've given me to speak on those things, and I appreciate the work that everybody's done, not just you guys but everybody in the industry, as far as those that are being proactive to move us in a better place than where we are today.

MS. MCCONNELL: Thank you.

Mr. Main?

MR. MAIN: Yeah, just a couple things. In terms of -- if you look at the super-longwall or super gate roads we have in some of these mines, that distance between that face and the outby, it can be a life-challenging experience, and I think the -- you know, if you look at it from a practical standpoint, looking at it for the current refuge alternatives, from the face outby, there is going to -- probably would be a bit costly, as the saying goes, and I'm trying to figure out some remedies for -- particularly for situations like that, as you described, in the hardened room areas, which would you see those to being the same 15 PSI standard to be protected from the explosive --

MR. O'DELL: The hardened rooms?

MR. MAIN: In the hardened rooms, yes.

MR. O'DELL: Yeah, I heard some conversation out in the lunchroom before we came in here today, and some of the hardened rooms, they talk about can withstand that type of pressure, but the other thing that some of the folks have done is pretty ingenious.

When they built these -- and you guys have probably seen them, and I haven't had the privilege of seeing them, but they actually build them so the access to them is not in line with where the explosion would travel.

So I think if you -- if you're a little bit smart on how you build these and you build them with a little offset to where they're not in line with where the explosion pattern would go, I think that increases the chance that it's gonna more than meet that standard, that PSI standard, to where it may take some damage, because you're putting it in a place where it's even more protected, just because of the natural settings and the way you build the unit on it.

I think the other thing that I failed to mention is, we have to look at it as far as distance-

wise between place to place for the miners to travel.

If we wear the self-contained self-rescuers that we use today, which are supposed to be 60 minutes, there's already been a formula established to what the distance is between caches.

I think we have to apply that same rationale if we go to hardened rooms, as far as those distances for changing out or replenishing the units that we would be using.

I think the other thing that could be done on that is a mine-by-mine approval-type approach on -- based on the fact that all mines have different conditions, different heights, different, you know, air and those kind of things. So I hope -- I don't know if I answered it, but I think I did.

MR. MAIN: Okay, that was helpful. I just -- and I think the -- you know, looking at it, if we look at where is most at risk, the gap to the next location, it would be more on those long gate roads than it would be a short section or the --

MR. O'DELL: That's a definite challenge, but I think the areas where you put your self-rescuers has to be located strategically to at least you know that you can get to a hardened room or a shelter if

need be.

Because I don't know that you'd, on a longwall face, you could put a -- obviously you can't, you know, put a shelter or a hardened room, but you can locate the self-rescuers strategically to where if you need to get from that place to where you can get to --

MR. MAIN: Planning your escape route out.

MR. O'DELL: Right.

MS. MCCONNELL: Wes, do you have anything?

Thank you, Dennis.

MR. O'DELL: Thank you.

MS. MCCONNELL: Anyone else that could speak to the topics of this session?

Thank you, sir. State your name and spell it.

MR. MOORE: Once again, I didn't come here to make a presentation, but I -- since you described the thing the way you did, that it's more of an open forum --

MS. MCCONNELL: Yes, it is.

MR. MOORE: -- I will address the group again. Once again, it's Todd Moore, T-O-D-D,

M-O-O-R-E, and I'm with Consol Energy.

The first thing that, you know, we've been talking about, putting these compressed air lines in, okay? That all sounds well and good, but there's lots of things that go along with compressed air lines that the group needs to think about.

One is, you know, that some of the bottoms in these coal mines are tremendously hard, okay? The coal seam is one thing to mine; the bottom is another thing to mine.

The second thing is that a lot of the mines that we've owned and operated have bottom hooving of two to three feet, okay? So if you bury it and then the bottom hooves, what's gonna happen to your line? It's gonna separate, it's gonna -- there's lots of different things that happen there.

Any compressed air I've ever dealt with, you have to have drops, you have to have places that you can bleed off the -- the water and the condensation, those kind of things. Any of those places are gonna be vulnerable places, you know, for a fire, for an explosion to disrupt the system.

And trust me, if I knew where my next fire or explosion was gonna be, I wouldn't have my next

fire or explosion. So you can't always engineer for that. You can't always think where that's gonna be. You can't always work your way around that. That's why I don't think compressed air lines are feasible.

The line from the surface, if you can put a borehole down, you know, that's all well and good, and that would be a Cadillac outby shelter, but those locations are limited as well, you know, due to landowner difficulties, due to the terrain, due to those kind of things. It's not always possible.

I think if you go to RAs, there has to be multiple, different ways that the people can provide the air, one maybe being boreholes, they can, but maybe it's cached air.

Maybe it's air that's in a, you know, in compressed caches that you would move and you would have behind the RA wall that you have so that you could move it from place to place. But I think that's the only way that's feasible.

You talk about the face pieces, and I want to talk about what Dennis talked about there. What he says about the Senate and the Congress, I have one of those units. I think it's a five-minute unit. It's in a bag.

I think I've showed it to you, Joe. It's in a bag, it's green. You tear it apart, put a hood down over your head, there's a little canister that goes right along your neck.

Like I said, I think it's only a five-minute unit, but it does help with a lot of the problems that we keep talking about, with this face-fit test, okay?

I can't be worrying about what size people I have on my section every day. You know, I got four with big heads like mine, and I got two with little heads like yours today. Before, I got four little heads like yours and two big heads like mine. So that doesn't work.

So you have to have one size fits all. This hood that comes around your head and cinches in, okay, that allows communication, it keeps the smoke out of your eyes. There's lots of good things that come along with that.

MS. MCCONNELL: But the option is only five minutes. So how --

MR. MOORE: That's -- true. That has nothing to do with the hood; that just has --

MS. MCCONNELL: Right.

MR. MOORE: -- to do with the oxygen supply.

MS. MCCONNELL: So is there any product out there that provides you more than five minutes or up to 30 minutes or --

MR. MOORE: In my opinion -- you can ask the professionals here in the room that know better than I, but I believe that that hood could be utilized with some other type of supply device.

MS. MCCONNELL: Okay.

MR. MOORE: Okay? Currently, it's only, I think it's five, it might be ten minutes, but it's just a small unit. But I think that's something that certainly needs to be looked at.

And the final thing I want to say is, no matter what you guys decide on RAs, outby, inby, whatever, without Through-the-Earth communications, we're still just spinning our wheels here.

We're ten years after Sago, okay? Those poor guys beat on the roof down there 'til they couldn't stand it any longer, okay? And we never heard them. We didn't know that they were, okay? That was our -- I still wear my helmet, a sticker that tells me to beat on the roof, and people come and save me.

That's what's in my helmet right today. Ten years later, we're not much closer than we were ten years ago, although technology does exist, and I think without Through-the-Earth communications, I think we're not doing the miners the justice that they deserve being able to get in these shelters.

That's all I have.

MS. MCCONNELL: Thank you very much. Oh, hold on.

Mr. Main?

MR. MAIN: Yeah, Todd, and there was -- I think there is -- one of the manufacturers that worked with your folks, which is --

MR. MOORE: Lockheed?

MR. MAIN: -- Lockheed, and I think they're in China now.

MR. MOORE: I think so.

MR. MAIN: And there's another firm out of Canada that I just saw, we have an approval at -- do you know which one that is, Wes?

MR. SHUMAKER: The Rescue Dog.

MR. MAIN: The -- through the communications and stuff.

MR. SHUMAKER: Yeah, I believe they're

called the Rescue Dog at E-Spectrum.

MR. MAIN: I didn't know -- I know they had been working with that technology. I just saw this actually recently. I was --

MR. MOORE: I believe there are four or five different companies right now that say that they have Through-the-Earth communications. I've not tested all of them, but I do know that it does exist. It's not pie-in-the-sky stuff.

MR. MAIN: Yeah, I would agree to that. That's something on the list that we need to figure out how to move forward.

MS. MCCONNELL: Thank you, sir.

MR. MOORE: Thank you.

MS. MCCONNELL: Is there anyone else who would like to come down and share some information?

MR. HARRIS: I guess since my other two buddies got up and gabbed, I need to, too.

Hi, I'm Randall Harris, R-A-N-D-A-L-L, H-A-R-R-I-S. I'm a tech support for the State of West Virginia, Mine Safety Office.

I also said I wasn't going to talk, because I've said everything I'm gonna say many times, but, you know, it's interesting that you guys date

yourself as working on this for six years. As Todd pointed out, we've been working on this for ten years, and Todd was here.

Dennis wasn't in the room, but Dennis' people were. We spent a lot of time trying to figure out what solutions were after Sago, and in many ways, we're responsible for the craziness that's here now, 'cause then Congress picked it all up and voted in the MINER Act.

One thing that Dennis started off with is absolutely right. We did not set off to build shelters.

We set off to figure out how we get people the heck out of the mines, and the whole concept of shelters came in because while we were doing this, in Canada, they had an accident in an underground metal/nonmetal mine, and a diesel engine, as I recall, caught on fire, and there was diesel smoke, and everybody went into a shelter.

Well, the media picked it all up and said, "Ah, shelters are it." We were in the middle of our deliberations, and so our chief executive says, "Shelters are not a bad thing, let's talk about shelters."

But when I talked to the Canadians, their biggest fear was if you put a shelter in there and it looks like a dining room, people are gonna go there first. They're not gonna give out. And sooner or later, they're gonna go in that room, and then we're not gonna be able to get them out.

So their recommendation to us - which I heard also from the folks in Poland and the folks in Australia - was build something that works, but make it so goddamn ugly that nobody will get into it unless they absolutely have to and provide them everything they need to get out, so that if -- the option to get out is more attractive than the option to get in.

And that's basically how we got to where we are today. The concept of outby places to stop and change rescuers and all that stuff was all debated.

The underground, whether you put air -- compressed air in, we debated all of that, too, and a lot of the reasons Todd talked about have not been overcome.

The mines that have compressed air systems now or any industry that has compressed air systems has trouble maintaining pressure over maintenance periods, and even in factories that don't

move. And as Todd pointed out, our mines move. The tops move, bottoms move, ribs move.

So it makes it even more complicated. The communication systems we have underground now are not perfect.

The issue with Through-the-Earth works really well if you're on the Enterprise, but when you get into the practical issues of moving an electromagnetic field through - in some cases - thousands of feet of rock, you've got a lot more issues, and that's why the Lockheed Martin system is as expensive and extravagant as it is, because it's not easy.

When you're trying to move a signal through, it's not like communicating through the air. The density of the air, the ability of the air to conduct signal is fairly constant.

When you're going through strata, you've got different layers of rocks and different compositions, you've got pools of water sitting in there, so you get all of these lensing effects, and it's just not easy.

So Through-the-Earth communications is something that is worth exploring, but it's not

something that you're -- that's gonna have an everyday solution. It's just very difficult.

Joe, your question about talking, we actually came across that while we were working through our stuff, and I've worked on it on and off for the last ten years. There are throat mics right now that you can wear with the current brand of SCSRs we have out there.

The problem is, that we basically have two major communication systems that accept them, the Motorola and the Kenwood. Motorola has them approved actually, but it costs more than a radio, and it comes in a pouch about the size of an SCSR.

Kenwood no longer offers theirs, because it was too difficult to get it approved and the market was too small, so they don't offer a throat mic for that, and the way our approval is, you can't plug somebody else's throat mic into a Kenwood radio, even though there might be a plug for it.

I found a company in Illinois that makes them for the military. They use them in tanks and in helicopters, throat mics. They were willing to do it. The problem is, we ran into even if I got them to do it, they could make one small enough to fit in a pouch

next to your SCSR and it would plug into your unit.

We couldn't get it approved, because they were gonna make a throat mic that would be universal to everybody. There's no mechanism, meaning electrical approval codes, to be able to do that, which kind of gets back in another issue that was brought up a couple of times, is the reality of 2018.

The reason we made 2016 was we happened to find a flaw that we had to fix, and we told everybody, "You've gotta fix the flaw." We fixed the flaw in time to make 2016. That was our first set of deadlines, right? Was it 2016?

MR. SHUMAKER: 2013. 2013.

MR. HARRIS: 2013. If we hadn't found that flaw, we would've had this crisis in 2013. Because there was an imminent danger, we got everybody to fix everything in time, and everybody got their approvals in place, and we made the 2013 date.

There is nothing driving people to get everything done in time to make 2018. I don't know how that's gonna happen. There's -- unless a crisis comes up or we get some real creative or motivated manufacturers to go out there and go do their thing in time.

I haven't kept up with Wes in the last several months, so I'm not sure where we are in this process, but it's probably not much improved. The problem you've got is, there's a lot of manufacturers sitting out here, too.

That's the guys that are gonna have to figure out how to make the things in time, for the other guys out here mining coal to pay for them and get them installed by the end of 2018. You can't just go out and start building something and be able to ship it.

The logistics of going through this cycle the last time - when we had to go back and repurpose some of these shelters - was enormous. The logistics was more complicated than -- by far than anything associated with the approval process or design process.

How do you move thousands of these devices? And a lot of these things weigh eight, nine tons. How do you move thousands of these things around to be able to do what you got to do in the time you've gotta do? How do you get them manufactured?

To manufacture them, you've gotta just order the parts. To order the parts, you've gotta do the design. To do the design, you've gotta get the

approval. To get the approval, you've gotta do the testing.

So you gotta work backwards from 2018, and I personally believe that you've already missed the deadline for 2018.

Unless somebody, a manufacturer of the portable shelters, unless one of them has their structural approval in place now, I don't know how, with all those steps in place, they're gonna be able to get everything moving, if they have to do any modifications, to be able to hit 2018 and get them out in the market that, quite honestly, is economically stressed and -- especially for capital expenditures.

The other issue that's come up a couple times from the other folks talking is this whole concept that this is a very situational-specific solution that you need, and you're driving towards some universal standard. It ain't gonna work.

I mean, we got thousands of different mines. Coal mines, you've got metal -- your metal/nonmetal mines that, eventually, you're gonna get into -- some of them have already adopted things like this, but you've got thousands of these things out there. Every one of them is different.

As Todd says, some of them got floors that are very, very hard. Some of them got floors that turn into mud. Some of them got floors that go up and down. There's not gonna be a single solution.

Braden and his folks are talking about the -- their walls. The problem with the walls, whether it's made out of their stuff, which is pretty cool, or whether it's made out of blocks or steel or whatever is the same thing we were just talking about, the walls go up and down over time.

The issue about where is the next explosion gonna come for, that was a real interesting thing, Joe, because when we went through -- we actually went through the process of, "Tell us what you're gonna do and why you're gonna do it."

The problem we ran into was, from a regulatory point of view, if a mine operator points out to you that there is a risk of an explosion at this point, what are you gonna do about that as a regulator, 'cause they've now pointed out a hazard or a risk, at least.

And now, we're in a position -- we know where a risk is, and then something eventually happens and we didn't do nothing about it, or where the

solution we adopted wasn't adequate, I mean, we've got a real -- there's a chicken and egg thing here that I'm not sure what the answer is.

The Australians went down this road a couple decades ago, and that's how they ended up at this whole concept of, "You tell us what you're gonna do, and we'll tell you whether it's adequate, then you're gonna have to follow it," rather than setting a standard.

They set some standards, but it's mostly at the mine level. You gotta tell us your duty of care, I think they call it. This is just a very complicated issue, and I'll be quite honest, you guys are way behind the curve on this. It's gonna be tough.

This built-in-place shelter thing, I know me and the NIOSH guys, we've had long debates about this. I agree that there's a place in this that several other folks have said we need a whole bucket full of solutions. We don't need a solution. There's not a solution.

The hoods that Todd's talking about, besides that little one, which originally, I think, only has a carbon monoxide filter in it, but besides that, there are hoods like that. I've used them.

I used to be in the nuclear weapons program. I was on the NES team, which is our inversion of nuclear -- or the mine and rescue teams, nuclear emergency support team. If the nuclear weapons went off or something happened, we were the guys that bundled up our stuff and went out.

There are hoods like that. We have them, I mean, DOE has them, the military has them. And most of them got like -- it's got an airpack on them, but you can put air in there from anything.

The irony is, I was telling Ed earlier, we were going -- we were all talking about, we all got old mining stuff sitting around, we all collect junk, we all do. I can -- look at you smile.

I found in one of my stashes a MSA self-rescuer that was built in 1950 that had exchangeable -- there's a solid state one that had -- it's changeable cartridges, so it had a whole cartridge with the OxyChem in it and CO2 absorber, and it came with a hood, it came with a regulator, and it came with three packs that you could plug into it.

We have spent -- since Sago, we have probably spent 7 or 8 million dollars on R&D that we've developed something that was developed in the '50s, and

they couldn't sell enough of them, and MSA quit making them.

You know, there are solutions out here. They're -- they're gonna be difficult to find, and as the gentleman from --

Parris? I don't know who you're with.

But as Mr. Parris was saying, it's gonna take everybody working together, especially now that we're up against this time crunch.

And I know from your point of view, Joe, sooner or later, you're gonna go off to the next -- the next thing you're gonna do, and we're running out of time on this, this momentum. If we're gonna get something done before you go off to your next job, we're gonna have to get it done now.

I have no idea what's gonna happen next; I just have been through too many administration changes as a federal employee to know that things -- that -- to know that things will change one way or another, and the things that -- the momentum and stuff that has happened over the last period of time, since you've been here, Joe, is going to be interrupted, if nothing else, by just a change of all of the managers.

'Cause people are gonna be shuffled

around, you're not gonna have the same momentum, you're gonna lose a year, 18 months, figuring out exactly what the heck the next person's gonna do before you even start doing anything.

And you and I had a conversation, you've been here for almost six years, and you still haven't figured out how to make things work yet.

MR. MAIN: Still haven't.

MR. RANDALL: Yeah, you still haven't, you know, but, I mean, I've been through it at the Department of Energy. I can't imagine the Department of Labor is any different.

So that's my two cents' worth. I've said all of this before at multiple meetings, and I told Ed that I probably wouldn't even say it again, but, fortunately, the court reporter has got it all written down this time.

MR. MAIN: A lot of things to think about, and, you know, that's what this is -- I think Dennis talked about it, it's sort of an open conversation, kind of a public meeting we wanted to have, because we do have to come to terms with all of this.

And I think we've been with the -- the

current model about six years now, and we have -- with the experience we had, we've had a few that did, as you noted, bring all of this equipment out and find out how to do it the painful way, but I think, you know, just sort of, like, putting everything in perspective.

We do have a short period of time, if not driven by a December 2018 certification regulation, we probably think we're a little bit more ahead of the curve than what you may, but time's gonna tell on that one.

We plan to have, as short as we can, the guidance out for what 2018 certifications mean, but, you know, it's -- I think we just need to take a quick step back and look at the overall mine emergency response system structures we're putting in place and use this short period of time as an opportunity to try to plot where we go from here.

And that's the purpose of this exercise, because we do have a communications issue, we do have some of these long gate roads that have a great distance from where you leave that refuge alternative to the next area, which we have to go through, things like that, that, you know, we really need to have input on and information back.

MR. RANDALL: I contend that you're never gonna get enough input to make those decisions, and that, you know, you're gonna have to find a solution that is flexible enough to allow people to do what they need to do with whatever the latest technology is, and an approval process that is flexible enough to allow the technologies to bear in the appropriate locations.

The whole issue is how do you encourage -- how do you encourage innovation, technological innovation in any field, whether it's new coal-mining methods or safety methods, when you have rigid approval processes that are difficult to modify, and it's not just an issue for MSHA; it's an issue for any regulator at any level in the system.

How do you -- how do you, on one hand, encourage innovation, at the same time maintain some minimal standards and remain, you know, credible as a regulator?

MR. TUROW: I guess the only point I'd like to make is that I think that's a good -- a good statement. I just do want everyone to recognize that the existing standards, I'm talking about 30 CFR 7.510 does allow for the approval of new technology.

So there is that flexibility that is at

least built into the regulatory structure that would allow new technology to be approved if it provides the same level of protection, and I just -- not commenting one way or another, but just want more people to be aware of that option.

MR. RANDALL: Steve, as a ten-year observer of the process, that flexibility is very difficult to actually execute, and I don't -- you know, having been on both sides now, you know, I'd spent the first 20 years of my life sitting in federal agencies regulating folks like you did, and now I've been on this side, and it's not easy.

I mean, there's no easy way to do this, but I just know that unless you get about -- a process in place to -- or something to drive to whatever deadline you're gonna get, you're gonna have difficulty getting there, because you will become -- overcome by events that we have not even anticipated yet.

I mean, I love your six Ps things. That's absolutely right.

All right.

MS. MCCONNELL: Thank you.

MR. SHUMAKER: Thank you.

MR. MAIN: Thank you.

MR. RANDALL: Thank you.

MS. MCCONNELL: Thank you.

Anyone else like to come down and share a few thoughts? We're learning a lot from your testimony. I know I am. So if you have some ideas or suggestions, please come down.

MR. MAIN: How long is the record open on this one? October --

MS. MCCONNELL: Another month from now.

MR. MAIN: Okay.

MS. MCCONNELL: November 16th.

MR. MAIN: So this is an extension of four extensions of the record --

MS. MCCONNELL: Right.

MR. MAIN: -- and an extension of the comment period. So, you know, any ideas, good thoughts that you have, we'd like to sort of get them out, because we do need to move forward doing something, and the input would be very helpful, and guidance.

MS. MCCONNELL: Okay. If there is -- this is the last call. If no one else wishes to make a presentation, I will conclude this meeting, and I want to thank everyone who has made a presentation, as those who did not present, for your attendance here today,

and your interest in this rulemaking.

I want to emphasize that all comments must be received by November 16th, and we will take your comments and concerns into consideration as the agency determines what, if any, action is needed.

Thank you so much, and have a good evening.

(The meeting concluded.)

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

I, Bret M. Matics, C.C.R., do hereby certify that the foregoing proceedings were duly taken by means of voice writing and transcribed by me to the best of my skill and ability by means of computer-aided transcription and that all information contained therein will be held absolutely confidential.

Given under my hand this 26th day of October, 2015.

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BRET M. MATICS