TRANSCRIPT OF PROCEEDINGS

In the Matter of:)
)
UNDERGROUND MINE RESCUE)
EQUIPMENT AND TECHNOLOGY)
PUBLIC MEETING)

Pages: 1 through 215

Place: Washington, D.C.

Date: March 13, 2006

HERITAGE REPORTING CORPORATION
Official Reporters
1220 L Street, N.W., Suite 600
Washington, D.C. 20005-4018
(202) 628-4888
hrc@concentric.net

UNITED STATES DEPARTMENT OF LABOR

In the Matter of:)
)
UNDERGROUND MINE RESCUE)
EQUIPMENT AND TECHNOLOGY)
PUBLIC MEETING)

Monday,
March 13, 2006

First Amendment Lounge
National Press Club
529 - 14th Street, N.W.
Washington, D.C.

The meeting in the above-entitled matter was convened, pursuant to Notice, at 8:31 a.m.

BEFORE: ROBERT STONE
Moderator

PARTICIPANTS:

STEVE LUZIK
ROBERT SUASHALL, Office of the Solicitor
DAVE CHIRDON
MIKE KOESTER, Mine Site Technologies
SHAWN STEWART, X Systems Technologies
MARTYN FISHWICK, MineCom - Australia
MARK ROSE, Tunnel Radio of America
JAMES HACKWOOD, NL Technologies
TONY/BUMBICO/WENDELL CHRISTENSEN, ARCH Coal, Inc.
JEFFREY RUMMEL, Arent Fox, PLLC
DAVE BEERBOWER, Peabody
JOHN W. BRIGLER, Retired Engineer, NYC
MARTY SARGENT, Total Fire Group
DONNIE GATTEN, TTC, Inc.
KURT SMOKER, Conspec Controls, Inc.
RUSSELL BREEDING
BOB LAVERGNE, Mine Radio Systems
RUBEN PADILLA, Pacific Consolidation
UNMWA

PARTICIPANTS (continued):

GARY TYDINGS, Stolar Research Corp.
BATTLE BROWN, QuickStart Wireless
(Carnegie Mellon)
WILLIAM COLLINS, WCC Solutions
BRIAN WILSON, MineCom - Australia
ALAN FISHEL, Arent Fox, PLLC
DENNIS O'DELL, UMWA
JIM PONCEROFF
CRAIG CARPENTER, UMWA
LARRY TENNEY
JOHN JORDAN, Central Mine Rescue
DONALD JACK
DOUG WADE
RICHARD COSNER
JOHN BOWERSOX
TIM BAKER

P R O C E E D I N G S

(8:31 a.m.)

MR. STONE: Good morning. My name is Robert Stone. I'm the acting director of MSHA's Office of Standards, Regulations, and Variances. On behalf of David Dye, the acting assistance secretary of labor for mine safety and health, I would like to welcome you to this public meeting today being held at the National Press Club in Washington, D.C..

The devastating loss of 12 miners at the Sago Mine explosion in West Virginia on January 2, 2006, and the two miners who did not escape successfully from the fire at Ericomo No. 1 Mine on January 19, 2006, clearly highlight the critical value of mine rescue operations following a serious mine accident. While MSHA is still investigating the cause or causes of these accidents and continuing a detailed evaluation of the emergency response, we are looking for ways to maximize mine rescue responses and improve opportunities for miners to survive after an accident occurs. Specialized equipment and technology are vital for effective, underground mine evacuation and rescue.

The key components of communications and tracking of miners are the focus of today's meeting.

On January 25, 2006, MSHA published a request for information in the Federal Register asking for comments, data, and other information on a variety of topics concerning underground mine rescue equipment and technology. Those topics included, among others, rapid deploy systems, breathing apparatus and self-contained self-rescuers, rescue chambers, communications, robotics, and thermal and infrared imagers. We have received over 35 comments to date. You can view these comments on our Web site.

The purpose of this meeting is to complement the request for information by obtaining technical information from the knowledgeable mining community on technologies used for underground communications and tracking. This information will better enable us to evaluate which actions to take to most effectively improve mine evacuation and rescue capabilities consistent with our responsibilities under the Federal Mine Safety and Health Act of 1977.

A notice of this public meeting was published in the Federal Register on February 23, 2006. We have copies of both the request for information and public meeting notices at the back registration table outside the room.

The meeting format is as follows: Two of

our panelists will give their presentations first. Next, those of you who have notified us in advance of your intent to speak will be allowed to make your presentations. Following these presentations, as time permits, others who requested an opportunity to speak will be allowed to do so. We invite all interested parties to present their information at this meeting, and if you are sitting in the audience now and wish to speak, please sign in at the registration table.

We must vacate this room no later than 5 p.m. today. Subject to that time limit, we will remain in session today until everyone who desires to speak has had an opportunity to do so. If you are not speaking today, we would also like you to sign the attendance sheet so that we have an accurate attendance record of today's meeting.

Following MSHA practice, formal rules of evidence will not apply at this meeting. The MSHA panel may ask questions of speakers. I may limit the questions of the panel for the sake of time. As is our usual practice and because of time constraints, we will not be accepting questions from the audience; however, if you do have questions, we would be happy to speak with you during the breaks. I request that members of the press refer any questions they might

have to MSHA's press officers, Dirk Philpott, standing over there, who will be available in the morning, and Amy Lumiere, who will be available in the afternoon. They will be available directly outside this room and including during breaks and at the end of this meeting.

We plan to have one ten-minute break in the morning and one in the afternoon, as well as a 30-minute break for lunch.

If you have a PowerPoint presentation, please see Celina outside when the previous speaker is beginning to speak. When I call on you to speak, please come to the speaker's table and begin your presentation by identifying yourself and your affiliation for the record.

Due to the large number of speakers that have already signed up and our 5 p.m. time constraint for the use of this room, we must strictly limit the amount of time for each presentation to 15 minutes. Fifteen minutes will be the total for any company, organization, or association. I will give a hand signal to indicate when five minutes remains and another one when one minute remains. When no time remains, I will state that the time is up.

If you have a prepared statement or any

supporting documents or presentational materials that you wish to submit for the record, please leave a copy with me today. We will accept written comments and information at this meeting from any interested party, including those who are not speaking. You can give written comments on this meeting to us today, or you can send them to MSHA's Office of Standards electronically, by facsimile, by regular mail, or hand delivery using the address information in the request for information.

The post-meeting comment period on today's topics will end concurrently with the comment period stated in the request for information, March 27, 2006, and submissions must be received by that date.

A verbatim transcript of this meeting will be made part of the record. It will be posted on MSHA's Web site, www.msha.gov, in a couple of days. If you would like a copy sooner, you can make your own arrangements with the court reporter.

Let me also add that MSHA and the National Institute of Occupational Safety and Health will host a workshop on issues and concerns mentioned in the request for information. The focus of that workshop will be mine escape planning and emergency shelters in the mining industry. The workshop will be held on

Tuesday, April 18, in Washington, D.C. We will be publishing a Federal Register notice soon that will formally announce this workshop.

At this time, I would like to introduce others from MSHA on the panel with me today. On my left is Dave Chirdon, the chief of the Electrical Safety Division at the Approval and Certification Center. Mr. Chirdon is also attending as a presenter and panelist. His presentation will deal with emergency communication and tracking systems.

On his left is Steve Luzik, the Technical Support Center chief at our Approval and Certification Center. Mr. Luzik is also attending as a presenter and panelist. His presentation will deal with the approval process.

On my right is Bob Snashall from the solicitor's office.

The first speaker on our panel today is Dave Chirdon, and he will be discussing MSHA's efforts to evaluate communications and tracking technologies. Dave?

MR. CHIRDON: Thank you, Robert, and good morning, everybody. As Robert mentioned, my name is Dave Chirdon, and I'm the supervisor of the Electrical Safety Division, at MSHA's Approval and Certification

Center. I have a brief presentation today to talk about what MSHA is doing to evaluate and advance the technology of mine communications and tracking.

Before I get started, I did want to make a couple of points about underground communications. Underground communications and tracking, in and of itself is a challenge. The conditions that we're facing when we're evaluating communications and tracking for emergency usage are that you would have no power available at that time and also that any fire or explosion would have removed any cables or wire infrastructure that that communication system works with. So the challenge of providing communications from the surface to underground in an emergency is a serious one, but I think the evaluation that we're conducting has uncovered some technologies that can work under that situation, under those conditions.

The activities that MSHA is currently undergoing to address the emergency communications and tracking issues: The first is we're investigating the Mine Site Technologies PED and Tracker systems. Since the incidents at Sago and Ericomo, there has been a lot of talk about the PED and tracker are approved by Mine Site Technologies. We wanted to take a look at these devices and see what the actual capabilities of

those systems are. So we've been evaluating them by visiting mines, and I'll talk about that a little bit more.

The other thing that MSHA has been doing is evaluating available new technology. Since the incidents, we have solicited proposals from the industry from manufacturers and from other organizations, and as of now, we have received about 80 proposals for different communications technology. We solicited these proposals over the MSHA Internet, and as of Friday, we've had 81 different proposals for emergency communications and tracking. We've been reviewing these proposals and have been arranging field testing of certain proposals, and I'll talk about that a little bit more as well.

Now, as far as our investigation of the Mine Site PED and Tracker systems, so far, we've looked at the PED installations at Peabody's Air Quality and 20 Mile Mines. We've also looked at the installations at Blacksville and Robinson Run Mines. Now, those four installations that we investigated had the antenna for the system installed underground, so in those situations, that paging system could be used to communicate under normal conditions, but in the event of an explosion, you would have to assume that the

antenna would probably be severed, and the communications would be lost.

The one installation in the United States that does have that antenna installed on the surface is the BHP San Juan Mine in Farmington, New Mexico. We went out and looked at that installation. In that case, that system could continue to operate in the event of a fire or explosion because that antenna is located on the surface and would not be susceptible in a fire or explosion.

Now, the tracker is another Mine Site Technologies, MSHA-approved device; however, it's not currently in us anywhere in the United States, so we sent a team of investigators over to Australia to investigate the performance of that Tracker system. They are probably in the air returning right now, so we're anxious to hear their results.

Now, the preliminary findings on the pros and cons of the PED, and this is before we've actually compiled all of the results of our mine visits, the pros of the Mine Site Technologies PED are that it can send evacuation instructions to the miners in the early stages of a fire. In the case of situations where that antenna is installed underground, you would be able to send instructions to the miners before that

antenna was damaged. Another advantage of the PED system is that it can be retrofitted for any of the existing cap lamps: Kohler, Northern Lights, and MSA. There is an MSHA-approved retrofit for all three of those cap lamps.

Another possible with the PED is that if you have the underground antenna installation, that in the event of an emergency, and you lost that antenna, you could rapidly deploy a surface antenna to reestablish communications with that tracking system.

Now, some of the cons we've seen with the PED system: Number one, as I mentioned, if you have that antenna installed underground, it could be compromised in the event of a fire or explosion. There are reports of some places in the mine where you can't receive the signal. They are referred to as "shadow zones." It can also cause interference problems with existing mine communications systems. The communications are limited to one way. The paging system can only provide a signal to the miner. There is no way the miner can confirm that he has received that message. That's a limitation of the PED system.

Now, preliminarily, as far as the pros and cons of the Tracker system go, it is based on an antenna that is installed underground as well. It

cannot use a surface antenna, so you would have to assume, in a fire or explosion, you would lose the connectivity of that system. In that case, the advantage of the system in the event of an emergency would be that it could at least provide you with the last known location of the people underground prior to losing the power and the signal.

Some of the negatives, as I've mentioned, with that Tracker system are that it cannot provide a precise location of the people underground; it just can tell you what the last node that the miners passed was, so it couldn't tell you exactly where they are located, and it would become nonoperational in the event of a loss of power.

Now, as far as these 80 proposals that we've received, we've evaluated all 80 of those proposals closely, and we selected several of those for further field testing just to get a cross-section of the capabilities and the different technology that's available right now.

Now, what we were looking for when we selected those systems for tests were a number of things. Number one, we wanted to see what the system capabilities were. So we were looking for something that if it was a tracking system, could provide

precise tracking, and if it was a communications system, we were looking for something that could provide two-way communications, something that you could talk back and forth on or provide a response to a received message. We were looking for something that could survive in an explosion. Because of that, we were looking for the wireless systems, systems that don't rely on some type of wire backbone.

We were also looking at these 80 proposals and considering the state of development in which they were in. If it was just a concept, of course, we were not interested in field testing that at this point. So we were looking for things that were marketable as of now.

And then the fourth thing we were looking at when evaluating these 80 proposals was something that could possibly comply with MSHA requirements.

Now, we have some field testing scheduled on these systems that we've selected, and some of the things that we're going to be looking at when we go in to field test: Number one, we want to see how well the signal propagates. If it's based on these wireless nodes that are installed underground, we want to see what the range of each of these nodes is so you don't have to install one every 50 or 100 feet

underground. We also want to look at how much overburden the systems can penetrate. If they are only good for up to 200 or 300 feet, then there is not going to be too many cases where they could be used underground.

We want to see how well the systems can provide mine coverage. Are there a lot of dead zones underground, or can they cover all areas of the mine? We've also got to look at interference issues. You're going to be adding a lot of new communications waves and frequencies underground, so you've got to be careful about what type of interference they cause. One of the big concerns is will they interfere with any blasting operations?

Then, as far as any tracking systems that we're looking at, we want to see how precisely they can track the individual. If they can only tell you within 1,000 feet of where the person is located, they are not as useful as if they could get it down to plus or minus several feet.

So out of those systems that we've selected for testing at this time, these are the technologies that are represented. There are several wireless, node-based systems that use different IEEE protocols, the 80211 and the 80215. We're also looking at an

ultra wide-band communications and tracking system that has great potential, and then we're looking at a number of these low frequency, narrow band, through-the-earth type of systems.

That's the end of my presentation. I appreciate your attention.

MR. STONE: Thank you, Dave. I should note that we have copies of Dave's presentation at the registration table, as well as copies of the presentation for the next speaker, who will be Steve Luzik. Steve will be discussing MSHA's approval process. Steve?

MR. LUZIK: Thank you, Robert.

I would like to take a few minutes this morning to go over our approval process for the benefit of the press in the room and some of our manufacturers who have not yet come through the MSHA approval process. Hopefully, we can get some answers on what the approval process is and what it is not.

What does "approved" mean? An MSHA approval basically is an official notification that we have approved the device under consideration, and it has met our requirements with respect to the applicable part, and we have several parts that cover various classes of products and equipment, but for purposes of

the discussion today, most of you will be interested in Part 23, which is the communication standard for telephones and signal devices.

A favorable evaluation and approval certificate would indicate that with respect to this particular product, no probable explosion hazard would exist under normal operations when used in gassy and dusty atmospheres. This is an important bullet here, and if you get nothing else out of the presentation, remember this: In the case of communication equipment, we have no performance requirements. We're strictly looking at the product from the standpoint of being permissible in terms of not presenting an explosion hazard. And that's the reason we're all here today, and as Dave mentioned, we're looking at some communications systems so that we can get to the practical aspects of the systems, how well they will perform. Also, an approval is not an endorsement by our agency.

The categories of underground equipment that we look at principally apply to what we call "in-by equipment." In-by equipment is equipment that is used in the areas of the mine that is mining coal where we have methane gas and fine dust being generated. The areas closer to the portal out by that area; those

particular classes of equipment do not require our approval.

There is a whole bunch of different types of products that we do approve, but we're going to confine ourselves, again, to the communications equipment, which consists of hand-held radios, mine pager phones, longwall face communications systems, leaky feeder communications systems, and systems of that nature. We also look at small instruments in terms of classes of equipment like noise meters, electrical measurement instruments, dust monitors, et cetera.

The next couple of slides are going to talk about specific classes of equipment that we have approved at MSHA. Basically, there's four classes. We have mine pager phones, leaky feeder systems, hand-held portable radios, and other types of communication devices.

We've approved five different types of mine pager phones, and you can see them on the slides. MSA has a system, Gal-tronics, Conspec, Pyatt-Boone, and Mine Safe Electronics.

In terms of leaky feeders, and, again, for the benefit of those out there that might not be familiar with that term, leaky feeder systems are two-

way-radio systems that feature a base station on the surface that communicates with individuals via underground radio units, such as walkie-talkie. To allow the RF to function underground, it's necessary to replace a standard surface antenna system with a cable network, and the cable is designed to leak signal, if you will, which allows radio frequency transmissions to leak both from the cable and also to the cable. These systems are generally used for both data and voice communications. So it requires an infrastructure and also a communication device. In most cases, it's a walkie-talkie.

There are four leaky feeder systems that we've approved at this point in time: the Mine Radio systems, the Flexcom system; Mine Technologies has a system; DAC, and L Equip.

At this point in time, we do not have any two-way communication devices that are being supported in underground mines. Motorola had two versions of a two-way Walkie-Talkie. They are no longer supporting those versions. They are no longer available. But the good news is we are in the process of evaluating a couple of two-radios for approval, and hopefully, in the very near future, we'll have at least one of those available as an option.

Other types of communication devices that we've approved, and Dave has spoken about those a little bit right before me: the PED system, which has basically been approved on three manufacturers' cap lamps as a retrofit, and also the TRACKER IV TAG 4 system. Now, in the case of the TRACKER TAG IV system, we have approved the transmitting devices. You may have seen those in the news. They send a signal out to a beacon unit, which can register the presence of a miner passing that beacon. We have not approved the beacon. The beacon is used in out-by areas that do not require our approval. So that is another viable option, although it's not being used at this point in time in any of our mines.

The approval process, in terms of Part 30, there are a couple of important things you need to know. Number one, the systems must be either explosion-proof or intrinsically safe. An intrinsically safe system, in and of itself, does not produce enough energy, either under normal or fault conditions, to ignite either methane gas or coal dust. If the system cannot meet that requirement, it can be placed in boxes, explosion-proof enclosures, which would prevent any ignition that might occur within that enclosure from propagating outside the enclosure.

Normal signaling systems would fall under the IS, intrinsically safe, area of the approval standard.

These systems must be supplied with back-up power supply in the event of a power outage, and, again, the entire system must be either IS or XP in the event of loss of ventilation to be used underground.

The approval process consists of a couple of different steps. To begin the evaluation, an applicant would submit an approval letter, along with the appropriate drawings of specifications and any quality-assurance information. The Approval and Certification Center today is largely a paperless process. Manufacturers can submit their applications online. They can submit them via e-mail, and it's a very quick process. The information is dumped in specific folders that are assigned to our manufacturers, and the engineers can work back and forth in an electronic format, and it tremendously expedites the process.

To begin the process, our engineer would take a look at the application and provide the applicant with a fee estimate. This would be a rough idea of what we think it would take to complete the investigation in terms of dollars. The manufacturer

would get that, and if he comes back to us with an authorization, we would begin the investigation. Normally, we are conservative in these fee estimates, but if it gets to a point that there is a number of discrepancies, and we have to spend more time, we may need to go back to him at a point down the road and say, your fee estimate has been exceeded, and then he needs to give us authorization to add additional monies to the investigation so we can proceed.

The investigators -- we have 11 or 12 electrical engineers and technicians that are assigned to these jobs. They review basically the product for compliance with the applicable standard. And, again, if necessary, discrepancy letters are sent. This isn't a process that can happen in a week or two, but if the product up front meets our requirements, generally we can get through the system in a couple of months, two to three months. If discrepancies are identified, and in some cases, it may require redesign, the process can go on for extended periods, and this happens on occasion, particularly when the manufacturer has not come through our system and may not be familiar with our requirements.

I can say this up front. We are definitely committed to getting these new technology devices in

underground mines, and Dave and I have made a decision. We have a policy that any applications for these systems will be put in a special queue and will be given priority considerations.

The Part 23 approval system; there are some benefits we can take advantage of. Recently, about two years ago, we promulgated a Part 6 regulation that allows us to accept testing and evaluation results conducted by independent laboratories according to our approval standards. At this point in time, we have two or three recognized independent laboratories, so if somebody has a product that they want to have approved, they can go to somebody like UL, have them conduct the tests, submit the results to us, and that can be a time savings. If the device has been approved to UL or FM standard, many of the tests that that standard required are similar to the tests we would require, so we would have a time savings that can be realized there.

Another part of the process requires us to inspect the prototype product according to the submitted documentation. I might throw in that we're currently looking at other standards out there in the world that could be equivalent to ours, either in their original form or with enhancements, as

alternatives to our approval requirements. We're going to be publishing the results of an IEC evaluation that we did in the explosion-proof area, and we're also looking at the IECIS standards right now. So this could be somewhere down the line both a cost and time savings benefit.

The quality-assurance requirements of the program: Basically, the approval holder is responsible for producing the products in accordance with the approved drawings and specs. For all of our products and equipment, we have a post-approval audit program, and another important point is that after the product is sold to the mining operator, it's the responsibility of that operator to maintain the approval in accordance with our approval.

If anybody would like any specific information regarding our application requirements or our approval standards, they can visit this site, and we have our standard application procedures and also our test guidelines. I believe we're going to make this information available through Starpoint Presentations.

MR. STONE: Yes. They are outside.

MR. LUZIK: Very good. Well, that concludes my presentation. I thank you for your time.

MR. STONE: Thank you, Steve.

I will now call speakers from the audience. Please come to the speaker's table and begin by spelling your name and stating your affiliation. Remember that we must strictly limit presentations to 15 minutes. Our first speaker from the audience is Mike Koester.

MR. KOESTER: Thank you. My name is Mike Koester, and the last name is spelled K-O-E-S-T-E-R. I'm the general manager of the Americas for Mine Site Technologies. I'm going to go through this presentation a little bit quicker than I was planning to because of the time constraints, but I think we should be able to get a pretty good point across.

I would like to thank you for the opportunity to speak here today. Since late January, we've heard about a lot of the benefits and a lot of the limitations of the PED and Tracker system that are being used throughout the world, and what I want to do today is basically review those products and try and set the record straight in some aspects. These systems are being used around the world every day by thousands of miners.

Our mission is enhancing safety and production, and, again, I'm going to skip through this

one just in the interest of time.

Our product that we manufacture is the PED, which is a personal emergency device. It's a text-messaging system to every miner underground. We also manufacture a Tracker system; an ICCL, which is integrated camp lamp, which includes the PED and tracker tags. We do an ImPact, which is a wireless technology. You saw some of the references to applications for approval. That's basically the 80211 protocol.

The VDV is a leaky feeder radio system. It does have limitations. It's a two-way, voice radio system, but it's basically line of sight. You can push it a little bit further than that, but there are limitations to it.

We have over 250 clients in five continents, and as you can see up here, I've got the PED installations in Canada. We've got 20 PED installations in the U.S., 72 PED systems in Australia. And some of these systems you note here are 40 blast PED systems where we can actually offer a product that initiates shots. Hard rock miners set off their blasts with the PED system as well; it's that reliable.

These are some of our valued customers. We

are a true global player. We have a lot of installations in hard rock mines as well as coal.

The person emergency device, the PED unit. Following a -- explosion in 1986 in Australia, there were 12 fatalities, and basically the underground infrastructure was destroyed, pretty much what Dave alluded to. The development started in 1987, and what they did is they reviewed a lot of research that was done by the Bureau of Mines and other institutions around the world. We also looking at an event that happened at the Sunshine Mine in Kellogg, Idaho, in May of '72, when there were 91 miners killed because of a fire. Basically, there was smoke smelled at around 11:30, and at 1:30 they were still trying to notify miners to get out of the mine.

The system was arranged to contact underground miners with a surface antenna, and we felt that text had more usefulness than verbiage or voice communication just because of the chaos, the noise, et cetera, that takes place under ground. The system became commercially available in 1990, and MSHA approved it in 1991. Just to quote there at the bottom, it's kind of difficult to see, but basically what the U.S. Department of Labor and Mine Safety and Health Administration has said is that time is never

your friend in an emergency.

The personal emergency device is a ultra-low-frequency, mine-wide, text-messaging system. It is a mine-wide warning system, and, again, it's not limited to line of sight. It's an everyday communication tool, and you can send text messages. It can be remote initiation of blasting from the surface.

Productivity: People contact personnel wherever they are in the mine. Efficiency through remote control. We can turn on fans, pumps, et cetera, with it as well.

This is kind of the evolution of the system. You can see, in 1989, was the first prototype, and as we progressed through the various stages, this product right here is available now for the lead-acid battery, and this is the ICCL. It's a lithium-ion battery. That unit contains a PED and a tracker tag.

In March of this year, we're going to apply for additional funding to finish research that we've done on a two-way communications system. We're pretty far along with it, and we hope to get that done probably late 2007, maybe 2008.

This is a schematic of the system. The PED system basically detects messages that are sent off of

a PC into a modulator, which then transmits that information to a transmitter, which either can be located on the surface or underground. You have a loop antenna. It's strictly just a loop antenna. It's a number six wire that's laid out into a loop. The area of coverage depends on the size of the loop.

I will state here that this system generates a continuous, ultra-low frequency, and you've heard people say that it causes interference with some other systems, and it will if those other systems are not grounded, or they are not shielded properly. With some of our earlier installations, we found this out, and we've actually helped people work through getting the noise out of their systems.

The system is designed for self-diagnostics, ground fault, open antenna, and lightning strikes, et cetera.

The PED receivers: You have an ICCL, and you have an auto PED. You've heard about shadow zones. Well, with an auto PED, if people are traveling in a vehicle, it's basically an external antenna that fits on a vehicle, and that will allow the message to be received. Then we have control PEDs and blast PEDs.

This is what the unit looks like on a lead-

acid battery. You have a liquid crystal display up to 32 characters. You can recall the last two messages being sent.

I want to get into this a little bit more, spend a little more time on this. This is communication coverage. This is a mine layout of a longwall coal mine. You see the loop antenna here, a loop antenna there, and a loop antenna there. Well, if you look at the coverage that's provided, phones basically give you 5 percent. If you go to leaky feeder, you can maybe get 20 percent. Now, you can take the leaky feeder and extend it into more entries, but as Dave said earlier, in the event of a catastrophic explosion, all of this infrastructure is going to be taken out.

Now, this is what the PED coverage looks like based off those antennas, and basically that's given us 98 percent. We've got a little open area right up there that we're not getting. All we have to do is extend that antenna there, and we'll get that area covered as well.

This is the Wallarh Colliery in Australia. This is under a very populated and very heavy, hilly area. It has a surface antenna, and it is protected from blasts and a fire. It's a 12,000- and an 8,000-

foot surface antenna, and it's powered by one transmitter, and they get 100-percent coverage.

This is Kanowha Belle. This is a hard rock mine, and you can see this antenna goes down. It's through a vertical and horizontal configuration. It's an underground antenna, and it covers the entire depth of that mine.

This is the Moranbah North Coal Mine in Australia. Again, all we have to do to get broader coverage is just to increase the loop on the antenna. This is a 33,000-foot surface antenna.

Surface antennas can be used in an emergency. Like Dave said, if all of this infrastructure underground is taken out, it just takes a matter of minutes to lay out another loop antenna on the surface, and you can start to retransmit again.

These are some of the installations, and I'm not going to go into all of them, but these are just some of the installations we've got: Cook Colliery in Australia, 1991; it's a surface antenna. They have 45 pagers. They send 10 to 20 messages per shift. It's just a regular communication routine in their production day. You can see Crimum Mine, 280 receivers, 40 to 60 messages a day. Again, Andalex out in Utah, Genwal in Utah. West Walls in is

Australia. You can see the number of pagers, the receivers that are used. Here we have Co-op, Dougout, BHP in the U.S., Air Quality, Laurel Mountain.

I would like to comment here that we're getting anywhere from 70-to-100-percent coverage on these installations. Each individual one is really dependent on the antenna configuration.

In the U.S., we have a total of 18 installations. The first one was installed in 1996. Again, the shadow zones and so forth is antenna-dependent. Worldwide, we've got 140 systems, and that's over 10,000 receivers very day being used.

This is the TRACKER tagging system. Basically, it allows you to know who is in and who is out of the mine, and you can identify location of people and equipment within clearly defined zones.

The benefits: safety management, people management, and equipment and asset management.

It was approved by MSHA in 2000. This is a reader/beacon and a tag, which I'm sure you've seen in the press. The beacon will read up to 150 feet in a radius, or you can directional it out to about 200 feet. It reads this tag, which is continuously generating an RFID signal.

This would be a typical TRACKER beacon

layout of a coal mine. You can see the red boxes. That's where the beacons would be, so as people progressed into that mine, you would know their approximate location, that they were between that beacon and that beacon, for example. In the event of an emergency, if the power was still on, and the infrastructure wasn't taken out, you would be able monitor their movements out of the mine.

This is the Lindstrom Mine in Australia. They have over 700 tags and 45 beacons in use. They tag equipment, and they tag people. You can see the green zones. The green zones, they use for blasting. If everyone is back in a green zone, and there are no people in the red zones, then they go ahead and set off their charges. You can click on a beacon, pull up information such as who the person is, where his locations were, what time he passed those locations.

These are zone displays you can use to limit traffic flow, stop signs, et cetera.

And, again, just to summarize the tagging system, it streamlines access control in the ventilation districts during an emergency. Withdrawal of personnel can be monitored. When you combine that with the use of PED, you can actually direct their egress from the mine. It has the potential to extend

into a tagging system that uses proximity detection, which we will be doing here very shortly. And with that, I thank you very much for your time.

MR. STONE: Thank you.

MR. LUZIK: I have one question, Mike. What would be your expectation of the practical limits, depth-wise, for a surface antenna installation?

MR. KOESTER: Depending on the strata, we get anywhere from 3,000 to 4,000 feet vertical. Now, aquifers will impact that to some extent, but we can say 3,000 to 4,000 feet.

MR. STONE: Thank you very much.

Our next speaker from the audience is Dave Beerbower. Would you please come forward?

MR. BEERBOWER: I would like to thank the panel for the opportunity to come and speak from an operator's standpoint. You've heard the manufacturers' standpoint. I would like to add our input because we do have three of these systems installed worldwide.

Peabody Energy is very committed to improving communications at all of our operations. We think that the opportunities are there, and we want to move forward, and we want to be sure that what we're doing is the right thing to do.

We originally started with the PED systems in Australia at a mine that we have actually purchased from another operator. The same thing is true at 20 Mile. We have installed our own system at Air Quality.

The PED devices are reliable communications systems, and I say that with this qualification. They are reliable, as Mike said, in most cases. They can deliver one-way text messages to most miners in almost every location of an underground coal mine, That, however, differs greatly from what has been proposed as legislation that says that it must be able to communicate with all miners in every location underground.

If antennas are located on the surface, which we do have one of those in Australia, the signal can be more reliable and can reach more remote areas of the mine. There are some setbacks to that type of a system, however. In Australia, it works well because our mine is rather remotely located, and we actually just lay the antenna on the ground above the mine because we own the surface.

In our mine in Colorado and the other one in Indiana, that is not the case, and particularly because of, in the 20 Mile case, because of the

topography in which we find ourselves, it makes it very, very difficult to locate a surface antenna there as well as property issues. And in the Air Quality Mine, because of the surface areas being farm land and private property, again, we have found that it makes more sense for us here in the United States to place those antennas underground.

Obviously, when you place the antennas underground, that introduces -- as has been said, the mine environment then takes its toll in the case of an emergency. In fact, the system that we have at 20 Mile right now is the same system that was used at Willow Creek, and a lot has been said about Willow Creek receiving those signals to evacuate the mine. What hasn't been said is that within two minutes after the signal being sent, the antenna was burned in two, and the system became inoperable.

So there are limitations, and I think we need to recognize those limitations when we're talking about regulations and laws that operators must comply with if they are going to be able to mine coal in this country.

As I said, we have a system at 20 Mile and one at Air Quality in this country. In both instances, those antennas are underground. We place

PED devices on our front-line supervisors, all out-by workers and floaters that travel from section to section, such as fire bosses, pumpers, and mechanics. It was determined that this setup provided adequate coverage to all areas in which mines would likely be working.

The antennas are underground, and, quite honestly, we have experienced shadow areas in both of those locations, as well as the one in Australia. So even with surface antennas, there are instances where we have found shadow areas.

The other difficulty that we are finding is that in some of these areas the antennas cannot be placed in the same entry, and so where there would only be one entry available, it makes it nearly impossible to extend the antenna into further areas of the mine.

These shadow areas that we have experienced occur mainly in bleeder and in remote areas such as tailgates of longwalls. Again, signal propagation seems to vary widely, depending on the coal seam itself and, in many cases, on the types of roof supports being used at the mine. Both of our U.S. locations are using wire mesh for the immediate roof control, and that has definitely had a deleterious

effect on the ability of that signal to propagate longer distances.

We are in the process of looking at why that occurs. We're not sure, and I think there is a lot of research that needs to go on with these systems, and even looking perhaps in West Virginia, where we're looking to put some more of these devices in, we don't know if we are able to put a surface antenna in. We don't know the effect of overmining, and as you are aware, in West Virginia, we have, in many cases, seven or eight seams that have been mined out above our operations. We think that may have some impact on the ability to propagate a signal from the surface to our mines.

We also have looked at, as Mike had mentioned when he talked about the new technology that's out there, the ICCL device. That has great promise, and that's something that we are very interested in looking into. It's in the approval process in Australia right now, and as you know, it is a lithium-ion battery with the tracker and the PED device included in one unit. This is, I think, a very positive step in the right direction because, as you know, the PED on the lead-acid battery is a very heavy device, and it looks like this newer device has some

real promise for us, and we're looking to the agency that as soon as the Australians approve this device, we would like to see it brought to this country and quickly approved for use here.

I think it would help us, too, as we try to gain the acceptance of the miners of these newer devices, if we can put something on their belt that is lighter and provides all of the services that we need it to. I think we'll have a better opportunity to make it acceptable to everybody.

One thing that has not been talked about much in these regulations, because of the limitations that are out there with these communications devices, we feel that it's necessary for the discussion to begin on what happens if a miner goes into an area in which he does not have communications, if he goes into a shadow area that we've experienced. Again, if the system goes down, as most mechanical systems will, what are the procedures that a mine operator must take while that system is down and being repaired? This happens from time to time, and there has to be an acceptable alternative short of evacuating the mine if that does occur.

I want to switch now and start talking about tracking systems. Again, a lot has been said about

the hardware that's involved in that system. There is not a system in the U.S., and I think there is good reason for that. Quite honestly, that system was developed in Australia. The Australian mining system, and, again, I'm speaking from experience at our underground mine there, the reason that system was developed was mainly for tracking mobile equipment and the numbers of manpower that enter sections. There are limitations as to how many miners can be in an active section there, as well as the number of diesel-powered vehicles.

So for those reasons, it had great advantage for an operator to be able to tell how many units were on the section. Right now, it's being done with just a regular tag board, like you would say a check-in and check-out board at a U.S. mine, and each device, as they approach this section, would put their tag on a tab board. What this tracking technology will do is to do that automatically, and it would tell the operator of any piece of equipment, stop, you can't go in this until another piece of equipment comes out.

The reason that was developed was for good reason there, and that has not been the case here in the U.S., so I think that's one of the reasons it has not been put in here.

Again, I think we find in the regulatory language there are great problems with what has been proposed, and I think there is a misunderstanding amongst those who are writing these regulations as to what the capabilities of the Tracker system are. Most of the regulations that are coming out of the states and that we've seen proposed in the federal realm have said that it must be able to provide real-time tracking for all employees while they are underground. Quite honestly, and I think Mine Site Technologies would admit, that is not possible.

One thing that Mike did not say -- he did talk about the range of these beacons as being about 50 meters, and that's about right -- what the problem is it has to be line of sight. Most of the Australian locations are two entries, and one of those is a belt going into the development areas, and so everyone travels in the same entry. That's fine when these systems work line of sight.

In the U.S. system, however, if, for instance, a miner, in an emergency, decided to go out the intake escape way or out the return, the beacon would not pick up the transponder's signal, and that would make it very difficult to tell where people were. That puts mine rescue teams at risk when they

may not need to be placed in that situation.

In closing, I would ask that as we look at communications, we not forget the mine rescue teams. They are an absolutely fantastic group of miners who have really put their lives at stake for their fellow miners, and we need to work on communications improvements for them also.

The state of communications and tracking devices, though fairly reliable, is a far cry from what lawmakers have envisioned them to be. There is nothing that will meet the current language that has been proposed. If the agencies want to mandate the PED, communications, and tracking systems, they should develop rules that are consistent with these known limitations. NIOSH should also continue to explore promising technologies, along with the AC&C, that will someday allow for two-way communications and tracking for all miners. The system infrastructure must be unaffected by the mine environment, and both of these are worthy goals, but they are not currently available.

Peabody stands as a willing partner with NIOSH, MSHA, and other interested parties to begin the search for a reliable system that will someday meet these ultimate goals. Thank you.

MR. STONE: Thank you. Dave, could I get you to spell your name for the record?

MR. BEERBOWER: I'm sorry. Beerbower, B-E-E-R-B-O-W-E-R.

MR. STONE: Thank you.

MR. CHIRDON: Dave, can you tell me why you guys chose not to put your antennas underground at Air Quality and 20 Mile for the PED system?

MR. BEERBOWER: They are underground.

MR. CHIRDON: I mean, on the surface.

MR. BEERBOWER: The topography in Colorado is tremendously difficult. It would make that nearly impossible, with cliffs and very high and steep slopes in the Colorado region, plus we don't own the surface area either. In Air Quality, it's a surface ownership issue, as well as valuable farm land and homes above our mine.

MR. STONE: Thank you very much.

Our next speaker is Shawn Stewart. Would you please come to the speaker's table and begin by spelling your name and stating your affiliation? Thank you.

MR. STEWART: Good morning, everyone. My name is Shawn Stewart with X Systems, S-H-A-W-N S-T-E-W-A-R-T. We are a technology company out of

Atlanta, Georgia, and a Cisco partner. I'll bring this up in just a moment for you.

Why are we here this morning? We're here to save lives. How do we save lives and reduce time in search and rescue? How can we reduce time in search and rescue? By eliminating the search. How do we eliminate the search?

We know where everyone is at all times. Now, I've heard other gentlemen come and speak about the inability of this to happen, technology-wise. We come in from a corporate environment, myself, as a Cisco partner, Cisco Systems. We have a bit of a tie to the mine environment. My father, who is with me today, Jim Stewart, is a 25-year veteran of the Kentucky coal mines, 15 years as a foreman. We take this technology a little bit personally because we understand that with a little bit of work, we can track everyone.

What we do, we build wireless networks. That is what we do. Why do you care about wireless networks? The main equipment of a wireless network can be placed in an MSHA-approved container that is, as we call it, explosion-proof and meshed throughout the internal sections of a coal mine. This creates a wireless network inside the mine. Now, I believe I

heard the gentleman from Peabody explaining problems with -- I believe that's called multipath distortion with the wire meshing units. We do understand the way these wireless technologies function. What we do is increase the number of actual wireless points to get around this multipath distortion.

With the wireless network, I know where this is at all times. What is this? This is a wireless, RFID tag that chirps, indicating its location at all times. This can also be placed inside of a small, MSHA-approved container that can be worn on the miner's person. This device itself is not MSHA approved, but I do believe there are some companies working on right now getting these devices approved, but at the time, we can put them in containers.

Therefore, I know where the miners are at all times. In the event of an accident, a rock fall, fire, explosion, or flood, we can reduce search and rescue to just rescue because we know where the miners are at all times underground, and that saves lives.

Again, coming from a corporate environment, these are the types of technologies that are currently in use. This is merely a screen shot of some of the technology. Like I said, we build wireless networks. This network gives us a secure Web portal that can be

viewed from anywhere in the world. This is a representation of what is shown. The layout is a standard, underground mine diagram. Using any Web browser, we know who or what we're looking at with a single click of the mouse. Locations of miners in this example are shown in green. Locations of assets, such as the longwall miner and roof build machine, are shown in blue.

Now, I know some of you are going to look at this and go, wait a minute. There is a miner and a longwall in the same cut. We understand that. That normally doesn't happen. This is for presentation purposes only.

The network provides secure, two-way communications underground. The purple square indicates a secure, two-way communication device, in this instance, a wireless phone. Now, right now, as far as I know, there are no MSHA-approved wireless phones. We are working on a small container that has a plastic front cover to allow the voice to pass through and for button use. As of right now, there is no MSHA-approved container for that, but we are working on that.

Another critical function the network can provide is two-way video, so in the event of an

emergency, we can see what's going on. The network can potentially provide telemetry information, such as methane levels, temperature, heart rate, equipment maintenance, and lock-out and tag-out procedures. If levels reach certain thresholds, this information can trigger an electronic notification or alarm. Many equipment manufacturers, such as Joy, have included a standard network connection providing real-time status of the equipment. That connection connects to our wireless network as well.

The network can send electronic notification if it detects activity that's suspicious or unsafe. Certain areas of the mine, particularly near moving equipment or high voltage, can be deadly. Notifications or alarms can be sent if a nonqualified miner enters an unsafe area. Most importantly, we know where all miners are at all times in the mine. In the event of a catastrophe, we minimally know where the miners were at the moment of the event.

However, we do have certain built-in redundancies in our network. Our wireless network works on what is called a "mesh network." This is a relatively new technology in the 802.11 system through AB&C Technologies from Cisco Systems that we are currently using in several, several places, especially

in gaseous areas such as radioactive areas. I think Pracsare is using this in some of their gaseous areas as well. Cisco stands behind us in everything we do. We are a partner. We are Cisco wireless specialists.

In the event of a catastrophe, even if we had a major rock fall on a main line coming in, we have a built-in redundancy of a secondary line that runs either through the intake or the return. This is a fiber-optic cable. As you can see, this is actually the fiber optics. This is MSHA- approved, fiber-optic cabling. The cost is very inexpensive in relation to even the high-voltage cabling that runs already through the mine. Two lines of this, one through the main line, possibly even one in both the return and the intake, will guarantee that the network stays up even in the event of a major catastrophe. Beyond that, even if all lines were cut, a new wireless system could be put in place in front of the mine rescue team to guarantee a reconnection with the network.

In the event of a catastrophe, the foreman is required to contact MSHA, the union, and bring in a mine rescue team. With the Mine Rescue Command Center, they have full access to our network that's in place, and with the wireless network in place, they

have secure, two-way communications while on site using standard wireless phones outside and inside. There is no need for a rapid deployment system; it's already in place.

Since the network has its built-in redundancies, we still have the secure Web portal that can be viewed from anywhere in the world. We still have secure, two-way communications with the men underground. We still have our telemetry information, and we still know where every miner is at all times.

So we strive to eliminate the search from search and rescue. It may take a little time to verify that all parts and pieces of this solution are completely approved, but we can put this system in place and save lives. Any questions?

MR. CHIRDON: Have you done any field testing of your system?

MR. STEWART: We have a marble mine in Georgia. I understand that marble is different than coal. They have allowed us to come in and do various, various testing. What we found in the solid rock, because they, too, work in the rim-and-pillar system, that we, too, even in a marble mine, get full coverage, 100 percent, even in their shadow areas. The equipment that we use is industrial strength used

in typically warehousing industries. The system itself was actually created to track important assets in hospitals, like babies. So we keep full test on this. In the marble mine, we can actually track any asset, any miner.

MR. LUZIK: Do you have test results you can make available to us regarding that experience?

MR. STEWART: We can. That should be available by the end of the month in report form.

MR. STONE: Thank you very much.

MR. STEWART: Thank you.

MR. STONE: Our next speaker is Martin Fishwick. Could you please come to the speaker's table?

(Pause.)

MR. STONE: Could you begin by spelling your name and stating your affiliation?

MR. WILSON: My name is Brian Wilson. I'm the CEO of MineCom - Australia. Martin Fishwick is one of my employees. He was communicating with the lady over here from Australia for me. So it's Brian, B-R-I-A-N, Wilson,
W-I-L-S-O-N. As I said, it's MineCom - Australia.

Okay. Thank you for the opportunity of talking with you today on wireless communications and

tracking in a mining environment.

A brief introduction to MineCom. We're an 9001-2000 company through SGS. We have offices and factories in Australia and South Africa. We have distributors located around the world. Here in the U.S.A., we're represented by Pyatt-Boone Electronics, who are a world-renowned company in the field of mining and gas detection and conveyor belt equipment.

Okay. We have been manufacturing and designing communications products for the mining industry for the last 19 years, based in Australia. We started off in Tasmania, the island there on the bottom where the Tasi Devil comes from, and we're spread out from there to everywhere, to Russia, China, Sweden, South Africa, and so on.

We have leaky feeder backbones, wireless automation systems, personnel and vehicle tracking systems, block light systems, heavy-duty radios, collision-avoidance, and traffic-management systems.

Okay. Redundant communications to protect the mine's assets. An asset is a resource having an economic value that a corporation controls with the expectation that it will provide a future benefit. People are assets, and, therefore, they must be protected so they can continue to provide a future

benefit to the corporation they work for.

Redundancy: Duplication or repetition of elements in electronic equipment to provide alternative functional channels in the case of failure, or a system design that duplicates components to provide alternatives in case a component fails.

Okay. People are putting out, say, a tender. Monk's Mining Corporation requires a fully redundant communication system for its Monks No. 1 underground coal mine. The communication system must be fully redundant, i.e., continue to work, operate under all conditions, including explosion, rock fall, and cable break.

Okay. We first introduced what we call a redundant system, which was a ring feeder, some five years ago, which supplied a continuous ring of leaky feeder in a mine. If the cable was damaged, you could still communicate on both sides of the leaky feeder. It's similar to a fiber-optic, self-healing ring. If you break the fiber-optic cable, the signals find another way to get around to the other side of the break and get there one way or another.

Okay. In 2005, MineCom introduced SMARTReverse, which was the first fully redundant, leaky feeder-based communication system. It was

originally designed for mainline railways in long tunnels where, if a cable was damaged, the train could still be communicated with on both sides of the cable break.

Okay. The problem being in mines is that for SMARTReverse to work and be fully redundant, there must be two egress points, two inputs and exits from the mine, for it to work efficiently. In hard rock mines, that's normally a standard. In coal mines, it doesn't always happen.

Okay. A secondary egress can be a return air shaft, a skip, or a cage shaft, escape way shaft, vehicle decline, or drill a bore hole, a four-inch bore hole down. It only has to carry a couple of cables or even one cable.

So in a mine like this, SMARTReverse, when it worked, this was only one egress point. In this mine, yes, it would work because there's two inputs to the mine or two escape ways. If one is blocked, you can get out the other, and we can get the cable out. The gentleman from Peabody was saying that the difficulty was they didn't own the surface, but on the surface, the return path can be wireless, fiber, or copper pairs.

Okay. Again, here SMARTReverse would work

because there are two egress points. In a coal mine situation, in this mine, no, unless you went down one tunnel, turned around, and came back the other. Again, one egress point. Drill a bore hole down, a four-inch bore hole, down from the leaky feeder cable up. Run the leaky feeder back along the surface, and you have a fully redundant, leaky feeder system.

Okay. Alternatively, you can use RF-to-fiber devices and come out of RF into fiber, up the fiber-optic cable, and returning on the surface through a trench back to the start point at the head end.

Option 2 is you could go up two shafts, run it up the second shaft back to the surface, and then either wireless, cable, coax, fiber, copper wires. Again, you can run the leaky feeder up the shaft and back on fiber.

Okay. SMARTReverse, as I said, the return path can be leaky feeder cable, fiber-optic cable, a wireless link, or even good, old-faithful, copper pairs. In some mines here, and this is relays -- they are not interested in anything else, but copper pairs still stay in a lot of mines.

Okay. The MineCom SMARTReverse is a reversible, bidirectional amplifier using custom-

built, helical filters to provide selectivity and act as duplexers to provide sufficient isolation between the uplink and the downlink paths. Should the cable be damaged, single-pole, double-throw, RF switches with high isolation characteristics electrically reverse the normal uplink and downlink RF paths to the amplifier.

SMARTReverse is a full-tolerant, leaky feeder system that can operate in a harsh mining environment and provide reliable communications on both sides of a damaged cable. The direction of the bidirectional amplifier is controlled by the presence or the absence of a control tone put down the leaky feeder. In other words, if the control tone is transmitted downlink at a VHF frequency, it's amplified and boosted all the way along the cable through each individual amplifier.

SMARTReverse amplifiers are also equipped with what we call "drive-by diagnostics" in the form of ultraviolet LEDs indicating the condition of the amplifier to staff as they pass so the staff can drive past and see comfort green LEDs and know that the signal level is okay, the voltage level is okay, and the current drain is okay. We also have an optional, PC-based, diagnostic system that will then display all

of that information and the ID of the amplifier back on the surface on a laptop PC or a fixed PC. Windows-based software allows you to read it without great difficulty.

Okay. SMARTReverse is available not in one band but five bands virtually. We have it in VHF, UHF, wide band, where you have 10 megs bandwidth up and down. We have it in narrow band, which was designed for Europe to work on existing trunking channels in Europe, and that only has one and a half megs bandwidth up and down, but it has 10 megs separation to suit the trunking and the digital tetra and tetra and tetrapol systems. We also have it available in 800 and 900 megahertz, and there is another one which is 2.4 gig.

So by virtue of the SMARTReverse amplifier, the two upper amplifiers within the amplifier box will reverse. The other amplifier provides video and control tone signals. It does not reverse. So in a normal condition, the amplifiers are in one direction. Okay. As you can see here, in normal condition, in the case of an explosion, these two amplifiers will reverse. They reverse in the opposite direction, and the signal will get back. When the cable is repaired, they return to normal.

The other thing is that you run a leaky feeder cable, and it's not being used to its full extent. A leaky feeder can carry more than voice, data, and video. You can cut the leaky feeder cable and put a box in there that will give you telemetry with analog and digital inputs and outputs. If there was an explosion, and the cable breaks, the data is still going to get back to the surface. You can cut the cable and put a camera in it. If there is an explosion, and the cable is broken, the video images on the down side, which is the side that you want to get the information from, can still get back to the surface.

Tracking. You can cut the cable and put a tracking unit in, and the tracking will work on both sides of the cable break. You can put the tracking units every 350, 500 meters, 50 meters, if you want to pay for it.

Okay. You can also have automation, control of pagers, skips, and, again, break the cable, and the system will work on both sides.

We also have tracking, passive, and active systems, passive personal tagging, active RFID. We now put the tags in the actual cap light rather than the cap battery. In the battery, they are shielded by

the vehicle. In the cap light, they are going out through glass, so they radiate out further, and it uses one of the wires as an antenna.

LAMPS is IS approved to IUC standards. It was developed with the CSRO in Australia. Again, it's an IS-approved tracking system.

We also have shock-proof and weather-proof, water-proof radios for vehicles. We also have wall-mounted, safety radios that you can mount on the wall, and they are powered by the leaky feeder cable. So you run the leaky feeder cable into the radio box and back out. It gets its power from the leaky feeder cable. In case there is a power failure, there is backup on the leaky feeder cable.

Last, to conclude, MineCom provides a written guarantee with every system that's installed to our specifications. We guarantee communications wherever you run that leaky feeder. Finished. End of subject. Thank you.

MR. STONE: Thank you, Brian.

MR. CHIRDON: Mr. Wilson, apparently, you have plans to get into the U.S. market. What are your plans for getting MSHA approval of your device?

MR. WILSON: That's what we're doing here at the moment. I was here two weeks ago to speak in

Virginia, and we heard of this one, so I came back over to speak again and have it submitted through Pyatt-Boone, our agents.

MR. CHIRDON: Thank you.

MR. LUZIK: I have a question. With regard to your redundant system, if we had a particular incident where multiple breaks occurred -- let's say we had a long entry, and multiple breaks occurred, maybe one five or 6,000 feet in-by and then out-by a couple of thousand feet, so we have two distinct breaks in the cable. Would your system be able to communicate in that distance?

MR. WILSON: Unless we have another entry/exit point. Again, it comes down to being able to get into the system. You have one entry/exit to the mine. Of course, the people can't get out on the down side. There is no escape way. There's no escape ladders, where in many hard rock mines and some coal mines in Australia, they have got access ways to get out, and, yes, then we can take off points at various locations. We do that in that case using RF to fiber where the device picks up the RF signals, converts them, and modulates them along a fiber-optic cable back to the surface. The more take-off points you can put in, the safer the system, but you need more than

one exit.

MR. LUZIK: Thank you.

MR. STONE: Thank you very much.

Our next speaker is Mark Rose. Please come up. I'll remind the audience, if you're going up to speak, and you have a PowerPoint presentation, please see our staff when the previous speaker is coming up. Thank you.

MR. ROSE: Good morning. While we're getting ready here technically, I would like to introduce myself. My name is Mark Rose. I have a little company out in the West called Tunnel Radio of America.

I've come here today not so much as a salesman but as a wireless professional. I've worked in wireless directly for 30 years and directly in underground mine wireless for 18 years. We've put in over a thousand miles of systems in the United States and a number of other countries. Education with the Northrop Institute of Technology and East L.A. Trade Technical College. It looks like we're booting up here, so it will be a little bit more time before we get into the electronic portion of the presentation.

Like I said, I'm really here more as an industry professional that is concerned. I'm very

happy that the federal government and the State of West Virginia have kicked over this bucket concerning mine underground wireless. It's been a passion of mine since the first mine I ever attempted to do this in. Like I said, we do have a little bit of experience in this area. The largest system we put in was 70 miles of underground workings at Home State that worked flawlessly. That mine is closed at this time. We have a few other ones out in the West.

I have an FCC license to maintain and build this stuff, a number of others from the FAA. So let's take a look at the presentation here, and we'll move right along, hopefully.

Some pictures from our group when we've been in the field at various times, and the question is, why do we do this stuff? We do it for them. No more needs to be said.

We primarily put in two-way wireless systems. We try to get the people connected. It makes a huge difference in an underground operation to get people talking and connected. It completely changes the attitude of the miners in the mine and completely changes how a mine operates once they get a good, wireless, two-way system up and running.

I list some advanced requirements here that

all of my colleagues that are here that are vendors go for. We like to have multiple channels. We like to have wireless data. We like enhanced range. Coming up with a system in a technology that's got a predictable coverage in a facility when you get in and what you have advertised are sometimes difficult to do. So when you do, to maintain your integrity, you want to be able to develop and install systems that are reliable, and their performance is repeatable every time you put them in.

A little bit on tracking, we'll get into, and then some of the emergency operational features. I'll touch a little bit on protocol and Ethernet-compatible systems, too, in this presentation. I apologize for the logo. I'm trying to keep this a generic presentation, but the pictures are pretty good there. Actually, that picture of the loader is one of my best ones, and that's when the flash didn't go off in my camera.

A typical distributed antenna system, as defined by the FCC, is a network connected to a base station radio with an antenna portion, which would be kind of lined out with these black lines here going down into this hypothetical facility. We've got a lot of ramps out in the West. We've got to go deep for a

lot of our ore bodies, and we use a ramp to do that. We also have shafts. We've got some of the deepest ones in the world. At Home State, we were down about 8,000 feet when we were all finished there.

It's a very dangerous facility to work in. You need good communications to keep your people in good stead, and there are a lot of stories about that that we've seen over the years. We specialize up in the upper band and have patents up in that band, which is 300 and 900 megs for a reason, and we'll talk about that.

We go for coverage. You know, when you put a two-way system in, you want distributed wireless coverage. That's the main purpose of the system, to get the people connected. So we've got a couple of things you do with that. You've got wireless data possibilities with coverage like that and tracking. We test our systems.

Showing the two types of technologies here, VHF versus UHF, a little diagram. Measurements taken off of these cables are done scientifically. The term is "coupling loss," and at 20 feet, typically for these cables, the coupling loss is 65 dB where 30 dB is 1,000 times loss, so 65 is way down there.

Distributed antennas at UHF; we're around 40

dB, so we're seeing nearly a 30 dB difference, which is a thousand times more effective power in these systems when you're running in these upper bands in mines.

So what you end up with is you've got greater range, you get obstacle passage, and you get a lot of reflected energy off the bounces going into these things called stokes and entries and cross-cuts, all of these terms that people are trying to grasp that those of us who work in the industry pick up over the years that mines know and work with every day.

All right. There is a picture of Monica down there in the right-hand corner. Now she is mine manager at LKB Monbay. I worked with her putting in wireless data on their loaders. They have got wireless loaders running without men tracking and doing production monitoring.

This PowerPoint didn't come out very good when I tried to transfer it. Sorry about that. Now, we'll get into some of the ancillary devices you can install on these wireless, distributed antenna networks. All right? Wi-PAD is a wireless, repeater tracking system. The difference of this system versus a lot of them that are out there considered RFID systems is that the connection infrastructure is

wireless between nodes, and the tag-tracking units have quite a bit more capability; they are not dumb units. This picture would be this device here. Your wireless node reader/repeaters are these. These systems are actually installed in a number of secure places in this town, protecting some important people. This is not made by us. We integrate and have a cooperative arrangement with the outfit that makes these. They are made in the United States.

Here are some close-up pictures of Wi-PAD. We call it the wireless personal alert system. It gives you a pager -- let me see if I brought mine up here with me -- a little housing like this like a pager-sized device. It's got some buttons on it, though. Those are emergency alert. That signals the information back to capture software, and that software shows the guy's location at all times and that he's got a problem. If he goes down for a certain number of seconds, it will also activate at a man-down alert level, which is the highest alert level, and be captured by software on the surface, and the people can take appropriate action, all the time tracking the guy to the resolution of the reader/repeaters in a facility.

So we've got man-down alert, position

reporting to the capture software, cableless network between reader/repeaters, with a 24-hour battery pack there, and post-event survivability is 24 hours.

All right. So you get all of these features. Our next technology level with that is we're going to put VOIP transmission on that unit so it will be one-way voice communications out of the mine with that unit as a backup to other systems.

So in this diagram, we've got two layers here. We've got a UHF layer using a standard, portable radio in the facility that gives you that high-frequency, UHF range that you want in a mine, and it's got a layer on it. That's the Wi-PAD layer that is wireless between nodes. We're also running 900 spread spectrum. It's an extremely efficient radio, and the ratio of power to range is tremendous and very low energy use.

Some other technologies; we've got a data technology that we use that the United States railroads have asked us to put in some of their facilities. We did it for them. It gives you the options of layering in rock mechanics and gas sensing.

In MSHA, you guys might know, there has been a little change in the stench gas requirements in mines. In a hard rock mine when there is an

emergency, they will release a gas that smells like rotten eggs, and they have changed the way they bottle that gas now, and the mines have got us building out wireless relay nodes with the press of a button that says stench on the screen. Mine management can flip that on with a shifter, and they will get those to trip and get everybody out of the mine with the gas.

So advanced options; on these portables, it's amazing. It was mentioned, how are we going to keep track of somebody that's out of site or out of radio communications in a mine? The portables have a feature called lone worker now that reminds the guy that he needs to check in. It's all done inside the radio. This is common, state of the art with more advanced portables. It's available off the shelf. It's nothing that we do.

IP-based systems are out there now. If you've got a LAN system, an Ethernet system in your mine, you can interconnect wireless base stations underground over that, and you automatically get tracking with that over the IP network that locates it to the resolution of your IP translation device.

I'm going to zip right through here. I think we get the idea.

Closing thoughts in my 20-some-odd years of

chasing these mines. Mining is an industry. Last we checked, we were rated 19 out of 20. Does anybody want to guess what number 20 was? The tobacco industry. I would say we could use some improvement in this area, and I'm really happy that we're bringing this to the forefront because I think technology will help us.

I've got a Bible verse there that says: "The Lord, your God, is bringing into a good land, a land of streams of water with wheat and barley, a land where bread is not scarce, and you'll lack nothing, a land where you can mine iron and copper out of the hills." It's just God's plan for a sound economy: mining. You've got to love it.

A tribute to the guys that got me into this business. The late Al Isburg wrote a very definitive work in 1981, what I based some of my technologies on, for the U.S. Bureau of Mines on wireless in underground in Black River Mine, and then we sold the system in the Black River Mine. We have mine-wide, wall-to-wall coverage in that mine with two-way portables right now.

The other guy is Bob Haning. Bob Haning is one of the three guys that invented leaky feeder systems, this whole leaky feeder technology. He is

one of my mentors. I'm in communication with him weekly. Thank you very much.

MR. STONE: Thank you. Could you just spell your name for the record?

MR. ROSE: Mark Rose, R-O-S-E.

MR. STONE: Thank you very much.

Our next speaker is James Hackwood. Would you please come forward? And, again, could you begin by spelling your name and stating your affiliation?

MR. HACKWOOD: Just to keep going, my name is James Hackwood, H-A-C-K-W-O-O-D, and I'm with the company, Northern Light Technologies from Toronto, Canada. I have also been in this business for about 20 years, starting with medium-frequency, inductively coupled or parasitically coupled technologies, leaky feeder, broadband communication techniques using cable television, and these kinds of things. We've used it for various aspects, from voice to full automation in tele operations, so I do have a little bit of experience there as well.

(Pause.)

MR. HACKWOOD: Thanks, panel. Thanks for this opportunity. Sorry for the delay. I guess I've lost two minutes. I've got about 14 slides, so at a slide a minute, I'll make up some time.

I'm here today to talk about what I call the next generation of technology in communications. An earlier speaker spoke towards using Ethernet and wireless LAN technology as a viable solution. We believe the same thing, so I'll talk to some of the things we've done in this area.

From the perspective of intrinsic safety and permissible devices, we have also got a partnership with a firm in Germany who has an intrinsically safe, approved, access point for use in coal, and some 300 units have been installed at the DSK operations primarily for the purpose of automation, but we can talk about those. With each one of these technologies, I'll also speak to where we are in the MSHA approval process.

Our primary area of business over the last 20 years has been in the cap lamp manufacturing area. We like to think that this is the miner's number-one safety tool, but a respirator is pretty important in an emergency, too. This particular device is one of the latest cap lamps. This one has a two-way, Wi-Fi radio in it with a two-line display. I would be happy to pass this around just so you get a sense for the integration that's going on within the cap lamp itself.

Certainly, over the years, we've installed RFID tags in the lamps. Some 3,000 or more tags have been installed in lamps in Chile. RFID is not a new technology, but there is a wonderful power source in the cap lamp that keeps the tags running all the time.

We've also incorporated, the mouse is showing here, a two-way radio within the cap lamp, and this has been done from an ergonomic perspective for a lot of the mines that are using leaky feeder technology. Our lamps have also been involved, in addition to radio and tagging, with the PED technology, which we've heard about earlier. We have an MSHA-approved PED receiver that is installed in the cap lamp. The next versions of that to come out will also incorporate lithium-ion battery technology, which will give a lighter cap lamp again.

We've also been approached recently by the firm, Vital Alert Communication, who I worked with some 20 years ago in the area of through-the-earth, emergency communications, and they also need a lamp for their receiver, so we're talking towards that cooperation.

The other area of our business is in the area of communications, and we are coining the communications phrase "Northern Light Digital." The

reason for digital is we want to turn the mine into a digital mine, and that incorporates all of the different aspects of data, voice, and video. The four areas of our focus at the moment, though, are in the area of voice-over IP, or two-way voice communications; two-way messaging, with that particular lamp there; tracking technology using RFID and Wi-Fi tracking; and ventilation management, and all of the aspects that go along with air flow monitoring as well. So those are the four areas of our focus with communications.

So the Northern Light Digital Network is an open standard, IEEE-802.11ABG. It's commercially available, per the earlier speaker, and we have used Cisco in our systems as well, and that works very well. We've also used a couple of other approaches. We have units operating in the mines. In particular, I mentioned over 300 intrinsically safe units operating at the DSK mine.

The advantage of the Ethernet network is that all of the kinds of applications that you might want to operate underground can be used across the network, including telephones, messaging, machine control and automation, data and supervisory control and automation. So there's plenty of things, an

opportunity for this network to take advantage of your daily needs related to communications.

This is a fiberoptic network that perfectly amenable to having dual fiberoptic rings, or more than dual, triple, however many you need. You can create redundant paths for fiberoptic cabling.

So, we spoke to ring topology. We also have technologies that in the event of a hardware failure, you can actually have a mechanical switch that sort of heals the fiberoptic cable if you will. Those things are available.

We also speak to wireless bridging, and that is where a link can be created between two wireless access points, and that of course provides a redundant path as well.

Further to that, in the event of an emergency, portable repeaters, which again are simple off-the-shelf devices, can be used as the mine rescue team enters an emergency situation, and they can carry portable repeaters to heal the network during those situations.

Another term that is important is interoperability, because we are operating on a standard. We can talk to and integrate with many other types of communications systems that might be

present. So that your investment in the Legacy Systems isn't lost.

So standard access nod, a very simple panel box, such as this, and this would be used for a hard rock application, or a surface wireless coverage, consisting of a programmable PC to do all the functions related to an access point, and power supply backup, and it functions as an access point.

Now, there is enough room in the box, of course, to install optional RFI readers for tracking purposes, or PLC for controllers for data applications. This is a picture of the intrinsically safe access point. It also has a four port fiber switch in it, and this is used--again, I mentioned that the DSK mine in Germany, the primary purpose is to create a wireless link to an overhead trolley system that they use for men and material transport.

We don't see too many of those here in the States, but it is approved to ATEX, and we will be submitting this device to MSHA in the coming days, in fact.

So, voice over IP technology, you have probably heard about it in your day to day life. There is industrial handsets that are available. This is not intrinsically safe, this particular unit, but

it is industrial. It also provides a press to talk capability, which miners like, and which behaves much like a two-way radio.

We also have an intrinsically safe PDA. This is approved again to ATEX. This is also manufactured in Germany. To get voice from this PDA, you use something called a soft phone, and the image here actually is a video image that is being streamed from that automated trolley system that I spoke about earlier.

So it also has got some capability to be a full-fledged computer and supervisor. Five minutes. So that means five slides, right? The digital messenger, you have seen in the audience there. It is a WiFi radio. You have web-based software that operates on your network, that anybody with web access, including wireless web access, could send a message to the unit.

The key differentiator with this messenger unit is that it is a two-way device. So we communicate to it and the message is sent, and the system logs that it was received by the unit, because it has a full two-way session.

In addition, we ask the operator to use the little toggle switch on that unit to confirm receipt

of the message. It also has the ability to send a message by holding the toggle switch in a holding position for a few seconds, and that will send an emergency message.

RFID tracking. Again, this is not new technology. It is used in many mines around the world, and this particular one is manufactured in South Africa. This can be a standard alone unit that fits in your pocket, or it can be mounted in the cap plant.

And we saw this little device earlier today by the other speaker. This is a technology manufactured by AeroScout. It is a WiFi tag. The advantage here is that if you are putting in access points and wireless infrastructure, you can use that existing infrastructure to do all these different things, including tracking.

So again you are not having to add other readers to the network. And of course the advantage that we have all spoken about is visibility for personnel, equipment, and assets, particularly visibility of where the person was during an emergency or after the emergency.

And, of course, on the environmental side, we believe that this is an important aspect of a

holistic approach, because we can actually provide early warning and launch preventive measures if we have enough data and knowledge about what the transit, and perhaps the gas levels mean, and rising temperature levels, or perhaps even rising CO levels.

So these can be monitored on the system, and by integrating it with messenging, we can now alert people that are in a given zone of hazard, and prewarn them of possible problems.

So it provides visibility in emergency, and of course, you have additional capabilities, in terms of real time reporting; compliance reports, and whether that is required or not in terms of monitoring of data.

And wireless access to business applications, and because it is a standard network, you can also do your e-mail if you wanted to underground, or perhaps not the face, or do some of your other job functions while you are underground.

And, of course, daily coordinating of maintenance personnel, or even production personnel, and redeploying them as required. And, of course, we have not talked much about the role of automation with respect to preventing accidents and that kind of thing.

And there is a real push to perhaps consider the role of automation, and keeping the men out of harms way. So it is a modern communication technology based on an open standard. International certificates. Certainly we heard earlier today from MSHA that they would be considered in terms of fast tracking approvals.

So we expect to leverage some of those, and of course the unified network gives you day to day functionality, but in the case of an emergency, you also have the added benefit of visibility. And redundancy and network healing is certainly a feature that can be employed in this kind of network. Thank you.

MR. STONE: Are there any other questions?

MR. CHIRDON: Yes. James, you mentioned that you have a cap man version that incorporates a two-way radio?

MR. HACKWOOD: Yes.

MR. CHIRDON: Is that used in a gassy mine somewhere, or --

MR. HACKWOOD: Well, when the HT-1000 was available, it could have. It was a permissible radio. We have since been asked -- and I think maybe on the two versions that you are looking at, we have been

asked to redo our -- it is basically the radio stays intact, and it sandwiches in the lamp. And we have to redo the fittings basically.

MR. CHIRDON: Oh, I see. There is no electrical interconnection between the devices? It is just a holder for the radio?

MR. HACKWOOD: Well, you take the battery off and the use the cap lamp battery.

MR. CHIRDON: Oh, I see.

MR. HACKWOOD: So there is that electrical connection there.

MR. CHIRDON: Okay.

MR. LUZIK: I had a quick question. You were talking about the DSK mine in Germany. Is that a coal mine?

MR. HACKWOOD: Yes, absolutely.

MR. LUZIK: Do you have any information regarding the installation details and the experience with regard to that system that you might be able to provide?

MR. HACKWOOD: I can provide that for you.

MR. LUZIK: Yes, that would be helpful to us.

MR. HACKWOOD: Yes, absolutely.

MR. LUZIK: Thank you.

MR. STONE: Thank you very much. Celina. Celina would like to make a technical remark for us.

STAFF: Are we going to take a break?

MR. STONE: Well, in a minute.

STAFF: Just a small announcement for presenters that we have left. We do have laptops that we provided, and if you have presentations that are on a laptop, we can put them on a flash drive and put them on that laptop so you don't have to unload and load again.

If you have a CD, we can also -- if we can get that ahead of time, we can get that set up for you as well. If you need a laptop set up, could you please let myself or people in the back know, and we can probably get that done during the break, as that will make it an easier flow during the rest of the day. Thank you.

MR. STONE: Thank you. I would also like to repeat in case some reporters came in late, that members of the press should refer any questions that they might have to MSHA's press officer, Dirk Philpott, who is standing there. And he will be available during the break.

And in mentioning a break, before the next scheduled speaker, I would like to take a 10 minute

recess. I have about 10:25 now, and so we will convene at 10:35.

(Whereupon, a brief recess was taken.)

MR. STONE: All right. We are going back on the record. All right. Our next speakers, I believe, are Tony Bumbico and Wendell Christensen. Please begin by spelling your names and stating your affiliation. Thank you.

MR. BUMBICO: Good morning. My name is Tony Bumbico, and that is spelled B-U-M-B-I-C-O, and I am the corporate safety director for ARCH Coal; and with me is Wendell Christensen.

MR. CHRISTENSEN: That is Wendell Christensen, C-H-R-I-S-T-E-N-S-E-N. I am with ARCH Technical Services.

MR. BUMBICO: Okay. We are here, similar to Mr. Bierbower, to present the operator's perspective on this issue. ARCH is the second largest coal producer in the United States. Our corporate office is in St. Louis, Missouri. We have over 3,500 employees, and operate mines in Colorado, Kentucky, Utah, Virginia, West Virginia, and Wyoming.

Wendell supports our underground mines in Utah and Colorado. We are here today in response to

MSHA's request for information on mine communication and tracking technology.

Our specific objective today is to share our experience with the personal emergency device, or PED System. We appreciate the opportunity for comments. We had hoped that our experience will assist MSHA in future decisions related to the subject.

PED systems are installed at two of our underground mines; at Dugout Canyon, and at Sufco. Both operations are large, long wall mines, with excellent safety records.

Now, Dugout is located near Wellington, Utah. It has 223 employees, and is projected to produce about 4.6 million tons of coal in 2006. Sufco is located near Salina, Utah. It has 320 employees, and is projected to produce 7.6 million tons this year.

The PED system at Sufco was installed in 1998, at a cost of $169,000. Dugout installed their system in 1999 and 2000. Both systems were purchased from Mine Site Technologies, or MST.

At both mines, the PED was installed as a secondary communication system, as a backup to the primary mine pager system. Our relative success with the PED at these two operations is best described as

mixed. At Dugout, the PED was originally deployed on a limited basis.

It has since been expanded to its current state, in which approximately 50 percent of the workforce at Dugout carries a PED cap lamp battery, with a PED screen. The system at Dugout has been fairly reliable. There are ongoing issues related to interface with the mine pager phone system that require ongoing maintenance.

Overall communication coverage has been good, up to distances of five to six thousand feet from the underground antenna loop. Dugout plans to install a leaky feeder radio system later this year.

They also plan to maintain their PED system until a better alternative is available. In addition, Dugout is reviewing alternative mine retracting technologies. We plan to test MST's tracking system and other similar systems at Dugout later this year.

Sufco has had less success with the PED system. As a result, they have deployed the PED on a more limited basis. At Sufco, PED units were initially issued to supervisors, electricians, fire bosses, EMTs, and miners working in out bay areas.

The PED system itself at Sufco has not been reliable. The system interferes continuously with the

mine pager phone system, and the mine monitoring system. To date, efforts by the manufacturer and Sufco to resolve these problems have not been successful.

As a result, Sufco discontinued the use of their PED system when they installed their leaky feeder radio system in 2004. Our experience with the PED has identified some common issues. I will offer some brief comments on a few of the more significant problems that we have encountered with the PED.

I am sure that there are some reasonable solutions to some of these issues. Others present more significant technical challenges. One common PED issue is infrastructure maintenance.

As an underground mine advances, you have to continually extend the antenna system. Large minds like Dugout and Sufco have to install thousands of feet of antenna in order to maintain the loop.

Dugout has approximately 45,000 feet and Sufco has approximately 50,000 feet of underground antenna cable. Failure to maintain this infrastructure results in dead spots in coverage. We have encountered dead spots at both operations.

This is more than just a maintenance issue. It has potential enforcement implications. We know

from experience that periodic dead spots will occur. We are concerned about how MSHA will treat these incidents from a compliance standpoint.

If regulations require the PED to be installed in all underground mines, will MSHA issue violations if we encounter periodic dead spots? Would we have to evacuate the mine.

Given the recurring nature of this problem, these are issues that our operations are concerned about. We need more reliable alternatives. Another issue related to the PED, as well as other communication and tracking systems, is the vulnerability of the underground infrastructure.

As MSHA is aware, this hardware is susceptible to damage from explosions, fires, and roof falls. In addition, the explosive atmosphere in a mine following a disaster may render the system inoperable for safety considerations.

In one respect the PED system is more vulnerable to damage than other underground communication systems. In order for the system to operate the PED antenna must form a complete loop. It requires twice as much cable as other underground communications systems. As a result, it is twice as vulnerable to damage from explosions, fire, or roof

falls.

Some have proposed surface loop antennas as the answer to this dilemma. In some cases a surface antenna may work. They are not the universal answer, however, because at mines like Dugout or Sufco, the depth of cover may exceed two thousand feet.

Many mines, particularly those in the Western States, we have to deal with surface rights issues, and installation complicated by rugged terrain, to consider installing a surface antenna.

Our experience indicates that the PED system tends to interfere with other communications systems. This problem has been more significant at Sufco than Dugout.

At Dugout the mine pager phone system occasionally experiences a feedback noise when the PED is operated. This problem is normally a grounding issue that is created when the loop antenna comes into contact with the wire mesh used to support the roof and ribs.

When this occurs, they have to turn off the PED system after they send the message. At Sufco, the feedback problem has been more persistent. It affects not only their mine pager system, but also the mine monitoring system.

We are not sure what causes the feedback problem at Sufco. It may be the result of the PED antenna running near high voltage cables, or cables that are not shielded. Since we have been unable to resolve this issue, the PED system is currently inoperative at Sufco.

We have also experienced problems at both mines using the PED to communicate with employees in pickup trucks. As you are aware the PED system alerts the miner to a problem by causing the cap lamp to flash off and on. It also has a secondary alarm that alerts the miner to a message.

At many underground mines, miners travel to and from their work place in pickup trucks. If a miner leaves his or her cap lamp on in the pickup truck, it creates a glare that obstructs their vision. To avoid the glare the cap lamps are turned off while they are in the truck.

Consequently, the miner isn't aware when the light flashes on and off to alert them to a PED message. Often the secondary alarm of the PED is not loud enough to be heard over the noise generated by the pickup truck or other mining equipment.

A possible solution to this issue may be a more effective secondary warning system to alert the

minor to a PED message. Seam height is another factor in the effectiveness of the PED and some other underground communications systems.

The seam height at Dugout averages 8 to 9 feet. At Sufco, it normally exceeds 10 feet. As a result the PED systems would tend to be more effective at these operations, as opposed to mines with lower seam cover.

The most significant issue that we have with the PED is that it is only a one-way system. You can send a message, but you never know whether it has been received by the miner. The PED system represents an improved emergency notification technology, but it is limited.

We feel that underground coal miners need and deserve better emergency communication options. We feel that MST is a good company with a good product. Their PED system was clearly a major factor in the successful evacuation of the Willow Creek mine in November of 1998. A PED alert sent by the Willow Creek supervisor helped to evacuate 45 miners in 45 minutes. We play to continue to evaluate the PED system at Dugout and Sufco. In addition, we are also evaluating MST's PED and tracker systems, as well as other similar technology, designed by other companies

at a number of our other mines.

The PED represents an improvement in emergency communication technology. In the final analysis, however, it is not good enough. We need to identify, test, and install better communication and tracking technology. We need technology that can provide two-way communication with miners underground, precise tracking of the miner's location, and infrastructure capable of surviving a fire or explosion.

We are encouraged by the recent research initiated by MSHA in this area. In our opinion the agency has identified several new communication technologies, with the potential to achieve our objective.

Many of these technologies have been used by the military and in other industries. In particular, we are encouraged by the promise of systems such as the Rajant Breadcrumb System, the Time Domain Radar System, the Vital Alert Canary 2-way Mine Messenger, the TG Miner Tracker System, and the Buddy Tracking System.

ARCH support the research effort initiated by MSHA in this critical important area. We are willing to offer our mines as possible test sites for

these new promising communication technologies.

We are willing to work with MSHA, NIOSH, and other interested parties, to develop and implement improved emergency communication options for our employees. However, we want to stress the importance of testing these technologies in real life mine environments.

Underground mines come in many shapes and sizes. Geological conditions vary significantly from region to region. Issues such as seam height, depth of cover, and surface terrain, all have an impact on how well the technology will work. What works at one mine may not work in another.

The final solutions proposed by MSHA need to recognize that one size does not fit all. In order to improve emergency communications for our miners, we need a flexible approach that recognizes the unique characteristics of each mine.

It is imperative that we identify the best available technology, and test it in a real life mine environment to make sure that it is reliable. We appreciate the opportunity to appear and offer comments, and we are willing to try to answer any questions.

MR. STONE: Thank you very much. Steve, do

you have any questions?

MR. LUZIK: No.

MR. STONE: Thank you very much. The next speaker is Jeffrey Rummel. Please begin my spelling your names and your affiliation. Thank you.

MR. FISHEL: My name is Alan Fishel, and I am here with Jeffrey Rummel, and we both work at Arent, Fox; A-R-E-N-T, and then the next word is F-O-X. And that is a law firm in Washington, D.C.

And my name is A-L-A-N, and my last name is F-I-S-H-E-L; and Jeffrey is J-E-F-F-R-E-Y, and his last name is Rummel, R-U-M-M-E-L. We have a very brief presentation. I am going to speak first for just a couple of minutes, and then Jeffrey is going to speak and get into a little more detail for just another couple of minutes. We promise to keep this very short.

Basically, we are Federal Regulatory Attorneys in D.C. who have represented both a number of mining companies, and mining manufacturers, on a variety of issues. I just want you to take a second to picture this situation, where you are in a situation as a mining company or a mining manufacturer, where you have done exactly what you thought you were supposed to do, and looked in the

MSHA rules, figured out what you needed to meet, come to your own conclusion that you have met MSHA's requirements, at least in your own mind.

You started making some production or whatever else, and starting to purchase equipment, and all of a sudden down the road the Federal Communications Commission comes to you and says you violated the law. That's great, you know. You complied with what you thought was MSHA, but you have violated the law.

And now you are going to your boss and explaining why you did not consider the FCC and Federal communications involved. And unlike in a Super Bowl commercial with FedEx, where FedEx didn't exist, the FCC does exist now.

And it is important, and it happens all the time, where people in one industry, whether it is mining industries or other industries, where they have overlapped with the Federal Communications Commission, and just for good reasons at times, but just forget -- well, when I say good reasons, it is understandable why it is not a good reason.

But understandably just forgetting about the FCC, and they shouldn't, because it can come back, and you want to make sure that you have done that. We

have represented mining companies at the FCC, and we have done other Federal regulatory work.

An example of that was a major proceeding going on a couple of years ago where we represented what was known as the Private Wireless Mining Coalition. And this was a case in which before we got involved, the mining companies had lost on a major issue that was going to cost them a lot of money.

And they came to us to try to get that reversed, and everything worked out fine, and it did get reversed. But the reason that it started that way is something to note here, which is simply that people didn't realize everything that was going on at the Commission because mining companies focus as they should on MSHA as they should and as they need to do.

But at times the FCC also plays a role. Here, mining manufacturers have to worry about equipment authorizations, and mining companies have to worry about licensing frequencies and emissions, and it is just important to note that at the Federal Communications Commission.

And by the way, on that proceeding, I should mention that we did work very well with the National Mining Association, who was very, very helpful in coordinating on those other FCC issues.

But with mining companies, you need to remember that at the Federal Communications Commission, just like with MSHA, you can have significant fines, and even shutdowns. I mean, one company just a month ago, and this was not a mining company, but it was noted that on equipment authorizations the proposed fine was a million dollars.

Now you don't see that every day at the FCC, but you saw that just last month on that sort of an issue. Once again, it was an equipment authorization issue, outside of the mining context. But it is important to note.

And finally, Jeffrey is going to go into more details on everything, but he is going to talk a little bit about some of the rules that you need to keep in mind. But one thing to mention up front is that if you don't feel that you can necessarily meet all of those rules, one potential option is to go to the FCC sooner rather than later to discuss the possibility of a waiver.

Waivers are often granted. Well, often they are not granted, but when they are granted, they are granted because they are in the public's interests. You will have arguments to make here, and because the

rules that you would be getting waived, their purpose would not be undermined by you getting a waiver in that instance.

So it is important to keep in mind a variety of options that you will have, and Jeffrey will go into a little more detail on that when you are going to the Commission.

And one last thing is that we see a lot of times that people go to the Federal Communications Commission at the very last second, saying that I have been designing something for five years, and I would like for you to waive your rules tomorrow.

It is obviously much easier to do that if you start earlier in the process, and give them a heads up that this is what you are trying to do, because the equity thing will favor you, and you are in a better position. We would be happy to answer questions after Jeffrey's presentation as to the rest of it. Thank you very much for giving us the time.

MR. RUMMEL: Thank you, Alan. As Dave mentioned in his initial presentation, one of the key concerns in this proceeding in finding the right technology is interference, and the FCC's rules are specifically designed to prevent interference on RF signals, to co-channel, and adjacent users.

The requirements of both MSHA and the FCC should be addressed with respect to interference by both manufacturers and mining companies, and that is a particular concern because the requirements that are being discussed both at MSHA and in Congress are discussing two-way communications, which include communications from the surface, where you are out in the environment, to underground environment as well.

Basically, communications equipment can be approved by the FCC on a licensed or unlicensed operation basis. Regarding or leading to unlicensed basis authorization, unlicensed authorization is beneficial, because this means that mining companies would not need to obtain their own licenses to use the equipment. This makes the technology much more appealing to industry.

However, there are requirements that still must be met by manufacturers, and that involves in many cases getting the equipment authorized under the FCC's equipment authorization rules, which includes very specific testing, labeling, and user manual requirements.

The systems are not permitted to just transmit on any frequency. The FCC rules designate certain restricted bands which cannot be used under

any circumstances.

In addition, in certain underground operations, there is a tunnel radio system rule, for example, and emissions limits above ground are limited. Now, a lot of the information regarding tunnel radio systems, and their problems with underground operation, are obviously more problematic when you are talking about when those systems relate to above ground communications as well, from above ground to the underground.

And those are dealt with on an unlicensed basis, but there is also in most situations, you have to look at licensing operations as well. And licensed operation means that the users of the equipment must get their own license to operate, and that would be the mining companies themselves.

That does not, however, relieve the manufacturers of the need to get their own equipment authorization under the particular FCC rule part, which allows for licensed operation. So, for example, you may know at certain mining locations that you use two-way radios for above ground communications.

Those may be Motorola radios, for example. Motorola has received an equipment authorization for those radios to operate in accordance with FCC

specifications. But mining companies are required to get the license to operate those hand-held walkie-talkies.

So it is a problem and an issue that both the manufacturers and the mining companies need to be aware of. For manufacturers, we suggest that you figure out right away whether you are proposing a system that falls within the unlicensed or the licensed regulatory requirements of the FCC.

Many of our clients develop technology that is great functionally, but does not neatly fit within either the unlicensed or the licensed regulations. That's okay, because as Alan mentioned, there are ways to deal with this.

Waivers, for example, as Alan mentioned, the FCC is willing to grant, even if your proposed operations deviate from the requirements if you can meet certain legal standards and technical requirements.

However, you do need time to identify how far you deviate from the FCC rules, and you must develop your waiver requests. Often you should meet with FCC staff in order to coordinate the requests, and then have the appropriate contacts to push that waiver request within the appropriate time frame.

You can also request temporary authority from the FCC on a variety of situations, where you can't meet the time requirements that your business requirements are imposing upon you. Again, very specific legal requirements and showings are involved when you are requesting temporary authority.

Finally, if all of these issues regarding equipment authorization or licensing, or unlicensed operation, present too many obstacles, and you are too far from these normal FCC requirements, you can also seek experimental licenses.

We are heavily involved in that area, and it is a way to get your equipment up and running without necessarily being subjected to the full panoply of regulations.

Alan and I, because of other commitments, won't be able to stay the entire day. We will be here through the lunch break, and we will be standing at the back of the room, and we will have copies of the comments that we had filed in this proceeding if you are interested.

And we have a copy of the rule which lists the FCC's fines as well. So if you have any questions, we would be happy to discuss them.

MR. STONE: Steve, do you have any

questions?

MR. LUZIK: Not really.

MR. STONE: Thank you very much.

MR. RUMMEL: Thank you very much.

MR. STONE: Our next speaker is Gary Tydings. Please come forward, and begin by spelling your name and stating your affiliation.

MR. TYDINGS: We will get the computer working first.

MR. STONE: Okay. We will do that, too.

MR. TYDINGS: Gary Tydings, G-A-R-Y T-Y-D-I-N-G-S. And I am representing from beautiful Raton, New Mexico, Stolar Research, Stolar Horizon Technologies.

I want to preface the remarks very briefly by saying that the founder of the company, Larry Stolarcyk, who many of you know, is very passionate about this issue. And maybe passionate is not even a strong enough word.

He has since the disaster in West Virginia spent an inordinate amount of time putting together what amounts to a treatise which consists of things such as Congressional White Papers, suggestions for regulatory change, suggestions for legislation, and has spent a fair amount of time up on The Hill trying

to push this issue.

One of the reasons that I am here this week was to assist in the briefing of some Congressional staff on this particular issue. But what we are going to talk about today is some technology that is pretty far past the developmental stage, and in some cases is operational, as to a multimode two-way radio communication for emergency and operational conditions in mines.

It is self-explanatory. Why is this company deeply involved in it, and at the behest of the founder of the company, in 1984, Larry lost 12 friends, very close friends, in the Welburg Mine, Quecreek, and then the Sago Mine explosion.

And mine wide wireless two-way radio communications is critical for the solution of these problems. What are some of the features that should be involved in this, and I think that most of the people here have heard this morning, and they are trying to incorporate or have variations on this theme, wireless two-way transmission, natural waveguides.

Through the earth waveguide, using an ultra low frequency, conveyor belt and cable waveguide also using a low frequency. Coal seam waiver guide and low

frequency, and passive wave waveguide, and ultra high frequency.

It has to be intrinsically safe, and it has to be operational when ventilation is disrupted. What are some of the features that we are developing? It will be a three redundant tracking and location, with subsystems, and real time networks, surface Delta tracker, and I will speak a little bit more about the Delta tracking. And then what is known as a Fox Hunter Antenna.

It has to be extremely reliable, and I believe that testing will verify this. It has an F1/F1 repeater expandable and self-healing, and it goes through the earth with a redundancy, and is modulated for digital transmission.

For tracking systems, cap lamp, power tracking beacon, cap lamp receiver, and it is multimode, and it is two-way tech synthetic voice capability, with a bluetooth link.

And this is sort of an outline, and I'm sorry that the details are a little bit small, but sort of, you see a holistic, more or less holistic communication and tracking system.

For tracking, the beacon goes through the earth using the earth as the waveguide, and above it

is what is known as the Delta Tracker, which can either be airborne or man-held.

This is a tracking beacon, and this is an older version. This is a Delta Tracker, and it is an EM gradiometer, and it not only suppresses the radio frequency interference that you might find on the surface, but the text spreading EM, and it pinpoints miners' locations, and it can determine depth.

This particular EM gradiometer Delta Tracker has been developed and is being used. About half of Stolar's business involves the U.S. Government in one way, shape, or form, and generally the Defense and Energy industries. The other half is the energy, coal, oil, and gas, et cetera.

It detects voids, and without me having to spell it out for you, you can see that where the applications would be for use by the military, and the military is using this thing right now.

Now, what we spent a lot of time on, and what Larry is very passionate about, is the regulation change that he feels, because there was not required in the current regulation that just says that you have got to have wired communications, which we all know is the first thing to go, is to combine the 30 CFR and the 30 CFR 49.

And require the same network and equipment, and require a 96 hour system operation when the ventilation system is disrupted. These three elements, he feels and we feel, and I am begging to get some impressions from talking to some of the staffers on The Hill, that they feel that this might be a direction that should be taken.

What else do you want to do? Well, I think one of the things, and I think Senator Rockefeller maybe has already taken care of some of this in the budget reconciliation, but this equipment can be very, very expensive, and it needs to be incentivized in some way, shape, or form.

Perhaps there could be tax credits for the purchase, and the installation, and the maintenance, and the training of sufficient personnel. I think probably these are some of the areas, in addition to the technologies, that Stolar is very heavily involved with, and is developing.

And I suspect that if you don't already have a proposal from Stolar, there is probably one on your desk today, and I assure you that it is a magnum opus. So hopefully the company will be in the mix, and in fact, right now I think that some of the things that you have already identified, we will be participating

in with some of the other companies already.

So, in conclusion, I think this is a two-pronged approach. I think it is critical for the regulations. We feel that it is very critical for the regulations to reflect technology at its best and current form, and provide incentives to see that that technology is implemented in its best and current forms. Thank you.

MR. STONE: Thank you. Our next speaker is John Brigler. Please come up. Is John Brigler here? Okay. So, our next speaker is Marty Sargent. Please come forward. No? Okay. Marty Sargent? All right.

Our next speaker is Donnie Gatten.

MR. GATTEN: By default.

MR. STONE: Again, please begin by spelling your name and stating your affiliation.

MR. GATTEN: My name is Donnie Gatten, and I with Technical Training Consulting. It is a mine safety and training firm. My past history, I am a fourth generation coal miner, underground coal miner. I have been in the mining industry over 20 years, and have about 20 years of mine rescue experience as well.

I will be pretty brief. I asked for about five minutes, and I think they allotted me 10, and so this probably won't take real long. My main concern

is from a mine rescue standpoint.

I currently train coal, non-metal, and tunnel rescue teams, and I think that some of the other industry people expressed the same concerns, but something that is actually going to work after a disaster situation. I think the same concerns that you as a group have as well. The leaky feeder systems, depending upon a hard wire underground, or a loop on the surface, poses problems with failure because of the hard wire underground. And then on the surface, in a lot of situations, they may work, but in many others, they also have problems as Mr. Bierbauer spoke of with the terrain out West.

And then we also have mines that go on to rivers, lakes, and places like that, where it would be hard to establish a communications look at well. We have had two or three speakers that have talked about some new emerging technology, and the last one being one of those. The thing that I would urge you as a panel, and as a regulatory industry, as we look at new laws and regulations, is to take the time to look at the facts, and not base anything on theory or opinion.

As a mine rescue member, I know that there is a lot of emotion involved after a tragedy, like Sago, from a political side and from a family side.

There is probably nothing that focuses more on safety than having to put someone in a body bag, and I have been there and don that.

And it is difficult to separate that out when you are looking for something that is going to work, and we are going to place in regulations for mines to have to comply with.

To my knowledge, right now with current technology, as far as two-way voice communication, wireless voice communication underground, I don't know of anything, not just available to the mining industry, but any other entities out there right now that have that current capability.

And I think that is the thing that we were really looking for. The real question is what are we going to look at in lieu of that, that is going to actually improve from our rescue standpoint our ability to get people, or know where they are, after an incident occurs.

A leaky feeder system right now with a tracking device gives us information on where they were when the incident happened, at least maybe within five thousand feet. But not where they went to or moved to after that. Now, that could maybe be coupled with some of the other things that are on the table as

far as shelter holes, and things like that, where you coordinate that through the training and regulation on maybe where people should go.

But from the training side of things, what we want people to do is to try and exit the mine when an incident like this happens, and not necessarily look for a place to go and wait for someone to come rescue them.

So I am afraid that if we are not careful, if we use something that isn't the technology that we are looking for, that we may end up giving people a false sense of security, or having them rely on something that is not going to make it safer, but may be detrimental to people exiting the mine.

Another problem is that I know a battery backup is required on these systems, but from a rescue standpoint after an explosion, with the devastation underground, and the explosion coming out, it also has a recoil where it pulls back in -- and someone who has not seen it can't realize the devastation that you have underground.

I know that some of you guys have probably seen that, but most of the people in this room probably have not. What was a permissible enclosure and which would keep an electrical arc from igniting

an explosive mixture outside of that, may or may not be permissible anymore.

And you have people on rescue teams going into these environments, where inside these permissible enclosures, you have electrical connections that could make or break, where after this, they could potentially set off an explosive gas.

So it is a real concern from a rescue standpoint on having these connections underground throughout an entire mine system, and how varied that may be depending on the particular mine.

Also, on the communication that the mine rescue teams themselves use, a lot of the miscommunication at Sago was a result of the type of communication the teams used. They typically use a hardwire line that is a thousand feet long.

Our teams that were out there at that time -- and I am from the rescue community, and so I say our teams. We are all one big family it seems like. But the teams went well beyond their thousand feet capability on this hard line, and they were using radio communication in conjunction with this, relaying back to one another to get that information back to the command center on the surface.

Better communication systems for the rescue

teams themselves are something that I think we need to look at, as well as mine-wide wireless two-way communication. I know that there are some prototypes out there that integrate radio communication into this hardwire so that they can communicate between one another, and also have the capability to communicate directly to the command center on the surface through this system.

To my knowledge -- and you guys can correct me -- I don't think any of those currently have an MSHA approval. I think it is pending on all of those. So we don't have that capability to use in a real situation right now.

If we had had that type system at Sago, a lot of that confusion would have been completely eliminated, because the team that was up there, and where the people were found, could have talked directly to the command center outside, instead of having the problem with having to relay back through several people.

Again, all of these systems that we are talking about are dependent on hand-held radios currently, and I think you said in your opening comments that Motorola doesn't have them on the market right now.

As a matter of fact, there are no radios approved, MSHA approved, for use that are on the market, where a new rescue team, or even a new coal operator, or coal mine, could purchase radios to have to use. And Motorola, I think it took them over two years to get their initial approval on these radios that are not used now.

Kenwood is one of the people that is seeking approval, and they are currently over two years trying to get that approved. So it is not a quick thing. It is something that takes time, and it should take time to get the quality assurance that we need to make sure that these things are going to function properly without creating a hazard for those using them.

But the main point that I want to reiterate that has been reflected by some of the other speakers is we need to make sure that we do have quality assurance on whatever we do.

We need to make sure that it is going to actually serve the purpose that we initially started out looking for, and that it will provide us with something that is going to increase safety, and not be detrimental to rescue teams, or create a hazard for them, or other people in the mines after the disaster, because if we are not careful, we could possibly

create that situation.

That involves as you said not just experimental mine simulations of these products. I think that can get you into thinking a product may work when it may not. Actual field testing in a variety of situations is what we really need.

Because of the different types of strata that we have throughout this country, the different depths, a surface line I think can communicate maybe up to 3,000 feet one way. Two-way communication, to the best of my knowledge, the best it can do right now is straight line, vertical depth, of about a thousand feet.

Neither one of those is going to work in a lot of our situations. We have a lot of mines that are much deeper than that. So more research to get what we actually want, I think that is something that we need.

I don't know if that would be through tax incentives, or through a possible grant program, or through an agency that we currently have, like NIOSH, which does a lot of research on this type of thing.

Just not having like I said an emotional knee jerk reaction to try to get something pushed through I think is key, and us working towards having

something that is actually going to be a safety benefit to the whole mining community. That's what we need to look at. Thank you.

MR. STONE: Thank you very much.

MR. TYDINGS: Do you have any questions?

MR. STONE: No, thank you very much. Our next speaker is Kurt Smoker. And again, if you would please begin by spelling your name, and announcing your affiliation.

MR. SMOKER: Okay. My name is Kurt Smoker, S-M-O-K-E-R. I am an electrical engineer, who works for the company, Conspec Controls. My purpose for coming here today is just to talk about the issue at-hand, and that this meeting was about primarily, primarily about mine rescue team communication systems, and some tracking equipment.

I have spent about the last 25 years designing electrical equipment for various companies, and that is the only industry that I have worked in, is in coal, and I have a number of approvals that have come through the Tridelphia AC&C.

I have also done approvals on intrinsically safety equipment in various countries like England, South Africa, and Australia. So what I am here to show you is some equipment, and I will go ahead and

get started with the mine rescue team system.

The equipment that we have and that I am talking about is a medium frequency radio system. It operates below the AM broadcast band, anywhere from maybe a hundred to 200 kilohertz, up to about 540 kilohertz, or 520 kilohertz.

It was a direct outgrowth of the United States Bureau of Mines funding that took place in the late '70s, and it uses inductive radio rather than all of the equipment so far that we have talked about today has been electrical antenna propagation.

These radios use inductive radio components, which they generate a magnetic field with a loop of wire, and they are MSHA approved. They obtained MSHA approval in the early 1990s, or the late 1980s.

They are easy to deploy, and battery powered, and specifically their use in my opinion is very important for mine rescue teams when they show up on site and they have to believe that post-incident that they have nothing to go on as far as an existing infrastructure.

Users right now include 75 percent of the New South Wales, Australia, mine rescue centers. MSHA itself had purchased a set of this equipment back in the 1990s, and used them out of the Beckley, West

Virginia, center.

And there were several mines in the United States, and I think maybe two, and I know for sure one out in Colorado had bought several systems for recovery work that they did post-fire.

Typical deployment, a mine rescue team typically runs five people in under a breathing apparatus into a mining zone, and we recommend that that team carries at least three of the hand-held radios with them, and definitely one on the Number 5, communications officer, to talk back to a section radio that sits at the fresh air base.

And this is a rescue team that was using the equipment during a training exercise in a hard rock mine outside of Idaho Springs, Colorado, this month. And you can see the fellow that is over there on the very far right on the screen. He is actually wearing the radio equipment.

Here is another shot of him. He has an antenna draped over his BG4 rescue pack, his self-contained breathing apparatus, and a radio is set up on top of his hoses right there and attached using some simple wraps on to straps.

And he has got a microphone that is set up in position in front of his mask so that he can talk

effectively using a really simple connection to his existing face mask, where he has just got a couple of pieces of blasting wire that are wrapped around some holes, and put in place. It is real simple, real easy, and real cheap. Real effective.

Here you see a picture of the section radio set outside the mine on a boulder next to that Mountain Dew, and behind it is an antenna that is one of the loop antennas that would be at the base, and it is positioned so that it is up on those rocks right next to some wires that are running into the underground mine.

Just a close up of the antenna there. the present status of this design was that the hand-held radios were designed in 1993, and were approved by MSHA at that time.

Since then many of the components have become absolute. You can't even purchase much of the hardware any longer, and so we are in a situation where we are down to maybe 5 to 10 existing radios that we can build.

Right now, we have a new design, and which is a 2005 design, which is right now going through prototype testing, and I have a model of it right here that I brought just to show sort of the size of it.

It is about 60 percent the size of our previous radio. It is intended to be small enough and rugged enough that it will be extremely useful for mine rescue teams when they do have to go under air underground.

We expect to have that ready for approval submission in the latter part of May of 2006, and I guess one of the things that I would just like to talk about is where MSHA can help. We have already spoken earlier today about MSHA's desire to prioritize and fast track the approval process for equipment that is specific to the present needs, and we think that is a very important aspect of this.

One of the other issues that I would bring up is that it would help tremendously if MSHA could find a way to help alleviate some of the financial burden that the approval process puts upon companies like the one that I work for.

This is a small market, and there aren't a lot of large companies that are specifically designing equipment for this marketplace, and for good reason. It is a very difficult and challenging environment to be in. But it would help tremendously if there was some way that smaller companies could somehow get some financial help to go through the approval process at

Tridelphia.

Another issue that might not put me in a good light with some people, and I have already had this discussion with some mine rescue teams, but I encourage MSHA to put less emphasis on trophy competition, and put m ore emphasis on realistic site oriented training.

One of the key reasons that I bring this point up is that as you can see, this radio equipment was first introduced in 1993, and at the time, medium frequency inductive radios were not even permitted to be used by mine rescue teams while they were conducting their competitions out in various locations around the United States.

It took about three years to get radios approved for use during competitions, but even that, the mine rescue teams that we attempted to sell these radios to came back and said that they were not willing to spent the money on these pieces of equipment because they simply were not able to use them during national mine rescue competition.

So that has been a very personal heartache for me, because as you heard from the previous speaker, the mine rescue teams really desire something that is effective and useful when they are in a

situation where they have to go in a mine.

If they are going to perform mine rescue operations, they have to get in, and they have to get in fast, and they have to get to the people that are trapped. If they are not going to be able to do that, then everything that we are talking about here is just an exercise. It is not designed for really promoting safety for the coal miners.

A second system that I wanted to talk about is just some vehicle and personnel tracking systems. The characteristics of this equipment is very similar to all that you have seen here earlier today.

They are low power, short range, burst tags, that transmit at UHF frequencies to stationary tracking receivers. In our case, they are part of an atmospheric monitoring system that is in place primarily to act as a fire warning system for the mine, and that detect very minute levels of carbon monoxide along the workings of a coal mine, and indicate with very high accuracy when there is an impending fire that might be taking place along beltlines, or along other workings of the mine.

The deployment methods that we have used up to this point are an MSHA approved transmitter that we put inside of a fiberglass box that we magnetically

mount to machines. When we first began to try to sell this product to the mines out west, we had a lot of resistance from the workers. There were threats from several of the mining companies that I went to that they would find a way to sabotage the system if the mining companies wanted to track their locations. So we choose to change the name from personnel-tracking system to vehicle-tracking, and this is the way that the transmitters were approved.

Five minutes, okay?

This is a photograph of that intra-approved transmitter. Basically, it just beckons out a transmission once every second to a receiver which is located again on an atmospheric mining-system cable. The four-conductor cable provides power and data communications to a surface computer.

One of the important things that we learned in deploying this equipment out in Colorado and Utah was that it is important to strategically place your receivers in the mine. Mines aren't just put together wily-nilly. They have a specific, defined purpose for every entry.

When you can put two receivers perhaps 300 feet apart, and keep track of which receiver was the last one that a transmitter passed by, not only do you

know where that transmitter was located, you get a very clear understanding of which way that person, or that vehicle, was heading in the mine. If they are heading up into a section, you have a very good idea that that is where they are.

The typical range from the transmitter to the receiver is about 100 feet give or take a little bit, which is about one cross-cut in a normal mine in the United States; and we provide logs of station activity on a surface computer where you can view not only the present last location of one of the transmitters, but then what the activity there has been for these tags going around the mine.

This is a photograph of the receiver. It just consists of a radio receiver inside a plastic enclosure. It has got a connection over on the side to the atmospheric monitoring system. Planned improvements, that we have ongoing right now, are to built a portable receiver that a mine-rescue team can carry with them into the mine.

We began work on this several years ago and then discontinued the work for no reason other than we had a lot of things on our table, and this was not panning out to be a commercially successful system back in 1999 when we first introduced it.

But I think it is very important that if you know that you are within a 100-feet of a receiver, you can tell that you are very close to a person. If individual miners were wearing these transmitters and a rescue team had a receiver that they carried with them into the mine, they would be able to tell when they were on a miner that might have fallen down because of smoke inhalation.

Whatever systems are being put into the mining environment, whether it be for communication, whether it be mine rescue, whether it be for tracking of personnel, I think that there some important things we have to remind ourselves always are: these systems must be intrinsically safe. They are going to have to be safe, or you are defeating the purpose of putting them into the mine in the first place. They have got to be reliable; they can't depend upon commercial-type electronic systems. They have to rubberized.

And another issue that we seem not to really take into account is the need for it being economical. We legislate automobiles that have to be safe at 100-miles-an-hour crashes here in the United States, but the commercial market doesn't burden the expense.

I think the same thing has to be recognized with the coal-mining industry. Coal mines don't have

an unlimited amount of money to spend on fantastically wild systems; and it has to be functionally simple. The coal miners, themselves, are the ones that are going to have to install and maintain that equipment. And I think it is very important that the systems not advance to a level that is far in excess of their abilities to understand it, maintain it, and keep it in functional order.

Thank you.

MR. STONE: Thank you very much.

The next speaker is Russell Breeding. Would you come forward please. Again, if you could begin by spelling your name and stating your affiliations.

MR. BREEDING: Hi, good morning, gentlemen. My name is Russell Breeding. That is Russell, R-U-S-S-E-L-L, Breeding, B-R-E-E-D-I-N-G. I am a senior systems analyst, and I represent myself, as well as my company. I work for: WR Systems, which is based in Norfolk and Fairfax.

What I propose here, as an interested party, and to what has been occurring, and utilizing my background as a submarine sailor in the military, and an inertial navigation technician and an analyst, is to use an inertial navigation as a tracking device.

Originally, the inertial navigation systems

were very large. They were typically about the size of a Volkswagen back in the old days in the '60s. But, finally, we have got something now that works in the form of microelectronics and technology. So some of the benefits of this are that it provides real-time tracking location of mine personnel in the event of an emergency; and it tracks personnel as they move away. It also provides rescue personnel with the most accurate and up-to-date locations of the tracked personnel, and assists land-survey personnel with quickly finding drilling locations. We are going get down to this in a little bit. I am kind of just moving right through this because I want to get to the heart of this.

It would have the capability of voice-over broadband communication. From what I am hearing this morning, there are a lot of proposals for communication systems and things that already exist, okay. This was one. It's JPS. Well, it's nice, it is a great navigation system, but, unfortunately, it doesn't work underground.

So, most of the components of this system that I propose are commercially available: the charting software, the 3-D modeling and charting, inertial sensors and microelectronics and battery

technology that has improved just drastically over the last few years. The computers, the wireless ethernet, working to military specifications, and, of course, shock-isolation systems.

And mainly what we are after is the integration of these components into an operable system; and it operates on the principle of inertial navigation, which has been used since the '60s. It uses the wireless VHF or UHF. There are some variations in this of TCIP transceivers.

The seam height kind of determines what the frequencies would be that would be used to maximize the weight-guide conducting effect. What that means is that you are trying to force the radio waves inside of the mine to conform. You provide them maximum coverage for the transmitters that we are going to get to shortly. It utilizes back-up power supplies to preserve operation, and the monitor system is located away from the mine, and that is what is kind of critical on this, and it requires minimum personnel attention.

Okay, just some of the principles of inertial navigation. It doesn't require external inputs. It requires no radios; it requires no waves; it requires nothing other than motion, the movement of

the sensor from a known location translates into latitude and longitude, or, in this condition, into a grid-coordinate system.

Latitude and longitude, we could use that later on in the rescue end of things but, for the purpose of this, we are going to put them onto a grid so that we can track them exactly where they are.

Well, the computing power in the miniaturization of this has finally progressed to the point of making this possible. I alluded to the Volkswagen. That was about the size that they used to be. Outside of the model, we use a grid system to do this with a zoom-in capability. All the tracking devices would have a unique identification code. In an emergency situation, your rescue personnel could each be assigned one of the InSet tracking devices as well, and they can be monitored, real time, as they move to try to reach the trapped personnel.

This is just a rough screen shot of what this would look like. The icons are representative, and there would be a legend concerned with those. This would be what you can actually track and see. You would see the physical location on the grid of where the people and the machinery are at any given time. These things can be attached to the bolders, to

the continuous miners, as well as to the shuttle cars.

To zoom-in on this, the operator and monitor of the system could pick any particular area, zoom-in on that and see precisely where these people are located. Precisely is a kind of loose term. Precise can be, as they say in the world of hand grenades, you know a couple of hundred feet. This system will track down to three feet with the technology that I am coming up to very shortly.

The device is wearable; the battery life is about 36 hours anticipated; transmitting range is typically one mile enclosed, utilizing the weight-back ducting effects in an underground Roman pillar high, or middle- or low-seam type of situation.

The way an inertial tracker would work is that it has to be optically aligned and remain at a docking station. In the Navy, we called it: dockside. We start from a known position and, from that point, we are going to track this particular device and it is going to provide back the information to update the grid-coordinate positions.

This was one I just put together and I am not how real sure how applicable this is. The reception range on this is typically one mile for each transceiver. It is going to use broadband wireless,

TCPIP Internet Protocol, three layer. A broadband receiver is 500 to 700 feet apart and this provides a multiple redundancy. The transceiver is relocatible. The position that they in does not matter. They don't have to be precisely aligned inside of the mine.

If we had put this in something like the Sago Mine, for example, the telemetry receivers, broadband receivers throughout the mine, their coverage would be significant inside.

Okay, getting down to what this is all about. This utilizes the MEMS technology, which is the microelectronic mechanical, 3-axis inertial sensors. These are commercially available now. In the old days, they used to use gyroscopes, very large, very bulky. These use vibrating tuning forks; and they also can integrated with the DMARS technology as well. This technology provides what used to be the size of that Volkswagen down now to what is contained on an IC chip in about a quarter-inch square and still provides the accuracy.

Now, there are varying degrees of accuracy in these sensors. There is strategic grade, as well as commercial grade, and everything in between. It requires a dedicated on-board computer processor for -- - and memory; and, of course, processor-controlled

battery management, and an air radio frequency transmitter.

This is a technical drawing of the 3-axis MEMS inertial sensor, the converter running through either a phentium or can be used, the AMD aflon or the Durant computer processors. The key to one of these is also the battery-charging management and discharge. To get the life out of the battery, the system is not transmit all the time. It transmits only on motion. All the transceivers are wireless broadband TCP/IP protocol. Each of the transceivers has a battery backup power supply and they operate in full duplex-mode transmission, as well as reception.

Just a drawing here -- overall, they can be mounted on the mining machine shelf cars, roof boulders on the equipment. They can be also wearable. Okay, the telemetry receiver, which is actually the broadband TCPIP transceiver, is commercial eternet, ruggerdized, hardened to operate under severe conditions such as -- I will get to that in a moment. Basically, it is going to receive the frequency end that it transmits on.

Now, the frequency that this would work at -- again, I am glad we heard about the FCC and the approval on frequencies. That is kind of important.

Nine hundred megahertz is one of the frequencies that bends very well inside of a mine. As a result of that, trying to get the coverage internally so that these wireless body packs are literally in a sough of the reception and transmission of these receivers.

The telemetry information that is passed is velocity north, velocity east, and velocity vertical. These are the motions that the sensor measures. The processing is done outboard because the processing is intense on this and requires a lot of memory and computing processor.

However, the layer three seems to have enough bandwidth at the 900 megahertz range that this can be processed outboard. They key to it is to insure that it is updating on the grid system accurately. The actual minor requires very little attention, to paying any attention to what he is doing with it. It is rugged. It will take the shocks and it will continue to work.

Each wireless body pack is stored in its charger and its master reset station to an optically aligned monument. The monuments are set using the standard geographic survey techniques. Prior to taking one of these out, the master reset switch is hit and it resets the inertial sensor to the known

docking position charted on the grid, and, from that point forward, it measures.

It also includes a critical power distribution system, which is a propane-powered external generator and velocity-detection switching circuitry. You can switch on and off at various things on the critical power base and when things all go off, everything operates off the UPS battery supplies contained within the transceivers as well as the body packs.

And just a short, brief diagram there of the three phases, power distribution and the critical power distribution. They are all the components that adhere to military specifications: high temperature, high humidity, salt spray, salt atmosphere, mechanical thermal shock, caballing with all the smoke, low chemical resistance armored to the military specifications as well as the connectors flame-proofed and water-proofed.

Are there any questions? I tried to put that together quickly.

MR. CHIRDON: Has this system been used in the military?

MR. BREEDING: This particular system has not been used in the military, but a very similar has.

MR. CHIRDON: Okay.

MR. BREEDING: The systems that I am familiar with are the ring-laser gyra-navigators and submarine surface, as well as the older systems, the Volkswagen-class systems. But the new technology is in the sensors. The other sensors were just too large and too big. Now they are down small enough to where they are wearable.

MR. CHIRDON: Okay. Do you have a business card you can leave with me?

MR. BREEDING: I intend to leave a presentation of technical drawings and cards, and I have CDs as well of this.

MR. LUZIK: I have a couple of questions, Russell.

MR. BREEDING: Yes, sir.

MR. LUZIK: The first one is: Have you tested this system in an underground environment at this point?

MR. BREEDING: No, sir. This is a proposed system, at this point, based on the existing technology that is out there now that didn't used to be even a year ago.

MR. LUZIK: And the second part of it would be --

MR. BREEDING: Yes?

MR. LUZIK: Has any consideration been given to the IR requirements that we might be looking at later on?

MR. BREEDING: To the IR --

MR. LUZIK: That intrinsically state the aspects of the system?

MR. BREEDING: At this point, not a lot on this; however, the inertial sensor packs, themselves, do not emit anything other than their telemetry information over the radio waves.

MR. LUZIK: Very good.

MR. BREEDING: So there is nothing that would be out of the ordinary from what I have heard this morning in the type of frequency-bands operation.

MR. LUZIK: Thank you.

MR. BREEDING: You're very welcome.

MR. STONE: The next speaker is Bob Lavergne. Again, if you could begin by spelling your name and stating your affiliation.

MR. LAVERGNE: My name is Bob Lavergne, L-A-V-E-R-G-N-E. I represent Mine Radio Systems out of Canada.

Mine Radio Systems specialty is communicating with the underground environment. We

have a little bit of history on mine radio. We have offices all over the world, Canada, Mexico, Europe, China, South Africa and Australia, and wherever we don't have an office, we have either a sales agent or a distributor in those locations.

Our core business is communications. With the team we have at Mine Radio right now, we have the combined experience of about 150 years providing communication solutions, specifically for the underground environment.

Some of our customers include: Arch Coal, Energy West, BHP San Juan, British Telecom, IncofalconBridge, as well as a number of coal mines in Poland and now Russia. Some of our products include the mine radio communication system backbone. We have two different leakey-feeder-type systems available. We have the MRS flexcon system as well as the Elequip multicon system. About three years ago, Mine Radio did purchase Elequip and we do continue to manufacture and support all of the Elequip products.

One of our newest products being our Insight Tagging System for personnel, vehicle and asset tracking. I will go into a little bit of detail about that system. We have a data rack, which is a telemetry system used for control and monitoring

assets underground: fans, pumps, as well as our newest backbone, which is: CMTS, Cable Modem Termination Systems, which we have taken to radio communications as well as ethernet protocols and married them onto one backbone.

So you can walk underground and you can still communicate on your two-way radios, or you can carry an IP phone as well. It has all the same benefits of the voice-over IP eternet solutions as well as the radio communications.

Some of the other products we offer is heavy-duty radios. We are a Motorola dealer and since Motorola discontinued the HD-1000, we are now manufacturing our own radio MRS Branded, which has been submitted for MSHAR approval. We currently are selling this radio in Russia where it has approved Russian certification, as well as the European countries where it has been ATEX certified.

One of the other systems that we have sold and installed is a paging system, or emergency-message-dispatch system. This is a fully-automated system that can tie into the gas-monitoring detection system at the mine, as well as ventilation system; where, in the case of a loss of ventilation or gases are detected, the system would automatically dispatch

a message over the radio network.

This can also be tied into the pager phones or fixed radios. There are eight levels of messages that can be dispatched from warning messages right up to evacuation messages.

With the radios of today, with all the radios having their own unique ID, you can also sent specific messages to one radio or a group of radios. So, if you don't want everybody to receive the message, you can send this message to a group of radios as well.

This system also has not only the voice message, but it can also alert people via E-mail. So it might be nice that I am underground with my radio, or I am near a fixed radio, or a pager phone, and I have heard the message, but if I am the guy who could work in the mining office, which could be miles away, and I don't know that that emergency message has been dispatched, this system will also send an E-mail. So whoever is on the E-mail list of this system would get an E-mail notifying them that a particular message has been dispatched.

We can also tie in PABX systems to our radio system. So a person with a telephone can call a specific radio underground, or a person carrying a

radio with a DTMF key pad can also call a telephone line or a specific extension into somebody's office.

We have the Elequip flow-sonic airflow meter, which uses ultra-sonic technology. It is currently being used in some of the coal mines underground here in the U.S. It is not an EMSHAR proved device, so they are using in fresh air and they are using it to monitor how much air flow, or air velocity, is in the mine or in that particular area of the mine.

Some of the applications that we think could be of use to the coal mine, of course, is voice communications. And we feel that the only effective way to communicate underground is two-way communications. So, whether it be our voice communications or our tagging system, all of our systems are developed under the two-way technology.

We are currently developing what we call a fixed radiophone, which is very similar to the pager phones being used now, only the radiophone would tie right into the leakey-feeder system. It would operate on the voltage that is already on the line of the leakey-feeder system and communicate directly on the leakey-feeder line.

We are only in the prototype stages of this

right now. It hasn't been submitted for EMSHAR approval, or it has not been tested anywhere underground yet.

Some of these side features to this device include: loud speaker notification in the even of emergencies or evacuations. As well, you can also hook up flashing lights or beacons to this device. So, if there is an emergency message that was dispatched, it can also start a flashing light or a beacon notifying of an emergency situation.

Our tracking system is called Insight Tracking and Tagging. It is used to locate miners in the event of an emergency or locate vehicles underground. Our technology operates on a two-way technology. As I said, we feel that only effective way of communicating is two-way technology. Therefore, our tags, which we call transponders, are intelligent. They not only talk but they listen and the beacons we install on the wall do the same thing. They talk and listen at the same time.

So there are two-way communications that happen between the beacon and the transponder, and there are also two-way communication that happens between our beacon and the head end or the PC that will display the information.

We use this not only to provide a little bit more of effective ways of communicating, but it also eliminates RF collisions, which happens when there is a large number of tags in the same reader location. You can think of this as ten people trying to scream a different message to one person, and that person definitely cannot hear the ten different messages and neither can a become effectively. So what happens in one-way communication: there is lost events.

So, because we have the two-way tracking system, once we receive an event from a transponder, we are able to acknowledge to that transponder that we did successfully receive its information and we can ask that transponder to stop transmitting while it is listening to the other tags that are in the vicinity as well.

Not only does this help control RF collisions, but it also helps maintain the data base where I can be in the same area working for an hour if my tag were to transmit once a second for that hour, there would be a whole lot of information there that Bob Lavergne is still in that location, where if we asked the tag not to transmit as often because we have already successfully received its information, we are also maintaining a data base that is not going to be

pages and pages of information that is really not of any use at that time.

Because our tracking system is two-way, we can also query tags. So if we have a miner who is missing underground, we can actually query that miner's tag and the system will say: I have either located him. He is here, or I know where his last-known position was and it will give you the time that he was in that position.

So, because of the two-way tagging system, we can query tags, or we can query a group of tags. We can set up the tags in the data base where if I need the shift boss or the foreman and I need to locate my crew, one click of the mouse and it will tell me exactly where my crew is located currently, or where their last-known location was.

Our beacons communicate two different ways. They can attach directly onto the leakey-feeder cable, so they are powered by the cable, the RF information is transmitted on the cable, or they also have a 485 communication port which can go on a fiber network or twisted pair.

Another one of our new devices is a little bit of redundancy for the leakey feeder. Seeing as we know when the cable gets damaged because of fire or

explosion or roof cave-in, the cable gets damaged, there is loss of communications. We have what we call a means of temporary communicating. We do require, as another speaker said, that the leakey feeder has to exit another area of the mine, but we can set up temporary communications and link that via fiber, twisted pair, or over-the-air to where the central command post, or back to the head end of the leakey feeder, is.

So there still is a way to provide back communications on the system that might be cut from the main head end of the system.

I had a PowerPoint presentation prepared, but in my travels from Cedry to Washington, D.C., my laptop went missing, so there might be a few things that I did forget. That is all. Thank you.

MR. STONE: Let me encourage you that when you do recover your PowerPoint presentation that you would submit it for the record.

MR. LAVERGNE: I will, yes, thank you.

MR. CHIRDON: What is the range of your beacons when you are tracking system?

MR. LAVERGNE: Depending on the antenna we use, we have directional antennae, so we can also detect which way the miner is traveling, anywhere from

50 feet to about 125 feet, depending on the antenna.

MR. CHIRDON: What is your time line for submitting for MSHAR approval on that?

MR. LAVERGNE: The tagging system has been submitted for approval.

MR. CHIRDON: Oh, it has.

MR. LAVERGNE: Yes.

MR. STONE: Thank you very much.

MR. LAVERGNE: Thank you.

MR. STONE: The next speaker, I believe the last speaker before lunch, will be: Reuben Padilla.

MR. PADILLA: Thank you. My name is Reuben Padilla. The spelling is: R-E-U-B-E-N P-A-D-I-L-L-A, from Pacific Consolidated Industries. As he is loading the PowerPoint presentation -- I appreciate the opportunity to come and speak to the group and I thank you very much for the invite.

For a small company located out in Riverside, California, we do a number of different things and we primarily do things with oxygen and with air and air-separation technologies. We think that it is critically important here today, as we talk about communications and about to the last-known location, or the last-known point. I think specifically, as the panel addresses these issues in communications in how

we track our miners, or how we track where people are at, we need to pay attention and be very consistent with explosions, fires, and roof cave-ins.

When that occurs, then the last thing that is there is what you really have on your body, and what you can utilize to either save yourself or to save your fellow miners. That being said, when we saw the recent events that occurred, we thought there might be an opportunity to come and show you what we have done for the military and what might be something that might be for the miners themselves.

As I said, PCI is located in Riverside, California. We are primarily a cryogenic or gas-separation device manufacturer. We provide to the military, to the medical industry, and to the oil and gas markets. Some of the players in the company have a lot of military background, a lot of commercial background, and a lot of aerospace background.

Some of the things that we produce for the Marine Corps and for the Air Force: cryogenic liquid-oxygen machines. Some of these devices have tracking devices with them, and the types of technologies that we have been speaking about today could certainly be employed with some of those technologies. These are nitrogen-separation devices that we provide for the

Air Force. The reason nitrogen is important is because it helps inert foam for coal fires and for putting out coal fires.

For our folks in Iraq and Afghanistan, the oxygen apparatus at the top right-hand picture, the EDOCS-120, helped save those lives on the battlefield, providing oxygen to those people who were injured.

Water, in every coal-mining accident out there, there was always some form of dehydration, and some capability where our miners don't have enough water, don't have enough oxygen to survive.

So that being said, we thought that there is more than one way for oxygen to be utilized in the coal mine. These are two systems that are out there today, the top system the most. The mobile-oxygen-storage-tank system would be a great system to be utilized in the coal mine because it is carbon wound for strength, and it is brass lined for inerting. That type of system could have a tracker device on it from any of the different devices being made. When that system is utilized in the mine, we would know where the miners are at.

Survivable, it can survive a gun shot wound, if you will, of a 50-calibre round penetrating that oxygen device with the second oxygen tank still

working. The lower device is a DOWS. It is called: a Deployable Oxygenated Water System. What that system all it really does is it provides oxygen through an ozonization capability to create O3 from O2 and it purifies water. That allows the miners to have a clean, capable drinking system in the event of an emergency in the mines.

Again, tracking devices could be associated with these two devices, so that we know where the miners are at, when they need oxygen, and when they need water.

That clearly concludes my presentation. I know that it is a little bit outside the scope. But the reason that I wanted to talk today was simply because when everything goes to heck in a handbasket, our miners need a place to go where they can breathe and where they can live. The tracking devices that we talked about today all defy physics. When there are explosions, when there are fires, and when there are roof cave-ins. So we need something for our miners to have the last-known point and then to be able to survive until someone can dig them out.

Thank you.

MR. STONE: Okay, thank you very much.

What I would like to do now is take a lunch

break. We will reconvene at ten minutes to one. Thank you.

(Whereupon, at 12:12 p.m., the hearing in the above-entitled matter was recessed, to reconvene at 1:01 p.m. this same day, Monday, March 13, 2006.)

//

//

//

//

//

//

//

//

//

//

//

//

//

//

//

A F T E R N O O N S E S S I O N

(1:01 p.m.)

MR. STONE: Could I request that any speakers this afternoon, if they have PowerPoint presentations, could they speak with Celine who is in the back of the room, or my wife, she is over here, so they can load you up so we won't lose time doing that. Also, for members of the press, if you have questions this afternoon, could you please refer them to Press Officer, Amylu Ver. Amy, would you please stand back here. She will be available to answer questions outside the room and during breaks as well.

So, let's proceed. The next speaker we have is Dennis O'Dell. Dennis, would you come forward please, and could you begin by spelling your name and stating your affiliation.

MR. O'DELL: Yes, sir.

MR. STONE: Thank you.

MR. O'DELL: Good afternoon. My name is Dennis O'Dell. D-E-N-N-I-S O'-D-E-L-L. I would like to thank you for allowing me this opportunity today to address many of the pressing needs that miners have been trying to bring attention to for a number of years.

I am testifying today on behalf of the

United Mine Workers of America, the union that has been an advocate of miners' health and safety for 116 years. Prior to my becoming the UMWA's Administrator of Occupational Health and Safety, a position which I currently hold, I came out of the coal fields having been an underground miner for 19 years. I worked about every job there was to work in mining, as well as serving as the local union's safety committeeman for Local Union 1501 of Consol Robinson.

I was appointed by President Cecil Roberts as an international field safety representative in 1996. Over the years, I have participated in many of the recent and most tragic mining disasters of the last decade, including that which occurred at the Jim Waters No. 5 mine explosion in September 2001, and the Sago Mine disaster earlier this year.

You asked for comments on several key issues today, I would like to touch on some of those. Rapid-deploy systems: After meeting with many of my rescue team members, we learned that this is a large problem that needs to be addressed immediately before another disaster strikes. We learned at Sago, that the explosion wasn't reported in a timely manner, and then after it occurred, it took from three to five hours for the first mine-rescue team to arrive at the Sago

Mine property. The mine-rescue teams told us that they faced problems from gaining access to the mine property because security wasn't notified to allow them on the property.

Once they arrived on the property, the mine-rescue team faced problems on getting set up because areas weren't designated or roped off for their equipment. The rescue teams told us that in the event of an emergency instead of just a small group of teams of being notified to respond, there needs to be a system in place to notify all mine-rescue teams that are located regionally, so they can also prepare in the event that they are needed.

This is just the tip of the iceberg. We are fortunate today to have some of those mine-rescue teams with us. If you would just stand up and be recognized at this point, would the mind-rescue team members stand up. Thank you.

(Applause.)

You will hear what I have just spoke of as well as some of their other concerns that need to be addressed in greater detail later because these mine-rescue team members are going to come up and address this panel. What better place to get comments than from the very experts who walk the walk. You ask:

What kind of rapid-deploy systems that could be used to locate miners who are trapped by a mine emergency? How would such a system work? Is the system currently available?

Let me back up. That same question was asked in 1968. The then Bureau of Mines recognized early on the potential for using radios as an aid in locating miners trapped by mine fires or explosions. In 1968, the Farmington Mine disaster resulted in a National Academy of Engineering recommendation that a post-disaster location system be developed.

In 1970, the Bureau of Mines contracted with Westinghouse Electric Company to develop through the earth-communication techniques. Both seismic and electromagnetic methods were investigated. Originally, the EM concentrated on large more or less permanently placed units that would permit voice and/or code conversations between the mine and the surface. The early tests and third-article studies carried out by J. R. Waite of the Institute for Telecommunications Sciences indicated that a location system that used portable manpack units was feasible.

In such a system, the miners would carry a small transmitter that would be activated if the men were trapped. A team of rescuers on the surface could

detect that transmission and then would locate the point on the surface that was directly above the miners. Subsequent development work and tests by Westinghouse, the Bureau of Mines' personnel demonstrated that the system worked in both coal and metal mines.

As of January of 1995, no insurmountable problems had been encountered, in neither the hardware development or field testing of the units. Attached with my testimony is a copy of the report that shows an EM system that has been built, has been tested, that permits the detection and location of trapped miners. The hardware required was proven to be compact, sturdy and, in general, practical for use in the mines. Successful field test of the system have been conducted in a wide variety of mines, but now the system currently sits on a shelf somewhere collecting dust.

We have also heard today of the many new systems that enables the identification and communication of miners' locations in an underground mine. I would suggest that the Agency take a look at these units as a start. Other units have been presented at several senate and congressional forums in the past few weeks in Washington, D.C., as well as

what we have heard here today.

From these meetings, we have learned that systems exist and that they are in our mines, in other countries, as well as parts of the United States. We have also been told there are devices used by other government departments that have not even been explored by the mining industry but could be helpful.

Bottom line, we know the technology exists, and has already been MSHA approved and is being used in underground mines today. Therefore, without question, this technology must be implemented and required by all mine operators immediately for protecting miner safety.

Breathing apparatus: unfortunately, there has been very little work to approve breathing apparatus as used by our rescue teams. Miner rescue team members tell us that the units currently used are too bulky and too restrictive. NIOSH and MSHA must also make this a priority, so research is conducted to allow all non-rescue members the ability to be more efficient.

You are asking, seeking comments on this subject, how long would it take and it would cost. What you should be asking the mining community is how soon can we get this done. The mining community has

to develop an attitude that there can be no price tag on the cost of the non-rescue team member or any other coal miner's life.

Self-contained, self-rescuers: throughout the industry, there have been a number of problems with miners not be able to properly don self-rescue units in emergency situations. Moreover, without a rule dressing self-rescuers, technological advances of these breathing devices has been stymied. The legislative history of the Mine Act, Congress indicated that mining regulations should be technology driving to maximize miner's protection. We had hoped with promulgation of new rules addressing self-rescuers, the existing problems would be addressed and technological advances encouraged. United Mine Workers of America is convinced that such a rule would have been the camas for a new generation of self-rescue devices. While operators are willing to invest in new technology when increases production, it appears they are not so willing to invest in miner's health and safety.

Reports of the recent coal mine disaster in Mexico indicate that miners had access to at least six hours of oxygen and there were additional units available on the ground to them. If so, their oxygen

resources far exceed what is provided to miners in this country. We need to explore this further.

Rescue chambers: those recent tragedies at the Sago and Alma Number One mine demonstrated there is a serious void in the regulatory framework for underground miners confronting a mine emergency. While there is a lot yet to be determined about these accidents, the note that Sago miner George Junior Hamner wrote to his wife and daughter revealed that most miners survived the initial explosion at the Sago mine. It, also, demonstrated that those miners had no information about where to find fresh air or about how they might have been able to exit the mine. In fact, miners survived for many hours; but, in the end, they had inadequate access to enough oxygen to survive the toxic mine atmosphere.

Though Congress specifically suggested in 1969 that the Secretary consider promulgating a rule requiring rescue chambers for miners to find shelters in the event of an emergency, we are unaware of any substantial efforts MSHA has made to pursue this option since the Act was written. Nevertheless, earlier this year, just such a chamber was successfully used and saved the lives of miners at a Podash mine in western Canada. If they can rely on

such a rescue chamber to survive, we need to ask ourselves why the miners at Sago and Alma were not afforded the same opportunity. We have been in contact with manufacturers of such unit. They will be displaying their safety chamber unit for all members at are constitution convention in April this year.

You are asking, seeking comments should rescue chambers be required for coal miners. I suggest you ask family members, like Ms. Hamner, who lost her loved ones at Sago and Alma this question. If the agencies in the industry are serious about giving miners the best chance for survival when all other means of escape fails, the safety chambers would be in the mine today. If you are more concerned with the cost of this unit than the cost of the human life, the miners again will be denied a safety device that could save lives.

Communications: some of this was already addressed in my comments on rapid deploy systems. MSHA and NIOSH only recently focused on these compelling needs and constitutes a critical first step in achieving success. Establishing these objectives has an immediate research goal of both MSHA and NIOSH, who expedite a successful outcome. We, also, should be looking at other areas of the government, such as

the Navy, NASA, and the Aviation Department of the Pentagon, and so forth. The technology we are seeking has already had been developed by one of these groups. We should also be looking at other countries where mining takes place.

Currently, there is a group of us that believe we have the answers to give miners the specialized wire communication device that can be utilized on a day-to-day basis, as well as an event of an emergency. Later, a group will be meeting in Texas, a group from the Governor of Texas, the Office of Economic Development, the University of Texas, the Mineworkers, CONSOL, West Virginia Commission on Mine Safety, the State of Illinois Mines and Mineral, as well as other people, who believe that the technology is on the verge of being developed.

Earlier, we heard operators speak of landowners above mine property being issued. I would venture to say that if a major disaster were to occur, those property owners would be the first ones to offer assistance. I have seen this time and time again, from Alabama, to Pennsylvania, to West Virginia.

I am going to skip -- since I only have a few minutes, I have a poem here about mine rescue teams, but I am going to allow the mine rescue teams

to touch on those. But, I would ask if you go back and read the report previously submitted to you of the United Mine Workers of America, of the Jim Walters Resource Number Five Mine disaster that occurred in 2001, you will find many recommendations in our report that address the various subjects that we are talking about today. Had you have taken our report serious and mandated that the industry comply with these suggestions as a rule, we may not have to be here today.

While it is hopeful that on MSHA's website, there's a list of promising technology, this list, after seeing what is going on today, seems to be limited as to what is actually available. Also, MSHA should not be in the business of listing the cost and the pros and the cons of the different technologies. What they should do to partner with NIOSH and to test now available systems, while continuing to push new technology. These existing systems that meet MSHA's approval and certification process should be passed on for the operators to choose which best fits their needs. If we were to implement only products that had 100 percent success rate, I would submit to you that nothing would be approved for use in mining today. This goes from the mining equipment used to extract

the coal, which breaks down daily, to pass safety devices in use today that have faced some failures, as well as successes.

I would guess that many people here are skeptic of what we are seeing today and believe that it won't work. I bet that some of our rescue teams even believe that some of these things won't work. Being involved in mine rescue for a number of years, I have had some doubt. But every time I question if a system would work, I read Mr. Hamner's note. I would like to share that with you now.

It says, "Hi, Deb and Sarah. I am still okay at 2:40 p.m. I don't know what is going on between here and outside. We don't hear any attempts of drilling or rescue. The section is full of smoke and fumes, so we can't escape. We are all alive at this time. I just want you and Sarah to know, I love you and I will always be in love with you. Be strong and I hope no one else has to show you this note. I am in no pain, but don't know how long here I will last. Tell everyone I am thinking of them, especially Billy, Noreen, Will, Bill, and Peg. I love you all. Junior Hamner."

I have to believe that what we have seen here today is doable. I pray that MSHA operators

stand up and do the right thing. We have to take a chance to make a difference and save lives by moving forward. I would hope that all the miner's forces do not have to go and hurt again. Of all the problems that we have heard today, when we look at the larger problem, miners are still dying in mining disasters. I heard it said that we don't want to give miners a false sense of security, but right now we have no security. Thank you.

MR. STONE: Thank you, very much. The next speaker is Battle Brown.

MR. BROWN: My name is Battle Brown. It is spelled just like it sounds, B-A-T-T-L-E, Brown, like the color, B-R-O-W-N. I have with me Anthony Rowe, A-N-T-H-O-N-Y, R-O-W-E. I am representing QuickStart Wireless and Anthony is representing Carnegie Mellon University.

I am here to present on behalf of a team that represents a number of entities: QuickStart Wireless, Carnegie Mellon, also FireFly Sensor Networks. Just to explain what FireFly is, FireFly is synchronized when they blink and we're able to build a sensor and wireless networks that are battery operated, that time themselves to come on and communicate in cycle on and off, in order to maximize

battery life. That's one of the things we bring to bear. The School of Electrical and Computer Engineering is involved and Real Time and Media Systems Lab is involved in this presentation. There's a number of targeted technologies we would like to talk about today: wireless networks, sensors, software applications, robots, communications, and then how we build integrated systems that use these technologies.

In dealing with wireless mesh networks, one of the problems is that all of the nodes try to talk to each other and you end up getting a lot of collisions and gibberish. Carnegie Mellon has developed a network system that is self-configuring and self-healing, so that you get a clean network diagram, as you can see there. It self-configures. Nodes go out. It will heal itself and reconfigure the network. We can also run heterogeneous wire and wireless mesh networks together, so we can integrated multiple network types. And we can do location tracking by nearby triangulation network nodes, and as you can see here in the diagram.

Additional capabilities that this team can bring to bear would be an adaptive communications protocol that would have a normal operation of low-

power battery-saving, low maintenance, closest node listening and then if there is an event or emergency, the network can automatically switch over to a higher power maximum band width, active node listening. So that if a node goes into node failure, it can skip past that node and listen for nodes further away.

Also, we have technology, which can allow segmented or trapped networks to function independently, so as you -- and we can have multiple paths into a network. So, we have a very simple tree diagram of the network on the lower right. If there is a break in that network, typically what happens is the far end of the network is totally disabled and ceases to function. In the case of the technology that we can bring to bear, we can bring -- the network would -- the two halves of the network would continue to function independently of each other and then because we can bring multiple entry points to the network, we can actually have multiple entry points to the network, air shafts, or new bore holes, in the case of a rescue operation to reestablish communications.

This is, as you can see here, pictures of existing prototype hardware for sensor nodes. In this case, we would propose using carbon monoxide, dioxide,

methane, and oxygen sensors, as the network nodes and, of course, getting to the intrinsically safe certification. There are other kinds of sensors, which can be brought to bear. I'm sure you heard earlier, temperature light, silent motion, vibration. These can monitor equipment and other variables in the mine environment.

There is also the possibility of wearable sensors. You see a watch there in the middle picture, which can enable two-way communications of text messaging across the sensor network. And it is important to point out that this is a two-way collision-free mode of communications. We believe that given the other certified radio frequency communications, we would not have any trouble getting the intrinsically safe certification for this technology.

In terms of applications, we are looking at location tracking, integration of triangulated position with database management software; server-side management software could display minor positions spotted on a map; transmit warning messages to mobile nodes; display sensor data and monitor the network status with automatic reporting. One thing I have not heard today, which I would like to strongly suggest,

is the establishment of an industry web portal or multiple state coders have access to that information. Owners, operators, inspectors, regulators, first responders, and search and rescue personnel could all access different portions, not necessarily all of the information, but portions of information relevant to their area of expertise. And operation and sensor data, production data, maintenance data, regulator compliance could all be integrated on such a web portal. That would be the type of thing that we would be happy to do a needs analysis on and consider developing.

Another thing I would like to point out is that sensors and senor node networks could be made to function like black boxes, like airplanes, so the nodes can store information about the conditions in the mine before and after an event. Also, given the fax that we have so many functioning and sensors as the node, we could provide automatic safety guidance to miners entrapped in a mine situation to tell them where fresh air is or safer zones are. We can provide automatic hazard detection through sensors that perhaps read vibration or roof collapse, additional black box functionality and collecting of data and archiving of that data.

Another possibility would allow this network might be to control robotic search and rescue vehicles. Currently, you've got existing robots that are in use in the area of mine mapping. This is an area that's been significantly developed since the Quecreek. There are both wet and dry hole, bore hold robots, which use sonar or laser range finding to do mine mapping. There are also unmanned rovers available. Carnegie Mellon currently has under development a man pack that can use inertial sensors for mapping. This kind of thing could be used to keep mine maps updated on daily production basis. And such robots could be used to reestablish wireless networks by dropping off new nodes, going in through bore holes. Those robots could be equipped with a variety of equipment, sensors, network nodes, supplies, various loads, including self-rescuers, oxygen breathers, medical supplies, food, water.

The benefits to thinking about all of these issues, as a system of systems, would be reliable, resilient communications, real time condition reports, sensor network initiated instructions to miners in an entrapment, document of the event with the history, immediacy of response, and peace of mind. The final result for the community is information availability,

timeliness, greater accuracy, professionalism, rescue effort coordination. And also on the productivity side for the mines, using software applications that manage those kind of activities over the same network, there could be some benefits there, which might actually provide or turn on investment to the mines.

So, that's the information we have to present today. Carnegie Mellon and QuickStart Wireless and FireFly Sensor Networks are prepared to assist in any way that we can. We are available for questions.

MR. STONE: None today, but thank you, very much.

MR. BROWN: Thank you.

MR. STONE: I understand that a speaker for this morning, who was not available, is now here and is available to speak. Marty Sergent. And if you can begin by spelling your name and stating your affiliation. Thank you.

MR. SERGENT: Thank you. My name is Marty Sergeant. I am from Total Fire Group, M-A-R-T-Y, S-A-R-G-E-N-T. I apologize for being late today. You can never depend on the airlines when you need to get somewhere, but you can always depend on them to get you there late usually.

About a month ago, I received a phone call from a safety director affiliated with the Peabody Coal Company at the Blackbeauty Coal Mine in Vincenze, Indiana. The guy had been to the local fire department and had asked them to be able to look at their thermal imaging camera, to see if it might have some application in mine safety. He did a little more research on the Internet and he realized that probably the product offered by Total Fire Group, the Fire Warrier Thermal Imaging Camera, which you can see on the screen now, would be applicable because of its hands-free capability. There isn't another hands-free thermal imaging -- helmet mounted thermal imaging camera available currently in the United States.

Total Fire Group is a company that makes personal protective equipment for fire fighters across the country. We probably have the biggest market share of the metro fire departments, D.C. Metro, for instance, New York City, the city of Cincinnati, where I am from, and we brought this thermal imaging camera on because it really fits in with the marketing program that Total Fire Group has, which is to reduce the amount of stress on a firefighter and to enable to firefighter to find his way out of a smokey environment faster.

The contact that we had at Blackbeauty Coal Company took us down into the mine with this camera. The camera is an easy -- it's a simple camera to use. One button operation turns the camera on. You can use it as a gloved -- with a gloved hand. It takes about three seconds for the camera to warm up and it's ready to be used in any kind of zero visibility situation that a miner might come into contact with. We went into just a dark area of the mine. They had a conveyer system going through the mine. We were able to see the coal on the conveyer system. We were able to see bearings in the conveyer that were hotter than other ones. That could be a potential maintenance issue down the road. But more importantly, you can take this camera -- you know, where your hand is in front of your face, you're not able to see anything, you can take this camera, put it on, and you'll be able to see the coal rib in the wall. You'll be able to see rocks laying in your way. You're able to see people far away.

The way the thermal imaging works is thermal imaging tries to find the hottest thing in a room. In that environment, obviously, the human body is going to be probably the hottest thing in the room. It finds it. It makes it a bright white light. You can

actually sometimes make out even facial features. You can see glasses, because they will appeal colder than the skin will appear. And thermal imaging in the mining field, I think, has great application for enabling the miners to find their way out faster and more efficiently and with a whole lot less misstep than just maybe following the rope with the cones on it and that kind of thing to get out.

We are currently working on getting MSHA approved with our product, but we wanted to bring it before you all. And if you just want to take a look -- would you like to take a look and see how the camera works? This is a working unit. If you want to -- there's nothing like wrong with taking a look and seeing how it works.

The camera weighs -- there you go. That will be something to use for the newsletter. The camera is the smallest camera available in the United States right now. It measures 3x3x3 inches and weighs approximately 18 ounces. The camera runs simply on two double A batteries and you will receive about three to three-and-a-half hours of useful life from those batteries. Now, that's from new batteries. Powering on, powering off, those kind of things tend to diminish the amount of battery life that we have.

There's nowhere that you have to plug the camera in. There's no charging. It comes in by water type -- water and dust proof pelican case. And when you have only about a half an hour of usable battery life left, there is a bright red light that comes on to indicate that you only have about 30 minutes of usable light.

In the fire service, one person is always assigned a hand-held thermal imaging camera. You're going to have your hands free -- in a fire, you're going to have your hands free in a mine, when you're trying to do any kind of self-extrication or comrade extrication and that kind of thing. So with the Fire Warrior, a person can assist in live saving measures. He can send in any kind of suppression. They can do any kind of rescue because they're going to have both hands there free -- both of their hands free.

The reason that the power consumption on the camera is so small and doesn't require the big batteries is simply because of the display that we use. The display is about as big as your fingernail on your pinky finger and it's an organic LED. An LED display, like what's on a simple cell phone, works great at this distance; but when you get it up close, it becomes distorted and you can't use it anymore. The organic LED display is meant for up close use, so

that when you have zero visibility because of smoke or because of dust or because of anything in the air, you're going to have that eye piece right up against your eye, right up against the fact piece here. Remember, this is going to be used when the miners are using their breathing apparatus to get out, if anything has ever happened. And that's the same face piece that is used in the fire service today. It's just a different version of that. So, it gets up close, seals to the face piece, and you're able to see clearly through that viewfinder.

To compare thermal imaging cameras of other thermal imaging cameras or to be investigated through this process, ours is hands-free and weighs 18 ounces. The other ones weigh over four pounds and are hand-held units. Ours is using the most current and up-to-date technology. Ours allows the user to multitask. And we do not sell anything directly. We work through distributorship and that's just simply part of the way that we've always gone for business.

It's a very simple process -- or a very simple concept. And if you all have any questions, I will be happy to answer them for you.

MR. CHIRDON: Do you have any existing certifications on the product?

MR. SERGENT: The certifications that we have are through the National Fire Protection Agency, the NFPA. We are working on finalizing an ANSI standards that relates to thermal imaging. And as I said, we have a company that we keep on retainer that helps us work through certifications such as an intrinsically safe, which none of the cameras are intrinsically safe. But, we are working through UL for some almost intrinsically safe certifications. I forget the numbers on them. And we're working for the MSHA certification right now, as well.

MR. STONE: Thank you, very much.

MR. SERGENT: Thank you for your time. Again, I apologize for being late.

MR. STONE: We waited for you. The next speaker is William Collins. William Collins?

(No response.)

MR. STONE: Okay. Then, Andy Stein. Is Andy Stein here?

(No response.)

MR. STONE: Okay. Jim Ponceroff? Is he here?

MR. PONCEROFF: How are you doing? My name is Jim Ponceroff, P-O-N-C-E-R-O-F-F. I work in the coal mine. I'm a union member, UMWA. I'm the captain

of the Blackstone Two mine rescue team, which is a console energy mine. Been doing it for 16 years. Of that 16 years, I've been captain for 11.

The best think I saw today was the happy young man just showed you, the thermal imaging really works. I use MJAWS at Lake Glen. I used it at 84 mine and you can actually see where you're going with it. It's a great piece of equipment, pretty costly, but it does work.

A couple of things I would like to talk about. First of all is communications and I hear guys all day here tell me how nice these systems are; but, apparently, they've never been underground after an explosion. Metal beams are twisted and bent double. Lunch buckets are smashed flat. Rock dust, pods, the vacuum coming through sucks the top right down against the bottom. That's three-quarter inch steel, folks. No piece of plastic ain't going to make it. These cables that will heal themselves, it ain't going to happen, not in the coal mine. It might work good out here, but it isn't going to work there. But like Dennis said, Mr. O'Dell for UMWA, there is technology available and it should be there and must be there. We need it. We go to these fires, we can't even talk to ourselves.

It's a little emotional, especially when you've got people involved. We need a system that we can talk to each other, so we can get back to the fresh air and out to the command system and understand what it is without the mistakes happening like it happened in Sago. If you had a system where all your members were hooked together and could talk to each other at the same time -- you've got to remember, we're not all walking up the center, you know. We've all seen maps of the coal mine on T.V. The news media made sure that we saw that. You may have two guys in one entry, two guys in two entry, two guys in three entry, a hard line, which is our silent partner communication system that we drag up the middle, we have two guys over here, two guys over here, depending on how many entries depends on how many guys you've got. Nobody travels alone in my rescue, because if you go down, you're in trouble.

I don't want to take up a whole lot of your time, but communications is very, very -- you can't emphasize that enough, how important that is to know what's going on around you. I've been in coal mines that are either on fire or exploded in three different states in the last five years. That's way too busy. I've been interested in mine rescue my whole life. My

whole family is coal miners or were coal miners. Most of them are out of the industry now, disabled, retired, or past away. I remember being a kid and my Dad was on Archrite Number 1 Steam. My uncle was on Osage Number 3 Steam. And we were at Grandma's and everybody was boo-hooing and whan, whan, because they were up there in that coal mine that was on fire. And I thought that was the coolest thing in the world. I really did.

And they say coal miners are simple. Well, yes. Nobody wants to go to a coal mine that's on fire or nobody that's got any sense about it. I absolutely love doing it. If I'm in there, I want to know there's somebody coming to get me. So, they don't understand what we do and why we do it. Well, sometimes, we don't understand it.

But, there's technology available to make our job easier and to get people out of there when it happens. Hopefully, it will never happen again, knock on wood. You train and you train and you train and every night you go to bed praying that it doesn't happen. But, it does. So, you go. And your family don't know. And it's real important, this information, or mis-information, I should say. We can talk to the moon, but we can't talk 200 feet in a coal

mine. Something is wrong with that, folks; something bad wrong with that.

Them guys that lost their lives knew the risk when they went in there and I know mine when I go in when it's on fire. The media portrayed us as something we're not. We just don't strap on our suits and go in. There's protocol that we've got to follow and we do that for a reason. I can't save nobody, if I get myself blowed up or my team. We talk about the mine rescue family, it is a family. I've spent more times with these guys in the last few years than I have with my own kids. I have. Training, contest. A fellow spoke about contests earlier today, one of the best training tools we have. When we go on a contest, still, as captain, I'm responsible for every decision that's made. We make them as a team, but it's my responsibility to make sure we make the right ventilation changes, that we systematically explore the mine. When we go to a fire, we have people telling us where to go, what to do, what air quality they want to know. You know, sometimes, they'll run us back and forth two or three times.

Believe it or not, folks, we're trained professionals. We do this for a living. And we take a lot of pride in what we do. And when we're second

guessed, it bothers us. But, safety for my guys is my number one concern, because I know their wives. I know their children. I don't want to come home and say, hey, your husband or your brother or your father was killed because I did something stupid. And it's not something you turn on and off. It's easy to turn on, but it takes days to turn off, if you can.

I'm a real outspoken person and I'm biting my tongue. There are a lot of things I would like to say to you people. I won't. And mark that on your calendar, because it will probably never happen again.

Nobody understands the forces that occur during an explosion. It's unbelievable. Like I said, I've been to two or three mines that's blowed up, several have been on fire, a couple of them two or three times. It's amazing. You can see a picture of something that's been through an explosion, you think, oh, that's tore up. You walk around the corner and see it, pictures don't do them justice. It's unbelievable, unbelievable. I've seen things and done things and come out of there and say, whoa, man, that was awesome. I can't believe I did that. But, I don't do it for money. I'm paid well, but it's not just a job. It's something you get in you. And we study rules, maps all the time. It's not just the day

before a contest or a week before a contest or a month before a contest. It's every day. Stuff goes through your head every day. You've got to, because you don't have time to think in a disaster. You don't.

We fought a fire at 84. We didn't say, I need to set a post here, I need to set a post there. It was there. The guys behind you turned around -- when you turned around to ask for something, they already had it. It was there. You just put it in and you go on.

And that's another thing that comes up with training. The company I work for, Consult Energies, has been real good about training us. We've been over to the NIOSH Lake Land several times. I can't -- the last few years, we had to cancel, because we've been at a fire somewhere. But, the hands-on, in the smoke, you can't believe how dark it is. The guy said, the thermal imaging camera, you can put it up against your lens, that's all you can see is the lens of your face mask. I mean, you can't see nothing. You feel your way through, and through practice, we learned how to explore these areas so we don't go by something that can endanger us or a person, leave somebody behind.

Gas detection devices, some of the best on the market aren't in use. The Rykin is probably still

the best methane detector they ever made. It's top notch, buddy. I mean, you know, and they questioned our sanity and stuff and sometimes I have to do that myself. When we were in Luverage and we were 100 feet from a fire, had 6.75 methane. Well, that's right about the middle of the explosive range, guys. Talk about looking down a gun barrel, that's looking down a gun barrel. But, that's what we do. We know the risk and we accept the risk. We're not no heros. We're just men. We just work and try to do the job we were trained to do.

These new teams, these little contract teams don't have the experience we've got. To tell you the truth, there's not very many people, who've got the experience that we got. We've been to a lot of fires lately, lot of disasters. Places people won't go, we go willingly. It's not easy to do, but that's what we do.

I know I've talked in circles, but I'm sitting down. I function better on my feet. I never have trouble speaking my mind. I'm trying to be civil here. A lot of things I would really like to say that don't need said today. The main thing is training. Back to the contract teams, you have two guys from this mine, two guys from that mine, two guys from

here. I'm thankful that them fellows have the intestinal fortitude to strap on that machine and try to do what we do. But, they don't do what we do. I mean, they're trying, but it's not their fault. We have a lot of things that go on in the industry that are compliance. At our mine, we have fire nozzles that are complaint, ain't worth a darn. Turn the water on, the guts fall out of it. So, now, you just got to let it pass its regulations, okay. It will last 50 psi for 30 minutes or whatever it is. That's not good enough. You've got to have good equipment.

Our sound power system was made in the 1950s and it still works like it's brand new. We have a brand new one that works like it was made in the 1950s. It's the truth. We take it, but we don't use it. It's a brand new thing. You can pull a bulldozer out with that old cable. That new one, you step on it and the guy walks off it, it stretches it.

Young man talked this morning about passing legislation. Well, we've got public outcry now because men lost their lives, so we need to do something. We should do something. Don't be hasty and do something that's not going to be right. We have laws about fire extinguishers underground at oil stations. It doesn't matter if it's sitting on top of

the oil station. It doesn't matter if it's in-by the oil station where the smoke and fumes is going right over top of it. It's legal because it's there. Don't make it legal because it's there. Let's do things right. We didn't kill people today, thank God, hopefully.

Let's not make a hazard or something that's going to delay us when the next one arises because it's going to happen. It's been happening ever since there has been coal mines. There's too many things there we can't control, but there are some things that we can, so let's do a good job on the things we can and try to rely on the man above to take care of what we can't and be smart enough to know the difference between the two. I'll let somebody else talk now. I could go on all day.

MR. STONE: Thank you very much

(Applause.)

MR. STONE: The next speaker is Craig Carpenter. Would you begin by spelling your name and stating your affiliation?

MR. CARPENTER: My name is Craig Carpenter, C-A-R-P-E-N-T-E-R, first name, C-R-A-I-G.

Good afternoon. My affiliation today is with the United Mine Workers of America and with the

CONSOL Energy Company and proud to represent 450 United Mine Workers underground at the Robinson Run Mine in north central West Virginia and probably around 150 company personnel, too. So it's with pride that we're here today.

A lot of things have been said today. I was really surprised -- be truthful with you about the companies that show what we have. I would encourage each and every corporation here today, you let us have it to use it for a while. We'll make it or break it or tell you it's good. That's the best way I know how to tell you. But do not ever assume that a cable or anything like that can possibly withstand a coal mine explosion. It moves hundreds of tons of steel like nothing.

But what we need, as a mine rescue team, which I'm proud to say I've been there 25 years and been with this group of guys here for a long time and know them like they are family -- we travel an awful lot together, but one thing we drastically need, as a mine rescue group, and we depend so much on the Mine Safety Health Administration and their radios, and we use our hands so very much. If there was something that could come to surface, but it's just sitting in -- that frees our hands up to use it would be a great

asset to a mine rescue team that will let them talk to each other. Like Jimmy said, we've spread out so very much. It's not like we're contained in just a little group. As we explore all of our entries, we can have communications with each other.

My purpose underground in the event of the Sago thing was communications, and we go with our company, which has some great corporate people that we have dealt with over the last five years, and the whole thing here today has been about communication. Communication underground to the outside is a very important thing. It was very difficult for some of us to talk to a strange voice from another company, but when we talked to the men from our company that had that familiar voice, it was a relief.

It would be great to have people like -- I know most of you will not recognize the names, but Ron Tolinoski, for example. We've worked with him for a long time. It would be nice to have a group of federal representatives that we know in a command center that understands our language because we all know. The southern part of West Virginia may have different terminologies than what northern West Virginia or Pennsylvania does. I would encourage you guys to come up with maybe different federal men that

our mine rescue teams have worked with so that we can have a familiar voice there.

Things that can withstand prolonged amounts of water. The coal mine isn't necessarily a dry place when it has been shut down for six months to a year. We do a lot of wading of water in a lot of places because they have to dump the water underground sometimes to put the fires out after they have sealed the mine. So, vendors, take that into consideration: prolonged periods of water.

There are different ways of communication out there today that probably would be very substantial to a mine rescue team. Over the years, the inventions that have been made and the progress that has been made in the coal mining industry, 95 percent of it has been based on production, not on lives, and it's hundreds and hundreds of men that go underground every day that risk their life so you can have fire in your house so you can be warm in the winter and cool in the summer.

It is the responsibility of each coal operator in our country, the state department of mines, the federal Mines Safety and Health Administration, the United States Senate and the United States Congress, and the president of the

United States to give their best toward us because we give our best to you every day. Tragically, sometimes it is by life, and we pray that none of this ever happens again.

It's easy to go put out a mine fire. You may be away from your family for a long period of time, but it's just a fire. But it is something totally different when there are people involved, and there's things you can't get away from. I would encourage you guys, for the oxygen stored underground, be very cautious with that and make a very competent decision. Don't rush into it because that could be quite possibly a very fatal thing.

Safe rooms should be required, yes. They really should be. I think, in some cases, it would save lives, maybe not all, but some. In Sago, there was one.

We would ask you to be very time consuming. Look over the overall picture. Don't make a rash decision because we count on you to make the decisions that affect us down the road. I would encourage you to do what your heart tells you to do. I think every coal miner that goes into the coal mines of West Virginia, Pennsylvania, Alabama, wherever they may be, deserves your utmost consideration in these matters,

and our men at the mines are weak on training, the very base roots. We spend, out of 365 days a year, an eight-hour training session. Is that enough?

But there are things that people want that may not be the best thing for the underground coal miner. Like I say, vendors, you give it to our mine rescue team, we'll try out your communications. We'll tell you whether it's any good or not. So we'll go from there, but I want to thank you for your time. We appreciate each and every one.

MR. STONE: Thank you.

(Applause.)

MR. STONE: The next speaker is Larry Tenney.

MR. TENNEY: Good afternoon. I'm Larry Tenney. That's L-A-R-R-Y T-E-M-N-E-Y. I'm a UMWA member, a member of the rescue team for Robinson Run Coal Mine and CONSOL Energy.

I've been an underground coal miner for 32 years, a mine rescue member for almost 25 years. What's going on here today is the first step, I think. If there was something available before this at the Sago Mine, if we knew where the men were, or if they could have talked to us, things would have been different. This may change future incidents, I hope.

Mine rescue teams, we're underground miners. I'm a roof bolter. On January 2, I was working the day shift and got the call to go to -- they said that there's 13 men trapped in Buckhannon Mine. Before that, I was thinking about going home that night and watching the Sugar Bowl with my son, but, instead, we was down at the Sago Mine. We didn't even think about the ball game until after we got out that night.

But I'm not going to take up a whole lot of time except to say that I'm glad the United Mine Workers is behind this effort. The federal MSHA inspectors that were with us; they are the best there is. They work right along beside you, and they do the best job that they possibly can.

I just wish things had turned out differently, but like Craig said, there was one man saved, and hopefully he may shed some information on what actually happened, which is a mystery probably still yet to everyone.

That's about all I've got to say on the matter today, and I thank you.

MR. STONE: Thank you.

(Applause.)

MR. STONE: The next speaker is John Jordan. Is he here?

MR. JORDAN: Good afternoon. My name is John Jordan. That's J-O-H-N J-O-R-D-A-N. I'm a member of the executive board of Central Mine Rescue. That is a not-for-profit corporation in the State of Idaho that was organized in 1923 for the purpose of improving mine rescue response and the ability of member and associate member mines to provide mine rescue coverage for our local mines.

We're located in the Cordlanes Mining District, but we have member mines and associate mines located throughout the western United States. We currently cover 23 different properties. I'm speaking on behalf of Central Mine Rescue, and I would like to direct my comments at the request for information published in the federal record on the 25th of this year.

I'm going to be very brief. I won't use 15 minutes. First off, I do want to say that those of us who are in the underground hard rock industry, the metal and nonmetal industry, have the greatest respect for what the coal mine teams did. Our mining industry is a natural resource industry. We exist by finding ways to capitalize on the myriad of different mineral deposits that God has blessed this country with. To the extent that nature has made each of those mineral

deposits unique, each mine is unique, and it's unlike all others.

A lot of what I'm hearing today and seeing here -- maybe this is just something I'm putting into my mind, but it almost seems like we're looking for a silver bullet, some sort of magical formula that's going to make everything good from this point forward. I don't believe that there is a silver bullet for that. I don't think there is any single communications tracking system, no single refuge chamber design, no single response protocol, no single training program that's going to be applied that can be effective in each and every mining situation and will ensure that there is a successful end to every mine rescue operation.

Central Mine Rescue has been following the progress quite closely, and we applaud the efforts to conduct a thorough search for technologies that can assist or improve rapid mine emergency response. We're all in favor of efforts to identify new technologies that can assist. That's part of the reason we came out here today. This thermal-imaging camera looks like something that I think could really, really assist us a lot.

As Craig and Jim mentioned, the interteam

communications are always a problem, and anything that can come up along those lines would be greatly appreciated.

Any technology that can improve our ability to locate and reach trapped miners would be a huge plus, but we strongly question the new trend of promulgating legislation reflexive to an emergency this quickly without, as Jim and Craig cautioned, solid, reasoned, cautious reasoning to make sure that we come to a good, workable solution.

We've got to recognize that every mine is different, and what is a solution in coal may not be the right solution for hard rock mining and vice versa. We've got to make sure that the regulations that we put in place, and as Jim and Craig said, we need regulations unquestionably, but what we put in place has to have flexibility to serve all aspects, all operations. Don't mandate that we have one type of a communication system that has to be used if it's not applicable to the application that we're going to be making. You've got allow us the flexibility to make those decisions as rescue teams, as operators, as miners, to make those decisions.

In closing, let me say that the keys to successful mine rescue lie in good preparation and

good response. Preparation includes training of the miners that are going to be working in there. They need to be thoroughly trained. In our mines, typically we have the eight-hour-a-year refresher, eight-hour day annually, and also one day a month we have at least a half an hour to an hour, two meetings, and we will specifically address individual topics along those lines, including mine escape.

Good preparation and good response by properly trained and properly equipped rescue personnel is not achieved through reactionary, cookie-cutter solutions. It's achieved through solid commitment by companies to preparedness and to the expense of training the rescue teams, solid support by state and federal officials to the business of preparing mine rescue teams, solid dedication of the individual mine rescue team members, and as I said before, good training of the personnel that need rescue. Thanks for listening.

MR. STONE: Thank you very much.

The next speaker is Donald Jack, Don Jack.

MR. JACK: Good afternoon.

MR. STONE: Good afternoon.

MR. JACK: I'm from CONSOL Energy. I'm a UMWA member and a member of the rescue team. I would

like to thank you all for having us here today.

MR. STONE: Thank you.

MR. JACK: I would like to say that one of the biggest problems we have is with communications. That's really a big deal, like Jimmy said. As far as our self-contained, self-rescuers, I think we should keep. I understand they were thinking about getting rid of the W-65 and going to the 1,000, or whatever it is, the bigger one. I think CONSOL has probably, at least in our mind, the storage plan. I think we have a very good storage plan with the SCSRs, and I feel that we should keep the W-65s that every miner wears instead of the bigger one because I'm sure a lot of guys will take that bigger one off and lay it on something and walk off, and it will just be laying there, and if they need it, they are not going to be able to get it. They are keeping the 65 on them. That would be there own fault if they do lay it down, but that's going to happen, and it could develop into a sad situation, which we don't want to get into that.

Then as far as the BG-4 and the 174, it could probably stand even a little more improvement. They are very good machines, and they do work, as we have proven that, but we could probably use a little buddy system on there that if somebody would go down,

we could tap into their face piece and give them some air while we are taking them to the fresh air base perhaps.

If there could be some kind of an adapter put on these or whatever, and really communications is one of the biggies to us, I feel, that could be improved on a lot, even the sound-powered system and the walkie-talkies and all this. Some of the things that these people have been talking about, the vendors or whatever, some of it, I understand, and some of it, I don't. I don't understand how this cable heals itself when it gets torn in two. That's above my head, I guess, but anyway, like Craig said, if you let us use it, we can either tear it up for you or make it work. Even if it don't work, we'll figure out a way to make it work.

That's about all I have to say, and I would like to thank you all for allowing us to come today and speak.

MR. STONE: Thank you.

MR. JACK: Thank you.

MR. STONE: Could I ask you just to spell your name for the record?

MR. JACK: Oh, I'm sorry. The first name is Donald, D-O-N-A-L-D, and the last name is Jack,

J-A-C-K.

MR. STONE: Thank you so much.

MR. JACK: Thank you.

MR. STONE: The next speaker is Doug Wade.

MR. WADE: Hi.

MR. STONE: Could you spell your name for the record and give your affiliation?

MR. WADE: Doug, D-O-U-G W-A-D-E. I'm a member of the mine rescue team for Backsville No. 2. I've been in the coal mines for 27 years and a rescue team member nine years. It seems like since I've been on the team, we've had something to do every year.

I want to talk a little bit about the rescue chambers. I feel that they could do some good. I feel that they have to be nothing too bulky. It needs to be like a little system where you maybe pull a rip cord, and you can get enough people, 10 or 12 guys, whatever is on the section -- there has got to be one at each section -- and have supplies with them. It needs to be something kind of small but made out of material that will withstand something. It doesn't have to be an explosion but something. It needs to be looked into.

I'm on the section myself. I'm a mechanic on the section, and I think it needs to be the last

resort, though. This needs to be taught to the guys on the section, this is your last resort if you can't get out. But it would be nice to just look into this and see if they can come up with something that was not bulky and everything, but they are going to have to have them on each section.

That's just about all I've got to say.

MR. STONE: Thank you very much.

MR. WADE: Thank you.

(Applause.)

MR. STONE: The next speaker is Rick Cosner.

MR. COSNER: My name is Richard Cosner, C-O-S-N-E-R. I belong to the United Mine Workers and Consolidated Coal Company. I'm a member of the mine rescue team and proudly.

What I see is a lot of problems. We've been an incident every year since '98, and in every incident we learn something new. Mainly is first response. If there was a first-response team there to have everything set up like the mine communication, the gas hemautograph, if it was on Sago, that could have been going before we even got there and set up. That could have allowed us hours before we even got to the mines to be prepared. If there was a team there that would have the maps ready, have that set up, have

designated areas for us to set up our equipment -- we had the equipment available to us. CONSOL made sure. They supplied us very well, but I see other technology out there that caught me by surprise.

I'm a coal miner. We don't get out there very often, and most of the time we're tied up in mining. This is a really unique opportunity for a lot of us. It's hard for us to speak. We're not public speakers; we're miners, but there is a need for our opinions, and I feel that we've got something to say. This is going to directly impact us, and for strangers to be sitting up here making decisions that I'm going to use this, I'm not really sure that I want that to happen. I want to be included, and I'm not only speaking for myself -- excuse me -- I'm a little bit nervous -- I'm speaking for my fellow mine rescuers.

There are only 120 mine rescuers that are experienced to the extent that we are, only 120. That is unacceptable. During this investigation at Sago, we could have had another incident. There wasn't even a mine rescue person on site while these people -- we had just lost 12 guys there. So now the mine is safe for you to go in and conduct this investigation? That's not acceptable to me. So we were done. We did what we were supposed to do. Then we go home and

allow you to enter this mine without someone watching over you? I mean, God forbid there had ever been another problem there, but what would have happened if there would have been?

If another explosion would have occurred while we was there -- it was a circus -- there would have been hundreds of people outside of that mine, not only the people inside that mine, and that can't happen no more. We can't allow that to happen.

Also, our command center. We need the same training on those command people that goes into us. If they don't have the experience, and we're going to listen to them, and they are giving us the opportunity to learn ventilation, rescue procedures, how to enter dangerous areas, and they don't have the same knowledge that we have, and we are to trust them with our lives? I don't think so.

Maybe they are creating a monster by giving us this extra training, by sending us to these competitions. I was completely against it. I was on a working team. I never was involved in this mine rescue training or the competitions. But we have been involved, and now that I'm involved, I want a voice.

We just have a certain amount of people outside there that we trust to go in a mine with. We

need to be involved in these new miners being trained for mine rescue just to give them simple tips that we learned as it was being developed. I mean, I raised backpacks on site at Sago with warning whistles covers and plugs and apparatus and oxygen not up to 3,000 psi. It just scared me.

I went to Bill Tolliver, a man I learned to trust and really admire, and I said, Bill, we can't allow these guys to be our backup. We can't allow these guys to go in. I said, not that they are not wanting to, and we would want the help, and we needed the help. It was because of the lack of experience. These people need the same training that we have. They put us through rigorous training, and it takes a certain person to be able to be trained as they train us, but we want to do this. This is not something they are forcing us to do. We want to, and we are proud to do it.

I was at a hearing. I've never been involved in none of this politics. I went to a hearing. I sat in front of the Senate. Man, Hillary Clinton came out. I said, wow. Kennedy and Byrd and Rockefeller. Wow, that's pretty impressive. Then I started listening to these people, and I said, these people are speaking for us. I said, we need to help

them. We don't need to be sitting here like stick people. You know, hey, we've got the members of the mine rescue team here. Yay. We need more members of the mine rescue team. We need to listen to our mine rescue team members.

Mine rescue is not only the United Mine Workers. We work with company personnel that are some of my best friends and nonunion miners. We are some of the best in the world, and we've got something to give back. During the Sago incident, we listened to the media say this is the only employment for us, around the mines and stuff. It's not. It's where we decided we wanted to make our living. My boy recently passed away. He was a graphic artist, and he decided, Hey, dad, I would like to go to the mines. I said, Come on, let's go. I was proud for him to be a miner.

For them to say that's the only employment there, they are wrong, and for them to say that's our only chance to make a living, they are wrong. Those miners are in there to put salt on your table, to power your houses, to put the diamond ring on your wife's finger at the wedding. We're in there for you guys, and we enjoy it. It's a hard job. Everything is a hard job. I wouldn't want this job. I wouldn't want to be a taxicab driver in this city for nothing.

I would much rather go into a burning mine.

(Laughter.)

MR. COSNER; If you're going to make decisions that's going to impact all of us, include us, please. That's all I have to say.

MR. STONE: Thank you very much.

(Applause.)

MR. STONE: I'm not sure I have the name correct. Ron Bowersox.

MR. STONE: Okay. Thank you.

MR. BOWERSOX: Ron Bowersox. That's B-O-W-E-R-S-O-X. I am a United Mine Worker, and I represent the mines that these mine rescue members are from. Just a little bit about these guys.

I drove their van down with these guys, and I tell you what, just listening to them today, you can see what kind of men they are. These guys work every day in the mines, just like we've got to work every day. They spend weekends upon weekends in training, and they are really dedicated in what they do.

The other thing: I've been part of this investigation at Sago since it happened. Dennis O'Dell and myself was there when they brought the victims out of the mines, along with the survivor, McCoy. Just some things I want to cover that I picked

up at Sago that could be addressed and could be standardized.

First of all, more teams need to deploy faster. These guys spent as high as 18 hours underground. You have Federal 2 mine. You have Cumberland, Emerald right over across the hill. If those guys had went there, it would have made it a lot easier for the teams that went in.

Legal problems, as far as one company helping another with mine rescue teams, that part should already be covered, like what happens if they go there, and what if somebody gets hurt or whatever? That legal part needs to be straightened out prior to.

A standard ID for these guys. There's at least four check points that we had to go through to get to that mine site. A standard ID card for every mine rescue member across the country should be there.

Some of this stuff has been repeated, like trailers. CONSOL has their own. Each mine has their own trailer, and they are really equipped nice. They have got generators. When I was there, it seemed like no big deal, but you would be surprised how many cars are there when something like this happens. These guys are pulling trucks, trailers. We need a place for you guys to park.

You need updated maps for these guys as soon as they get there to be update on the area affected. Okay?

Communications; everybody has hit that. Everybody mine rescue member needs communication of some type, and it's got to be compatible with the federal, the state, everybody involved. It's not good having a communication device if I can't communicate with the person next to me.

More training needs to be done. Like I'm saying, these small contract companies and mines; there is no way these guys are trained like CONSOL mine rescue team members are.

Something else that could be done: They need a standardized supply car so that when they go into that disaster, you'll have supplies you need. Just like you would have a fire car, first aid equipment, you need a standardized, mine rescue car that can be taken right in with those men when they go in.

Something that was brought up -- I didn't realize this, but one of the mine rescue members brought it to our attention -- when they drill a hole, they usually drill right down to the tail piece of the section, and the reason they say they do that, that is

the last documented surveyed site. They do methane, oxygen, CO readings from that hole, plus they lower the camera down in. They looked around. They seen the feeder car. They seen the shuttle car, everything in place.

Something simple as to have a standardized board maybe on the right rib. If they lowered that camera down in, they could focus that camera and maybe read a message that the miners left, or if they can't read it with a camera, when the mine rescue members get in there, that's the first place you would go to see what kinds of messages are left. Miners at Number 3 heading, two hurt, anything. They could just read that; it's standardized.

Command center. A mine rescue member should be a part of that command center. Who knows better than the mine rescue members what's going on in that mine?

I guess, in closing, the bottom line for, like, the last 20 years, everything in the coal industry has been towards production. They updated longwall. Roof bolters -- you name it, they have it. But very little has been taken for the safety and mine rescue members in training.

So that's all I have to say, and thank you

for the time.

MR. STONE: Thank you.

The next speaker is Tim Baker.

MR. BAKER: My name is Tim Baker. I am deputy administrator for occupational health and safety for the Mine Workers. I'm going to try to be as polite as I can, but anybody that's had many dealings with me knows that I'm usually pretty blunt.

One thing I want to say, I think, to begin with is for everyone here who has heard on numerous occasions, gee, we don't want a knee-jerk reaction, we don't want to jump into I think, let's not make the thing worse than what it is, in 1968, if we had that attitude, we wouldn't even be talking about the 1969 Coal Act. Somebody did something. Something has got to happen now. Something has got to happen as a result of the first two months of this year.

So let's not try to focus on a knee-jerk reaction. We have a lot of information. We have a lot of technology out there. We need to sift through it. We need to do it quickly, but let's not delay it by saying, gee, let's not jump in too fast. I applaud the agency for moving quickly on some of these issues.

I have some written testimony, and then I'll just kind of talk off the top of my head. I am

pleased to have the opportunity to offer these comments on underground mine rescue technology, although I think a lot of the day was spent on the overriding communications whenever I thought the hearing was pretty specific to mine rescue. But all of that information may be integral to one part or the other.

The union has pushed for many years to have the mining industry incorporate new and advanced rescue and other health and safety technology in their operations with the same vigor that they embraced new and more productive mining equipment. Unfortunately, in the mining industry, that is rarely the case. Because of a lack of desire on the part of industry to invest adequate resources in miners' health and safety, we find ourselves here today discussing issues that should have been settled long ago.

The comments you have heard today from members of the MWA who are members of the mine rescue teams at their particular operations are not new to anyone, I would say, on this panel and a lot of people in this room. They, like so many other miners, have testified in previous hearings and understand what is best needed to protect and preserve the health and safety of miners not only after a disaster but as they

do their routine, daily operations.

It is our hope, and it is the hope of each of them and their union, that these proceedings will bring about much needed change in the industry. In order for this to occur, the Mine Health and Safety Administration must return to its core function of enforcing the Federal Mine Safety and Health Act of 1977 and promulgating new and more stringent regulations, as was the intent of Congress.

The agency, in recent years, has been seen by miners as more of an obstacle than the protector that Congress intended. It has been more concerned, in our opinion, about the operators' bottom line than the health and safety of the miners. When a business fails and does not remain viable, profits slip, and stockholders lose money. When MSHA fails to fulfill its mandate, we have Sago, we have Jim Walters, and we have Alma.

In the last 12 months, counting from February to February, we've lost 43 miners in this country. This is unacceptable. We need better, we need stronger, we need less flexible, more rigid regulations.

A couple of comments that I would like to make, and I've heard this several times today. We are

not opposed to some sort of flexibility within a framework that says we want the communications system to be capable of this or that, or we want this regulation to be followed like this or like that, but from our perspective, we must be very careful when we talk about flexibility. Flexibility, in the opinion of the mine workers and their union, is no air quality rule. Flexibility is no belt-flammability rule. It is no next generation of SCSR. It's mine rescue team policies that are contrary to the regulation in the Mine Act. But it also means Omega block stopping and Omega block seals, contrary to the Mine Act. And it also means belt air.

These are problems that we see as affecting mine rescue teams and miners in many instances. Obviously, we have some major concerns with the sealing operation that occurred at Sago, and when those things occur, and teams are called to the scene, it becomes very confusing as to exactly what they are dealing with. So when we talk about how to protect teams, we need to look just beyond, and I know that we've looked at communications extensively today. We've looked at the number of people on teams and what equipment is necessary, but we need to know the infrastructure of that mine.

Does anybody with a practical understanding of coal mining believe that Omega blocks should be used to seal an abandoned area? This is a hazard that we've created, and now we have rescue teams going in there, not knowing exactly what the rest of the mine may be sealed with or what the block stoppings are made out of. These are real concerns that we need to look at. So when we talk about flexibility, we need to be very careful.

The other thing that I think is important that has kind of been hit a little bit but not entirely is when we talk about mine rescue teams, my reading of the act may be off, but it says: "Mine rescue teams shall be available at all times when men are underground." The regulations require two available mine rescue teams. Somehow, folks, we've got to get past the system of allowing contract rescue teams to be considered substantial enough to do this work. This is a bad system. This is a system that's broke. This is a system that puts my membership in harm's way.

These people, in many instances, are not getting the same training. It's a paper chase, is what it amounts to. As long as you sign the documents, as long as you've got the contract, then

you're fine under the regulation. Some of these people that were on property should not have been on property. That's not their fault. These people need to be trained to do these operations.

So we need to reevaluate what that policy is, and we need to get back about the business of looking at the situation and saying, if you want to run a coal mine, you've got to have two mine rescue teams from your operation available. I mean, Sago is a large operation. Sago is 200 people. Sago should have its own mine rescue teams that are inherently aware of the situations at that mine, the gas that's ventilated, where the miners are, where the sections are, where the pumps are. That's what they need. That's what this agency should require. That is what Congress intended, if you read the act. That is what Congress intended.

We've hit on rescue chambers. I won't go into that too much more.

There have been a lot of good ideas, I think, kicked out here, but we need action. Quite frankly, we need action. We have seen no action in the recent past, and that's unfortunate. In the information request, you asked for some specific information, and we applaud that from our side.

However, if getting there means that we are going to wait until we find the perfect, then the effort here is futile. We need to immediately identify communications systems that work, next-generation SCSRs, and if that's for rescue teams, that's great, and if you can apply that to miners every day, that's great.

We need to identify those things and move on those things now. The perfect will come later, or the perfect may never come, but if I have a system that works half the time or that applies to half of 75 percent of that mine on a routine basis, and there may be shadow areas, and there may be areas where you won't have the ability to contact, that's 50 percent better than what I have now. It's not a false sense of security. There is no security at this point. If we had the ability to tell the miners at Sago, PED, go to Entry 3, go to Entry 2, walk 500 feet, you'll be in the clear, we would have 12 miners alive instead of one.

We need to look at the technology quickly, implement what is available, and go from there. But we do today find ourselves in a very difficult position regarding the mining industry and the agency that has been created to regulate it.

I think you heard the frustration from the membership of the miners that sometimes we wonder who is doing whose bidding in this process, and, quite frankly, many of the miners believe that the agency is more than willing, and has been for the last several years, to do the industry's bidding. Industry doesn't need assistance in that form. Miners need protection. To do otherwise would be immoral. But we are tired of being shut out of the system, the system that, quite frankly, miners created.

This agency and the Bureau of Mines and the 1969 act were not the result of some epiphany of Congress. It was the result of dead coal miners. It's time to return to the roots from where you came and understand that it's the miners that need your protection. The industry can fend for itself. Thank you.

MR. STONE: Thank you. Celine, you wanted to make an announcement of an administrative nature?

CELINE: If there's not any more visual presentations, we're going to try and get some of that equipment back so we can start processing some of the presentations into the record, but if you need us here, we will stay. Does anybody have any more visual presentations? No?

MR. STONE: I think we have, by my count, about five more speakers, maybe four. I think I see three or four. I'm not sure if there is a name here or not. It may be only three.

In any case, I would like to, at this point, before we call the next speaker, to take about a 10-minute recess until five minutes until three. We'll reconvene then.

(Whereupon, a short recess was taken.)

MR. STONE: Okay. We're going to go back on the record. The next speaker, I believe, is Judith Burr. Is she here? Judith Burn? Judith Burr? Okay.

Alden Osment; is he here? Alden Osment? No?

Okay. The last name, I can't tell -- Nancy Zuckerbay?

(Discussion held off the record.)

MR. STONE: Well, are there any other individuals in the audience who would like to speak who have not signed up to speak? All right.

MR. WILSON: (Off mike.)

MR. STONE: Come on.

MR. WILSON: Brian Wilson again. I would just like to say a couple of things. In Australia, mine rescue chambers do save lives and are saving

lives every year in both coal mines and hard rock mines. The fact that you've got the chamber there you can go down, there is oxygen, there is water, there's medical supplies, and you can go in there, and they are locked up -- I mean, going back a few years, there used to be ex-shipping containers that were all sealed up and reworked, but now they are state-of-the-art, professionally built chambers designed to withstand lots of things.

The other point they made was that not one system does all. You can't say this is the system you will put in every mine because every mine is different. Even though they are the same coal mine or they are copper mines or gold mines, each mine is different, and each one has different needs. As I say, we need to get these guys working with the manufacturers. They say, look, give us the equipment, and we'll put it in, but we can't do that because you guys won't let us.

It's a matter of where it should be a team where we all get together and say, okay, you can put it in and try it, in Australia, the onus is now on the resident mine manager. If you want to do something in your mine, it's on your neck, and he is virtually there, and in most cases now they are doing it in a

safe, controlled way. The mines inspectors have stepped back and passed it back to the resident manager.

If we're going to come up with equipment that you want that's going to work, it's not just you guys; it's these guys out here and the mine company, and the guys -- about putting money up. In Australia, every dollar I spend on R&D with the government will give me back 150 percent in my tax. If you want to encourage these mines to spend money, if you put up and say, okay, we'll give you a 200-percent cash back if you like on your tax for every dollar you spend on rescue equipment or something like that, it's an encouragement.

If you hand people money, they take it and walk away. What are they doing with it? Some do, and some don't. It's a two-way thing, the same as if I want to design new equipment, I can get money from the government, but it's on a 50/50 basis. I've got to put up 50 percent, so I'm going to bloody well do it because I've got to put up my money as well as get some from the government.

As I said, after hearing these guys, I think there should be more of them, and as I say, they should get a say, and they should be able to work with

all of us as a team. Thank you.

MR. STONE: Thank you. Okay.

MR. PONCEROFF: I'm back. I might have misspoke earlier. I'm not sure if I did or not, but I want to make sure that you guys know, contests are great. It's a great training tool. Other than hands-on firefighting like at the academy at Beckley or over at NIOSH, there is nothing better to train us to do what we do than a contest, and I hope that everybody understands that I didn't mean to say, if I did, that contests aren't good because they are real good.

MR. STONE: Thank you. Any other speakers?

Well, I want to thank you for your attendance and participation, and this public meeting is adjourned.

(Whereupon, at 3:05 p.m., the hearing in the above-entitled matter was concluded.)

//

//

//

//

//

//

//

REPORTER'S CERTIFICATE

DOCKET NO.: N/A

CASE TITLE: Underground Mine Rescue Equipment and Technology

HEARING DATE: March 13, 2006

LOCATION: Washington, D.C.

I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes reported by me at the hearing in the above case before the United States Department of Labor.

Date: March 13, 2006

Christina Chesley
Official Reporter
Heritage Reporting Corporation
Suite 600
1220 L Street, N.W.
Washington, D.C. 20005-4018