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Linda Zeiler, Designated Federal Officer

Dr. Jan M. Mutmansky, Chair

TECHNICAL STUDY PANEL

ON THE UTILIZATION OF BELT AIR AND THE COMPOSITION AND FIRE RETARDANT PROPERTIES OF BELT MATERIALS IN UNDERGROUND COAL MINING

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122 West South temple
Salt Lake City, Utah

Reporter: VICKY McDANIEL, RMR
Notary Public in and for the State of Utah

P R O C E E D I N G S

MS. ZEILER: Welcome, everybody, to the third meeting of the Technical Study Panel on the utilization of belt air and the composition and fire retardant properties of belt materials in underground coal mines.

As usual, I'd like to ask if you haven't signed in, please sign in at the desk by the door. And if anyone here wishes to speak during public input hour this afternoon, they should also sign up. We have the Colorado Mining Association and the Bureau of Land Management already signed up to speak this afternoon.

As you may know, yesterday three of the technical study panel members had the privilege to tour the Skyline Mine and the Aberdeen Mine here in Utah. And just on behalf of MSHA, I'd like to thank Tony Bambico from Arch Coal and Lane Adair from Murray Energy for making it possible for the tour. And I think -- I don't know if Jan would like to say a few words on behalf of the panel, too.

DR. MUTMANSKY: On behalf of Jerry Tien and Jim Weeks and myself, I would like to thank the members of the Skyline Mine and Aberdeen Mine for the hospitality shown to us yesterday. It was a great

educational tour for us, and we appreciate your efforts.

MS. ZEILER: The first thing on our agenda this morning, and there are copies of the agenda also at the sign-in desk, is a chance for the technical study panel to ask questions about any belt air issues they would like of our panel of MSHA district managers, assistant district managers, and ventilation specialists. And before we begin, I'd like to introduce these people to the technical study panel.

Immediately to my right we have Bill Knepp, who's an assistant district manager here in Denver, District 9. Then we have Bill Francart, who's a general engineer from the Pittsburgh Safety and Health Technology, that's technical support, and MSHA. Next to him is Kevin Stricklin, who is the administrator for coal mine safety and health for MSHA.

Next to Kevin is Carlos Mosley, who's an assistant district manager in District 3 for MSHA. And then we have Allyn Davis, who's the district manager from Denver, which is also District 9 for MSHA. Then we have Bill Reitze, who's a supervisory mining engineer for District 9.

At the very end of the table is Bill Crocco, who is the accident investigation manager at MSHA's Arlington headquarters office.

So with that, we can kick off the Q and A.

DR. MUTMANSKY: I would like to start the questioning by having one of the MSHA people, whoever would most appropriately answer this question, but I'd like to have you give us a summary of the history of belt air use at a coal mine face and how MSHA administration of belt air at the face has changed over time.

MR. STRICKLIN: Jan, I think probably as administrator I'll be kind of like the moderator. I think the person most suited to answer that question would be Bill Knepp. Bill has been involved in the regulations of the belt air. And I think Bill Francart will probably help him out with that one as well.

MR. KNEPP: Thank you, Kevin. I started, unfortunately, at MSHA like way back in the 70's, early 70's. Some other people in the room, too, that have.

But as a young ventilation engineer in those days, we had some issues out here in the West that probably necessitated the use of belt air

eventually. There's going to be a lot of overlap with two-entry systems here, as you saw yesterday on some of the -- three of you who went with us on the tour yesterday saw some of those issues. And those issues began as far back as the 70's, outbursts and ground control issues and whatnot.

So the two-entry system is going to be intermingled, from my perspective, anyway, for District 9 here throughout a lot of this.

But anyway, one time I was just reading the regulations and discussing this with my district manager at that time. The way I read the regulations, it said belt air for mines are open. Prior to that belt air could be utilized. It didn't say whether intake or returns. Said belt air could be utilized in the ventilation entry.

And we took that and developed ventilation plans starting in the early to mid 70's, and a lot of that was in conjunction with two-entry systems where the belt air was used as a return air course. And yet another regulation as far as permissibility issues with the belt air and the return, but they were addressed through the dog leg and point B that you guys saw yesterday.

So from that we started through the

ventilation plan process, review process for years after that, started addressing mines that needed -- what we felt, only those that could demonstrate that they needed to use the belt ventilation entry. We would address certain concerns and precautions in the ventilation plan.

And basically the ventilation plan addressed -- it was the beginning of -- later on took some of the petition language. There was a memo out before that. I'll have Bill briefly talk about that, Bill Francart here, in a second, even back to 1973.

But we in District 9 through the ventilation system, the review every six months, approved the use of belt air through the ventilation plan. And that went on for months, and that was only for mines that were open prior to 1971 and the Act there. There was a grandfather clause that permitted that.

There were a few mines open in that period before 1984. 1984 is a key date, because that was the Wilberg disaster that occurred December of 1984. There were a few mines that were open after 1970 that wanted to use belt air, and they did go through a petition process for belt air at the face.

Then in 1984, unfortunately we had the

terrible Wilberg event that created great national attention, and it brought up the spotlight on -- particularly on belt air usage at the face and two-entry systems also. And a two-entry system task force was developed, and that was probably the first time, and there was a national detailed study on the use -- on two-entry system and belt air use.

And eventually what happened after that was any two-entry systems for belt air at the face, or any mine, no matter what, they would require a petition for modification process, which became a quite detailed, lengthy, legal process, but we all went through that for years after the 1984.

And issues were still the same. They had to prove the use quality of the belt air, and a lot of it was tied into the two-entry system. There was a need to limit the number of entries because of ground conditions. Therefore, it was very important to utilize a belt entry as a ventilation entry.

And all through this period the CO monitoring became better and was required throughout this period. It's reached the point where today I think it has become very reliable.

Another big development was diesel discriminating sensors. Again, it affected our

district quite a bit because of the early on use of diesel equipment out here in the West for years. And the nuisance and alarm problem was always a problem and a concern, and that was a big step with the diesel discriminating sensors. Still have some issues, I think, but I think false alarms have been greatly reduced.

DR. WEEKS: Excuse me just one second. Just a question for clarification. Are you saying that people had to show the need for a two-entry system, or did they have to show the need for belt air? I mean, which is the cart and which is the horse?

MR. KNEPP: Well, they were directly related, and particularly here in District 9 from the ground control issue. Obviously if you're going to drive two entries, the belt entry has to be used at the return air course on development, and then of course with a longwall and the great air quantities that they need to run these longwalls for respirable dust control, methane control, and the bleeder system itself, it is important also to have that -- the use of the belt air at the face was just as critical, probably. So they're very hard to separate the two in our district with deep cover, and particularly

like the two mines you visited yesterday.

There is really -- you know, the belt air language was pretty clear in the regulations and the grandfathering all up through prior to the Wilberg disaster. There was nothing clearly in the regulations that banned the use of two entry other than you couldn't do it because you couldn't use a belt as a ventilation entry. So you had to address that if you were to go to two entries I guess is the best way to answer your question.

MR. DAVIS: I'd like to add something to that. Technically speaking, when petitions were issued to utilize the two-entry system, those petitions were based on the dimunition of safety, and that was tied to ground control safety issues in the mine whereas the belt air petitions were granted as an alternative method. So that's a big legal distinction between the two. So in essence you had to prove the need to get a two-entry petition. But that strict requirement wasn't there on belt air.

MR. KNEPP: Then the ventilation regulations later on in the -- Bill, you can help me here -- came in the late 80's, and I think they ended up being promulgated in '92. There were a couple of committees developed. One was the infamous BEVR

Report where a committee was put together, and we on the belt air committee utilized -- and that was a panel such as yourself, actually, really took a hard look at belt air usage. And their goal was to determine whether belt air could be safely used at the face.

And they came out with this very detailed report which we in the belt air rewrite committee for the last belt air regulations used very -- you know, we -- it carried a lot of weight in our decisions and development of the latest regulations.

And there was still a lot of concern at that time, and so in '92 the regulation was put on hold to use belt air at the face and never was included as a part of the 92 regs. And I think -- Bill, tell me if I'm wrong -- the advisory committee agreed to go ahead and use the Development Advisory Committee after '92 to further look at belt air at the face, which they did.

And again, both these, the BEVR report and Advisory Committee report, bottom line was yes, belt air can be used safely at the working face if this, this, this is done. And that's kind of what we based the current regs on, requiring a lot of this, this, this in those regs under 150, 151, and 152.

So the petition process was still in effect even after the '92 ventilation regs all through this period. Then in early 2000, 2001, even before that I think there was a rewrite -- there was a rewrite committee developed to look at writing new Regs 150, 151, and that's where I became involved.

And it took a few years. We had the public hearings and they said study these two documents very closely and other sources and other input, which led us to developing the latest regulations on 75150, 151, and 152, allowing the use of belt air without a petition and if these other items are addressed.

However, at that time, the assistant secretary at that time decided not -- did not want to address and include two entries in those regulations. So two-entry systems were excluded from this latest round of regs, and basically what that meant is the petition process remained in effect for the two-entry process, two-entry system. And still does.

So you can as an operator have the right to go ahead and develop a three-entry system right now, comply with the regulations with all the monitoring, maintenance, examinations, and all those requirements. However, two-entry systems, you have

to prove the need for the two-entry system as Al said, usually from dimunition of safety, driving in threes, kind of ground conditions being really greatly -- a lot more hazardous than driving two entries as the basis of a lot of these petitions. And include all the numerous safeguards. Bill might be able to tell you really the history of the petitions. What was required changed over that 20-year period and whatnot.

MR. FRANCART: The petitions really were born out of the concerns in the early 1970's. There was a committee put together by the government. I think Linda provided you a copy of a memo that was written by Bob Dalzell, and the memo was identifying problems with belt entry ventilation.

There was a belt haulage ventilation committee that they formed. And the main concern was ultra gassy mines that were located under heavy cover. Sounds a lot like two-entry mines, but it wasn't, it was the mines in Virginia. Those mines needed to use air in the belt entries to ventilate the faces. There was a strong opinion out there that not using that air was really a loss in ventilation capacity within those mines, because that air was vented at the return and lost. It took a

considerable amount of air to ventilate those belt entries because of the amount of gas that was liberated along the ribs along the longwall panels.

So they came up with a scheme for ventilating the faces in these mines in Virginia, and that included two basic -- well, a lot of provisions. And you'll see in that memo that was provided to you -- I think Linda directed that to you. A lot of those provisions you'll see in existing petitions for modification in the 80's and 90's.

One of the considerations was the use of fire doors in the mines to direct smoke and CO into returns if there would be a fire in those mines.

Another was an improved fire detection system, which they use what they call metal oxide detectors. I don't really know what they did, but they did respond to CO. You may know a lot more about them than I do, but they were precursors to the CO systems that we have today. And those two elements in themselves were very important to allowing the use of belt air in the working sections.

First petitions came out in the mid 1970's. They were very basic, and they did evolve over time as research found that there was ways to improve fire detection. In 1988 we had the Marianna

mine fire, and that spurred considerable research by the Bureau of Mines and later NIOSH on fire detection.

And a lot of those research results were used to enhance the requirements of petitions, especially the detection of fires.

A lot of that information was later used to develop RI 9380, which further improved the detection level required by the CO systems. We had alert and alarm levels of 10 and 15 parts per million. They were later reduced to five and ten parts per million above ambient.

So we've had these research projects completed by NIOSH and the Bureau of Mines and former Bureau of Mines and the information that's been used by MSHA to improve the petitions over time, and that information then was again used to develop the regulations that you see today and were finalized in 2004. That's where we are today, Jan.

DR. MUTMANSKY: Okay, thank you.

MR. MUCHO: I really have about three questions, and they dovetail on one another. Really I'd like to talk about the overall handling of the issue of belt air in the United States, how we've been handling it.

To start with, I'd like to talk about the petition, the panel talk about the petition process. Obviously in going to regulations, MSHA saw issues, I would think, with the petition process. So I guess start off with, what problems, issues are there with the petition process and why did MSHA decide to go the regulatory route?

MR. STRICKLIN: I can start with that a little bit. I think after a period of time when you get so many petitions under a certain standard, we look at that and we think -- well, we look at it and decide maybe we need a regulation instead of having to go this petition route for all these different mines that want to do the same thing. So basically I think that was one of the reasons that we decided we needed to pursue a regulation dealing with it rather than having a large number of submittals from the petition process.

The one thing you get in -- or the way a petition works, a mine operator submits a petition to our Office of Standards and Regulations. They in turn send it up to the coal division of MSHA. And we put someone to go out and investigate the petition from the field. And they're not to I guess recommend or not recommend the use of, in this case, the use of

the belt air petition, submit all the information back to our headquarters office.

And in the Division of Safety we evaluate it, determine if we think it's necessary, if we think it meets the requirements of what a petition is. And we put I guess a temporary approval out there and basically give people up to 60 days to comment on it before it goes final.

In many cases we got additional input from miners that worked at the mine that basically felt, well, there needs to be some additional safeguards put in place of this petition. And in many cases a coal company would go along with that, and the petition basically would become final after that window of an opportunity for people to comment on.

There was very few times, I guess, that it didn't work out that way. Typically comments would come in, we'd include them in this PDO -- what does PDO stand for? Proposed. I said temporary. It's proposed is the word I was looking for. And basically after a time period it would go into effect.

So I guess up until the time of the regulation you had some that was just a little bit different from each other. In other words, some may

require additional SCSRs on the longwall face, some may require additional dust monitoring in certain areas based on the specificity of that petition.

And I think what the group did to come up with the regulations, they tried to look at everything that could be included that was basically similar to what was in the petitions that were granted, and they basically used that as their template as well as additional information to come up with the regulation.

MR. MUCHO: Okay. Following up to that, my next question deals with the fact that when you look at mining law and regulation, we have in -- the U.S. we have sort of blanket laws that pertain to, say, all bituminous coal mines regulations, but then we deal with ground control and ventilation very individualistically in that we require ventilation plans, route control plans that are then approved by the district manager.

So my question to the panel is, did MSHA consider treating belt air within the ventilation plan process because of individual differences in ventilation plans? Belt air is primarily a ventilation and ventilation-related issue, whether they're talking dust control, methane control,

fires -- consider all that the ventilation area. It seems to account for the individuality that we see among mines that maybe that would be best handled in the ventilation plant process, maybe with certain criteria, et cetera set up.

MR. KNEPP: It does -- the new regs require a lot of information and overlap into the ventilation plan now. And so I think we're at least halfway there, and there are ways to address any particular specific issues that come up. We've given a district manager that authority in the new regs. There's a couple instances there were the specifics can be adjusted to some degree.

And the ventilation plan itself still exists, and still there's a pretty powerful statement in there, too, where the district manager requires, as these guys well know, other information or other requirements. So there is some flexibility right now, a lot more than just pure petition process, I think.

MR. STRICKLIN: I agree with Bill. I think we've kind of used the regs as a template, but then the district manager if he wants to go further with additional sensors, reduced levels, he has the authority to allow higher velocities. So basically I

think we start with the template of the regs, but then each district can change it a little bit to massage it or put it in place with what the actual conditions are at that moment.

MR. MUCHO: Still, there's areas that maybe people have contended are issues that do not specifically go there. Examples are things like stoppings. All stoppings approved for use in the United States are not created equal, as we found out with seals. And I would contend that maybe in certain situations -- mining situations, ventilation setup, whatever, the construct of stoppings may be an issue for using belt air. And that's really not sitting there in the regs right now where I can see district managers stepping in in that kind of a situation saying, we want to see this type of stopping because of these issues.

Any comment to that?

MR. STRICKLIN: I see your point. Stoppings is a good example. We hear a lot of comments about the Kennedy type stoppings compared to a solid concrete stopping. And basically I guess you could look at some of the issues that we're dealing with with the belt air in the same ways. I think those are fair comments.

As I said, what we do, we use the regulations as our template, and if a district manager wants to he can require additional information in their plans. I guess that's something that we're interested in hearing your comments from the belt air advisory committee on where you think we stand with that.

MR. MUCHO: My third and last follow-up along this line is, one of the reasons we wanted to go down this path is, again, this overall approach to mine safety and how we do it. And of course one approach we use in the U.S. is a regulatory enforcement kind of approach.

One of the things that -- you had a process, say, where the district manager was approving belt air plans within that kind of a framework to allow for, say, different approaches such as the risk assessment, risk management kind of approach that has been brought forth by a number of people in the mining health and safety arena. A recent committee report talked a lot about that in terms of getting to where we want to get to in miner health and safety in the U.S.

And I personally believe that to get to that level that you need that kind of an approach

which creates what I'll call a safety culture where we're not looking at -- we're trying to create that kind of atmosphere for active approach to issues where mining operations would consider the potential. For example, this belt air issue. A lot of it is, what if I have a fire here, what if I have it there, what if this happens over here, how am I going to deal with it. Seems to me that having operations go through those kind of processes of course at least start that kind of a safety culture that isn't already in existence, at least in that case.

So my question is, has MSHA considered -- to me belt air is kind of a prime example of a topic that lends itself to this kind of approach because it's so interrelated to so many other kinds of issues -- again, ventilation of dust, methane, the ground control issues, et cetera, et cetera, et cetera. It seems that that is kind of a -- would be kind of a prime candidate for these kind of approaches. Has MSHA considered doing that, doing that with belt air in any way?

MR. STRICKLIN: Up until this point, Tom, I don't think we have. And that's always open to a mine operator that may want to do that. But basically I guess we're saying what's in the

regulations would be the minimum that a mine operator would need to do. And if he wanted to go above and beyond that with his risk assessment, by all means. I mean, that would be an excellent thing to do.

But as far as how we would I guess go back to, say, give the district manager the authority to just approve it in a vent plan rather than through regulations, we haven't really evaluated that as a possibility with the mine operator doing his own risk assessment and then getting it approved in a vent plan. But that's something that we would be willing to consider.

DR. BRUNE: All right. Let me fire a few questions at you.

From your experience investigating mine fires, would you say that initial detection of a fire comes from a sensor, or would it come from somebody smelling a fire and going about investigating it? What would you say is the typical way the first detection of a mine fire happens?

MR. STRICKLIN: I'm sure Bill will add to this, but I think we've seen them both ways. And basically, if it is done by a nose, as you say, sometimes when you go back and you start looking at the records, it does indicate that the CO system

picked it up early, it's just that maybe it wasn't responded to as early as it could have been. That's my opinion.

MR. FRANCART: The CO systems have had an excellent track record, as we've discussed before. There are some that have been detected visually and by smell prior to the CO system, but I don't think it's because the CO system wasn't effective. It's because they were detected at levels below five parts per million or below the warning levels that were set. So the systems did detect every reportable fire that we've ever had in this country where CO systems have been used. They've never failed. But it depends on who's where at what time, whether or not they're found by people first.

MR. STRICKLIN: I'll add to that saying it's only as good as the maintenance that you put into these systems, and that's an important component in any of this.

DR. BRUNE: I think that's a valuable statement to have that, Bill, as you say, that the CO systems in the past have in fact helped to detect fires. So it's a matter of how do you respond to the changes in the CO detection and what do you do with that signal, and the CO system hasn't failed to

deliver.

Now, the statistics question, maybe Bill can help with that. You've talked on some of these statistical evaluations. Do you have any evidence that shows that belt air to the face is less or more safe than belt air away from the face? Is there something in the statistics that can prove one over the other?

MR. FRANCART: I don't think that statistically you can prove one way or the other. You can say if you have a CO system with belt air used at the face, you're going to detect the fire sooner than if you use point-type heat sensors. There's no doubt about that. Based upon our Dilworth (phonetic) fire response -- you have a copy of that report --

DR. BRUNE: Yeah.

MR. FRANCART: -- there's no comparison between the two detection systems.

Now, if you're using belt air you have to use the CO system. If you don't use belt air, you don't have to use a CO system. And if you have air moving in an outby direction on a panel in your belt and you dump it to the return, you may have a fire grow outby your section beyond control before it's

detected. And you have nobody in that belt entry perhaps downwind, and you have no detection system to find that fire.

In that case you'd have a less safe condition, I believe. There are a lot of mines that do use CO sensors also taking belt air outby, recognizing the improved capabilities of the CO system for fire detection.

DR. CALIZAYA: I have a couple of questions. The first one is related to CO sensors. The regulations, we've talked a lot about CO sensors, but we don't share much about smoke sensors. I don't know if there is any mine where smoke is monitored regularly and what type of monitors are they using. That's my first question.

MR. STRICKLIN: I'm going to ask Bill Reitze, have you got any plans in District 9 that have smoke sensors in them?

MR. REITZE: We do not. All of our sensors are CO sensors. I don't think the technology for the smoke sensors is of a level that makes them as reliable as the CO sensors. Bill Francart probably has more information on that issue.

MR. FRANCART: There are some smoke sensors that are being sold. I don't know how good

they are. They haven't been recognized by NIOSH as having the level of detection that they need to have to be equivalent to the CO detection levels we have today.

I do know there are some mines, we've had reported to us they do have them installed. What they are are essentially the home type smoke detector you have repackaged to be mineworthy. But there was some research done back in the early 90's by NIOSH on the MSA smoke detector; and because you don't have an incentive for companies to develop this technology to be sold, there was no requirement at that time to have smoke detectors, MSA kind of just dropped that project.

They did work to detect smoke, but there was also some problems with rock dusting in the belt entry causing interference. And I think there's a lot of work that can be done on smoke detection, but the manufacturers haven't done that at this point.

DR. CALIZAYA: Thank you. My next question is related to maintenance of these sensors. I think you mentioned a few minutes ago that's the key issue. And according to regulations, we need to check them, we need to calibrate them. But I think we are still missing a few points there. Can you

elaborate a little bit about this maintenance?

MR. STRICKLIN: I'll start. I don't know if anyone wants to follow me in this. But I think that's an important component is the maintenance of the system. When we typically go in and look at -- and I think you'll see that later today as Bill does a presentation on Aracoma, maintenance is a key to making sure your system works from the calibration to making sure the sensors are located where they are to the response of the sensors.

I was always real concerned about false alarms. You know, the number of false alarms you have I think gives people a feeling that the system isn't worked correctly. If we could maintain a system so you didn't have false alarms, when there was something that occurred, it definitely got everybody's attention and they reacted a little bit differently than thinking, oh, it's just a false alarm.

And I think the better you maintain the system, the more confidence miners and mine operators would have in the system. And I agree that that's a very important component of having an AMS system.

MR. DAVIS: I would add that false alarms were a bigger problem in the past than they are

today. The systems are better. Certainly in dieselized mines the use of discriminating sensors that discriminate between CO in the exhaust of a diesel machine versus some from a fire has made a big difference. We don't hear anything like the complaints we used to about false alarms.

Another thing I would add is that the flexibility that's there in the ventilation plan process, through that process we look at not specifically just the belt entry sensors but other sensors at other points in the ventilation system. And we often require more frequent calibrations of critical -- of sensors located in critical areas to the ventilation system.

MR. FRANCART: One other thing I'd add to that. We do have in addition to testing an examination of the system each shift. Every preshift that is conducted in a coal mine, the sensors have to be examined. And beyond the examination and the testing, miners have to be trained on how to maintain the system. We've seen some problems with that, too, where people are told to take care of this, but they're not really trained on what the requirements are and what the specifications are for that system. Another key point.

DR. WEEKS: I've got a number of questions. First I want to follow up on a question that Jurgen raised about the nose. I think there's more to it than the discussion we've had so far. When the issue has come up before this panel, several people have said that the nose is far more sensitive at detecting smoke than is the CO system or the AMS system that is detecting carbon monoxide.

So as a preliminary and naive question, I say, well, if the nose is more sensitive, why bother with the AMS? We've got a better instrument there. And there are many good answers for that. First of all, it's very subjective, it's highly variable. An AMS system is comprehensive, it's more objective, et cetera, et cetera. So there's a good answer to that question.

But then I read the Aracoma report, and there are several things that stand out in that report. First of all, the fire was observed well before the AMS system went to alarm level. If I read it correctly, it's around the order of nine, nine minutes. And by the time -- there was one important point before anybody had been notified in which the fire had been underway for about 28 minutes, which is two minutes short of it being reported, which I felt

at that point when the fire was really well underway it still was not a reportable fire, which I found rather appalling.

Now, there's been some correction to that to reduce it to ten minutes. Frankly, and one of the things that I'm going to recommend is, that should be -- if the fire is observed, it should be reported. And the first thing we want -- if somebody observes a fire, first we want that person to do is make sure everyone is safe and fight the fire. We're not concerned about that person having to look at his watch. I think that would do a lot.

Let me go back to the issue of the fire having been observed before the AMS system went off. At that point nobody was notified inby. That seems to be -- it was appalling that people waited as long as they did before notifying anybody inby on the section. And the time which they should have done that is when they observed the fire. So that was one noteworthy feature.

The other noteworthy feature was that in the MSHA report it always starts out with when the AMS system notified the fire and not when that person notified -- observed the fire.

So it's a very narrow-minded question as a

nitpicking issue. Under the AMS rule, is the operator compelled to do anything when a fire is simply observed rather than the AMS system goes off?

MR. STRICKLIN: I guess that comes back to me again. I do think -- I'd have to look at the regs and see what it says, but in my opinion, if you see a fire you don't wait until the CO system goes into alarm to take action. I think that's pretty irresponsible.

The one issue -- and I'll just throw it on the table -- that we've always had is, what is a fire? I mean, when you have smoke coming off something, is that considered to be a fire? I don't know if there's ever been any guidance given on that as far as do you need flame for it to be considered a fire. You know, we have smoking -- or a hot roller sometimes giving off smoke, a belt; and basically we've always -- we've taken the position that unless you see flame, it wasn't a fire. So the smoke itself would not be considered a fire, it would be considered a heating, we would call it.

In the case at Aracoma, I mean, there was a number of tragic errors made, in my opinion. And typically I guess you wouldn't expect someone to be in that area all the time, so you would expect

probably because they were there they would have detected it quicker with their nose or their sight. But if no one was in there, we would have expected that CO sensor in that area to pick it up and notify the mine operator that we have an issue, and the mine operator, it's his responsibility to then start evacuating people affected by that sensor.

But I would be interested in hearing from -- and I know what your charge is about belt air, but if you would look at what you would consider to be a fire, we would be interested in hearing that from you in your report, and when you think a fire was created and something would need to be responded to.

DR. WEEKS: Easier to ask than to answer the question. It's like the discussions we've had about pornography and torture, you know it when you see it kind of thing. So I may want to avoid that question, but I do want to focus on the issue of -- well, I guess to put it bluntly, when I read the AMS report written by you, I mean collectively you, it starts with when the AMS sensor went off rather than when the fire was observed. And I agree with you, the responsible thing to do, you observe a fire -- and what he observed specifically was smoke, smelled

smoke, and I think he saw something glow. Whatever you want to call it. That's what was going on. Which seems to me reason enough to do something.

And the responsible thing at that point, you look at something that could become worse and in fact did become worse, is to do something about that. But does the rule simply state the operator has to do something when the AMS sensor goes off or when the fire is discovered?

MR. KNEPP: There's a firefighting evacuation plan, and there's extensive training required in the recent ERP, Emergency Response Plan. And there's a tremendous amount of training each quarter required for all miners on just that, what happened.

Now, I'm not saying -- obviously their action wasn't proper in that case, but believe me, the regulation is there and the training requirements are there for any coal miner coming upon a situation where there's a fire, flame, heck on the CO sensor. There's a flame, he should be trained properly how to react and contact --

DR. WEEKS: That's separate from the AMS rules. I know about that. I guess I'm asking you a more pointed question, which is, why is it that you

start with the AMS system and not --

MR. KNEPP: Bill Francart will answer that.

MR. FRANCART: You're talking about the Aracoma report specifically, and we'll get into this in more detail on Aracoma this afternoon. But what you're referring to is the belt attendant observed some glowing and he didn't describe it to the investigation team as a fire at that point, but when people arrived on the scene they did observe flames and at that point they tried to extinguish them. And about the same time, the CO system went off. I don't know how long a time, where you identify that time difference, but I don't think there was a lot of time between the initial flames and the CO alarm.

We had a CO warning prior to that alarm at 5:14, and we'll get into, like I said, some more detail on that. It was 26 seconds prior to that, I believe.

DR. WEEKS: I don't recall, either. One point I came up with nine minutes, and I forget exactly where that came. But I'll look also.

MR. FRANCART: We had indications of problems for twenty minutes prior to the CO alarm that wasn't a fire, it was a frictional heating of

the components of the fuels that were burned. But it's hard to tie down exactly what time things happened, because the man didn't wear a watch, and in the excitement it's hard to determine exactly the time line. But we do have a strong time line on the CO system because it's recorded by the computer. And that's what we have to go by. And without any better information, Jim, that's the best we can give you.

And I think the underlying issue that I see here is that there is a -- there really is a preoccupation with the AMS system as the solution to a lot of problems. And it's a very important part, but it's only a part. And I think -- I mean, I see the nose and the AMS system as complementary to one another. Common sense and technology serve each other. And it seemed to be, in that one little vignette it seemed to be missing.

Again, at Aracoma we had 25 contributory violations. If you take away one of those 25, you may have two men alive today. And to say that we're going to concentrate on the CO system, we didn't do that in the report. We looked at belt maintenance and other factors, preshift examinations. There were a lot of things that were done wrong at Aracoma, and the CO system shouldn't be the last line of resort.

The prevention of that fire should have been number one. That wasn't the concern of the company.

DR. WEEKS: I agree. I just simply look at what MSHA has said about that fire. The first sentence is about when the AMS system went off rather than when the fire was observed. Maybe I'm being obsessive here.

MR. FRANCART: Again, the time the fire was observed and the time of the alarm were so close as what we determined from the interviews that it was hard to distinguish much of the time difference.

DR. WEEKS: Well, I guess we can nitpick on you a little more this afternoon.

MR. FRANCART: Sure.

DR. WEEKS: Okay, I have another question. There's a provision in the statute that drives this whole thing. That's an explicit prohibition against the use of belt air unless certain conditions are met. And I've gone back and I've looked at some of the legislative history of the Act, and frankly, I can't find very much as to why that prohibition was there. And I suspect it was there because there was a certain conventional wisdom in the industry at the time that, oh, yes, that's the right thing to do. I mean, I think a lot of the people involved in writing

the Act probably had eastern coal experience more so than the west, weren't sufficiently aware of the two-entry problems in the West. That's just all suspicion.

But the question that I have is, why was that provision of the statute there? What were the hazards that that provision was designed to control?

MR. FRANCART: Well, the legislative history talks about fires in all haulageways, both track and belt, not just belt entries. And the prohibitions were to isolate your belt and have a minimum velocity in your belt to avoid the fanning of fires and to make sure that the contaminants didn't reach miners in working places. That was the conventional wisdom. I don't know what more you want, but we can get you a copy of that legislative history.

DR. WEEKS: Yeah, I'd like to see it so that when -- I just want to pursue the logic of that. Those are the two hazards, fanning the fires and the smoke going to the face.

MR. KNEPP: I think methane was powerful dust to some consideration.

DR. WEEKS: Yeah. Let me deal with the first two. They're a little bit more tangible than

the dust and the gas issues.

So if -- so that provision of the statute also is something of a benchmark, that whatever is done after that has to be at least as safe as that, or there can be no diminution of safety. There are sort of two different paths you can follow according to the Act.

So if belt air is allowed to be used to ventilate the face, how does the regulation deal with those two hazards, fanning the fire and having smoke go to the face? The AMS system is only a monitoring system. It doesn't do anything about preventing the flow of smoke and fanning the fire, anything. I think the limitation on velocity might address the fanning issue, but they don't address the smoke on the face issue.

So how does your rule deal with those two hazards?

MR. KNEPP: I think early warning has to be the key player in that issue, obviously. I think the whole key to historically any fire, you know, is to get to them quick. And there are certain built-in advantages when you look at the overall picture with belt air going inby that if you do have a fire and smoke, you can fight it from an outby side very

easily. When you're comparing the two systems, if it's going the other direction, and again I think detection and promptness of detection is the key versus the two system, using belt air or not using belt air. I think the advantage of the using belt air is greater in ability to fight the fire. If belts on intake is greater than you get outby and your men aren't exposed into the water lines and that kind of thing, it may it a little easier to fight.

As far as preventative and going to the face, obviously when it's going straight in intake, if there is smoke in the belt it's eventually going to get there. But on the other hand, if you look at it if the belt's going -- air is going the other direction, you could have a fire smoldering for a long time, and if it burns through without being detected into the intake escapeway, then you've got really big problems with everything -- returns, intakes, belts eventually being probably pretty quickly filled with smoke. So I don't think there's any clear-cut advantage one way or the other, but there are some advantages.

MR. DAVIS: I'd like to add that I think one other consideration you've got to keep in mind is that hand in hand with early warning comes

evacuation. And the issue of smoke at the face is not the same issue as getting there and people not knowing that there's a fire building outby.

DR. WEEKS: Well, all those issues pertain regardless of whether you've got an AMS system. And let's go back to the nose. If smoke goes to the face, that's where people are. They're going to notice that there's a fire.

The early warning part -- I mean, I raised a question once before. The reason -- the way I got into the nose versus the AMS system was the time lag between the detection by the nose and detection by the AMS. That's the length of the time that you get. That's the early warning that you get is that difference. Now, the problem is it's highly variable, but that is the difference that you get. Now, how much advantage is that to have that much of an early warning? That's one issue.

The other issue is if you're using belt air for the face, you can still fight it outby. I mean, that existed before your rule anyway.

And frankly my brain is a bit garbled at the moment. I just lost my train of thought. But anyway, let me just hear some reaction to that.

MR. KNEPP: Well, as far as fighting the

fire, if the air is going outby, to get to the water line you possibly you might have to go inby to get out of the smoke, fight the fire. And that's not always -- you know, you increase risk in that area.

As far as just relying on nose only, remember now, the CO systems are triggered to be able to warn a lot of people in a lot of different places automatically and not rely on any human reaction. And I think that's a big advantage. Like at Aracoma, all the sections if things were set up properly could have been -- went into the alarm state and properly changed, these miners could have been on their way out of there without waiting for a phone call or some human decided, well, I smell something burning, let's go check it out kind of thing, which could happen and probably would happen eventually, or maybe even ignored to some degree for a while.

So I think there is definitely advantage to eliminating the human factor and having the automatic detection system. And again, it could warn the entire -- several sections immediately versus one person making --

DR. WEEKS: Well, I think the human factor is important, as I said before. And going back to the Aracoma report, I think common sense and

technology are complementary. It's not like one or the other.

And I think that the advantage of the AMS is not so much early warning as it is you have mine-wide surveillance. You can find where the fire is fairly quickly. That's completely independent of any belt air issue. And it's a much more, quote, objective measure of what's going on in the mine than the nose is. And that's completely independent of whether you're using belt air.

So I think the AMS is a valuable system independently of whether it's on the belt entry or not. And not so much because it's early warning but because it allows you -- it gives you much more information about what's going on and where it's going on. So you're in a much better position to deal with it. And all of that's independent of belt air.

MR. STRICKLIN: I agree with you, Jim, that the AMS system is a protection in place. And it should be able to detect something, whether using belt air at the face or not. I guess it would be good for every mine to install a CO system whether they're using belt air or not to protect their belt entry or protect their miners who are working in the

area.

I would expect if an AMS system is installed, maintained, and operating correctly, I would expect it to pick up the majority of smoke or heatings prior to anybody smelling it. I used to work in tech support with Bill, and I recall a couple of reports that mine operators as they're traveling in an area would pick up something on their CO detector and it would indicate a higher reading than it typically would have in the ambient, and they couldn't smell anything. And they actually had to go back to the area two or three times to keep digging around in the area and ended up find a hot spot that they didn't smell or couldn't detect with their eyes.

So I think a fully functional CO system operating correctly, maintained correctly, or AMS system is definitely a plus.

DR. WEEKS: I agree. I also think that there are people in the mine, throughout the mine that can detect things and do detect things before the AMS system, and that that is an important part of running a safe mine. I mean, like I said, it's -- they're very complementary. And I don't want to remove the human element.

MR. STRICKLIN: I agree with that as well.

It's just that I know that people aren't going to be at each of those locations all the time.

DR. WEEKS: No, I'm not claiming or expecting that they would be. They are where they are and they know what they smell.

I have one more question.

MR. MUCHO: Jim, could I interrupt for a second just to follow up? Going on to a different topic, the one on the firefighting and the direction of the air. For a number of reasons, if belt air is moving outby and you have a fire, the way to fight that fire is to have the air moving inby. Generally what people actually do is change the air, which brings up other issues of making an air change, et cetera, et cetera. I'm asking the MSHA panel if you generally agree that if you have a belt air that's being ventilated outby for a number of firefighting reasons, which I won't go into unless we have to, you tend to -- what tends to happen in reality is the air is moved, traveling inby. Do you agree or disagree?

MR. FRANCART: In fact, Tom, at the '84 fire they did exactly that. The air was moving outby and they changed it around to move it inby. One problem you still have, even if you're taking the air inby, if you don't have enough velocity to prevent

smoke rollback you'll still have that to contend with. So that's still a complication of firefighting.

MR. STRICKLIN: The cookbook answer I'll give you, Tom, is we look at it on a case-by-case basis. But if you're the senior MSHA official on site and you've got a K-order in place to protect the people, you don't want them going inby a fire. You want them to be outby the fire. So typically that would be something that we would look at right away is, can we turn this air around so we've got people protected instead of getting caught inby that fire.

DR. MUTMANSKY: Jim, is your question related to the previous questions? I want to give Jerry a chance to ask some questions, but --

DR. WEEKS: No, it's not related, in all candor. But I do want to ask it.

DR. MUTMANSKY: Well, I'll give you a chance later. How's that?

Jerry, do you have any questions? Any questions you'd like to bring forth at this time?

DR. TIEN: I don't know if mine is a question or observation, but I would like to hear the panel's general reaction to this. U.S. is a major mining country, more specifically major coal mining

country, but not the only mining country in the world. There are other mining countries such as Australia and South Africa and so forth. But we do in the coal industry have several unique features or something already, such as whether we use booster fans underground in the coal mines. Neither was a rescue chamber until recently. It was used for a long time and a bunch of other things, and of course belt air.

Now, what are the wisdoms -- following conventional wisdom Jim was talking about, what can we learn from the other countries? They mine coal. Coal is coal. They have the same problems, same issues. And why were -- you know, my question or my observation, have you, MSHA as a group, looked at what other countries have done with the belt air issue?

MR. STRICKLIN: I think the answer to that is no, based on everybody sitting here like this. No, I don't think we have evaluated what other countries do.

DR. TIEN: The barrier based on what I heard this morning that has been around the issue -- Bill, you talked about since the 70's for quite a while -- I think, am I correct to say that the

general consensus is it can be used relatively safely provided you have all those things in place? Am I hearing correctly?

MR. KNEPP: Well, yes. We approved it through the ventilation plan process years ago. We wouldn't have done it at that time if we didn't feel it really provided benefits when you look at the overall picture.

Now, I know there's two arguments to this, with the respirable dust control and other issues. But I say simply, yeah, at least in District 9, anyway, we have a history there. We have accepted and seen a lot of progress made and feel pretty comfortable when things are done right that it can be safely used, belt air at the face.

DR. TIEN: Okay. It is generally advantageous, a lot of benefits can be provided?

MR. KNEPP: Generally advantageous. I like that.

DR. TIEN: Then the question is, why have not many more mines taken advantage of that particular situation, used the belt air?

MR. KNEPP: I think maybe Carlos or someone else -- but a lot of other areas in the country have a lot less cover and can develop a lot

more entries, I think, easily, or easier, and therefore do. And therefore, it really doesn't probably have near the need that some of these deep-cover mines do on utilizing multiple entries.

DR. MUTMANSKY: Linda, are we going to be taking a break this morning?

MS. ZEILER: Yeah, I think it would be a good idea.

DR. MUTMANSKY: I think it's a good idea to take a little break. If we can get back here at five till eleven. Jim Weeks will be the first to lead off with his question after the break.

(Recess from 10:40 a.m. to 11:05 a.m.)

DR. MUTMANSKY: I think we're ready to move forward. Kevin Stricklin will be leaving soon because he has a plane to catch. And after Jim's first question, if we have any questions specifically for Kevin, we'd like to take those next.

Jim, go ahead and lead off with your questions.

DR. WEEKS: A couple of things. I'll try and be brief. I apologize for taking too much time here.

But I find it remarkable that under the old conventional wisdom smoke going towards the face

is treated as a hazard, but under the new conventional wisdom it's treated as an asset, which is it allows for early fire detection and fighting fire outby. I'm just curious, what explains that mental shift?

MR. FRANCART: I don't think it's really a shift, Jim. If you look at the compliance under the old 75.326, you could take belt air toward the section, but it had to be done to the return just outby the section loading point. And that was considered compliance with the ventilation regulations prior to the belt air rule. In fact, you could do that today and still be in compliance. And that would be taking smoke in a fire toward a section but not taking it to the face. So it really isn't a shift in thinking at all.

DR. WEEKS: I'm unconvinced, but I'll go on.

MR. FRANCART: We'll cover that in detail this afternoon.

DR. WEEKS: I want to reflect a little bit and raise a question about the mine tours that we took yesterday and go directly to the cart and the horse problem that I alluded to earlier. And it seems to me that the most impressive problem at the

mines that we toured yesterday were all ground control problems and that there are many things that were done to deal with those ground control problems, and among those things was the use of two entries. And then once you go to two entries, almost as a matter of necessity you've got to use one of those entries, a belt entry for ventilation.

So I see the case for using belt entry for ventilation coming out of that, and essentially subsidiary to the ground control problems. That seems to be the horse.

But there are lots of other explanations for why operators were allowed under the petition system to go to use the belt to ventilate the face. And I'm curious, what are the other problems that belt entry solves that's as clear to me, anyway, as it is here.

I think it's somewhat ironic also that the mines that can make the easiest case are specifically excluded from the rule. That is, they still have to go through a petition process if they're using two entries.

But the question is, what else? I'll tell you partly where this question comes from. I read a few petitions, admittedly only a handful, and I've

been impressed with how lacking they are in explanation as to why they need to use belt entry. They'll go through the usual list of things, this is what we want to do, we're going to do it this way. That all seems fine, but they never explain why they want to do it. Now, it may be explained somewhere else, but it's not in the petition.

So what are the other reasons for using belt air for ventilation?

MR. KNEPP: Well, I think like Al Davis mentioned earlier, you had the diminution of safety which would be strictly the ground control aspect. But sometimes I think you can just take the two versus three and just go to three versus four and four versus five really to some degree, depending on the cover.

DR. WEEKS: Pardon me for interrupting, but I see the ground control issue. That's pretty obvious.

MR. KNEPP: Okay. The other addition would be from an equivalent means standpoint. There is a theory that you feel safer for your miners if you're using belt air at the face and have early warning detection and get all the benefits it provides versus dumping the belt air and not

utilizing it at all. And when you weigh both systems, and I'll say there's an argument either way there, but arguments are made that you're at equivalent or even greater safety by using belt air at the face and properly monitoring, doing your examinations and training your miners from that aspect. That's out there as one reason.

MR. DAVIS: I think that we really need to recognize the effects that technology has had on this issue. And as Bill Francart mentioned, people have historically brought the belt air towards the face but then dumped it just immediately prior to the loading point. But now with the technology that's out there and available, many mine operators feel that they don't want to lose the ability to utilize that air at the face, because that measure of safety can be provided by the technology that's out there in terms of these AMS systems.

DR. WEEKS: This measure of safety, that's the line that's in the Act. When I look at the -- I've asked the operators here for some data about this, and I think they're going to show me that using three entries they had a lot of roof fall and ground control problems, et cetera. When they went to two, those were reduced substantially.

Under that circumstance you can actually measure the difference. You say, well, we had so many under these circumstances and so many under those circumstances. When you go into situations like you referred to, what's the difference? I mean, where do you measure -- I mean, are you seeing better gas control? What's really -- what's the measure of safety under something other than ground control problems?

MR. DAVIS: Speaking from my own past, when I worked in the industry it really was an issue of getting sufficient air to the face even without the issue of two entries, three entries in areas of this mine. But if you have a gassy mine, obviously the more air you can get to the face, the better you can ventilate the face areas. And so use of belt air provides the ability to get --

DR. WEEKS: Is that documented in the measures of gas concentration?

MR. DAVIS: Well, I'm sure that that history is established. If you look at what concentrations were found, you know, on examination of that, yes. But it's strictly -- I mean, it was very important to have the ability to use that air that was forced in that entry to add to other intake

air.

MR. STRICKLIN: Jim, I don't know if it would be documented on an overall basis, but I would say at that mine it basically would determine how much air they would need to ventilate the working face, and they would naturally utilize that belt air to try to increase that quantity to knock the gas down. But I don't know of any studies that's been done other than like face liberation studies that tech supports may have done in the past to indicate how much gas is being liberated at a certain mine.

DR. WEEKS: Let me explain just a bit about kind of where I'm coming from on this. I come from a public health industrial hygiene background, and we're obsessed with measuring things. And it may be lapsing over into this area. So that's what I look for: Is it -- you know, is it better than having it this way, and how can you show that. I'm hoping that the data from these other mines will show that there is a difference. And you've got measures of differences. They're not phenomena that can't be measured.

MR. STRICKLIN: I didn't catch your last thing about phenomena.

DR. WEEKS: There are not phenomena that

cannot be measured.

MR. STRICKLIN: I agree with that. I mean, it's documented. I just don't know if we've ever done it on a national type basis to say this mine uses this belt air because the face liberation rate is this much and the resistance in the intake air course for going 12,000 feet is this much, and they would need that to be able to knock the gas down. I don't know if that's ever been done.

DR. WEEKS: All right. I'm done.

MR. MUCHO: A quick follow-up to Jim's questions, if I may. Does the MSHA panel think that one of the major safety advantages of belt air is the fact using belt air at the face gives you another intake entry that can be used for escape? For example, in Aracoma which we're going to hear about this afternoon, the ten that did make it out were able to use a belt entry that was on belt air to get up out of the fire and safely escape. Unfortunately, of course, two didn't make that. Seems that that might be a major safety plus for using belt air.

MR. KNEPP: I think obviously from the point feed on inby, a fire on the intake is obviously the most hazardous situation. And this system from the point feed inby would provide two separate intake

escapeways real quick. Of course, we try to design those regulations to protect the intake from any possible -- but there's still equipment. You know, we've made progress in that area, but that possibility still exists. And that's why in the regs we have -- and that was one of the changes we required the intake to also be monitored, intake escapeway. But yeah, that's a distinct advantage inby the point feed regulator.

DR. WEEKS: If I could follow up to the follow-up briefly. And maybe this is something that Tom and I need to discuss. In fact, let me just say explicitly we need to talk it over. But it seems to me that one of the things that's celebrated in uses of belt entry is a reduction in the number of entries and therefore reduction in the number of escapeways.

MR. KNEPP: Well, not just clear-cut like that. Sometimes you have entries that are together, just one intake, two or three, and they'll be all polluted with the same event and same return. But you're right, you could separate more entries with -- obviously with more entries available, obviously. I'm not sure that's done too much when they don't have to do it.

MR. STRICKLIN: I think if you just look

at the longwall mines you might be able to make a point for that, Jim. But I think overall when you look at all the mines, I can think of mines in West Virginia that have five entries and they have one intake, one return, three neutrals. So they basically, by using belt air at the face they didn't cut down on their number of entries, they just have three neutrals in the middle with a CO detection system.

DR. MUTMANSKY: Before we go to the next question, does anybody have any questions they specifically want to ask Stricklin? At this point in time we'd like to take those questions.

MR. MUCHO: My question goes to the changes that have taken place since the implementation of the 2004 rule. I brought this up at the last meeting almost mirrored with District 2 of MSHA mines where since implementation of the rule initially a lot of the mines that had petitions were longwall mines. Currently, to my knowledge, none of the longwall mines in District 2 are currently using belt air. But I see a number of smaller, one-, two-unit room and pillar mines that are using belt air.

Sort of a change, going back to some of

the things that Jim talked about, the justification for it, so on and so forth, without the need for that, just having it in regulations and implementing that change has happened in District 2. So I'd like to know from a broad perspective, national perspective, what's happened? What are we seeing in the other districts in terms of the impact of the regulations?

MR. MOSLEY: I can tell you, Tom, from District 3, just a little south, before we had one mine on the petition, and after the regs came out two other mines picked up on belt air. But that's about the only impact we've seen down in our district.

MR. STRICKLIN: I guess from my standpoint in headquarters, Tom, we saw it, too. Early on it seemed like the longwall mines were ones that were most interested in using belt air at the face, especially in the Pittsburgh seam. I think some of that probably had to do with -- they had to increase the air flow because of the rib liberation that they had.

As time has gone on, we see the majority of longwalls mines in the East now are dumping back down the belt. And we see smaller mines like Carlos is talking about in District 3 that maybe have five

entries that want to use that belt air at the face.

And I mean, I can't make a blanket statement, but overall we see less and less of a dependency on belt air at the longwall three-entry mines as we're seeing at other mines that want to do the same thing. They have five entries for room and pillar mines just like you talked about. I can't give you an answer why that is. I mean, that would probably be something mine operators would be better able to address, but we see the same thing that you're talking about.

DR. MUTMANSKY: I believe Jurgen has a question for Kevin as well.

DR. BRUNE: Actually, a quick follow-up with the discussion about having belt and track in common entries. If you had -- obviously that would require that you ventilate belt into the face. But if you have belt and track in a common entry, are not separated by a line of stoppings, provided you had the atmospheric monitoring system in place, would that raise a concern with you? Would there be a safety concern from your perspective doing that? Is there something special that needs to be done to make that a safe situation?

MR. STRICKLIN: I don't think it would be

anything different than the regulations required. It would be different if there was trolley wiring involved in it, probably. But as far as, like, battery haulage in that entry, if they put the carbon monoxide system in that entry, we would look at it the same as if it was just a belt entry.

DR. BRUNE: So that wouldn't be any --

MR. STRICKLIN: We wouldn't look at it any differently, no.

DR. BRUNE: My other question kind of puts all of you gentlemen on the spot a little bit. But in your opinion, what would be the minimum required safety standards for taking belt air to the face, considering what's available in technology today, and perhaps also considering that you may be able to mandate that the pressure drop is such that there's a positive pressure differential between track entry and belt entry so that smoke on the belt would not end up in the track, what would be your minimum standards? And next question in addition to that is, would those standards be different or should they be different if you ventilated belt the outby ways.

MR. STRICKLIN: Jurgen, you can't put me any more on the spot than I've been in the past year and a half. Let me tell you that up front. And I

guess in a way, I mean, an easy answer to that is we think that we have it addressed in our regulations, I mean, what is safe and what's not safe, or we wouldn't put it in effect in 2004.

I think where we're at now, though, is based on these last three emergencies as well as Congress speaking to us is, we're wanting to hear what you folks think we should be doing with our belt regulations. And I think that was one of the reasons that they decided, let's back up here, let's put a team together of academia that basically looks at it independently from mine operators or from MSHA or from the UMW, and tell us what you think we can do to better perfect the system.

So I'm not going to throw that back on you guys, but basically we're really only interested in hearing, after you guys have had your visits on where you think we're at, can we do something differently on pressure drops, or if it's different going outby than inby. So I think we would probably reserve judgment on that until we basically hear what you folks have to say to us.

The one thing I want to do before I do leave is, I want to thank all of you. You've got a job in front of you. You know, this MINER Act is

going in, and we're working through it and we've got a lot of things already in place. The three things we're lacking right is our seal standard that we have to have in place in December. Well, we've got four things missing -- the seal standard, the mine rescue standard, and the two reports -- one on rescue chambers that's coming to us from NIOSH and its Belt Air Advisory Committee.

And you're an important component on where we end up going, and I know it's a challenge and I appreciate all of you taking it on to come up with something to help us out. And we're basically looking for all the help we can get now. And we appreciate you folks taking on the challenge to help us out with this.

DR. MUTMANSKY: Thank you, Kevin. I believe Felipe is anxious to ask a question, and I believe that Jerry has a question that he'd like to get again before the panel. Felipe, why don't you go first.

DR. CALIZAYA: My question is related to this minimum velocity and methane layering.

Since I learned about ventilation in coal mines, 60 feet per minute was I think standard. And when we start talking about belt air, we dropped that

one to 60 -- or to 50.

And the document talks about methane layering. Methane layering can take place at velocities much higher than 50 feet per minute. We have observed cases where the layering really became a problem for explosions. I think Westray Mine was one case. But we are talking about methane layering taking place over 100 feet per minute. Could you elaborate a little bit about this minimum 50 feet per minute?

MR. FRANCART: Fifty feet per minute came from the detection capabilities of the CO system. If you do have a methane layering problem in your belt entry, you still have to account for that. Your minimum velocity may be 200 feet per minute, 250 feet per minute, whatever it takes to mitigate that methane problem; but the 50 feet per minute is specifically based on CO detection and is based on the CO sensors.

DR. CALIZAYA: Well, if a mine -- if we are talking about gassy mines and we are talking about conveyor belts which have more than 1,000 -- or 5,000 or more feet in length, methane layering will take place at velocities in that target.

MR. KNEPP: You'll see in the gassier

seams, especially in Virginia, you'll have velocities 500 feet per minute perhaps in the belts because of that, yes.

DR. MUTMANSKY: Jerry, would you ask that question again now concerning the role?

DR. TIEN: Yeah. I understand last hour my microphone acted up, so a lot of you did not hear the question. So I'm going to re-ask again the question now you've had a little time to think about it.

That is, since the enactment of Act 69, the use of belt air has been talked about for a long time. We have learned a lot over the past 30, 40 years or so. And it looks to me the general consensus if done properly with the new technology available, more reliable and all the good stuff, and we can offer a lot of benefits, advantages by using belt air.

Now, my question is, why out of 800 some odd coal mines underground only a handful of them are taking advantage of that technology or method?

MR. MOSLEY: I think I can answer that a little bit from our area up in the East, and I think Bill Knepp mentioned part of that. We don't have the cover that they have to deal with out here. So to

get the air, we can just drive an extra entry if we need to.

But I think one of the big prohibitors is cost and then the maintenance of the system. It's a full-time job to keep advancing the system, as you advance and maintain and calibrate and everything else the system. So just from our area, I think that's the general consensus why they don't. Plus the regs, they don't require it.

MR. MUCHO: Could I make a comment to that? I mentioned that the longwall mines in District 2 were not using belt air currently to ventilate the face. And having been in work for those companies, I'm familiar with the reason. The main reason is maintenance of the belt line, principally rock dusting. Of course you rock dust the belt line and the air traveling to the face, it's problematic for people being in the face working doing maintenance or what have you.

So primarily from a belt line maintenance standpoint, the mines would prefer, especially the longwall mines where time in the face is so critical and valuable, mines would prefer to ventilate the air outby to allow for maintenance that can occur and can be scheduled at any time. That's the primary reason

in that case.

MR. KNEPP: Yeah, I've heard that theory and I think you're exactly right, too. Also, I think just what Carlos was saying, I think, you know, the regulations are pretty stringent. There's a lot of requirements there. I think it really doesn't encourage the use of belt air at the face. I think you really pretty much, if you're going to commit to that, particularly a small operator, it does take a little bit of financial burden, a lot of training to do it right for people, and some expense.

DR. TIEN: Do you anticipate that number is going to change with more affordable systems?

MR. KNEPP: I really don't know. I don't foresee any major change or rush to use belt air. I think the mines like out here in our district that need it are using it now, and pretty much stay that way. Of course most of our reserves left are deep cover reserves out here. So they'll always have those issues, basically.

DR. MUTMANSKY: I'd like to get on to a somewhat different question. I'd like to ask the MSHA people the question, have the hazards associated with the use of point feeding versus not using point feeding ever been assessed, and what are the

advantages and disadvantages of the point feeding system?

MR. KNEPP: Point feeding I think is a necessary evil in a lot of ways. I think the length of these belt lines, somehow you have to get intake air into the belt entry. For too many years it was just totally ignored through the 70's and 80's. There was an escapeway issue question, separating intake escapeway from belt entry. In this last reg we finally admitted point feeding was necessary to provide. If you're going to use belt air you've got to dump air in somewhere. So we try to put it in a controlled place on the mine map where people know where it is and have sensors before and after, and the closing doors, if that becomes a possibility or availability, at least it will be there. So we addressed it from that standpoint.

You know, I don't think there's really any advantages. It would be better if they could bring intake air all the way from the surface separate all the way. But that's not realistic, particularly for older mines. It's already done near development. Maybe mines starting out right from scratch do that to some degree for a while. But otherwise it becomes I think a necessary evil, almost.

I mean, you'd rather not have to do that. And if you don't have the point feed there, it's just going to leak quite a bit anyway, which we've found, and which the advisory committee I believe in the BEVR report addressed also, too. They were finding a lot of leakage was occurring and belt air was going to the face anyway, uncontrolled or unmonitored and that kind of thing.

DR. BRUNE: Well, you've got dead spots.

MR. KNEPP: Yeah, or dead spots, other issues.

DR. TIEN: I have a general question. On the sensor levels, do you have the national standards, COs and CHOs as far as to set a ppm to trigger alarms or reduce levels, or are they mine specific?

MR. KNEPP: We do have a national requirement under the belt air rule for five and ten parts, respectively, above the ambient. And that can be reduced in areas of mines where the district managers see problems with dilution due to higher quantities. So there is some flexibility in the ventilation plan approval process for reduced settings of five and ten. But five and ten are the basic starting points.

DR. TIEN: Anybody aware of higher numbers being approved?

MR. KNEPP: I don't think there's any higher, but the key here is ambient. There's going to be a difference in mines there, so there's going to be some difference in the total number. That's five or ten above ambient, and you have to establish the ambient. And of course we look at that hard through the ventilation review each time on the ambient status. Most of these mines have a real history there and a lot of documentation.

DR. MUTMANSKY: I'm looking for questions now. Surely we're not going to let them off the hook this easily.

MR. KNEPP: Make up for yesterday.

MR. MUCHO: Let me ask a question about the maximum. Of course there was a maximum velocity on the belt line that was put into the rule making process and then on legal challenge was taken out. What's MSHA's view as to how critical, how necessary a maximum is, rationale for such a thing?

MR. KNEPP: Francart's an expert on that. There is some advantages to having a lot of air when you come to firefighting.

You go ahead. You're the expert on this.

It's not a clear-cut issue, either.

MR. FRANCART: No. When we did the rulemaking process we had some comments from the public that we needed to have a maximum air velocity. We went back in the documentation and determined that 500 feet per minute would be a good number to use as a baseline for a maximum; but knowing that we could have mines that needed higher velocities, we said in the regulation, unless otherwise approved in a ventilation plan, the maximum velocity would be 500 feet per minute.

Now, the challenge was made because there wasn't public notice on that regulation, I believe. And that's why it was overturned. I don't know if it was a technical issue. But we still have the capabilities of reducing alert and alarm levels if there are velocities over 500 feet per minute, which is a higher air quantity. So as far as MSHA is concerned, we have the same level of protection in the role without that maximum velocity. So losing that from the rule really didn't cause a dimunition of safety to the miners.

MR. KNEPP: There's also the requirement that the fire suppression systems and the fire detection system are compatible with that velocity.

So that's one other control. Then there's always a good, old ventilation plan and other requirements the district manager may require. If we felt there was an issue there that was a hazard, we could address that through the ventilation plan approval system.

MR. MUCHO: But it was fire detection, basically, sensor operation that was the key. It wasn't a float test, it wasn't --

MR. KNEPP: No. It was more of a concern from the detection and fire suppression systems too.

DR. BRUNE: Just a quick follow-up question, Bill. How do you ensure that the fire suppression system is up to par with a higher velocity? Is there a process that MSHA involves, or do you trust the mine operator saying, hey, we designed the system for 1,000 feet fpm or something like that?

MR. KNEPP: You know, was it tech support that did some research or NIOSH? Tech support. There's some ongoing research now. In the interim, I think we pretty much -- the manufacturers aren't going to stick their necks out on things too far and say this is good for a thousand feet a minute if it's not. I mean, there's a lot of beltway there. So yeah, we kind of are relying on the system itself and

the operator specs right now, and through our regular inspection work we check these systems.

DR. TIEN: As a follow-up on the follow-up again. In your visit of the old coal mines, a lot of the coal mines which you have done, the problem in the belt air is not having maximum velocity, is not having enough velocity. Am I right?

MR. KNEPP: Yeah. I think very rarely we found an issue with having too much air, too much velocity on the belt.

DR. TIEN: So how that point feeding system has helped?

MR. KNEPP: I think where it helps is we're putting the air in in one spot. We know where the spot is. It's monitored now closely. And it's still not the best of all worlds. You would like to see it separated totally all the way to the surface if that could be done.

But like I said, that's just not realistic. That belt's filled with restrictions all the way, and it's hard to bring it in from real long distances. So you have to point feed or it's going to leak periodically. So I think if there is an advantage to point feed, that would be one thing. It can reduce leakage pressure drop between the two

right there in a controlled location. And it's monitored.

DR. TIEN: These questions to the other Bill next to you.

MR. KNEPP: He's smarter than I am.

DR. TIEN: He's your right-hand man, sitting on your right.

MR. KNEPP: He is.

DR. TIEN: We have always been using the leakage being one of the primary reasons you're losing a lot of air from the belt entry into the return. We have been using a certain -- what would be the comfortable number? Can we do better as far as reducing the leakage?

MR. FRANCART: I think you'll see better maintenance on your stopping lines. You'll see a lot better luck with reducing leakage. We see a lot of mines where you walk in, there's holes left in where there were maybe some data lines or some water lines passing through stoppings; they take out the lines but the hole remains.

Doors, especially. Doors are not -- you have a 36-inch door, somebody's trying to crawl through here with equipment on, self-rescuers banging on the door, banging on the frame, they bend things,

and you have high pressures. And when doors are closed they get bent. And there's a lot of leakage through improperly maintained doors. So if there was some better maintenance on some of these ventilation controls, I think you would see a lot better luck in reducing leakage.

One thing on the point feeding I'd like to add. I have a concern on point feeding from the intake escapeway. I think all mine operators need to take a lesson from Aracoma and make sure you maintain that 300 feet per minute velocity through the regulator, because that's what provides you the separation between your escapeway and your belt. If you don't maintain that velocity, you have the possibility of smoke rollback through there, contaminating your intake escapeway.

And that is what the problem was at Aracoma was a contamination of that escapeway. It wasn't a point D regulator. And we'll get into that this afternoon. But I have some real concerns on implementation of point feeding from primary escapeways. It's very critical that it's maintained properly.

DR. BRUNE: So is it correct to say we don't even need to -- we shouldn't worry about the 50

or 60 feet per minute that is needed to prevent layering, but rather worry about preventing smoke rollback? Is that what you're saying?

MR. FRANCART: For a point feed regulator, yes.

DR. BRUNE: Well, essentially that goes for any point in the belt; right?

MR. FRANCART: No. That would be to maintain separation between the primary escapeway --

DR. BRUNE: Oh, so smoke doesn't roll inby the point feed. Okay.

MR. FRANCART: Right, between the two entities.

DR. WEEKS: Belt entries are a common source of fires because there are sources of ignition, combustibles and so on. I think one of the critical elements of being able to use the belt entry safely is fire prevention. And it's a tough issue to address from a regulatory point of view, from the agency point of view, seems to me because it depends so heavily on maintenance of the entry, of the belt, so on and so forth.

So the question is, what do you see as improvements in fire prevention with this rule? Bill Knepp, it's not that bad.

MR. KNEPP: After I toured Utah with you all day, you ask me.

Well, actually I think there are some advantages that the rule created, and one is the visual observation. You know, every day that belt is being traveled, these monitors are needing maintained. Of course, belts are required anyway to be traveled daily, because it is recognized, as you brought up, as a really high potential, one of the higher potential fire source areas.

The reg really doesn't touch on directly fire suppression systems, even though I'd say there's a lot of regulations on the book already in that area. And the problems we have found over the years after doing some sweeps, our district just finished a sweep here in the past six months, is maintenance of the fire suppression systems themselves.

And then cleanup's always an issue. That is a high maintenance. Depending on how well the belt line is trained and everything, you can have ventilation, other issues. There are a lot. So you have that potential for coal, loose coal, whatnot in the belt.

So inspection, frequent examinations are keys really for making any improvement maybe in fire

suppression equipment. I'm not even sure that's the right statement, because the regs are already out there. The manufacturers themselves and operators themselves maybe can better address the availability or improvements in that area.

We were somewhat disappointed maybe on what we found on our sweeps. And I was back in District 3 years ago when we did one where Carlos now works where the results were a really high awakening for us, too, as far as the number of problems we found with fire suppression, sprinkler systems. These kind of things just weren't be maintained. So maybe that's something we need to emphasize more and pay attention. That is critical. The best thing is not to have a fire, obviously.

DR. WEEKS: Do the mines that are using belt air get any special attention regarding fire prevention?

MR. KNEPP: Not by policy, necessarily.

MR. DAVIS: No, there's not a requirement nor any procedure that we have in place that makes a differentiation between a mine using belt air or not using belt air in terms of enforcement. There are certainly the additional AMS system that's there that gets inspected. So by virtue of that you might

say there's a difference.

DR. WEEKS: Well, that's a fire detection, not a fire prevention. I mean, that's important, but I'm looking for fire prevention.

MR. KNEPP: There's nothing in the final rule for belt air. There were some petitions prior to the belt air rule that addressed that, and the mines were required to implement and emphasize a program of cleanup. That wasn't carried over to the final rule. I feel that needs to be done in all mines, not just belt air mines. It's not a belt air issue, it's all mines that need to really maintain that belt.

DR. WEEKS: Well, I can quite agree. The consequences of a fire in a belt entry used for ventilation, it's more troublesome. And I was looking for -- and I don't think it's much of a rulemaking issue, because I think the rules are in place. I think it's more a question of enforcement.

MR. KNEPP: I think you're exactly right. The rules are there for maintaining both the use of the belt as intake or not as intake. 75.400 regulations are probably the most cited regulations we have.

DR. WEEKS: Yeah, we've got a list.

MR. MUCHO: My question goes a little bit back to where it started off earlier in the day, but when one looks at Aracoma, we'll talk about it this afternoon, but one of the issues I see in reading through it is, of course, that a number of the planks to using belt air were not implemented. Very many on some very major ones, of course. In some cases -- well, that was kind of all over the board.

But one of the issues at least that I see with that is that there was not a belt air plan. In other words, when I use belt air I do A, B, C, D, E, F, G. In some cases they did A, B, skipped D, E, did F.

From a training perspective, from an implementation perspective, from a management administrative perspective, if you have a plan and the planks are well known and are used in training for the miners, that certainly seems to work a lot better. And as it exists now under the regulations, as long as I do the planks I can implement belt air. And it's -- maybe I'm doing it here and not over there or whatnot.

I think that maybe there should be some provision where it's a plan, it's a plan submitted within the ventilation plan. I'm using it on section

A, B, C, or whatever. But that might help address a lot of training issues, a lot of miner understanding issues, and to see that all the planks are implemented.

MR. DAVIS: I think that's very a reasonable observation that you're making. The mines that use the belt air of course have a training obligation like mines that don't, and they should be training on various systems at their mine. But there is not a specific requirement in the standard for training specific to the, you know, to the belt air, to the aspects that are there that's a system, the AMS system, et cetera. It's there because of the use of belt air.

MR. KNEPP: The AMS operator, there is some training required for the people doing the maintenance and the AMS operator, that kind of thing. You know, I really think MSHA could push that with the rules that are available now even greater. There are training regs, there's availability. And the miners, the miner emergency response plan and whatnot, they should be or trained to be aware of the AMS system, what it does, what's required as alarms go off and all that. There's quite a bit of training required in that area.

DR. WEEKS: Just to follow up on the fire question. I don't know if you can answer this question. I'm not even sure I can answer it. But the basics of fire is that necessary and sufficient conditions for a fire to occur are fuel, source of ignition, and air. And if all three of those are present, sort of unambiguously present in some entry, would that fall under the pattern of violations rule? Because this is a pattern. All three of those conditions are present unambiguously. Is that a pattern of violations? Like I said, I'm not certain that anybody can answer this.

MR. KNEPP: I don't think that meets the definition of the way we look at what constitutes a pattern. It has to be the same regulation. So if you want to look at that point saying the accumulation type over and over again, yes, that would be a possibility. But there is some, I think -- isn't it a legal issue, it has to be almost like the same area each time? There was some question that hadn't been totally answered yet.

MR. DAVIS: There are a number of criteria that's involved. I don't think you could go simply to the fire triangle to say that this is headed towards an issue a pattern of violations. A

violation, yes, but the patterns --

DR. WEEKS: Well, let's say it occurs the same time and the same place where it really could create a fire.

MR. DAVIS: It might be described in your violation. To say that that's a pattern of violations, there has to be a whole lot of other criteria.

DR. WEEKS: I'm just looking for -- I'm looking for ways to prevent fires, basically.

DR. CALIZAYA: This is a general question. It deals with utilization of booster fans. Coal mines in this country, they don't use booster pans. There were several petitions to use booster fans in coal mines under certain conditions, and of course problems when this was denied. But now I think we have means to monitor conditions for that fan. We know the advantage of booster fans, and we were talking about pressurizing the belt entry and show booster fans can do that job. Any comments along those lines?

MR. CROCCO: I think years ago the Agency took a look at the issue of booster fans and made a decision that there were other ways they could get the pressure where it was needed underground and that

booster fans introduced a number of hazards underground that weren't really necessary. And so traditionally we haven't accepted either in the regulations or through petitions booster fans underground.

But I do understand that there's a technical argument that can be made that, you know, there are some advantages to it. But I think the Agency's position is still currently that there are other options to get pressures where you need them underground, and the hazards involved with introducing booster fans underground just don't outweigh those.

DR. CALIZAYA: We are talking about number of entries. We have six entries and the resistance in the airway is quite low, but we are limited by the number of shots. We have many shots following the resistance, and therefore maybe we don't need booster fans. Surface fans would do the job.

But if we talk about deep mines, and here we are talking about reducing the number of entries, therefore it's expected that the resistance will increase. And I'm not saying this may be one answer, but at least for certain conditions booster fans may do the job.

And here I need to ask one more thing, and that has to do with fires. Fires are really fans and generate pressure, depending where you are located where the fire takes place. In some cases we can have a fire where it's exactly in the opposite position than the booster fan, and maybe under those conditions may be used to decrease the effect of the fire. Any comments?

MR. CROCCO: Yes, I agree with you that the fires do indeed produce a pressure, and that's why we especially at point feed locations want a minimum velocity to control those things and keep the air moving in the right direction. I agree with you, there's a technical argument to be made for booster fans. They could do some things, but up to this point in time the Agency's position is that they weren't really necessary.

DR. WEEKS: Let me just follow up briefly. You mentioned that there were hazards introduced with booster fans. Could you be more specific? What are those hazards?

MR. CROCCO: Well, you have to get the electric power to the fans underground, and there's rules for removing power from underground areas to the event of an interruption in ventilation, for

example. So under some conditions it could be difficult to reventilate the mine and put power back on an underground booster fan without an examination. I mean, that's basically what you'd have to do is reenergize the fan and put power back into the mine without an examination. So those are the kind of issues we'd be talking about.

DR. TIEN: Well, examination. Can AMS do the job for us?

MR. CROCCO: AMS can do the job provided you have some air moving so that you're getting the gases to the sensors so that they can properly monitor.

DR. TIEN: Monitor the electrical power and the voltage and amps and other stuff, would that be critical factors entering the function?

MR. CROCCO: I agree with you, they can do some things.

DR. MUTMANSKY: Okay. At this point in time I still give the panel members one more opportunity. If you have burning questions you'd like to get answered at this point in time, make it known to me and we'll take them. Otherwise --

Okay, I would like to thank the MSHA personnel for subjecting themselves to these

questions. I think the questions were very good. I'm very happy to have had the opportunity to speak with you this morning, and I'd like to thank you for being here.

MS. ZEILER: I'd also like to thank the MSHA panel for coming, and I suggest we take our lunch break and maybe come back at 1:15.

(Recess from 12:00 p.m. to 1:

MS. ZEILER: This afternoon we're going to have a discussion with the panel on the Aracoma investigation report, and Bill Francart is here to give a presentation on that.

MR. FRANCART: Thanks, Linda.

I thought a long time about how to start this presentation, and where do you start at something like Aracoma except to maybe summarize it.

And for your benefit as a belt air committee: This accident had nothing to do with belt air. That says it all in a nutshell. But I think in our first meeting I mentioned to you that we would give you a comprehensive review of what happened at Aracoma and how belt air played a part or didn't play a part, and we'll explain that today.

It was a terrible tragedy that should not have occurred, and it was a perfect storm of an

accident. It wasn't just one thing that went wrong at Aracoma. Like we mentioned earlier today, we had 25 contributory violations. Because they weren't contributory didn't mean there weren't other violations at Aracoma.

We'll discuss the belt air violations in detail today and the contributory, but we won't discuss all of the over -- I think we're over 300 violations at Aracoma.

The accident did occur January 19th, 2006. And this presentation will summarize the accident investigation report and discuss, of course, the belt air and compliance with belt air regulations on that day and prior to that day.

This is an overview of the mine. We have three active sections in the mine. No. 3 Section is a continuous miner unit. No. 2 Section, also a continuous miner. And the longwall section. You see the longwall face right here.

Two sections developing in the future. Flip this over. Number 11 headgate or 10 tailgate. And No. 3 Section is getting ready to second mine.

We have fire located at the belt storage unit of the belt drive for the longwall right here. And we have two entrances to the mine, the box cut

portal right here where men enter the mine. There were some supplies taken in at that location. And also the Rum Creek Portal down here at the bottom where coal is transported out of the mine and also supplies are taken into the mine.

This is how the belts were laid out in the mine. Main line belt, we have No. 1 through 6 belts running in the mains. This is called the North West Mains. No. 7 belt comes off the mains across what we call the North East Mains, and it's connected to the longwall section belt.

There are three 48-inch belts that take coal off of No. 2 Section. One of the key things to remember here with the way these belts are laid out, that the longwall belts and the two section belts run independently. So something that happens on No. 7 belt won't affect production on 2 Section. The same with the belts on 2 Section. And for something that stops these belts, it doesn't affect the longwall production.

The mine is ventilated with three main mine fans. The Melville blowing fan supplies almost 500,000 cfm located near the box cut portal through two exhaust fans, what they call the Mecca and the Ethel fans. The Mecca fan on this side does

ventilate three sections. Return air comes off of 3 Section and two gob areas. That's all that this fan is responsible for. The Ethel fan ventilates, returns off the longwall off of 2 Section and one longwall panel on the south end of the mine.

This is a single line diagram of the ventilation system per the approved ventilation plan in effect at the time of the fire. The longwall was, according to the plan, using belt air to ventilate the face. 2 Section, according to the plan, was not. Moving in an outby direction, probably regulated to the return here on the gob side. We don't know for sure, but that's what the plan indicated. And that, of course, was not the way it was ventilated.

Intake air is marked in blue here. Comes up the mains. A split comes off the longwall, ventilates the longwall face. Remaining portion of the air goes into 2 Section.

There are no returns in the North West Mains in this portion of the mine except one entry on this side that comes off 3 Section. I don't have it on that map, but comes off of 3 Section and goes into the gob.

The longwall was developed with four entries. Number 1 entry is a belt. It's in common

with number 2 and 3 entries. Number 4 entry is the intake which is marked in blue.

On January 19th there was a lack of isolation between the primary intake escapeway for 2 Section and the No. 7 belt. That allowed air to change direction, and it had been this way for some time. Air did come into No. 7 belt as designed but continued on past the tail of the belt and combined with air from the intake and moved it toward 2 Section. Air in the longwall belt was moving in an outby direction. In fact, they had lost so much air off of the section because they were using this belt air, it checked off this belt to keep air coming from this intake reversing and not going onto the face.

2 Section is a super section. They had two mining units, two bolters, and there are twelve men working up in that end of the mine.

Another interesting occurrence that happened at this mine sometime before the fire, there's one seal in the mine right here. That seal was installed as a result of an inundation of water. They had cut into some old works. The mine was flooded and they put the seal in to isolate the old works in the active mine.

As a result, they had to preshift that

mine at the seal every day, every shift, unless it was on return air. So what they did, they made a ventilation change and put a separate split in to dump that air off the seal through a regulator into the return. That ventilation change was never approved in the mine ventilation plan. The use of belt air on 2 Section was never approved on the mine ventilation plan. So there were two major changes that were not approved by MSHA.

DR. TIEN: Bill, why were some of the quantities going to the units?

MR. FRANCART: The quantities? Jerry, we really don't know. Can't answer that question. We did do a ventilation survey after the accident to try to reconstruct. The ventilation system was very fragile. In fact, we -- I myself was taking two measurements on the return side and tailgate. As we took the readings, the air reversed. Somebody had opened the door outby somewhere and your tailgate is reversed.

DR. TIEN: They must have terrible leakage, because we're talking close to 400,000 CFM, sufficient for one or two minor leaks.

MR. FRANCART: There was a lot of leakage. Stoppings had holes everywhere. It was in pretty bad

shape, there's no doubt.

DR. BRUNE: Any particular reason why they would take the -- I'll call it the zero tailgate and leave the belt air rather than moving it over to the -- in a normal longwall I would consider the right side of that face the headgate.

MR. FRANCART: It's interesting. They're going to do that on the next panel, in fact. The next headgate will be over here, and this will be the tailgate for the next panel again. So it will be a flip.

DR. BRUNE: You don't have a fresh gate, then.

MR. FRANCART: They did a lot of things that we don't know why, how. That's a good question.

We'll go into some detail on this isolation problem. But the location of the common belt and intake air was just inby the tail.

The way the mine was laid out, they used a lot of airlocks to travel through the mine. There weren't a lot of overcasts but a lot of airlocks.

9 headgate, you had two sets of equipment doors on the inby and the outby side of the longwall belt. The fire occurred down here below North East Mains and of course spread to the No. 7 belt.

Miners would travel to the section every day, come in through these airlocks and continue on to the section.

There are three overcasts up here that take air across this No. 7 belt, and I don't show them all on here. The single line doesn't show it, either. But you come across this No. 7 belt three times with your intake to No. 2 Section. This is the third overcast.

You can see there's no way to get around the belt for 2 Section on the north side of the mine, and this is right against the barrier for a gas well. There's no way to get around this belt without the use of overcasts.

The reason we had that lack of isolation, there were two ventilation controls, two stoppings removed prior to the fire sometime between October 26th and -- we don't know when the second one was removed. But there's a construction project inby the No. 7 tail. They're extending this longwall belt. No. 7 belt will be extended for the next longwall panel.

Before they extended that structure they came in and removed this stopping. The purpose was to facilitate the installation of electrical

equipment for a belt starter.

There was also a stopping right here between the two airlock doors on the inby side. This stopping was removed. It was right up against an electrical installation. The crosscut was so hot, they decided to cool the air they would remove the stopping, and that's what they did.

These two stoppings did help to isolate the area. You have these three stoppings around the inby side of the tail. But one other problem you have is these doors don't form an airlock, because when you open this first door your air can travel, and we don't show on this picture, but you don't have isolation inby those airlock doors also. So this set of doors does not form an airlock. So we have two stoppings missing that were removed and other stoppings that were never installed.

Media made a big deal out of the missing wall. You probably saw it on the TV and newspapers: Missing wall in the mine. There was on the 1202 map, which is required by MSHA to be maintained at the mine, a stopping marked on the map inby the tail at this location. This just shows you by the picture, there was never, ever a stopping built at that location. There was never evidence that it was ever

removed. So even though it was on the 1202 map, it was never installed in the mine. The two stoppings that were removed were never removed from the map and were not marked on the map. So we had some very poor inaccuracies on that map.

This map shows the travelway and escapeways for the two sections. We have the dashed purple line which is the travelway used by miners. They used diesel haulage, rubber tired equipment to travel into the mine. They come down, like I said, through the airlock doors, travel on the south side of this belt extension project, back up across. And one of the reasons they did that was to stop and preshift that seal every day. So the boss would get off, walk across, preshift the seal, come back to the mantrip and continue into the mine.

There's a door that was installed right here in this stopping to facilitate his travel to that seal. It wasn't installed when the stopping was built. We'll talk about that stopping a little bit later.

The green is the primary escapeway for both sections. You can see it's designated to come down across this belt. It does not come out the travelway. However, miners believed, we think, that

the travelway was the escapeway. There were a number of entries that were marked with green reflectors which indicate intake escapeway. In fact, there was a green reflector between two of the airlock doors designating that entry as an escapeway.

The dashed blue line is the belt construction project, and there were breaks in the structure for the mantrip to travel through and across that entry.

The yellow is the alternate escapeway, and 2 Section was the belt from the section out to the North West Mains.

Longwall section, the alternate escapeway again marked in yellow. We had a little bit of a problem with this escapeway, because when you get up here you have to travel through three solid stoppings to get through. There were no doors installed. Their primary escapeway was well marked and was easily accessible.

One problem with the escapeway drill for miners on 2 Section -- well, there were a number of problems. Big problem, though, that we identified was that they did travel out on the mantrip, which is permitted by the regulations as long as you travel the escapeway, but when you get down here you can't

drive your diesel mantrip over these overcasts. You have to get out and walk around, then you can get back on your mantrip.

Well, when they did their drills they rode out of the mine every day that they did their drill. So they understood their escapeway drill to be going through these airlock doors every day.

Sometime before 5:00 p.m. on the 19th there was a belt examiner who was stationed at the longwall belt drive. His name was Bryan Cabell. It still is. He found a belt alignment problem within the belt storage unit, and he did try to realign that problem. A belt was rubbing up against the bearing block, creating some smoke. He wasn't able to get it done himself, so he did call outside to the mine foreman to try to get some help, and he asked for some chain ratchets so he could try to pull a dolly within that belt storage unit to get it back in line so that the belt could be realigned.

Things got worse, and at about 5:05, according to the CO AMS printout, he shut down the belt to avoid further damage to the belt. At this time, no big deal.

He did hear calls from the longwall headgate operator. Of course when the belt goes down

the headgate operator gets on the phone, calls the dispatcher. He wants to know why his belt's down.

Cabell got on the call and said, "I have your belt down. We have smoke. As soon as I can fix it you'll be back to work."

Cabell sees smoke intensifying, and now he calls a second time outside for help. He wants to know where his help is.

In the meantime, we have our first CO alarm at sensor No. 82. And that's just outby the ignition point of the fire. We know the belt air is moving outby, and we talked earlier, there was some comment about a fire being a fan. At this point all we have is some frictional rubbing of the belt against a bearing. It wasn't really able to produce its own pressures to creat a change in air direction. So we believe the airflow was in that direction. It took the CO from the frictional ignition which now is probably starting to create some more combustion, maybe is a fire. We don't know for sure. But Bryan Cabell says -- he tells us he sees some glowing against the rib side of the belt.

At this point, of course, at 5:14 we have an alarm. According to the belt air rule, at that point miners in affected areas, all affected sections

have to be withdrawn to a safe location. And that didn't happen.

We're going to cross-hatch the clock with a red color here so you can see the time from the CO alarm as time progresses. We'll keep track of that.

Bryan Cabell again calls for Fred Horton. He's the afternoon shift mine foreman. He's the responsible person for initiating evacuation in the event of an emergency.

Mike Brown hears him calling for the mine foreman because he's not answering. He gets on the phone and says, "Bryan, what do you need?" Cabell says, "I need Fred." Well, Fred eventually gets on the phone. And we know that happens at about 5:14 because Mike Brown tells us this is about the time he got the CO alarm. He got up to acknowledge that alarm. The call came in at that same time.

Now we have a second alarm going off, sensor No. 81, which is inby the No. 7 belt tail at 5:16 p.m. Again, there's no notification to either the longwall section or 2 Section that there is an alarm.

You might ask, what about the automatic notification with the alarm unit that's installed at the sections? The alarm on the longwall section,

we'll get into this a little bit later, was not installed properly, was not maintained properly, and there was no alarm unit on 2 Section.

Bryan Cabell is on the phone with Fred Horton when two other men arrive who are on their way into the mine. They're going to do some construction work inby the longwall belt. They get there around 5:18 p.m. At this time when these two miners arrive they can see that there's flames against the rib.

Three men begin fighting the fire. Their first attempt is to take a fire extinguisher off the mantrip that the two men brought in and take it over and fire it, but they cannot extinguish the flames. They obtain additional fire extinguishers; they release them. Again the flames can't be extinguished.

After the fire extinguishers Bryan Cabell attempts to hook up a water line. He has a fire hose and he goes to a fire tap. He attempts to screw it on and he's not able to because the fire tap -- the threads of the fire tap and the threads of the female coupling are not compatible, so he can't hook up the fire hose. He anyway turns on the valve to see if he can at least get some water to roll out onto the fire area. There is no water in the line.

There's no automatic fire suppression above the belt takeup storage unit. There was never any installed as required by the regulations. So now we have a fire growing out of control, no way to put it out.

And at this point Bryan Cabell calls again to Dispatcher Brown and tells him to evacuate 2 Section. Brown begins to call his section, but there's no response on the phone. They have a strobe light installed on that phone, and he sets off the strobe remotely. Again, no response. Finally he shuts off 2 Section belts to gain their attention. Of course, when the belts are stopped the mine foreman goes directly to the phone and calls outside.

The time the belts stop is at 5:39, again recorded by the AMS. So we have a very solid time the belts were stopped. The order to evacuate was given just minutes later. When Mike Plumley, who's the section foreman, called outside, Plumley was told he has smoke in his intake escapeway.

He assembles his crew and they begin to evacuate the section. This is the first time 2 Section is told to evacuate, 5:42 p.m., nearly half an hour after the first CO alarm and well after the fire was visually observed by the belt examiner who

was an agent for the operator. He was required to take action and he did not.

So Mike Plumley assembles the crew and boards a mantrip. And he tells the miners before they leave, if we run into smoke, we're going to go outby. And he tells them there's a door, the door I pointed out to you before where you go to that seal. There's a door out there just past a set of cribs. We'll go to that door, we'll get into the belt if we hit smoke. So that's their plan.

The crew members aren't aware of the severity of the fire at this point. In fact, some miners believe they're going to go out and help put the fire out and come back to work. Some guys grab their buckets. They're going out, they're going to take and eat their lunch after they put out the fire. They think they're coming back to work. They have no idea what they're going to run into.

This is the door, again, I mentioned before in the seal. This crosscut was heavily damaged, very bad roof, fallen in. There were cribs set on both sides of the crosscut. And the miners were well aware of that location. But some of the miners on this section were new to the section; they did not know where this door was.

In addition, one of our requirements in the regulations is to mark mandoors between escapeways. This door was never marked in the escapeway so you could see the location of the door from the escapeway.

Mantrip being driven out runs into thick, heavy smoke in the primary escapeway and the crew is forced to stop because they can't continue any longer. They get out of the mantrip and don their SCSRs and begin to walk through smoke to that door.

You see here where the mantrip was stopped, three breaks inby the door. They rode out the travelway to this point, drove into this alternate entry and hit the thick black smoke. One of the victims made it to this point to where he donned his self-rescuer. There were a group of four men at this second red dot. Again, one of the victims was in that group. The remaining seven miners were at that black dock, one break outby the mantrip. This is where they stopped to don the rescuers. This is the last time we have contact with the two victims.

Ten miners did find that door between the primary and the alternate escapeway. The belt is the alternate. And when they walked into the belt it was

clear. There was no smoke. They took off their self-rescuers, found there were two miners missing. I guess that's the next slide.

Three miners did return to the smoke-filled entries to try to find those two miners. They went in. They had their mouthpieces out of their rescuers, out of their mouth, calling for their friends. They could not get any response. They had to return back into the belt and continue their evacuation from the mine.

What about the longwall section? The headgate operator knew the belt was down because of some smoke. Never was told there was a fire. He was never told to evacuate. In fact, two men, the mine foreman for the -- the section foreman for the longwall and the electrician went out to do some investigation when they didn't hear anything. But when they lost power, the crew decided on their own it was time to leave. They had lost communication prior to that time. Finally, after they lost power, they decided on their own to evacuate. Nobody ever told them to leave the mine.

Almost one hour after the first CO alarm, ten members in 2 Section crew arrived to a safe location just outby the fire in North East Mains.

This is the layout of this belt and the location of the CO sensors. These two sensors right here, No. 81 and 82, were the first two sensors to indicate alarm. There was isolation between this belt and the primary escapeway. Those stoppings were in place, but there were a lot of holes in those stoppings. So any smoke that came out of this belt came into this intake, leaked heavily inby later on during the fire. And sensors in this belt, most of them did respond to the fire beginning at No. 71 sensor, which is just inby the longwall belt.

None of the sensors inby the fire on the longwall belt responded to any CO. Now, we lost communication with those sensors later and we don't know if eventually the smoke did get down there or not, but there wasn't a lot of heavy soot deposition down here, so chances are most of the heat and smoke and contaminants came up out of longwall into 7 belt toward 2 Section.

No. 72 sensor indicated a warning but not an alarm. No. 75 sensor did not indicate warning or alarm. No. 75 sensor had been in communication failure most of the day. The sensor was never investigated as required by the rules, was never repaired, and nobody was sent there to monitor the

belt as required.

Let's talk a little about sensor calibrations while we're here. 81 and 82 sensors were the last two sensors calibrated in the mine, 41 days ago. As you know, they're required to be calibrated every 31 days. There's no evidence that some of these sensors were calibrated for a couple of months.

Mine rescue teams did respond to conduct the search and rescue activities and firefighting activities. The fire got so hot that they weren't able to explore just inby the fire and find those miners for two days after the fire had ignited. So they were found two days after the fire began.

Again, this is the location of the fire where the one victim was found eventually just inby the fire, another just about four breaks inby him.

This is where the mantrip stopped, where they went in through the door to the secondary escapeway. Ten miners evacuated through that belt. These two miners for some reason came down here. Everybody wants to know why, why would they do this.

There was a lot of discussion. We had some interviews. Some of the miners told us that one of the victims said that he wasn't going to die like

Sago, that he was going to get out. But to get out, did he plan to go out through the route he was most familiar with, which he thought was the intake escapeway? We don't know. We'll never know. All we know is where they were found, and it certainly wasn't going through this door into this belt as they talked about on the section.

Talk a little about the violations. We mentioned this morning there were 25 contributory violations. Our committee investigation team agreed to 25. I believe there were more, some in particular that we'll discuss a little bit later. But there were 99 noncontributory that were cited by our team and 309 other violations that were cited by other MSHA inspectors outside the investigation team. Of the 124 violations that our investigation team identified, 32 of those violations were directly related to belt air.

We broke down the 25 contributory violations into some areas, three related to escapeways, seven with examinations. Examinations, of course we require preshift, on shift, weekly examinations. We had a number of violations here. Examinations of the escapeways, belt entries, intake airways. We only had seven because there are seven

categories of examinations. We could have had an examination violation for every preshift conducted from October 26th to the day of the fire if we wanted to do that for every shift that people worked on 2 Section.

Seven examinations. Five fire protection violations, of course. There was no fire suppression system installed at all on the longwall belt takeup storage unit. Four belt air regulations, and there were two others that are training related that are also required by the belt air rule. So there were actually six belt air regulation violations directly contributing to the accident, one evacuation for not evacuating the men when they knew that there was an imminent danger, one equipment maintenance violation.

This belt storage unit, this isn't the first time that they had a problem in the belt storage unit. I don't know if you read the report and saw the fire on December 23rd when in the same location they had a similar fire. That fire they were able to extinguish, but this problem that they had existed for some time. It didn't just occur on January 19th, 2006.

The accumulation of combustibles, 400 violations were rampant throughout the mine. Every

belt drive in the mine. Of course this particular belt drive, everything was burned up, so how do we prove that there were combustibles there? Well, this would have been an aberration had they not had those accumulations, because every other belt drive was buried, to put it mildly.

One mine map violation, of course, for not properly notating with the temporary notations that is required in the 1202 map, and the two training violations.

The two training violations are significant because they build on other violations. One of them is for the AMS operator who failed to notify the responsible person that an alarm had occurred. The other is for the person who's responsible for installing and maintaining the system. Had he been properly trained, he would have known that there was an alarm unit required to be installed for the men on 2 Section.

The four belt air violations: They failed to withdraw miners when they had the first CO alarm, failed to notify appropriate personnel when the first alarm was received, failed to install the alarm unit on 2 Section as required, and failed to conduct adequate visual examinations as required every shift

when the AMS is operating and coal is produced.

Had they done an adequate visual examination, they would have seen that there was no alarm unit if they would have been trained properly to do that examination.

The escapeway violation was written on the lack of separation between the belt and the intake escapeway. That same requirement is written into Part 350, which is the belt air rule. We decided to write it under the primary escapeway rule, under 380, because it was more related to an escapeway problem. It could have been written under either one. So again, that is a belt air requirement that was written under a different section.

And the two training violations we've already discussed, inadequate training for the personnel installing and maintaining that equipment. There is no doubt that he didn't have time to do his job. He often -- well, I don't know that there was any more than six or seven sensors that were calibrated within 30 days at any one time. For the most part, every sensor in this mine was not calibrated within a 30-day period one time or another for the previous year.

And of course inadequate training for the

AMS operators. It wasn't just the operator on the afternoon shift. He was probably one of the better ones as far as making records and calling people. The other shifts were even worse.

The conclusions in our report. The fire, of course, occurred because of the frictional contact between the belt and the bearing block in the storage unit which ignited accumulated combustible materials along the belt. There was a lack of a fire suppression system that allowed the fire to grow. There was a lack of water in the water line and the water hose compatibility problem which compromised firefighting activities. And the lack of separation between the belt and the primary escapeway allowed an inundation to occur of CO and smoke in the primary escapeway.

Examinations at the mine were inadequate and they failed to identify obvious violations and hazardous conditions in the mine. Examinations of the safety system failed to identify deficiencies such as the CO system and the fire suppression systems. Response to the AMS alarms was totally inadequate and inappropriate. Miners were not evacuated when an imminent danger was presented to the miners. Escapeways were not properly marked, not

properly maintained, and escapeway drills were not conducted properly. In addition to running them through the wrong entries, they didn't conduct them as required in the frequency or the location.

2 Section was using belt air to ventilate the section without improved change to the ventilation plan and without implementing the additional required safety measures required by the belt air rule.

Adequate training was not provided for the personnel responsible for installing and maintaining the CO system. And of course adequate training was not provided for the AMS operators responsible for responding to the AMS signals.

We believe that full compliance with the belt air rule would have prevented these two fatalities, there is no doubt in my mind. If you comply with maybe one of those 25 contributory violations, we may not be here today. This was a confluence of disaster at Aracoma.

Belt flame resistance. I know Harry Verakis talked to you before in Washington, D.C. about the flame resistance testing and that whole issue. At Aracoma we did have the test run prior to our report being released on the 2G test for the

flame resistance, and the belt did meet that criteria.

Following our investigation report release we did some additional testing. There was approximately 4,200 square feet of belt consumed in this fire. Certainly not flame resistant, but it did pass a 2G test. The improved flame resistance test that Harry talked to you about was also conducted, and the belt at Aracoma failed to meet that test. And I think you've been given a copy of that report, or it is available to you now that discusses the results of that report.

If you have any questions, Mike Hockenberry is here today and he can talk about the tests if you have any questions.

So that's the accident in a nutshell. We could talk for days about Aracoma on the accident. But to keep it to a reasonable time, if you have any questions on the accident itself, I'll try to answer those questions now.

DR. BRUNE: Let me just follow on with this belt -- flame resistance on your belt. Are you saying that the belt did not pass the B-E-L-T test? Is that correct?

MR. FRANCART: That's correct.

DR. BRUNE: Now, may I ask you this. If that belt had passed the test, if the belt was truly flame resistant, would it have made a difference in the accident, based on your knowledge of the case?

MR. FRANCART: I think it's quite possible, yes. If you look at the accumulations and the amount of coal and rock that was mixed in there, I don't think a coal fire in itself is probably going to cause that much of a problem and spread that quickly. I don't think it probably would have made a difference.

Any other questions?

DR. MUTMANSKY: Bill, if the belt air had been going outby instead of inby, would the system have failed safe? That is, given the 25 -- well, given the other violations and so forth that had occurred but the air was just moving outby in the belt, would it have failed safe?

MR. FRANCART: We're going to talk about that. That's not the end of my presentation. This is just talking about the accident itself. We're going to talk about belt air at Aracoma and compliance and what if belt air would have been changed at the mine prior to the fire. So we'll get into that toward the end of the next section of the

presentation. But if there's any questions on the accident investigation or the conclusions to the accident first, I'll try to answer those right now.

Okay. We'll continue, then, with the use of belt air, the history of the use of belt air at Aracoma, and compliance with belt air rules.

Of course Aracoma was opened I think in 1999. They initially used belt air under a Petition for Modification, and we'll discuss that petition and the comparison between the requirements of the petition with the final rule, the compliance with the fire rule provisions, and we'll discuss what if belt air was not used at Aracoma.

The mine began production on October 1st, 1999. They did initially submit a petition in December of 1999, and we don't know why. We weren't able to really discuss those issues with company officials. But we do know that they asked for an expedited processing of that petition which was officially filed on January 21st of 2000. Petition was granted on May 3rd, 2000. And we can get you a copy of that petition if you don't have it, but it's pretty much a typical petition for that time period.

Of course AMS installation was required by almost every petition, and it was required by this

one also, as was in the final rule.

A couple differences between the petition and the final rule. In the petition, sensors only from the mouth of the section to the face or within 4,000 feet outby the face were required to automatically signal on the section when there was an alert or an alarm. The final rule requires all outby sensors to activate the alarm units on the affected sections.

So the final rule, as we've discussed before, goes way beyond the requirements of this petition. We're looking here at four sensors outby setting off that section alarm, where in the final rule you would have maybe 20 sensors outby clear the box cut portal. Any sensor along that belt and all that air is going up to 2 Section and to the longwall, any one of those sensors would automatically set off that section alarm.

The Petition For Modification identified a maximum allowed quantity of 202,000 cfm in the belt air course. We don't have that limitation in the final rule, but it is addressed in other ways, such as reduced alert and alarm levels in case of higher quantities.

Ambient determination was specified in the

PDO. We do not require any specific method in the final rule for determining the ambient in the mine. That is left up to the ventilation plan approval process.

There was a dilution study required in the petition, and that was in case of multiple entries in common with the belt. Of course, that wasn't the case here. We didn't have a number of entries except on the longwall on 2 Section it was just one entry in the belt, but we did not require this dilution study to be conducted in the final rule. But the district manager did have the authority, of course, to take other actions and require additional sensors, reduce the alert and alarm levels, whatever he deemed necessary to account for the effect of dilution if needed.

Velocity requirements were similar; however, the final rule allows reduced spacing if velocities in the belt are less than 50 feet per minute. We've discussed this before, if you have less than 50 feet per minute you can reduce your space into 350 feet and be in compliance.

The petition required alert and alarm levels to be determined from the tables, and I'm sure you've read those. There have been a number of

petitions. The final rule, of course, uses five and ten parts per million as a baseline with reduced alert and alarm levels based upon the decisions made by the district manager.

Examination and calibration requirements in the system were similar. A petition does not allow miners to enter the mine after an alarm occurs. We did not include this in the final rule. Did not think it was appropriate. And I think that your reaction to a fire, if you have an alarm and you have nobody underground, how do you send anybody in to fight the fire? So it's kind of a catch-22 there.

This is a very important point right here, this last one on this page. And I'd like to pay particular attention to this one. The petitions required miners on the same split of air to be withdrawn from the mine when there was an alarm. The final rule requires all people in affected areas to be withdrawn. Now, this is a very important point at Aracoma because the two belts are on separate splits but 2 Section is an affected area. Do you understand the difference? Any questions on that?

And we didn't have Aracoma in mind when we made this change in the rule, but we did have an idea what happens to the miners two miles inby on a

separate split when there's a fire at the mouth of the section just two miles outby. That was exactly our thinking, but we never figured to have two separate belt systems.

System malfunctions. In the final rule we did not limit the duration of a malfunction. If you have a sensor malfunction you're required to repair the sensor, or if it can't be repaired you have to patrol that area by using hand-held CO monitors. The PDO allowed for only a short period of time for this to continue. That was defined by the time required to repair the system.

But we didn't address that in the final rule. We believe that if a company was willing to set somebody down there with a hand-held for 24 hours a day to comply with that rule, that would be fine. There's no incentive to keep him down there when you can repair it instead. So we didn't make that determination in the final rule.

The petition did require the improved flame and flammability, flame resistant testing when that belt became commercially available. That was not addressed in the final rule and is not addressed in the existing regulations.

Again, the PDO required equipment operated

in a primary escapeway to have automatic fire suppression systems installed, and that's covered by other existing regulations in 30 CFR.

The petition specifically required maintaining the integrity of the primary escapeway. It did include the 50 percent limit for the contribution of the belt air to the section as the final rule.

The petition did not specify a pressure differential requirement at all times, but it did say to the extent practical. So it did require to the extent practical for that pressure differential to be from the intake escapeway to the belt, again, to the extent practical. And the training requirements for the miners and the AMS operators for both petition and the final rule are very similar.

The petition also, and the last point that I forgot to mention, does specify requirements for stopping repairs and for maintenance of stoppings. That is also covered by existing MSHA regulations.

Okay, belt air courses. And a little bit of this is redundant and we'll go through this a little more quickly. This is according to approved ventilation plan what the air directions would have been on those belts. Again, the longwall belt air

was moving inby toward the face; 2 Section moving outby.

Likely air flow directions at the time of the fire, inby on 2 Section, outby on the longwall belt toward the head, inby down around the face. So we had a split point somewhere along here. Don't know exactly where. We have a strong suspicion it was about three breaks outby the face, so the air from about right here was moving outby.

Under 75.350 part (a) the belt air course must not be used as a return, can't be used to provide air for the working sections except under part (b) of 350, and it must be separated from other air courses. That's the key, must be separated from other intake air courses. Belts are intake air courses.

We also include a provision that air velocities must be compatible with fire detection and suppression systems if you install it.

350 part (b), air from a belt air course may be used to provide air to the working section if you meet these requirements. Of all of these requirements we list in 350 (b), the mine met one. They developed at least three entries. They failed to meet every other requirement of 350 (b).

Again, not to belabor, but the mine operator failed to maintain the physical separation between the No. 7 belt air course and the 2 Section, the primary escapeway. And again, this provision required for all mines regardless if they used belt air or not. This is not specifically aimed at mines that use belt air.

Once again, the critical ventilation controls removed prior to the fire. This is what caused the lack of isolation between those two airways. It's ironic. Every day -- this is the travelway right here between these two airlocks. When you drive your equipment right here you have to stop to open this inby door. So everybody that travels in there stops right next to this location where that stopping was removed. You can see here at the bottom row, blocks was still in place. The blocks to that stopping are stacked right along this corner of this rib. So every day every miner that looked out there saw that there was belt structure in the next entry right up here. They could see that structure and they could see from where they were sitting there was no stopping.

Alarm units. There was no alarm unit installed on 2 Section where miners could see or hear

the signals, and there was a problem with an alarm unit on the surface also. The AMS operator was located within an office in the box cut, and he was also responsible for dispatching equipment in and out of the mine, directing traffic flow, providing supplies from the warehouse and lamps and hand-held detectors for gas detection to miners.

There was an alarm unit, visual and audible, hooked up outside that office so he could see or hear it when he was outside that office. It was not functioning at the time of the fire. We found that there was a wire that was cut or shorted prior to the fire, and that's why it did not work. Some people didn't even know they had one on the surface. So we don't know how long that was not working.

Once again, the alarm unit in the longwall, this is one that did function. It was located in a place where you could not see or hear it very well, but there was another problem with it. It wasn't maintained in proper operating condition. This alarm unit, you can't see it real well, but there's a series of LEDs around the outside edge and across the front, and there's also a speaker right here for the audible alarm. So it gives a visual and

audible signal.

Inside this unit there's a battery. The battery is used to initiate the signals. And there's a triple charger that charges this battery continually. This battery was not connected. It was fully charged but it wasn't connected.

In addition, that alarm unit would not respond to all CO alarms for all sensors outby. It would only activate when any alarm occurred on longwall section CO sensors. So if you had a sensor in the No. 6 belt in the North West Mains that went into alarm, you would not get a signal on the longwall section as required by the rule.

They did program the longwall sensors to give you a signal on the longwall sensors if they went to two consecutive alert signals, but only for the longwall belt, again, not for the other outby sensors.

CO sensors were installed in many cases in excess of 1,000-foot spacing. They weren't installed properly within the belt entry. Many were found to be installed along the rib instead of the center of the entry as required.

The sensor at the longwall headgate was not permissible as required, that one I just showed

you in the last picture with the alarm unit. Conspec sells two models; one's permissible, one's not. This was the wrong one. Again, did not contribute to the fire, but it's an indication of what kind of effort they put into the CO system installation, operation, and maintenance.

There was no sensor installed within 100 feet downwind of the transfer point from the No. 7 belt to the No. 6 belt. Again, not contributory. And there were no CO or smoke sensors installed in either one of the primary escapeways as required by the belt air rule.

I mentioned before, sensor calibrations frequently exceeded 31 days. You can count on your two hands the number of times it did meet that requirement over the past year. It appears that, according to the records, that improper calibration procedures were used when they were calibrated. And calibration and examination records were not maintained as required.

The AMS operator was not properly trained on mine ventilation and evacuation requirements. He had no map in his office to show where the sensors were and who would be affected by alarms. In fact, he had only been working a number of months at the

mine. He was really new to the industry, had very little experience.

Records of alert and alarm and malfunction signals were not properly maintained in the AMS log. And again, the AMS operator at the time of the fire did not notify the appropriate personnel when warning and alarm signals were activated. And miners were not withdrawn to a safe location.

Another requirement we have in the rule is that you have two methods of communication with each section. One could be the AMS system, but that means you have to have your pager phone line in a separate entry. Both the AMS cables and the phone line cables were installed in the same bundle, so of course they were in the same entry.

There was no designated area established for 2 Section. There was for the longwall section. Again, not contributory.

The AMS was not properly examined each shift. There were number of deficiencies they would have seen had they done their examination properly. They weren't identified and certainly weren't corrected. And there was no record of a seven-day AMS functional test that was required by the belt air rule.

Mine map posted at the location where the AMS operator was located was not up to date. And like I say, that No. 75 sensor malfunctioned on the 19th; it was not repaired. And the belt continued to operate without the required monitoring by a person with a hand-held detector.

Not all miners were properly trained on the operation of the AMS. Some of the miners didn't know what it was. And the person responsible for installing and maintaining the AMS was not adequately trained on the requirements of the belt air rule. He did not know that there was a section alarm required in 2 Section until after the accident, and shortly after the accident he did install that alarm unit.

Conclusions. Belt air was used on both 2 Section and the longwall section, although 2 Section was not permitted to, according to the ventilation plan. Had the company submitted an amendment to their ventilation plan to use belt air, it would have certainly been approved. It's really an exercise in paperwork as far as approval from MSHA goes, but it was not identified by the company to MSHA as a change and was not approved.

Even with deficiencies in the system, unbelievably, the AMS system detected this fire.

Now, my question is, did it detect it at the proper time? Were these two sensors actually calibrated properly to give us an early enough signal? We don't know. These two sensors were destroyed in the fire. There's no way we'll ever know. But we know they were not properly calibrated and were not properly maintained. We don't even know where they were installed within the entry.

There could be more contributory violations that we'll never be able to prove or disprove or even suppose, maybe, but they did signal that there was a fire the date of the fire. And again, the approved ventilation plan was not amended to permit the use of belt air on 2 Section.

We had 32 failures to comply with provisions of the belt air rule, and several of those were contributory to the accident and we list those here. We've already discussed this. We won't go into those again.

I don't know how many of you have read the entire report. There are some other pieces of information that are very interesting in the report.

"Other Fires and AMS Response" is what we title this slide. And on October 8th of 2005 there was a response of the CO system to elevated CO in the

North West Mains belt outby the longwall, and there were 11 sensors that indicated alert and alarm signals for a period of over one hour. We couldn't find out from anyone what happened on this day. Nobody knew of any fire. But 11 sensors in alarm and alert for an hour is kind of suspicious.

There was no investigation indicated that was conducted. There was no record made in the AMS log. The only reason we found this was going through the actual printout of the AMS event log. We found these alert and alarms and consolidated them into a form where we could see that there was definitely something going on that day. And of course there was no withdrawal of miners that day in the inby locations. That would have required withdrawal of miners from both the No. 2 Section and the longwall section.

This is the box cut right here and a single line diagram showing the CO sensor locations. The first CO sensor was No. 90 right here inby No. 3 Section that went into alarm and the warning. And you can see the sequence. You had air probably two directions here. The sequence of warning and alarms is consistent going both inby and outby, and once you get past the box cut, because of the dilution from

that blowing fan you don't get into the alarm levels on the downwind side of the box cut interception. So we're only indicating warnings on these sensors, and in outby from that location there are no warnings or alarms.

On the inby side we have an alarm here. 93 sensor we're not sure was installed on this date, but there was no indication on the log that there was anything there. And No. 92 sensor went into warning. And then inby from that point there are no signals. So to me, there was something going on, who knows what.

December 23rd is a rather famous event, and this was at the belt storage unit for the longwall section. Again, the same location we had the fire on January 19th. It was a non-reportable fire, according to our definition of a fire at the time of the fire. That is no longer the case, as you know. There were the alert and alarm signals for the same two sensors that we had on January 19th. And the belt attendant put the fire outby attaching the hose, the water hose to the fire tap with the incompatible threads and took a pair of channel locks and forced those threads together, stripping them, to get water into that water hose. There was water in

the line. He used the fire hose and the water to extinguish that fire on that day.

The fire was recorded in the AMS log by the AMS operator. There were miners working on 2 Section at that time but not the longwall section. Again, miners on 2 Section were never notified of that fire and never withdrawn. The miner did dispatch the belt attendant to investigate the alarm and extinguish the fire.

The belt attendant we interviewed who put the fire out, we asked him, how long were you there, how long did it take you to put this fire out. He said it took every bit of 30 minutes. And then later in his interview told us it was maybe 30 minutes. So we didn't have real strong evidence to say this was a reportable fire. But if the company would have done an investigation of this event and found out the problems that this belt attendant had with the fire hose and the water, getting the water onto the fire, maybe on the 19th of January we don't have an accident. Maybe we get that fire put out again.

December 29th, the third event. This was a fire, a reportable fire which was not reported to MSHA. The fire lasted for a period of approximately one and a half hours, and it was in a location outby

the intake escapeway for the longwall section. I'll show you on a diagram in just a minute. The fire was recorded in the AMS log. There was again no withdrawal of miners indicated, and miners were dispatched to investigate and put out that fire. One of those two miners was injured in his response. That accident wasn't again reported to MSHA.

The company told us they had no knowledge of a fire on December 29th. Just about two weeks ago we received a report from the company. They found documents to indicate they did know there was a fire and that they had done an investigation of that fire. So they were well aware of what happened.

December 29th, our first sensor to go into alarm is right here. And both longwall section and 2 Section are inby this location. The intake escapeway is marked by this green line right here in what they call the No. 2 cut-through.

And you can see the CO sensor responses. We had alarms on sensors inby except for No. 52 right here on the North West Mains belt, and both sensors No. 80 and 81 on No. 7 belt activated to the alarm level.

82, which is on the longwall belt, again did not indicate CO, and the air movement was

probably in the outby direction on that date also.

We don't know what happened to No. 52 sensor here, why it didn't respond. I'm very confident in saying that the lack of maintenance of the system probably had something to do with it.

MR. KNEPP: Bill, where were they point feeding at the belt?

MR. FRANCART: They were not point feeding. It was strictly ventilated by leakage at some locations. In fact, we're really not even sure what the air directions were in the 48-inch belt between this location and the belt drive. There's a very good possibility that -- because you don't see this air moving into the No. 1 48-inch belt here on sensor 70, 71. This air may have been moving outby from about right here, because the leakage from the intake escapeway on the other side of that barrier for the gas well, you may have had just leakage coming in here and ventilating this belt in both directions. It's very possible.

There were a number of holes in the stopping line, very poorly maintained. And that's essentially how the smoke and CO got into that belt on January 19th, through those holes in the stoppings.

As I said before, we really believe that compliance with the belt air rule would have prevented the two fatalities at Aracoma. Maybe it wouldn't have prevented the fire, but it certainly would have prevented two fatalities.

Lack of separation I believe is the key. And of course the lack of the automatic notification and the delay in withdrawing those miners from 2 Section for at least 28 minutes from the time of the first CO alarm had a large part to play with those men not successfully getting out of the mine.

This goes to your question earlier. We've talked, many of us, earlier about what if things would have been different. What if belt air was not used at Aracoma? What if we didn't have a petition? What if we didn't use belt air at all? What if belts were ventilated in an outby direction and the air was directed to return? What if air was ventilated toward the section and dumped to the return? Again, that would have complied with the old 326 regulation.

Unfortunately, we couldn't develop a very good model for ventilation simulation from the data we collected. It was just not possible from the very poor quality of readings. Not so much that we took bad readings, but we could not get a model to balance

from the data we collected. When you open a door outby you get air reversals on the tailgate of the longwall. You just can't do a ventilation survey and get a good model when you have things like that happening.

Going back to January 19th and the air directions that were in place on that date. We have a lack of separation right here which allowed air from 7 belt and the longwall belt to meet and combine with the intake air for 2 Section.

So this is essentially what we have. We have some check curtains put up here to try to reduce the amount of air coming off the belt out of the longwall. And there is no check, of course, air from the 48-inch belts No. 1, 2 and 3. 48-inch belts are going directly to 2 Section. We do have one split coming off going to this seal to ventilate the seal, and that's a dump to the return.

So that's January 19th. What are we going to change if we don't use belt air? What changes from that last picture?

First of all, we're not going to use CO sensors. Take that out of the mine altogether. What changes ventilation wise now?

This diagram depicts compliance under 326.

This is without using a petition. You have air on the longwall belt coming outby just like the day of the fire. It has a check curtain here outby the loading point.

And somehow we've got to vent this to the return. I don't know how they would have done it. There's a number of ways, I guess. Could have set up a separate split up in the North East Mains to dump to a return in the tailgate. Could have taken the air outby on 7 belt also and dumped it to the return up here in the gob. Don't know. But you can't dump it out here because there's no return in the headgate. So you've got to take it to the tailgate or take it outby on 7 belt, one of the two. You can take your pick.

2 Section. Let's take air toward 2 Section. Just outby the section loading point we'll put a regulator in, dump the air from the belt to the return, put a check curtain up just outby the section loading point. In the BEVR report you'll see a number of mines in that report chose to ventilate their section belts that way. And this does comply. They're not using belt air to ventilate the section.

This was permitted for years. So this is one way the mine could have been ventilated on

January 19th. What's different between this and what we had on the 19th? A check curtain right there is the difference. That's all.

We have lack of isolation. What happens when we take those stoppings out? I don't know. It would be a guess. But there's a real good chance you're going to contaminate that intake escapeway anyway.

It all depends on the draw on this regulator. You didn't have a real good draw on the back of this bleeder anyway on this ventilation system. There's no regulator on the back end of this section. It's a three split, essentially.

So what happens here? We don't know. But when that fire grows in intensity and becomes its own ventilating force, becomes its own fan, we're going to push air. Because one thing I didn't mention earlier, I probably should have, we have a 7 percent grade in this mine. The top of the screen is the highest elevation, so it's like a chimney effect to boot. So if we have any heat produced here, it's coming right up. We have very low velocities. We have a 12-foot entry height in the belt entry. Velocity is less than 50 feet a minute, probably, so we're going to push the smoke right back into the

intake. But we didn't use belt air. We're not using belt air in this scenario.

Okay, let's change the No. 2 Section belts around and take the air outby now. We still have the air in the longwall belt going outby like we did before. So what changes here? Well, 2 Section air is going outby now. Remember, when he's off the mine, off 2 Section on the 19th, their fresh air course was a 2 section belt.

What happens now, we have a lower pressure in our belt than in the intake escapeway. Lack of isolation, what happens? Again, depends on the draw point of this regulator. Do we have enough draw to keep the air coming this direction? Probably not, because we still have our intake split. It's a parallel split, comes down the longwall, back up the longwall belt, and meets with this other intake split that's parallel. Again, a very good chance you're going to have contamination of your primary escapeway when you remove this isolation.

But now what happens to No. 2 Section belts? Well, to have the air flow in that direction, of course it has to be on a lower pressure now. In addition to contaminating this primary escapeway, given the condition of the stopping line between the

belt and the primary escapeway in North East Mains, it's likely you contaminate the belt now. And now you don't have a fresh air split to evacuate through. Maybe we kill 12 miners.

So what if belt air was not used? It's all conjecture. We're not sure. We still have a lack of physical separation, which is the key to the Aracoma accident. Without isolation you inundate your escapeway with CO and smoke. And again, we don't have a CO based system, so if we don't have a belt attendant there to see that this fire developed, we don't have a CO system, we have the heat sensors, we don't have a fire suppression system, what changes? We had a representative from West Virginia just after this report was released stated our report was Exhibit 1 against the use of belt air. How you can get that from reading this report, I have no idea.

Any questions?

DR. BRUNE: Let me ask you again, based on this, my earlier question was would you gentlemen from MSHA have a concern with having belt and the travelway or the haulageway in the same entry or in a series of common entries?

MR. FRANCART: You would still have to

have an isolated primary escapeway in addition to that track and belt air course.

DR. BRUNE: All right. So if you have an isolated primary escapeway then there would be no concern. Is that correct?

MR. FRANCART: Yeah. You would have to have that escapeway one way or another. You can use your travelway as an escapeway, an isolated intake escapeway; but if you combine it with a belt you still have to have a separate intake escapeway.

Anything else?

DR. WEEKS: You noted a number of problems that existed before the fire, for example, lack of calibration. I guess the absence of isolation existed before the fire. The belt misalignment was notified that existed before the fire. And there were several others.

I guess the other question, what if belt air -- the question you raised, what if it were not belt air? What if those problems had been corrected before the fire? What would the outcome have been then?

MR. FRANCART: You know, if you go back and repair this belt storage unit, and I didn't get into detail on the problems with it, but this unit is

a series of dollies and latch levers, and when you advance this belt so far within the unit it drops off dollies and moves along. A lot of these levers were busted, and plates were -- it was a mess. It wasn't maintained properly. Dollies were chained together where they were supposed to be separated. Had you had that repaired, you don't have the fire. That's very likely. So nothing happens.

What else do I want to repair? Let's take and put in a fire suppression system. Put a fire suppression system on the belt storage unit, put the fire out. We don't even hear about it. It's not a reportable fire. Of course a reportable fire we want to hear about.

Let's put the stoppings in. We have a fire, nobody gets killed, everybody gets out. Do we hear about it? Maybe, maybe not. Probably not.

You fix any one of these things, you probably save some lives, but you still have a number of problems. It's probably an accident waiting to happen another day.

DR. WEEKS: Well, I guess the question behind the question has to do with, I'm sure these are not difficult problems to notice beforehand. What was MSHA doing?

MR. FRANCART: There is an internal review ongoing right now on the Aracoma accident, and that report will be released probably --

MR. CROCCO: I think they're working on that report currently, and the plan is to release that internal review within the next several weeks. I don't think we're really prepared to talk about the details of it, but there will be some issues, as you can probably surmise yourself, from the presentation. And MSHA will be making appropriate changes.

DR. WEEKS: It seems obvious that those problems have been -- and whatever action would be appropriate, might have had a different outcome.

MR. FRANCART: One thing you have to remember, the mine operator is responsible for compliance. MSHA only goes in and inspects for compliance. We're not responsible to make changes, only to identify problems. So the ultimate responsibility is that of the mine operator. We're not their safety department. We were never intended to be that. We go in and enforce the law. Whether or not we did that will be the subject of that internal review. But the compliance is the responsibility of the mine operator, period.

DR. WEEKS: Yeah, I think whether it was

enforced is the question. And I agree, the mine operator is ultimately responsible. The thing that stands out to me as the most unbelievable aspect is the failure to notify.

MR. FRANCART: It's unforgivable, it really is. You saw by the clock we cross-hatched, 28 minutes or 26 minutes, I forget the number now -- should be engrained in my mind by now -- but you wait that long to even notify somebody to leave when you know you have a fire, it's just deplorable.

DR. WEEKS: And people in the other section were not notified at all.

MR. FRANCART: Never notified. The only knowledge they had something was going on, after that first call where Cabell told the headgate operator he had smoke and he was going to get it fixed, he listened into the speaker pager phone, listened in, eavesdropped to hear what was going on. That's the only thing they heard. Nobody ever paged them. Nobody called to say get out of there. Just eavesdropping.

DR. TIEN: Bill, you did a good job, very thorough. And I've just got a couple questions for my own clarification.

You mentioned three accidents prior to.

They all happened toward the end of 2005, October 8th and 23rd and 29th. Were those talked about before?

MR. FRANCART: Those are in the accident investigation report. There's a section in the report that discusses them. The 29th fire, though, we say it was a reportable fire. They were cited for not reporting that to MSHA. They did provide us an accident investigation report after the fire, or after the release of our accident investigation report. Then just a couple weeks later they provided us with additional information to show they indeed know there was a fire that day.

DR. TIEN: So all those three incidents were not made public until this time?

MR. FRANCART: No. They were in our accident investigation report. The October 8th incident, we don't know what caused that. I don't know. I suspect a fire. The 23rd, December 23rd was a fire. Whether or not it was 30 minutes long we can't prove one way or another. But the 29th was definitely a reportable fire, according to our regulation at that time.

DR. TIEN: What is the average entry size of the belt air course?

MR. FRANCART: At this mine the longwall

belt was pretty high. I want to say that the drive was 12 to 14 feet high and came down to around 10 feet, maybe 9 feet high in some places inby toward the face. The width, probably 19 to 20 feet.

DR. TIEN: I guess my question was, in one of the slides you say in the petition they requested to have 202,000 cfm for air course.

MR. FRANCART: That was the maximum allowed by the petition. They did not have that. That was the maximum allowed. They didn't have that kind of air flow.

DR. TIEN: The way you're describing, they barely had anything at all.

MR. FRANCART: If they had 50 feet a minute they'd be lucky. In fact, after the accident investigation when they went back and recovered this area, they weren't able to get 50 feet a minute in that area. They reduced their sensor space to the 350 feet.

DR. TIEN: I'm not exactly clear myself on this one. I think in Section 75.350 (b) on the AMS system, what does the AMS system produce, specifically specify the type of sensors and everything else?

MR. FRANCART: The AMS system is defined,

but essentially it's a computer with sensors connected to it underground that provides signals back to the computer, and then those signals then turn from the computer back to the sections and other alarm units that are installed in the mine.

DR. TIEN: So those are the generic terms after the manufacturers and operators to purchase a type of sensors and all that?

MR. FRANCART: Yeah, there are a number of manufacturers. You'll probably get a briefing from them in Alabama, a panel of manufacturers. This particular manufacturer was Pyott-Boone. It's a very popular system, one of the most popular in the country today. It's a very reliable system, it seems, and very economical.

DR. TIEN: So they do not specify you've got to have CO sensors or you've got peak point temperature sensors or --

MR. FRANCART: Well, we do in the belt air rule, yes. You cannot have point-type heat sensors. You must have a CO or smoke-based detection system.

DR. TIEN: Thank you.

DR. MUTMANSKY: Bill, this is indirectly connected to belt air, but I just thought it was worthwhile bringing it up at this point. In both

Sago and Aracoma the mine workers themselves who were involved could perhaps have made more intelligent decisions about escape and so forth. And I was just wondering, what are the ongoing efforts at MSHA to overcome some of the problems of teaching escape techniques and trying to overcome the mistakes that have been made in these two incidents?

MR. CROCCO: Well, I guess the big thing that was done is the improvement in the drills, and the scenario training that they go through on a quarterly basis now is far beyond anything before. And it's all aimed at getting the people very familiar with what they would do if such a thing ever happened, and they paint various scenarios for them to make sure they have an understanding, thinking through a problem and what they would do to get out of the mine.

MR. KNEPP: Also, in addition to that there's SCSR donning training every quarter as part of the drill, as Bill said. And of course that's quarterly. Then there's realistic training, it's referred to, where they have to actually don the apparatus in smoke or a more realistic atmosphere. In addition to that, they have to insert the mouthpiece, and that's to mimic the actual

conditions. So I think they're going to be pretty well better trained than they were previously, no doubt.

MR. CROCCO: One of the interesting things about Aracoma, all of the things that were wrong there, the one thing they did do well was their SCSR training. The miners, I think they actually trained them in the dark to don those SCSRs, and every one of them I believe donned those with no problems. Is that right, Bill?

MR. FRANCART: Very minor problems. In fact, the miners generally told us that the training they received on the SCSR donning process saved their lives. So we do have to give the company credit for the good training they gave them. And they had the training just ten days before the fire. So that probably had something to do with it, too.

There were some minor problems. Of course you get somebody excited, they kind of forget. They have to settle themselves down. They're in smoke. You can imagine, you can't see your hand in front of your face at this point, and they're trying to don a self-rescuer to save their own lives. We had one guy get nauseated and threw up. There were some minor problems. One guy failed to put his mouthpiece in

properly and he had to blow into it to get it manually started.

But other than that, the donning process was rather smooth. Most of them lost their goggles, as you can imagine. You open that case up, they fall on the bottom, and the last thing you want to do is spend time looking for a pair of goggles when you're only two breaks away from fresh air. So we found a number of pair of goggles laying on the bottom with the lids from the SCSRs.

MR. KNEPP: Did you say they removed their mouthpiece, a couple of them, and went back into the smoke trying to yell at the person?

MR. FRANCART: Yeah, they did. There were three miners who went back in to look for the two missing miners. They had removed their mouthpieces to yell, which of course they're not supposed to do. But being very close friends with some of these miners, I don't know that I would do anything a whole lot differently.

CO levels were probably less than 2,000 parts per million. Monitoring downwind of the fire, after we had monitoring equipment in place we had about 1,200 parts maximum. Had a borehole just inby the fire. I can't throw stones at people that want

to save somebody else's life. I'm sorry. I won't do that.

MR. CROCCO: That's just against basic training. I agree with you.

MR. FRANCART: Anything else?

DR. MUTMANSKY: Bill, we'd like to thank you for your presentation. It's a very sobering presentation, and thank you for coming today.

MS. ZEILER: I think we're ready to take a 15-minute break and then begin.

(Recess from 2:57 p.m. to 3:25 p.m.)

DR. WEEKS: Before we get started here, I've been mulling over your comments on the Aracoma report, and I do think that the behavior of the operator was extremely disappointing, to say the least.

But I also think there's an issue with what MSHA did leading up to that accident. And I'm speaking for myself here and not for the panel or anybody else. But in my opinion, I think there needs to be an independent review of MSHA. And whatever internal review you do would be fine and very productive, but I think an independent review is called for. And I'll do whatever I can to see that that happens. I think it would be for the good of

the Agency in a variety of ways. But I wanted to let you know that in public so that it wouldn't come as a surprise later.

I think the investigation that you all performed was exceptionally good and very informative, and it raised a lot of questions, many of which you've answered but many which are not answered. And I thank you for presenting it and doing a very good report.

MS. ZEILER: Okay, we have reached the public input portion of today's agenda, and we have two speakers right now from the Bureau of Land Management, Utah state office, Jeff McKenzie and Steve Rigby.

MR. McKENZIE: I'm Jeff McKenzie, and I welcome the opportunity to be able to speak a few minutes about our situation here.

Most of the coal in Utah, as I'm sure you're all aware, is federal coal, and we work with leasing that coal. That's our responsibility. So we thought we'd come today just to express our experience.

Steve and I have both worked in the industry for many years and have joined BLM in the last three years. And we do have a flavor for

strictly Steve's experience as a mine superintendent in Utah, and then we'll talk a little bit about reserves, resources in Utah and the future as we see it. So let me turn the time over to Steve.

MR. RIGBY: Well, many of you may ask what is BLM doing here and what dog do they have in this fight, and hopefully we're going to take just a few minutes and explain that.

As Jeff mentioned, the BLM is responsible for leasing of federal coal to the mine operators in the state of Utah here. And currently we have ten operating coal mines in the state, all of which have some federal coal. Of the ten operating coal mines, seven have longwalls and the other three are small room and pillar mines except for the Bear Canyon Mine which is developing for longwall, but they're using a three entry. So the other seven that already have longwalls, six of those have the two-entry system. They're employing the two-entry system for development as well as retreat, and the seventh one is currently not using two-entry but soon is expected to as they approach deeper cover moving to the west. That will be Sufco.

Quickly, here's a little history on two-entry in the state of Utah. All of you who are

aware of our coal mining history recognize Kaiser as being basically the forerunner to experimentation in all kinds of gateroad development. They started mining in 1896. Histories go back to 1930 of two-entry, three entry, whatever they could.

Up till 1969, the Mine Safety and Health Act, they were running two-entry; and then shortly after '69 they went to three entry, but that didn't last long. They were longwalling as early as 1961 in short areas but actually began two-entry longwall mining in '64.

Willow Creek no longer functioning, either. There were multiple variations of the three- and two-entry systems. Lane probably could tell you all kinds of history over there. Deer Creek currently using the two-entry system. They start in 1979 and have run over 100 miles of two-entry systems.

Star Point no longer functioning. They started using the two-entry system in about 1985, '86. That's when they got their petition. Started longwall mining in '84. We're going to talk a little bit more about them in a few minutes.

Genwal, of course they're using the two-entry system. Their longwall is not active right now. Aberdeen, two-entry system. We're going to

talk a little bit at length about Aberdeen. Westridge started with two-entry, still two-entry. Skyline, two-entry; Dugout, two-entry. And like I say, Sufco, three entry, but they will soon be petitioning, I'm sure.

Okay. I want to talk about some of the mines right here. I can relate to this mine. I worked here during this time. This is the Star Point No. 2 mine.

Point out quickly some of the features here. This is the Wattis seam that we're looking at right here. There's rock slopes that come from the middle seam up into the top seam right here and also go into the Hiawatha seam at this point. But this is the first longwall area of the Star Point mine.

As you can see, the mains are driven around here. These are the bleeders back here. The first tailgate right here was a multiple four-entry, also was used as the bleeder. First headgate right here was a three-entry, next headgate was a three-entry, and the next headgate was a three-entry.

Those of you who are familiar with longwall mining will understand that usually a first panel, very little problems. Whether there's two, three, four entry gateroads or not, really the ground

pressures haven't come upon you at that point.

That's the case here. That longwall panel came out lickity split. The second longwall panel, Seventh Left right here, was kind of a new phenomenon to us who had worked this property for several years. We actually saw a little bit of floor heave in the tailgate. It was kind of exciting -- oh, we've got some floor heave going on. Oh, this is new. This is exciting. Better take care of this. Better start putting a few cribs in.

So that panel wasn't too bad. By the time we got to this third panel, and Bill Knepp and the boys in Denver were aware of the problems that we were having at that point, as we started retreating out, this panel, we have all kinds of problems in the tailgate. I spent too much time going with local MSHA inspectors to see if we could get through the tailgate. This was just following the Wilberg disaster. And part of the regulations were that we had to be able to make a tailgate. And so if it required removing our belts and cap lamps or whatever to squeeze through those cribs and things, we did to prove that we could make a tailgate.

Again, that was a three-entry headgate system. So the third longwall panel right here

really created some grief for us. Multiple failures in the tailgate. It seemed like at least once a week we had a failure on the beltline. Any of you that are familiar with mining, beltline caves are a pain in the, you know, and they have to be cleaned up and shut production down.

At that point we decided, enough of this three-entry thing. We'd heard that Deer Creek was two-entry and other mines were looking at two-entry. We decided we'd better go with two-entry as well. So we petitioned. And by the time we got up here to fifth right, you can see that's a two-entry. And I apologize. Can you see that that's two and three entry back there or not? Anyway, that's a two-entry development. No problems, believe it or not. This was a night and day thing. No problems on the headgate.

The tailgate was a disaster. We put steel square sets in, we put eight-by-eight cribs in -- I mean, everything to try to keep the tailgate open. And it was tough getting out of fifth left.

We had fourth left up here and we had a two-entry tailgate, a two-entry headgate. It was a dream world. We're talking -- the cover line you can't really see here. We're talking 16, 17 hundred

feet of cover here. And needless to say, the ensuing other longwall panels that we did in this Wattis seam here, this set of Wattis seam panels over here, across the grobbin (phonetic) up and down the Castle Valley Ridge track all were two-entry. It's not the total answer, but it certainly helped in ground control.

Okay, let's talk about the next mine here. This is a representation of a seismic study that was done at Willow Creek Mine. Again, not a functioning mine at this time. After the first mine fire -- there were two mine fires, the second of which shut the property down. After the first mine fire we offset the tailgate right here. This was the original tailgate. This is the headgate. And as we advanced -- well, we came back and we drove another set of entries right in here to be the new tailgate. All these little bubbles that you see here are seismic events, and these were recorded. And the magnitude, as you can see here based on the size of the bubble, goes from zero up to two, most of these.

Well, you can see that there was a major one right here. When we hit this corner where this additional set of entries, this comes over and ties into this first tailgate. Hit that corner, we had a

major, major event. The purpose of this slide is to show you that under deep cover, again, this is 1,800 to 2,200 feet of cover, is to demonstrate to you that there are forces out there that are real when it comes to mining at deep cover. And this is a true descriptor of the forces of magnitude that you can see in a coal mine.

Okay, next. Unfortunately, I was present when this happened underground. And it's not anywhere you really want to be. There wasn't this major shaking that everybody thought there would be underground if you had a scale magnitude of 4.2. It was more of a total blackout. Instantaneous blackout, a little shake.

Because there was so much coal dust in the area, your cap lamp was ineffective. And I swear if the fans would have not kept running everybody would have choked to death because of the amount of dust that was in the air. It was so black. And for that instant that it happened, everything was black and, you know, we didn't know what was going on. But just within a few seconds the fans actually cleared the atmosphere, and fortunately we were able to breathe. Because I really don't know what would have happened.

DR. WEEKS: Just to get a little oriented

here, what's the horizontal axis? What does that measure? Is that along the face? Or what --

MR. McKENZIE: This is a top and side view.

MR. RIGBY: This would be plan view up here -- headgate, tailgate, old tailgate. We had to drive a parallel -- this had fire below here in this next panel right here.

MR. McKENZIE: In the side view, the 4.2, it actually occurred in the sandstone above the coal seam.

DR. WEEKS: I know what it represents in terms of the size of the circle, but I don't know what it represents in terms of where it is on your graph.

DR. MUTMANSKY: They're trying to give you a three-dimensional representation of where the seismic event was centered.

MR. RIGBY: We had all these cones that were placed in the headgate and tailgate, and they would record that seismic activity -- bumps, earthquakes, whatever you want to call them. And they could pinpoint three-dimensionally where that was occurring, whether it was below or above the coal seam.

DR. WEEKS: I don't get it, but I'll talk to you later.

DR. BRUNE: What was the depth of cover?

MR. RIGBY: Again, we're between 18 and 22 hundred feet.

DR. TIEN: I have a little problem with the bottom, the side view. Does the coal seam actually dip a little bit?

MR. RIGBY: The coal seam does dip. Yes, it does. It dips about 8 degrees.

DR. TIEN: Is this one to scale?

DR. BRUNE: And is the vertical scale the same as the horizontal scale?

MR. McKENZIE: I think so. As far as I know, yes.

MR. RIGBY: If that's 200 meters there, 600 -- close.

MR. McKENZIE: There's a major sandstone above. That's what actually took the energy and broke.

DR. TIEN: I'm just curious. How do you measure the side view where they are? You say you can pinpoint them.

MR. RIGBY: Because they have these geophones located, so they three-dimensionally can

pick out the centers in the mine.

MR. McKENZIE: This showed up in Salt Lake and Denver. Everybody picked it up.

DR. TIEN: Triangulate.

MR. MUCHO: There were also surface geophones, too.

DR. TIEN: So they're due to the sudden caving in the gobs?

MR. RIGBY: That inherent pressure that resides and then cuts loose.

DR. TIEN: Pressure release?

MR. RIGBY: Pressure release. Again, like Jeff was saying, you have the Castlegate sandstone, 400-foot thick member above the mine here. Probably never will break, but just sets down heavily.

DR. TIEN: What is the usual duration of that? Just a fraction of a second?

MR. RIGBY: Instantaneous.

MR. McKENZIE: This would be a finger of coal out there, this barrier, and you're pulling both sides. If you were going to set up an experiment to try to get it to do this, this is the one to do it. So we learned from this: Don't do this again.

MR. RIGBY: The Star Point Mine that I mentioned was in the Wasatch Plateau coal field. The

Aberdeen Mine is over across the valley there in the Book Cliffs coal field. And again, this is a two-entry development. You can see here's the two entries -- headgates, tailgates, headgates, tailgates.

The unique thing about this property is that they have to develop the two entries for each longwall panel. The orange represents the barrier between which -- this is the barrier between this coal panel that will be pulled, and you can see how that's staggered. And again, this is something that's evolved because of the depth of cover here. You can see, there's a 2,500-foot cover line that winds its way through there. There's 2,600 foot. And you might say, well, that's certainly a waste of coal reserves. But in order to get the 60 percent of the coal that we do get safely, we might have to leave the 40 percent.

Again, we're talking because of deep cover issues. Two-entry may not be the total solution to coal mining in the west, but it certainly has contributed to its success for the last -- well, since Kaiser started there in the early 60's. And it's evolved, not the total answer, but without it I don't know that the coal mining industry in the state

of Utah could survive.

MR. McKENZIE: We put this one in just so you understand -- help you understand. There are lighter coal reserves in Utah and the Kaiparowits Plateau, but we've been blessed with this Grand Staircase monument that has locked all this up. There's billions of tons down there and not available to us in Utah to mine. So we're left with what you see in the multi colored part of the pie.

So this kind of situation of deep mining is not going to go away anytime soon for Utah, and so these reserves would be a lighter situation. We wouldn't have to be as deep. Just not on the table to mine at this time.

So in summary, there's a long development history with two-entry here in Utah. It's the only proven safe method that we have that we know of to recover these reserves. These reserves are used to generate power that is used in the state. 95 percent of the coal -- of the electricity in the state comes from coal. It's also used to generate electricity into Nevada, Las Vegas, California, LA area, Anaheim and other areas, and also reaches up into Idaho. So it's an important resource for the country.

Panel barrier and two-entry is becoming

important as we get really deep. We're looking at that, trying to maximize our recovery in a safe way. And deep mining is going to continue for some time to come.

If you have any questions, be happy to answer them.

DR. TIEN: I just have a general engineering question. Can you flip back two slides back. I'm just curious, I don't know if it's shareable, the information. What kind of recovery out of this design? You sterilize so much coal there.

MR. McKENZIE: You get -- I don't know.

MR. RIGBY: Lane?

MR. ADAIR: 60 percent.

MR. McKENZIE: About 60 percent. So we're working with the University of Utah to see how wide does this really have to be. So far it appears like it has to be that wide. Maybe 50 feet even, you know. It's going to have to be big.

DR. TIEN: But that's more than 50 feet.

MR. McKENZIE: No, I'm saying you might take 50 feet off. It's 500 now. You might go to 450.

DR. WEEKS: A question on the same issue.

Those panels that are mined out, have they been completely mined out, or will they have to be abandoned at some point?

MR. McKENZIE: This one here was stopped. This fatality here, and then this was left in place and the panel started again. So that started the panel barrier system. And it's on a dip, so you're going down but the cover doesn't increase really dramatically except it's 1,500, and gets to 2,600, gets to 3,000. How far can we go? We don't know. It's also a very gassy mine.

DR. WEEKS: So does the 60 percent recovery considered panels that were abandoned?

MR. McKENZIE: No, that's up here. That's with this kind of layout.

MR. RIGBY: Yeah, that's after they started this. Again, the charge of the BLM is to maximize recovery of the reserves. And if -- you know, we have to do it safely, and if this is the method that has to be employed to do it safely and we have to leave certain reserves in the ground, then so be it, we have to do it.

MS. ZEILER: Thank you very much.

Our next and final speaker for today will be Link Derick, who is representing Colorado Mining

Association.

MR. DERICK: Before I start on my comments, I'd like to thank Debbie and Linda. I had a special request to speak today because tomorrow was my daughter's due date, and I was threatened to be back in Fort Collins as early as possible tomorrow, so all the arrangements were made. But Macey Jane came 16 days earlier, so I'm already a grandfather. But that's the purpose, or main purpose of why I retired and moved to Fort Collins.

So I appreciate the effort of putting me on today. I really do appreciate that. And Bill, you helped too.

My name is Link Derick and I'm going to be speaking on behalf of the Colorado Mining Association for the belt air technical study panel.

Colorado Mining Association would like to thank the panel for the opportunity to provide comments concerning the use of belt air, air coursed through an entry containing a belt conveyor, to ventilate the working faces of underground coal mines. These comments reflect the unified views of the members of the Colorado Mining Association, which currently represents seven underground coal mines in the state of Colorado.

The CMA, founded in 1876 and incorporated in 1897, is an industry association whose members include the producers of coal, metals, and other minerals throughout Colorado and the West. Our 700 members also include individuals and organizations providing services and supplies to the industry.

As you know, the Coal Mine Health and Safety Act of 1969 established interim ventilation standards, including prohibition on the use of belt air to ventilate working faces. Through grandfathering, mines utilizing belt air were allowed to continue such practice with the approval of the district manager. Numerous operators subsequently filed for Petitions to Modification which were granted, allowing the use of belt air to ventilate working places.

The granting of the petitions further supported that belt air could be safely utilized to ventilate working places since MSHA imposed conditions requiring operators to at all times guarantee a level of protection equal to or greater than protection afforded by the regulation. In some instances the inability to ventilate working places with belt air was found to result in a diminution of safety.

In 1988 MSHA published a proposed ventilation rule which would allow the use of belt air for ventilating working places as long as additional safety precautions were taken, including, but not limited to, the use of an atmospheric monitoring system, AMS. At the public hearings on the proposed rule, industry and academia generally concluded that the use of belt air in the belt entry provides positive ventilation and reduces the possibility of a methane buildup in the belt entry. However, at least one labor association maintained that "the use of air in the belt entry reduces safety due to increased exposure to products of combustion and greater dust levels."

At the completion of the public hearings MSHA conducted a thorough review of the safety issues related to the use of belt air. At the end of the review MSHA stated in their report entitled "Belt Entry Ventilation Review" that "directing belt entry air to the face can be at least as safe as other ventilation methods provided that carbon monoxide monitors or smoke detectors are installed in the belt entry."

However, the safety standards for underground coal mine ventilation final rule

published in 1992 did not include provisions that would have allowed operators to utilize belt air. MSHA instead referred the issue to an advisory committee as authorized under the Mine Act.

In their final report in 1992 the advisory committee further supported the proponent's view by stating that "belt haulage entries can be safely used as intake air courses to ventilate working places provided additional safety and health conditions are met." The 1992 final rule was later revised in 1996, which did not include a provision for the use of belt air due to impending rulemaking.

In 2003 MSHA published a notice of proposed rulemaking to modify the 1996 final rule on the safety standards for underground coal mine ventilation to allow the use of belt air to ventilate working faces.

In 2004 MSHA published a final rule, "Underground Coal Mine Ventilation -- Safety Standards for the Use of a Belt Entry as an Intake Air Course to Ventilate Working Sections and Areas Where Mechanized Mining Equipment is Being Installed or Removed," which allowed the use of belt air.

In the preamble to the final rule MSHA states that the use of belt air, under the conditions

set forth in the final rule, will maintain the level of safety and therefore not reduce protections currently afforded miners in underground mines while implementing advances in mining technology.

The preamble further states that "It is important to note that NIOSH, in comments to the proposed rule, states that the use of belt air may have a positive effect on reducing dust levels in the face area." In addition NIOSH states, "The development of improved atmospheric monitoring systems with fewer failures and false alarms has addressed previous reliability concerns."

Before I make some of the other comments in the written part, and I'll try to state when I'm going to inject some comments that address some of the questions that were raised this morning, we can add to some of the questions that the panel asks the MSHA panel.

In underground coal mines in Colorado belt air is typically used to ventilate sections with at least three entries, whereas in Utah mines the belt air is used to ventilate two-entry sections. Belt air can be safely used in both circumstances. Since the mines represented by the Colorado Mining Association are typically a three or more entry

system, my comments will address the safe usage of belt air in these sections. CMA strongly supports the comments the Utah operators will make tomorrow that are members of the Utah Mining Association which addresses the safe use of belt air in two-entry systems.

Five of the seven underground coal mines in Colorado either have in the past or are currently using belt air to ventilate working faces. All of these mines have safely utilized belt air for years. The enhanced safety of these operations is a result of the following.

An AMS system is required in each belt entry utilized to ventilate a working face. The AMS systems are much more effective in detecting products of combustion as compared to the point-type heat sensors currently used in many belt entries where only elevated levels of heat can be detected. The incipient stages of a fire are more readily detected by the carbon monoxide sensors currently in use. These sensors have proven to be protective for smoldering and flaming coal-type fires, whereas point-type sensors rely on latent fire properties.

Additional continuous monitoring for either carbon monoxide or smoke is required in the

primary escapeway for all sections utilizing belt air. This monitoring provides additional protection to the miners through an early warning system activated immediately upon an indication of a potential problem.

Alert and alarm levels for carbon monoxide have been established to provide earlier warning than those previously approved in Petitions for Modification. This has further enhanced the safety of all section miners.

Sensors are installed at key locations along the entire belt air course. The sensors are required to be at the section tailpiece, transfer points, drive, take-up unit, and at inby point feed locations, if used, at each belt air split, and at intervals not to exceed 1,000 feet. The 1,000-foot spacing is reduced to 300-foot spacing when there is a reduced velocity of less than 50 feet per minute in the belt entry.

Additional intake air coursed through the belt entry to the working face increases the total air quantity in the working section, directly reducing methane levels, diesel emissions, and dust levels.

From the comment today, I know several of

the operators have information that can relate to methane liberation rates before and after using belt air. I think the panel had asked some questions, so some of that will be provided.

In mines with elevated methane liberation, the additional air provided in the belt entry is absolutely necessary for methane dilution purposes. For example, in a typical three-entry longwall headgate, the volume of air provided to the working face can be increased by nearly 30 percent when belt air is utilized to ventilate the working section. Eliminating the use of belt air would be a dimunition of safety to the miners.

The total quantity of air reaching the working section is maximized by avoiding leakage of air from intake to return air courses, increasing the ventilation efficiency. This allows sufficient distribution of air throughout the working section as needed.

Some of these next ones, I have some comments to add. Water used for firefighting purposes and air flow in the belt entry are in the same direction, enhancing the firefighting capabilities. When the airflow and water flow are in opposite directions in the entry, smoke in the entry

may prevent access to fire hydrants and firefighting equipment necessary to extinguish the fire. When belt air is not in use, firefighting in the belt entry must be done on a downwind side of the fire.

To fight a fire from the top, from the upwind side of the fire when the belt air is not in use requires the water supply line to pass through the fire area. This increases the likelihood of the water line being damaged, resulting in loss of water or water pressures. In addition, a broken water line can result in flooding of down dip areas, potentially trapping inby personnel.

It was mentioned this morning about in some cases the air could be reversed at the time of the fire to be able to shut the water off going inby and then hook your hoses on the outby side. But this would be a major air change, as stated. And to date I do not know of anybody that would feel comfortable with the current regulations of making that air change without any approval and waiting until MSHA and everybody is there, a K-order issued, submitting a plan, and would probably be too late, or could be too late.

Minute concentrations of combustion products can be easily detected by a sense of smell

or sight even before being detected by the carbon monoxide sensors, and certainly well before point-type heat sensors detect a combustion.

Again, this morning I think that it was left that it was CO that persons are smelling. It's the other products of the combustion. CO is colorless, odorless, and tasteless. And there are numerous reports and I have personal experiences where carbon monoxide has been detected from spontaneous combustion by carbon monoxide sensors with a lack of smell or visibility.

Pillar heatings in the Norfork Valley are fairly common, and the odor products of internal pillar heatings can be masked and absorbed and CO still coming out of the pillars. And either gas chromatograph, the CO system, or infrared analyzers are used, but just because there's -- the rule of thumb in the Norfork is if you can smell it you've got a problem, but if you can't smell something it doesn't mean you don't have a problem.

Use of belt air in working sections allows for the alternate escapeway to be on a separate intake air split rather than the section return air split or the beltline air that is coursed in an outby direction but is a continuation of the primary intake

escapeway, further enhancing the safety of the miners in the event of an emergency.

In three-entry longwall gateroads belt air cannot be coursed towards the working section and then regulated into the return air course near the loading point, since the beltline is not adjacent to a return air course. Usually if it's not a gateroad development, the belt would be in the center and possibly next to the return.

I'd like to add, in the Aracoma report there was talks about changes that could have been made there that there may not have been the 12 fatalities. But to me, my review of what I heard today is saying the unauthorized change of using the belt air in the CN section saved the nine lives. And I think that should be well noted, that even though it was an unauthorized change, that it wasn't submitted and an amendment or a DA established, but was very likely the reason those people could leave that mantrip and get into that belt line. So I think that should be noted that maybe that was possibly a reason for saving lives.

Dust concentrations from the belt entry are regularly monitored to ensure continued compliance with respirable dust standards. Bimonthly

dust samples are required to be collected and submitted to MSHA for verification purposes.

In the event of an outby mine fire, the use of belt air allows the entries to be pressurized to control smoke. In the event of a fire on the intake air course, the belt entry can be pressurized to leak into the intake. For a fire on the belt entry, the intake can be pressurized to leak air into the belt entry.

Different than the comment made this morning about reversing the direction of belt air with a major air change, this is possibly something that the responsible person underground could make without it being deemed a major air change, because in this case there would be no reversal to the air, only the changing of the quantities and affecting the leakage paths.

Use of belt air is allowed in mines, particularly in the West, to reduce ventilation pressure differentials. A high ventilation differential from the intake to return entry allows air to be drawn through the natural cleat and fractures of the coal, potentially leading to spontaneous combustion. The Elk Creek Mine, the West Elk Mine, and several mines that have been closed in

Colorado have unfortunately incurred fires or heatings as a result of increased ventilation pressures.

I might pass that the Orchard Valley Mine, part of Colorado Westmoreland, had numerous, upwards of 20 heating events caused by excessive pressure. In fact, all pillars and portals were on fire in the inside and were constantly infused with water and magnesium chloride, and all as a result of ventilation pressures.

In closing, I again thank the panel for the opportunity to provide comments on the use of belt air. Underground coal mines have safely utilized belt air for many years. Continued use of belt air for ventilating working faces, coupled with the improvements in atmospheric monitoring systems, only enhances miner safety. MSHA, NIOSH, Advisory Committee, and academia universally state that belt air can be safely used to ventilate working faces, and in fact state the use of belt air provides potential enhancement of miner safety. The use of belt air improves the overall quality and quantity of section ventilation, directly affecting methane control, dust control, spontaneous combustion mitigation, and fire detection capability. We

encourage the panel to support its continued use.

Thank you. Questions?

DR. WEEKS: What's the approximate depth of cover in Colorado mines? Do you have the same sort of ground control problems in Colorado that they have in Utah?

MR. DERICK: Some of the operators are here, but what I'm familiar with is anything ranging from probably 800 feet to 2,000 at the current time. I'm not sure if some of the West Elk are higher yet. 2,400 already.

DR. WEEKS: So up to 2,400?

MR. DERICK: Currently.

DR. WEEKS: For the deeper mines, they're using two entries?

MR. DERICK: Not at the present time, but I think several are considering it.

DR. TIEN: I have just a clarification of the last page, the last bullet. For those folks in the back who probably don't have the wording, it says, "The use of belt air has allowed mines, particularly in the west, to reduce ventilation pressure differentials." That's good.

Now, the second question, the last sentence, "A high ventilation pressure differential

from the intake to return entry allows air to be drawn through the natural cleat and fractures of the coal, potentially leading to spontaneous combustion." Where?

MR. DERICK: Inside the pillars or, worst case, on the intake rib. This is a problem we had extensively at Orchard Valley, and the closed U.S. Steel Somerset Mine had hundreds and hundreds of pillar heatings.

DR. TIEN: Because of?

MR. DERICK: The pressure that -- enough air gets pulled through the cleavage of the coal, gets pulled in, and when it slows up it heats and can't exhaust out, it starts internal heating.

DR. TIEN: Not enough current to carry the heat away?

MR. DERICK: Right. We have actually watched fires develop over the course of a year inside of a pillar, and then finally drill in and pull out burned clinkers.

DR. TIEN: What did you say the incidence?

MR. DERICK: We had up to twenty in the Orchard Valley Mine near the portal areas, and communications with some of the oldtimers at the U.S. Steel Somerset Mine, it was just a way of life there.

MR. MUCHO: Going back to the overburden or depth of cover point that was just brought up. Of course I guess tomorrow we're going to hear a lot more about the geotechnical aspects of the ground control issues, but depth of cover is just one of the factors. In fact, significant stiff strata of considerable size, such as big sandstones, are another major aspect tied to the depth of covering; and we see some differences, say, Utah to Colorado in those respects. Is that your observation?

MR. DERICK: For the most part, the closed Shoshone Mine, which used to be a sister operation of ours, had a petition that was diminution of safety for both ground control and spontaneous combustion. They couldn't afford to have the open middle entry or it would burst to flame.

DR. TIEN: On those spontaneous combustion, you want a certain kind of air flow velocity to carry the heat away. What kind of velocity would you like to have, minimum, to avoid spontaneous combustion?

MR. DERICK: Well, in the airways it would be different. In the cleavages through the pillars you try to avoid the path, period, by trying to have the lowest pressure drop from one entry to another.

So, I mean, it's two different kinds of issues there. One is a real low flow. The worst case I have seen in Orchard Valley was actually the outcrop burst into flames from a pressure drop from the outcrop to the beltline entry. That's just through the solid coal with the natural cleavages. And now some of the deeper mines you can still get the leakage into the pillars, and if it doesn't cool off you can start a spontaneous combustion event.

DR. TIEN: Would you attempt to stop them through ceilings or through --

MR. DERICK: The number one choice would be to lower the pressure drop, which is therefore using every airway you can to try to -- that puts less pressure across the pillars. The other, in Orchard Valley I think we were the first company to successfully combat spontaneous combustion with magnesium chloride and AFFF foam injections.

DR. TIEN: The Chinese have to use a mud. Thank you.

DR. WEEKS: I appreciate you clarifying the issue of CO, that what we smell is really quite -- it's quite different from what the AMS picks up. And I forgot exactly how you put it. If you can smell, it you've got a problem, and if you can't,

you're not sure you don't.

MR. DERICK: Just because you can't smell the evidence of a heating or a fire, that doesn't mean you don't have one. And two recent fires in the West, that's been a concern that elevated CO was obviously being detected but a problem was not known because they weren't smelling it. And that's -- they say if you smell it you've got a problem.

DR. WEEKS: As I said earlier, and I feel I need to repeat it, I think we should use all means available for fire detection, whether it's the AMS system or smell or sight or what have you.

MR. DERICK: The one thing about all of the comments about bringing belt air to the section but then regulating it into the return, comments over years have been, well, it still leaks through and up into the face and you'll still be able to smell it. Because to theoretically put a system where all the belt air was brought to the section regulated into the return and didn't go on to the section, the regulators required to do that, you wouldn't probably have any section there. You'd have to heavily regulate the return inby the regulator for the belt air, and that's not done.

So people who have been a proponent of

bringing it towards the section and regulating it full well knew they had the advantage of still smelling an event if there was odor associated with the event.

DR. CALIZAYA: I have one general question relating to gases. Is there any mine in Colorado where methane is not a problem, like the ones that we have in Utah?

MR. DERICK: Where methane is not the significant problem?

DR. CALIZAYA: Yes.

MR. DERICK: Yes, Twenty Mile Mine where I worked, the Foidel Creek Mine had low methane liberations. I mean, it was a huge mine and on a ten-day spot. But methane is not the major concern at that mine. Most of the other mines, methane is a significant concern.

MS. ZEILER: Thank you very much. We've reached the end of our planned agenda today, so with the concurrence of the chair I think we stand adjourned.

(Meeting adjourned at 4:15 p.m.)

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REPORTER'S CERTIFICATE

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I, VICKY McDANIEL, Registered Professional Reporter and Notary Public in and for the State of Utah, do hereby certify:

That the foregoing proceedings were reported by me in stenotype on May 16, 2007 and thereafter transcribed, and that a full, true, and correct transcription of said proceedings is set forth in the preceding pages.

WITNESS MY HAND AND OFFICIAL SEAL this 27th day of May, 2007.

VICKY McDANIEL, CSR, RMR
Notary Public
Residing in Salt Lake County