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STATEMENT UNDER OATH
OF
GARY HARTSOG

Taken pursuant to Notice by Miranda D. Elkins, a Court Reporter and Notary Public in and for the State of West Virginia, at the U.S. Bankruptcy Court, 324 West Main Street, Clarksburg, West Virginia, on Tuesday, March 28, 2006, at 9:04 a.m.

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EXHIBIT PAGE

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P R O C E E D I N G S

MR. UROSEK:
My name is John Urosek. I'm an accident investigator with the Mine Safety and Health Administration, an agency of the United States Department of Labor. With me is Robert Wilson, with the Solicitor's Office, Mike Rutledge and Dave Stuart, with the West Virginia Office of Miners' Health, Safety & Training. I've been assigned to conduct an investigation into the accident that occurred at the Sago Mine on January 2nd, 2006, in which 12 miners died and one was injured. The investigation is being conducted by MSHA and the West Virginia Office of Miners' Health, Safety & Training to gather information

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to determine the cause of the accident, and these interviews are an important part of the investigation.
At this time, the accident investigation team intends to interview a number of people to discuss anything that may be relevant to the cause of the accident. After the investigation is completed, MSHA will issue a written report detailing the nature and causes of the

accident. MSHA accident reports are made available to the public in the hope that greater awareness about the causes of accidents can reduce their occurrence in the future. Information obtained through witness interviews is frequently included in these reports. Your statement may also be used in other

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enforcement proceedings. I would like to thank you in advance for your appearance here. We appreciate your assistance in this investigation. The willingness of individuals to work with us is critical to our goal of making the nation's mines safer. We understand the difficulty for you in discussing the events that took place, and we greatly appreciate your efforts to help us understand what happened. This interview with Mr. Gary Hartsog is being conducted under Section 103(a) of the Federal Mine Safety & Health Act of 1977 as part of an investigation by the Mine Safety & Health Administration and the West Virginia Office of Miners' Health, Safety &

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Training into the conditions, events and circumstances surrounding the fatalities that occurred at the Sago Mine, owned by International Coal Group in Buckhannon, West Virginia, on January 2nd, 2006. This interview is being conducted at the U.S. Bankruptcy Courthouse in Clarksburg, West Virginia, on March the 28th, 2006. Questioning will be conducted by representatives of MSHA and the Office of Miners' Health, Safety & Training. Mr. Hartsog, the interview will begin by me

asking you a series of questions. If you do not understand a question, please ask me to rephrase it. Feel free at any time to clarify any statements that you make

in response to the questions. After we have finished asking questions, you will also have an opportunity to make a statement of and provide us with any information that you believe may be important. If at any time after the interview you recall any additional information that you believe may be useful in the investigation, please contact Richard Gates at the phone number and e-mail address provided to you. His contact information is in the letter that was provided to you.

Your statement is completely voluntary. You may refuse to answer any question and you may terminate or end your interview at any time. If you need a break for any reason, please let me know.

A court reporter will record your interview and will later produce a written transcript of the interview. Please try and respond to all questions verbally since the court reporter cannot record nonverbal responses. Also, please try and keep your voice up. Copies of the written transcripts will be available at a later time.

If any part of your statement is based not on your own firsthand knowledge but on information that you learned from someone else, please let us know. Please answer each question as fully as you can, including any information you have learned from someone else. We may not ask the right question to learn the information you have, so do

not feel limited by the precise question that we've asked. If you have any information about the subject area of a question, please provide us with that information.

At this time, Mr. Rutledge, do you have anything that you would like to add on behalf of the Office of Miners' Health, Safety & Training?

MR. RUTLEDGE:

Gary, I have a short statement here, and that's just that the West Virginia Office of Miners' Health, Safety & Training is conducting this interview session jointly with MSHA and we are in agreement with the procedures outlined by Mr. Urosek for the interviews that will be conducted here today. However, the Director of Miners' Health, Safety & Training reserves the right, if necessary, to call or subpoena witnesses or to require the production of any record, document, photograph or other relevant materials necessary to conduct this investigation. We appreciate you being here today, for taking the time to come up here. If you have any questions from the State's side, you can use that contact information there for Brian Mills. Thanks.

MR. UROSEK:

Mr. Hartsog, are you aware that you may have a personal representative present during the taking of this statement?

MR. HARTSOG:

Yes, I am.

MR. UROSEK:

Do you have a representative present here today?

MR. HARTSOG:
Yes, I do.
MR. UROSEK:
And could you introduce that person?
MR. HARTSOG:
I got with me David Hardy.
MR. UROSEK:
Do you have any questions regarding the manner in which this interview will be conducted?
MR. HARTSOG:
Not at this time.
MR. UROSEK:
Will you please swear in Mr. Hartsog?

GARY HARTSOG, HAVING FIRST BEEN DULY SWORN, TESTIFIED AS FOLLOWS:

BY MR. UROSEK:
Q. Please state your full name, and spell your last name.
A. Gary McKinley Hartsog, H-A-R-T-S-O-G.
Q. And please give us your address and your telephone number.
A. [redacted]
Q. Are you appearing here today voluntarily?
A. Yes.
Q. Okay. Can I call you Gary?
A. Please.
Q. And please call me John. How many years of mining experience or engineering experience, Gary, do you have?
A. I started working for Eastern Coal in 1976. That will be 30 years this May.
Q. And can you give us a brief description of your history?
A. I started working for Eastern Coal while I was in college. I worked as a rodman, transitman, draftsman, various other positions in safety, engineering up through 1991 with Eastern and then with Peabody. I worked in northern West Virginia and southern West Virginia.
In 1991, I resigned from

Eastern Coal/Peabody and started working as a consultant with Alpha Engineering, it was a company that I started, and have been with Alpha since.
Q. And is that your present position?
A. Yes, sir.
Q. What would your present title be?
A. President of Alpha Engineering.
Q. And do you have any mining licenses, certifications, degrees, such as your P.E., or ---?
A. I have a B.S. degree in Education. I have a B.S. degree in

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Mining Engineering. I have a Master's degree in Mining Engineernig and a Master's degree in Business Administration. I have fire boss, foreman papers in West Virginia and various other certifications like instructor and such.
Q. Are any of your certifications in any other state other than West Virginia?
A. I'm a P.E. and a P.S. in West Virginia, P.E. in Illinois.
Q. Okay. And where is your office located?
A. Beckley, West Virginia.
Q. Can you explain a little bit the relationship between Alpha Engineering and ICG?
A. Alpha Engineering became involved with the Sago Mine in 2003, when it was in the process of being re-opened. That was for Anker Energy. Anker was acquired in some manner by ICG in 2005. And we continued with that work for ICG as

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they took over the operation and then after they had taken it over. The main thrust of our work has been surveying and mapping. We've done some other engineering work as requested along the way.
Q. Was that your first work with ICG, was at the Sago Mine after they took control of ---?
A. We worked with Anker and then ICG at Sentinel and Sycamore Two, had done some work with them at Spruce for Anker and then ICG, and some

other incidental work along the way. We had worked for ICG on some other projects in other places as well.
Q. Is that since 2003 or was that prior?
A. Well, ICG came into being I think in 2004, 2005. So not long after they came into being we've done some projects for them.
Q. Okay. So at the Sago Mine, one of the primary focuses that you do is the engineering, the mapping of

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the mine for them?
A. Yes, sir.
Q. How many employees does Alpha Engineering employ?
A. Currently 18.
Q. Can you tell me a little bit about their backgrounds?
A. We have surveyors. We have engineers. There's another P.E. in the office. We have CAD operators. We have what we call engineers-in-training. And then we have some clerical staff.
Q. On a yearly basis, on average, and obviously not starting from this year, but in the previous years, about how much time does Alpha Engineering employees spend at the Sago Mine?
A. On average, we'll have a survey crew there twice a week.
Q. Is that their normal assignment? In other words, every --- twice a week, that they just automatically go to the Sago Mine, or

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is it more as an as-needed? How does that work?
A. It's an as-needed. We schedule day-to-day with mine management, according to their needs and according to the work that we need to get done to satisfy those needs.
Q. Can you explain that a little bit for me? I mean, do you call them? Do they call you? Or how does that work out?
A. Typically speaking, we get a fax each morning that shows us where the faces are. And we use those faxes to track their advance and to schedule our work so that we can set spads for them as they need them. We

try to anticipate their needs, and then we try to schedule other work that needs to be done, for example, check surveys, elevations, so that we can make the most efficient use of our time there while we're there.
Q. Just to get into that a little bit further, for example, can you explain a little bit how far --- what criteria do you use to advance the survey? I mean, is it so many feet of advance that you would bring your crew in or ---?
A. Typically we like to set spads, that is face spads, every two to three breaks. And that height at that mine that's probably a good distance. If they have a problem, such as a swag or some reason they can't see the spads or maybe the spads have fallen out, then we, of course, have to get there more quickly. But typically, every two to three breaks we try to put in face spads.
Q. As far as the elevations --- you mentioned the elevations. What's your typical methods or how often do you do the elevation?
A. We like to take care of some of the elevations each time when we're there. In other words, we may do three or four breaks of elevations while we're on the section doing work. If the elevations get back a little bit, let's say for some reason we're not able to do them with our regular spad work, say the spad work takes longer or something as we're going, then we'll make a special trip, if we need to, to catch up the elevations and keep them reasonably close to the section face.
Q. Do you do an elevation for every spad or is it in a particular entry, or how do you do that?
A. We don't do it on every spad. Typically speaking, we run elevations in the two outside headings and try to tie across on some frequency to check from one side to the other.
Q. Would that be every, approximately, thousand feet, or what would that frequency --- is there a general number?

A. There isn't a general number. Sometimes it may be the entire panel.

It's just a check that we do as we watch the advance and we want to make certain where we are with our elevations.
Q. Is there a particular entry that you may pay closer attention to, for instance, the belt entry?
A. No, sir. Typically, we run the elevations in the two outside headings. Occasionally, we'll run an elevation in the belt heading or the track heading, depending on how wide the section is or some specific need that we have to do that.
Q. And your folks that do that, can you describe a typical day with them? In other words, a typical day, when they would arrive at the mine, would they go in with a crew, or how does that work at Sago?
A. Typically speaking, they would ride in with the production crew and coordinate with the section foreman where he's going to be working, where they have their production plan, and

work around those so that they don't get in the way of the equipment. And they have entries for their own use for short periods of time to do their work so that they're out of the way. Once they get the spads put into the face, then they'll look at their time and decide if they can pick up some elevations. They'll get coal sections, any other information that we want them to get on that particular trip.
Q. A typical day, and I know that --- but a typical day, how long would it take them to actually do the survey, the surveying part of the work?
A. At Sago, a good day would be four to five hours.
Q. Is there a --- I know it's difficult to schedule the folks sometime. Is it typically that they're --- and again, I know you adjust it accordingly, but would it be like Monday and Wednesday were

normally at Sago, unless something different happens, or is there a

typical schedule for those folks?
A. We typically like to do Tuesday and Friday because they have weekend production. So we like to have spads in the face on Friday. But what we do in reality is based on where the faces are and how fast they're advancing.
Q. Sure. Prior to the accident or prior to January 2nd, when was the last day that you or your staff were actually in the mine?
A. I believe they were there on Thursday before, which would have been the 28th, I believe, thereabouts.
Q. And do you know what they did that day?
A. They ran a check survey.
Q. A check survey. Can you describe that a little bit for me?
A. Every so often, we will run a check survey, which is an independent

survey loop that is independent of the daily work that I've been talking about, so that we can check where the mine is, run a higher accuracy closed-loop so that we can do any adjusting that we need to do to the daily work before going on ahead.
Q. Can you describe that a little bit for me, I mean, your normal accuracy versus this higher accuracy?
A. Typically, when we put spads in the face, those are like construction points, like putting a hub on a road job to do a cut or a grade by. They're the grade --- or excuse me, they're the sites that they're using to advance the mining, to keep the mining straight and in the proper direction.
The check survey is a loop where we want to be, depending on the situation, anywhere from a foot and 10,000 up in accuracy, realizing that our daily work isn't looped back. So you don't really know what its

accuracy is other than when you're measuring between entries, your measurements hit the lines from what's been done before and they match up with each other. The loops are more to make certain that we're headed in the right direction and

that we've got the proper azimuth.
Q. The prior --- that was a check survey on Thursday.
A. Yes, sir.
Q. When would have been the last time they would have been in and done the normal, the routine survey, do you remember that?
A. I don't recall.
Q. The results of that survey --- first of all, was it conducted in the Two Left section?
A. It was.
Q. How did it work out with your normal survey? Was it pretty much on line with what you had?
A. As I recall, it was very close. It was reasonably close to

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what we were expecting it to be.
Q. If we could step over to the other table, we have a map there. And I'm going to ask you to take a look at that. What we have here is a small map of the Two Left section. And I think we'll call this Exhibit One.
(Hartsog Exhibit One marked for identification.)
BY MR. UROSEK:
Q. And anyways, Gary, if you can, can you tell us approximately on the --- or actually mark on this map, if you would, where the survey check that they conducted on Thursday, what areas they would have surveyed to.
A. They would have run a line up into the area around the section loading point. The exact location, I don't know right now.
Q. Okay. If you can just give us approximately.
A. Somewhere in this general

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area.
Q. And what you've circled here is the area between 22 and 24 crosscut in entries Three to Seven?
A. Yes, sir.
Q. Okay. So this is the area where the check survey ---. And what spads --- what is the furthest spads that would have been set prior to January 2nd, if you know?
A. This appears to be a map of the area just prior to January 2nd.

If that is the case, then looking at this map, the spads 20 --- excuse me, 4278 ---.
Q. Could you circle those for us?
A. In green?
Q. In green.
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A. 4277, 4276, 4275, 4282, 4283 appear to be the most inby spads.
BY MR. UROSEK:
Q. And what day would those spads --- those would have been set?
A. I don't recall the exact date.

Probably earlier that week would be a guess.
Q. And the spads within the circle that was part of the check survey would have been outby that approximately one to two crosscuts?
A. Yes, sir.
Q. So just so that I understand the surveying method, the spads located, for example, 4269, 4270, 4271, 4279 and 4280, are kind of in the zone that we talked about where the check survey was; is that correct?
A. Yes, sir.
Q. Would the accuracy be better in those --- at those spad locations than they would be at the spads located up near the face area?
A. After the check survey was run, that should be comparable.
Q. Okay. Make sure I understand that. But the check survey was done --- were these --- the survey, the spads up near the face, the ones that

you've circled in green, would they have been part of that check survey?
A. I don't know without referring to the field book at the time.
Q. Okay.
A. I am estimating here because I don't recall exactly where those went to.
Q. Okay. That's all I have on this exhibit for right now. Thank you.
Can you describe a little bit, Gary, how the process actually works with the mapping and drawing of the maps and how you get back to the Sago Mine?
A. The cycle would be we send a

survey crew to the mine. They would, for example, set up on the most advanced spad, take a back site from the previous spad and align using a transit to give a distance to set the next spad. Measure that distance very accurately, then the transitman, along with the other surveyor, would

take what we call side notes, which are measuring left and right, walking up the entry to get the location of the coal rib, the corners of the crosscuts and any other features that they see that they want to make note of. That information is brought back to the office. We have a CAD person who enters that information into AutoCAD, plots that on a map in AutoCAD, connects the dots that are plotted, and then produces a map that has the updated spads on it. Then those --- in the case of Sago, those updated maps are sent to the mine weekly, usually on Friday afternoon, to give them the most up-to-date map to start their week the next week.

Q. Would they send that to them electronically?

A. Yes.

Q. I don't believe I've asked you this. Can you describe what type of equipment that you use in the surveying?

A. Typically, we use what's called a total station, which is an electronic transit. Measures generally --- depending on the instrument, it may measure to five seconds arc. It may measure to 20 seconds, depending on the instrument. And then it has an electronic distance meter built into it that uses an infrared beam to bounce off of a mirror and measure the distance from the transit to the spad. The instrument also has a vertical circle in it that measures the horizontal angle and the vertical angle to give us the position in three dimensions. And it does --- or it can do the trig internally to give you the readout of what the horizontal and vertical are straight off the instrument.

Q. Is there a particular model, number of instrument, that you used

at Sago?
A. We use any of a number of instruments at Sago. Usually it's

the --- what we call the DT-10. We use Topcon, we use Sokkia manufacturers. There are different instruments that we use for different things.
Q. Getting specifically back to the incident on January 2nd and the week prior to that, when would have been the last time that you would have completed the procedure that you've just mentioned and sent the information back to the mine operator?
A. Without checking the record exactly, I think it was that week before that Friday. That being a holiday week, they may have varied from that a little bit. But the mine had worked three days that week, I believe, and there should have been a section map sent out electronically. If there wasn't that Friday before, it would have been the Friday before that. But with the holidays, I couldn't tell you exactly without

going back to look.
Q. Okay. And who would be the person --- do you e-mail that to a certain person or do you drop it onto a hard drive somehow? Who's the person that you deal with that at the mine, with that?
A. That particular map we e-mail to Joe Myers, the engineer. We e-mail it to the superintendent, Jeff Toler. And there may be a couple other names on the distribution. But it's a fairly widely-distributed map that everyone takes a look at to see where they are.
Q. And if they have questions --- is there like a normal contact person that you work with on this?
A. Typically, Joe Myers. But we have conversations with different people at the mine as we need to.
Q. And do you know what Joe Myers' title is?
A. Chief engineer.
Q. Chief engineer. And I know

you've gone over this, but just to

get the wording in correctly, the surveying method, is it called a closed-loop method or what would you actually call the method that you use?
A. The check survey is the closed loop. The spads that we put in daily are push-up spads, one of the ways that they're described. And they're pushed straight up.
Q. And you've described it, I believe, already for us, ---?
A. Yes, sir.
Q. Okay. Switching gears just a little bit on you, Gary, have you ever conducted, prior to January 2nd, a ventilation survey at the Sago Mine or conducted any ventilation work for them?
A. No, sir.
Q. How about as far as --- and again, I'm going to switch gears on you back to kind of the surveying. As far as gas wells or boreholes at

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the mine, is that something that you would have surveyed for them as part of your work?
A. Yes, sir.
Q. And have you surveyed gas wells and boreholes at the mine?
A. Yes.
Q. Have you ever been called in by them to survey any gas well or borehole that may not have been originally plotted or that they knew about, they may have hit accidentally?
A. I know of none that have been hit accidentally. As far as I know, all the gas wells that we have located have been in advance of mining.
Q. In the area where the seals were located, do you know of any gas wells in that area that they may have encountered that's not on their mine map that we've seen?
A. No, sir.
Q. Focusing now on the ---

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actually, on the January 2nd day, were you or any of your employees scheduled to work that day?
A. No, sir.
Q. And of course, the accident did occur. And were you contacted

when the accident happened?
A. When the accident happened, I was in Atlanta. And I got a cell phone call from one of our employees, telling me that he had heard from some other individual that there had been something at Sago and asking me if I had heard anything.
Q. I guess at this time what I'd like to do is just start on the morning of the 2nd and, to the best that you can for us, describe the contact between or how your company found out about this and who from the company contacted you and what all activities occurred between yourself and Sago and between your staff and Sago.
A. I got a cell phone call in

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Atlanta about 10:30, quarter 'til 11:00 that morning. The upshot of it was there had been an incident at Sago, had I heard anything. Of course, I said no. And I told this fellow to stand by. And I called Joe Myers' cell phone, didn't get an answer. I got voice mail. So I called Chuck Dunbar's cell phone, who is Joe's immediate superior. Chuck told me that something had happened, I don't recall exactly how he described it at that moment, and they needed maps. So I called Dave Prelaz, the other engineer in our office, found that he was already on his way to the office because he had heard about the incident on CNN. So I talked with him while he was driving to the office, and we began coordinating getting the maps and different things that they needed ready for them. Now, recall that I said that we had run a check survey just the week before into Second

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Left. My instructions were get that calculated and checked, and make any adjustments that you need to before we release anything, because we want to make sure that it's as accurate as we can give them.
Q. And that was done that morning?
A. That was done immediately that morning by David. And he was calling other people into the office as he

came along.
Q. Do you know what time he approximately got to the office?
A. Somewhere around 11:00. Somewhere in that general vicinity. David proceeded to get the information together to check the maps and began plotting maps. You may recall that the weather was getting bad at that time. And I didn't want to turn one of our guys loose in a hurry to try to run maps there, so I called the State Police to ask them to act as couriers,

knowing that they could get their safely and more quickly than we could. And they were very amenable to helping us. In fact, they sent a trooper to the office. By that time, Joe Myers had been found, and we began exchanging maps by internet, across what's called the FTP or the file transfer site that we have set up with their group. And Joe began producing maps on site.
About one o'clock, give or take, Joe told us that he needed a survey crew. And as I said, we already had people moving in different directions, coming toward us. I sent the fellow that I had in Sutton, who's one of our employees, who happened to have a mapping grade GPS with him. I sent him immediately to the site with the idea in mind that they could start building road and building site based on the mapping grade GPS while we got the exact spot ready for them to drill.

Q. Interrupt you for one second, Gary. As you're going through this, you're doing a great job, any time you can interject a time, an approximate time that somebody was called, I'd appreciate it if you could put that in for us.
A. Okay. Matt got to the site somewhere in the neighborhood of two o'clock. Somewhere in that vicinity, and I'm not certain when right now, Joe called and gave us a coordinate that he wanted to hit in the mine, which was at the tailpiece of the Second Left belt. We talked about it a little bit. We did our checking to

make sure of exactly where it was and that we were all aiming for the same point. They gave the coordinates to the fellow on site with the mapping grade GPS, and he went out to locate it on site.

There was some problem with the mapping grade because of satellite reception. In mapping

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grade, as in survey grade GPS, you are required by the software to have a certain number of satellites in communication in order to get the work done. There's an internal ratio in the instrument that's displayed called a PDOP. That PDOP has to do with the reception strength of the signal, the number of satellites and the like. The thing that you need to know about the PDOP is that the higher the PDOP, the less reliable the results. Therefore, we like to have a PDOP that's in the five, six, seven range. At that time, they were getting a PDOP somewhere in the 16 to 18 range, which was not encouraging. But using that --- and understand that this is the kind of thing that happens. You don't --- it doesn't indicate that there's anything wrong with the equipment. It has to do with satellite strength. It has to do with weather. It has to do with foliage, with trees, with structures.

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Any number of things can affect this.

Q. So you weren't surprised that this PDOP was high that day?

A. No, I wasn't surprised. I was disappointed, but I wasn't surprised. Those things happen. So what we did was using the mapping that had the planametrics surface features on it, plus the mapping grade information that we could glean, and using a little bit of judgment, built the road, got the site started somewhere in that afternoon. And that time I don't know.

When we had the information gathered together for the conventional survey crew, they left to go to the site. I contacted our GPS folks, and they gathered their equipment together and went to the site. And somewhere in the

neighborhood of four to five o'clock they started trying to set iron pins and get ready to do the GPS work. The GPS work actually started

somewhere in the neighborhood of seven, eight o'clock. And I'm calling from memory now, somewhere in the neighborhood of seven, eight o'clock. And we were trying to use what's called real-time GPS, which involves radio communication between units. We were unable to establish the radio communication to a satisfactory level, so we went to our fallback position, which was to use observations of GPS receiver units on particular points. So we were using one of the permanent points at Sago and one of the permanent points at Spruce, which was a neighboring mine that we were familiar with, to give us the baseline that we wanted to do the GPS work in the neighborhood of the boreholes.

Once those observations are made, it has to be downloaded and what's called post-processed. In other words, it has to be calculated using some high statistics to give us

a coordinate for those two points. That process was done in the field, on laptop computer, and was ready somewhere in the neighborhood of 11:00 p.m.

Once that was completed, the conventional people took those two points and spotted the hole conventionally. They found that they had to do a little more work on the site and they --- our fellows stood by until they got their work completed, re-spotted the hole, helped them set up the rig, helped them plum the rig and got them drilling. So that, in essence, is the scenario for how we got there.

Q. Okay. I'm going to ask you a series of questions and try to recap some of the areas that you just went into with that. What time did --- did you come back to the office, your office, at some point during this day or did you coordinate over the phone? Can you explain that a little bit for

us?
A. As soon as I heard what was going on and switched on CNN and looked at the internet, I began packing. I got a reservation to come back, fly back into Yeager and come. I called Chuck Dunbar and I said, Chuck, I'm on my way back. I should be there, give him an ETA. He said, no. He said, we need you to stay where you are. Don't be out of communication.
Q. In Atlanta?
A. In Atlanta. Coordinate from there. It's more important that we do that rather than have you out of communication for two or three hours. So I stayed in Atlanta and stayed by the cell phone and the internet and the television until --- well, just about all night.
Q. So you never did come to the mine or come back to your office, you coordinated from your hotel in Atlanta?

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A. Yes.
Q. And explain to me a little bit how you would have done that. In other words, who was your lead person at your office?
A. Dave Prelaz.
Q. So you would have been calling him?
A. I was talking with Dave Prelaz at our office, with our survey crew in the field, with Joe Myers, once he was in his office.
Q. You mentioned that Joe Myers had called you about a particular coordinate ---
A. Yes.
Q. --- that he was interested in? Did you have any decisions? Did you talk to him about why that particular coordinate was selected?
A. I asked him why there. He said that's where Sam Kitts told him to put it. And that was good enough for me. I didn't have anything better to offer. I was out of the

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loop. I wasn't on site. So that's where we went.
Q. That particular point, was it --- was there any different accuracy if they had picked anything closer to

the face versus where that particular was --- that particular point, I understand, is how far back from the furthest point of advance of the face, approximately?
A. That point, without referring to a map, that was two or three breaks from the faces.
Q. There were some spads in those breaks ---?
A. There were spads inby there. What you like to do is aim for a check survey station.
Q. Yes.
A. You can't always do that. What we did here was use our side notes and our other surveying information to aim for the intersection where they wanted to hit and went through a procedure to check

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that and make sure that we were okay, and then that's what we aimed for.
Q. I guess what I'm trying to get to, Gary, is there any more accuracy at that particular spad than one of the spads that are further inby?
A. I would have to go back and review the exact locations before I could say that.
Q. Was it a discussion that anyone had? Did you have that type of discussion, I mean, this is the most accurate --- or the best accuracy we can get is if we pick this particular spad? I mean, did you have those discussions at that time?
A. We talked about it a little bit. I don't recall the exact conversation. I recall we pointed out where particular spads were. The bottom line was we felt confident that we could hit the intersection where we wanted to hit it. There wasn't a lot of reason to go

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elsewhere that I knew of. So we felt like we could hit the target.
Q. Do you know why he picked --- I mean, other than you said Sam Kitts told him that, I mean, was there any philosophy as to why that particular spot? Was there any discussion as to that?
A. Not at that time.
Q. Did he indicate to you or

maybe Dave that he had --- did he have a GPS system or GPS survey equipment on site, Joe Myers?
A. I believe Joe Myers did have a unit. It was what we refer to as a Wal-Mart unit. It's the kind people use for hunting and fishing and hiking. It's not capable of the accuracy that the units that we typically use are.
Q. Did he indicate to you that he was having any difficulty with that unit?
A. Yes. He was having the same difficulty with that unit as I

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understand that we had with the mapping grade unit.
Q. The mapping grade unit, where was it located physically on January 2nd?
A. It was in Sutton.
Q. It was in Sutton. Why was it in Sutton?
A. One of our employees lives in Sutton. He had used it the Friday before to do some work in the field. And I told him to take it home, put it on charge for the weekend.
Q. And the survey grade, that's the best grade?
A. Yes.
Q. And where was that unit located?
A. That's a series of units. It takes three units to do what we were doing. Those units were located in Danville at that time.
Q. So you had to have them brought to your office, or did you take those right to the mine from

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Danville?
A. They were taken directly to the mine.
Q. You mentioned conventional surveying. And I just want to make sure that I understand that there was conventional surveying being conducted. Is that the same as the GPS with the survey grade or is that something different?
A. Conventional surveying, as I'm using the term, is where one sets an instrument such as a transit or a total station over a point, gets a reference by back-sighting another

point to give angle, and then measures an angle to another point on the ground, and then measures the distance and calculates --- then we can calculate a coordinate to the new point. That's what you typically see out here with a transit and a chain and those kinds of things.
The GPS is where one uses the --- a receiver to receive signals

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from a set of Department of Defense satellites that are in geosynchronous orbit. And by calculating the differences in time that it takes to get certain signals from those satellites, it's able to calculate where it is on the face of the earth. That's GPS.
Q. And I guess it's the terminology, just to make sure that we have it clear, when you say conventional, you used the GPS system between the points of the Sago Mine and another mine to locate the borehole. You physically didn't run a transit with a tape between these points?
A. That is correct.
Q. So I guess when I think of conventional survey, that's what I'm thinking when you mentioned that, that there's a transit at these points and that the tape you actually measured to the borehole. You didn't do that; is that correct?

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A. Are you asking from the permanent points at the mine?
Q. Yes.
A. We did not. What we did was transfer the coordinates for two points, using GPS, from the mine points out into the field where the borehole was going. Once we had those two points in the field, then we could set up on them, using conventional work, and actually spot the hole.
Q. Okay. The mapping grade wasn't adequate to do that because of the signal strength; is that correct?
A. Let me answer this way. We have talked here about three different grades of GPS work. Let's talk about it in terms of what we call the Wal-Mart unit, which is what

Joe Myers had. That generally will tell you where you are within 40 or 50 meters on the earth's surface. We talk about the mapping grade unit, which is the unit that

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was located in Sutton when this happened, and we got to the site first. That one will get you generally within a meter to a meter and a half of your location on the earth's surface. Then we talk about survey grade GPS, which will give you sub-centimeter accuracy on the face of the earth, sub-centimeter being pretty close. So we were using, in effect, all three of those grades to accomplish what we needed to do.

Q. The survey grade, when was the decision made to bring it into the picture, to use it that day?

A. When Joe told me that we were going to send survey crews, as I recall, I made the assumption that there was going to be a borehole somewhere and I called for the survey grade equipment at that time.

Q. And approximately what time would that have been?

A. Somewhere around one o'clock.

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Q. Somewhere around one o'clock. Did you call for the mapping grade at about the same time?

A. Yes.

Q. And why the time difference in getting it to the mine? The one got there before the other.

A. The mapping grade --- with the mapping grade unit, we had a fellow standing by the telephone ready to move in Sutton, which is only about an hour from the mine. With the survey grade, we had people who were on holiday that we had to find and equipment that we had to mobilize and bring in, check and make sure batteries were charged and things of that nature, gather the information and get it moving. So the mapping grade was basically ready to go. The survey grade, being a holiday, it took a little time to gather the people and the equipment and move it.

Q. Was that the fastest way to locate the actual site that they

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wanted to put the borehole in? In other words, could you have done it conventionally, the old-fashioned way? And how long would that have taken if you would have tried to do that?
A. Had we tried to do it conventionally, it would have taken probably many hours. We could have put multiple crews on it. We could have worked through the night with it. But it would have been many hours before we could have had that there conventionally.
Q. I mean, would it have been longer than it would have took ---
A. Yes.
Q. --- to do it this way?
A. Yes.
Q. If --- and I'll just ask your opinion in this area. If you were to try to locate the borehole with the Wal-Mart grade unit, what do you think the chances would have been of actually hitting the point that you
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were trying to hit at the mine, given the signal strength that was available that day?
A. Not very good. Rather poor.
Q. The mapping grade, with the signal strength that you described, if you were to try and locate that borehole, just using that particular system? And in fact, I think you had a point located with that system, if I'm correct.
A. There are different procedures that you can use with that equipment. One of them is a procedure called post-processing, where you can take the signal that's recorded in the unit and then, comparing it to a base station signal somewhere else, get a more accurate location. Had we used post-processing and had we used multiple points and averaging, we could have probably been within a meter, maybe less, of the point that we wanted to hit. So figure a circle that's about seven feet in diameter,
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we would have been somewhere in that. I wouldn't want to try to hit a mine intersection with that if I could avoid it. I would probably do that

as a last resort if I had to. But there's a lot of error built into that system for the work that we're intending to do.
Q. The signal strength --- even with the signal strength you had that day, would you still have been able to get within that circle?
A. I don't know. Understand that signal strength changes, that it is a dynamic situation and it's constantly changing because the earth is moving around with the satellites changing their constellation at all times.
Q. Did you locate a point or a rough point with the mapping grade, or your staff?
A. Yes.
Q. And approximately how far from the final location of the borehole was that point; do you know?

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A. I don't know.
Q. Was it Joe's decision or a joint decision to come up with --- to decide to go have the survey grade brought into place to accurately locate the borehole based on the knowledge of the mapping grade survey? Who made that decision? Can you describe it a little bit for us?
A. I made the decision of what equipment to mobilize and send. I told Joe over the telephone what I was doing and what my plan was. Joe probably discussed that with somebody there, I'm going to guess Chuck, and came back and said, that sounds good.
Q. Have you or your company in the past had to locate boreholes for mine operators for them to drill?
A. Yes.
Q. Has that been a successful operation in the past?
A. We've hit them all so far.

MR. RUTLEDGE:
Can we take a break,

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John?

MR. UROSEK:
Yes.

SHORT BREAK TAKEN
BY MR. UROSEK:
Q. Gary, just to go over just a little bit more on the surveying work that you did. You used the phrase planametrics. Can you describe that

a little bit for us.
A. Planametrics refers to the planar map that's over top of the mine workings. There's a difference between what you would usually call a topo map, which shows contours of elevation and relief. That's a topo map. Just the component of that that shows things like roads, houses, physical features, those are the planametrics, in other words in plan view, that show what's on the surface above the mine.
Q. And you indicated that you used that or that they used that at the mine to get a general location of

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where they were going to put the borehole?
A. Yes, sir. That's where you look to see where you drive to down the road to get a starting point.
Q. Now, that mine, that map, that particular map, was that something that was in your office or was that map already at the site?
A. We had the planametrics in AutoCAD that we could overlay the map and manipulate it to see what we wanted to see. So we had it in our office. Joe had it on his computer. Our guys in the field had hard copies with them that showed that.
Q. At the beginning, though, I mean, where was that? In other words, did Joe have that at the beginning, on January 2nd, at, say, six o'clock in the morning? That particular map, was it on your computer in your office or was it on Joe's computer in his office? And the hard copies, where would they

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have been?
A. We both had it on our computers. It's an integral part of our mine map to show the surface features.
Q. Okay.
A. The hard copies were produced that day from the digital copy to send with the survey crews into the field.
Q. Would they have been produced at your office, at the mine site or at both locations?
A. The ones the survey crews had

came from our site. They could have been produced at either one.
Q. You mentioned that you used two points, one at the Sago Mine and another mine. Can you explain a little bit why you couldn't just pick a location along the road or use a state map to come up with the location of where to put the borehole?
A. Every mine, by law, has to

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have some survey points outside somewhere that are tied in to the underground system, surveying system. Those are called permanent points, as a label more than as a describer sometimes. And it's from those points that one can reference where the mine works are on the surface. We did not have any points that we were comfortable in using outside of those points at the mine site, at Sago, other than what we knew to be in existence at Spruce.
Spruce is another mine owned by the same company that we had familiarity with. We had done work there. And we elected to use a point from Sago and a point from Spruce because of their distance apart. In doing the GPS work, we wanted a rather long baseline, long being, in this case, 5,000 or 6,000 feet, that was perpendicular to the direction that we were trying to project. Had we used the points that were just at

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Sago, we may not have gotten as good a result --- a resolution to the problem. Don't know because we didn't try. We felt more confident using those two points that were some distance apart and oriented perpendicular to where we were going to get the best resolution and the best answer that we could get in the field.
Q. Well, these base points, we all know --- our own property is all surveyed. Some surveyor comes in and actually locates the points where our property lines are. And of course, there were properties above the Sago Mine that I'm sure at one point someone would have surveyed those. And of course there's highways there

and different things. Why couldn't you use those survey points to locate the borehole?
A. Property boundary corners or surveys are a completely different area of practice from mine surveying.

In the case of Sago and Spruce, we're working on what's called the state plane system, which is a system set up by the federal government and by the state to reference any and everything within their zone. So we had elected to use those coordinates --- that coordinate system from the beginning to facilitate something like we were doing here.
In the case of boundary surveying, those boundaries don't have to be connected to anything. They can be free-floating because one bases property lines more on evidence than you do a given coordinate survey point in general.
So locating a tree and a rock and the intersection of a road certainly don't give us the accuracy that we need to go out and put a borehole into a mine where you've got two and a half miles of underground surveying and two and a half miles of surface surveying between the two

points.
Q. Okay. I think that clears up that particular issue. You've mentioned, and I know you've --- you mentioned different folks coming to the mine from different locations in our discussions. Just to make sure that I have it clear, can you go over again who all was at your office and who would have left either their house or their office and come to the mine for this effort, and approximate times if you can remember those.
A. Matt Ashley was the employee of Alpha Engineering that was living in Sutton. And he was the one who had the mapping grade GPS at his home on the weekend. David Prelaz, is a P.E., is the engineer that works for Alpha Engineernig that came to the office. He was on his way to the office when I called him at roughly a little before 11 o'clock. Mike Gosnel is an engineering tech and

surveyor that is an Alpha employee.

He was called by David at some point and came to our office to help with the calculations. And then he was the lead or the crew chief in the survey crew that we sent to do the work.

Q. Did Dave --- not to interrupt, but did Dave stay at the office the rest of the day, or did he, at some point, travel to the mine site?

A. No. His assignment was to stay at the office in communication and produce whatever they needed.

Q. And that check calculation, approximately how long did that take, that you did at the office?

A. Well, there are a number of checks and a number of calculations.

Q. The very first one that you just had indicated that he went in and you were going to check the --- go over the check survey that had been conducted on Friday.

A. As I recall, that took something like an hour and a half,

two hours, to go through and check everything and make sure that we were all --- we had everything adjusted right.

Q. I'm sorry. I'll let you get back. I think you mentioned Mike and what he was doing.

A. We had Chris Kelley, who was an Alpha employee, was called in to make up the second man that we were sending from Beckley. Matt made the third man on the survey crew. He was, by that time, already on site. Then I called Marshal Robinson, who is a principal in Allegheny Surveys, a company that we have worked with for 10, 12 years, doing this kind of work and with whom we share this GPS equipment, called him and he pulled out some of his people, their names I don't know, to come and help him. And he also called another gentleman, who was a leading GPS expert, lives in Teays Valley. Called him out to go with us, not because we thought we

particularly needed him, but we really wanted somebody else to check us.

Q. Do you know what time ---?
A. So we wanted a certain level of redundancy.
Q. Do you know what time those folks all --- I assume at some point they all came together at the mine to do the final survey. Do you know what time they all would have gotten there?
A. It was somewhere in the seven, eight o'clock range. Somewhere in that general vicinity.
Q. And I know you indicated this. Their mission was to survey the spot for the borehole as accurately as possible, and so they have to go out in the field to do that and take their equipment out to do that. And then after that, they do a series of calculations. So how long would it take to actually do the work in the field before they started their

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calculations?
A. Generally, you let the receiver sit on the site, on the points for 30 minutes to an hour. It depends on signal strength. It depends on the constellation of the satellites. The longer you let them sit and receive the signal, the higher the degree of accuracy. So we like to let them sit as long as we can. However, in this case, of course, we wanted to sit long enough but not too long. So typically speaking, we're talking about an hour maybe by the time you get --- after you get set up and get receiving. Then the actual calculations may --- you know, realize you got a guy working in the dark on the tailgate of his truck with a laptop computer. We're probably another 30, 40 minutes by the time he had done everything and calculated it and checked it.
Q. So you had mentioned typical. So it's about an hour and about 40

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minutes. That's typical. Is that pretty much what happened here?
A. Let's say a couple hours.
Q. A couple hours?
A. No.
Q. And that's for the whole process?
A. Now, realize that in this

particular case we first tried to use the real-time equipment. But that because of the radios not communicating properly, we couldn't do that. That would have cut the time down significantly. But again, because of the radios not working properly --- and I don't know why at this point, I'd still like to know, but we had problems with all kinds of radio equipment that evening. Now, we've got Joe's GPS equipment, our mapping grade units, the real-time equipment. And I seem to recall there being some other problems with radio transmitting receiving, that evening. Why, I don't know. It was

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just one of those things that happens.
Q. Well, just so I understand then. At say seven o'clock, they would been all there and prepared to start. And they would have tried to do it the first method, but the radio is ---. And how much time would that have taken before they changed to the other method?
A. As I recall, as soon as we set the equipment up, we saw that it wouldn't work. I spoke with them and said, quit trying. You know, we've had other radio problems. There's something in the atmosphere. Let's go with what we know is going to work now. Joe Myers was in agreement with that. So we went to the receiver mode and post-processing.
Q. So the receiver mode, was there like a half an hour there?
A. Maybe.
Q. Half an hour. Then the receiver mode, that would have been

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intact for about an hour?
A. Probably.
Q. And then the processing would have been another 45 minutes to an hour?
A. Probably. And there's some travel time in there, too. So all tolled, you're talking somewhere in the neighborhood of three --- say three hours, three and a half hours, somewhere in that neighborhood.
Q. Thank you. After the borehole was completed on that evening --- or

that morning, actually, what role did your folks have, if any, for the rest of the rescue operation?
A. We were asked to locate two more holes at that time. One of them was at the tailpiece of the One Left section. One of them was at the drive for tailpiece --- right in the area of the mouth of Two Left. The hole that went into One Left was completed. The hole that went into the drive area of Two Left was not

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completed. It went down so far and stopped before they actually drilled in, because they had completed the rescue part.
We were asked to locate, from those points, the gas wells, the four gas wells that were in the immediate area. We did that.
Q. Did your folks have any role in the command center, in any of the decisions or any of the actions that were going on throughout the rescue efforts in the command center?
A. No, sir.
Q. I think I'm ready to change to another subject.
MR. UROSEK:
Mike, are there any questions?
BY MR. RUTLEDGE:
Q. You just mentioned that you were asked by the company to locate gas wells --- you said four gas wells that were around that property?
A. Yes, sir.

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Q. And your survey of those gas wells, were the initial surveys accurate? Did the surveys that you made at this time coincide with original surveys?
A. Yes, sir. As I recall, they were all within a foot or two, which is pretty good.
Q. You gave a lot of testimony, we appreciate that. If you can, tell me --- when was the first time that you were aware that a borehole was being planned or that the company wanted you to plot a location for a borehole? What's your best estimate of when you first became aware that a borehole was in the works?
A. Somewhere around 1:00 p.m.

Q. About 1:00 p.m., okay. And do you know who from the company asked you that or gave you that information or made you aware of that?
A. Joe Myers.
Q. Joe Myers. And if you can briefly, you mentioned that a

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point --- a road was put in and a site was prepared, okay, and a point was picked on that site, okay. And then that had to be moved before the actual --- the whole location had to be moved before the actual drilling began?
A. No, sir. This --- it was my understanding that the site had to be made larger to accommodate the rig.
Q. Okay. So ---.
A. The point wasn't moved from the time it was set conventionally.
Q. I understand now. Thank you. That cleared up a lot for me. Are you aware or do you know what it would have taken on the site preparation or anything in the site area if, for example, someone had said, we want to hit the spot 100 feet in front of this tailpiece? Would that have taken a lot longer to do or was the site conducive to that, or would that have created problems or

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--- are you aware of anything at all about that?
A. I'm not familiar enough with that specific area to say.
Q. And in using the GPS equipment, you stated that it's a dynamic process, that the signal strength is always changing and that the position of the satellites is always changing; is that correct?
A. Yes, sir.
Q. So if I set my GPS unit up right here right now, I might have four satellites with a certain signal strength?
A. No, sir. If you set it up right there, you'd have no satellites because you can't use GPS inside a building.
Q. Okay. I apologize then. If we just pick any certain spot outside, anywhere, and at one --- as soon as we set this equipment up

there, we might have X number of satellites and X number of --- or X

amount of signal from those. Two hours later, four hours later, six hours later, that would all be completely different because of the movement of the earth and the movement of the satellites, the number of satellites and the strength of those things would change, you know, over those period of hours?
A. Yes, sir.
Q. So what would be an accurate station outside somewhere today may not be tomorrow or what was inaccurate today could be accurate tomorrow?
A. Yes, sir.
Q. And I'm being very hypothetical here, so --- and let's use the Two Left section of Sago since we're all familiar with that. If the company asked you, okay, we're turning Two Left section and it's been driven in there four or five breaks, okay. If the company asks you to go on the surface and plot me

two points, say one in the far left entry and another point in the far right entry, plot me two points there and put me a stake in the ground, how long would that take? You know, would that be a long, drawn-out, expensive process or something that could be done fairly easily?
A. Mike, do you mean under normal circumstances?
Q. Absolutely. Normal, everyday, everything is normal circumstance, just for whatever reason I decide I want these two points on the surface.
A. In the case of Two Left, in that general area, we would most likely use the same methodology we used here. And it would be at least a couple of days.
Q. A couple of days.
A. At the very least.
Q. Three or more people?
A. For three people, plus your office support.
Q. Okay. So three people in the

field for a couple of days and then office time or whatever to ---

A. To do the calculations.
Q. --- do the data entry and ---
A. Processing.
Q. --- process and stuff and so on. And if that had happened or if that had been done, would those two points be usable three months down the road, when the sections had advanced so far to maybe to be able to plot a borehole location or something like that?
A. Yes.
Q. Those two plots would be usable and would speed that process up?
A. Well, the two points that were installed in this instance are still there and have been used now to spot and drill, I believe, eight boreholes into the mine, in that area. So to answer your question, yes.
Q. Okay. The original survey that you did or your company did,

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your crew did, have been used to do eight additional holes?
A. I think there's a total of eight holes now, without stopping to count them, that are in the First Left, Second Left and old Second Left areas.
Q. Okay. Gary, just to try to be a little more specific, and we're trying to make an assumption here, but let's assume that under normal circumstances we've put these two points up there on the surface when we first started driving Two Left section. Okay. Now, three months, six months down the road, whatever it is, an emergency occurs and we have need to accurately drill a hole to a specific spot in the mine. Would those two points be usable to spot a specific point here that we want to hit, like I said, three months, six months later, and would they speed that process up?
A. If they had not been

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disturbed, they'd be available to do that. And yes, it would speed the process up if you had points there close by.
Q. How much would it speed the process up?
A. In this particular case, and

we're speaking very hypothetically, --- Q. Of course. A. --- it would just depend on the terrain and where they actually were. And those kinds of questions I hesitate to answer because we don't know the distances. We don't know the terrain. We don't know the specifics of the site. I don't know the ground that you'd be talking about, so ---.

MR. RUTLEDGE: That's all I have for the moment.

BY MR. UROSEK:

Q. Gary, in response to a couple of the questions that he had asked,

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to make sure so that I understand this correctly, the --- as I understand, when the mapping grade GPS system got there, they were able to locate some spot in the proximity of where the borehole was going to be located to put a pad in. Do I understand that correctly?

A. Yes. There were problems with the PDOP. And there was a certain amount of estimation that had to go into what they were saying and doing.

Q. And did they try to actually locate a spot where the borehole was going to be with the mapping grade or did they just locate a place to begin road construction and pad construction?

A. My instructions to them were to locate enough area to where they could build the road and build a rough site, that we do not spot holes, if we can avoid it, with the mapping grade.

Q. Did they attempt an

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approximation of where the borehole may be at that point in time?

A. They attempted an approximation of about the area involved. To say that you put your foot on the ground and we're going to drill here, I don't think so.

Q. Okay. I guess my next question was, compared to that approximation and then the final location, which was many hours later, do you have any idea how close they

were with their approximation? And is that part of the reason that the road or the pad had to be made bigger?
A. I don't know.
Q. I'd like to use Exhibit One that we'd spoken about earlier and ask you a question. If I --- instead of asking you to drill a borehole as you did, near spad --- I believe it's spad 4270, ---
A. Yes, sir.
Q. --- if I would have --- if the

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question to you would have been you wanted to locate a borehole in the 26 crosscut in the Number Three entry, right where I've just drawn a circle, if that were what were asked of you, and knowing that there's no spad in that location, would that have been possible?
A. Yes.
Q. And would you have been able to do that accurately or would there have been a less accurate --- would you have been able to do it as accurately as you were able to spot the one that you did, based on the information that you had available to you?
A. At that time, to have put a borehole there would have been somewhat more risky than putting the borehole where we did. Now, with 20/20 hindsight, yes, I think we could have hit that just fine. At that particular moment, with the information we had at that particular

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time, had we been told that that's where it needed to go, we would have tried our best. Most likely, it would have hit, based on what we know now. But at the time, I would have resisted somewhat if I could have.
Q. You wouldn't have felt s comfortable because the data that you had wasn't as secure --- I'm just trying to put it in some kind of words.
A. I would have been more comfortable with the outby point at the tailpiece because going inby, yes, we --- as I said, now, knowing what we know, we could have hit that.
Q. Excluding that information?

A. But not knowing that, we would have been relying on foreman's maps and assuming that they were driving to places straight ahead.
BY ATTORNEY HARDY:
Q. What do you know now that you didn't know then that causes you to say now, knowing what I know, I would

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have been more comfortable?
A. Because I've stood at spad 4275 and looked at where it is with relation to the mine, and I know that it's in a good location. It's right in the entry. And I know that the place was driven pretty much on centers. And I've walked it.
BY MR. UROSEK:
Q. Knowing, Gary, --- again, not knowing what you know now, but knowing what you knew at the time and someone had asked you, I want to put a borehole as close to the face as I can and knowing the importance of that particular borehole and you were to do that, what would be the --- knowing the information you had available to you, what would be the closest you'd feel comfortable saying, if we put it here, I feel comfortable about it's going to hit?
A. Realize that any time you're going to drill a hole much --- whether it's in this situation or

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just normal course of work, there's always a certain tightness that goes with that. And it's a matter of degree. In this particular case, knowing that there was an intersection there, intersections make much nicer targets than dead-end places. Knowing that there was an intersection there, had we been asked to hit any of those three intersections in 26 break, we could have --- we would have gone for it and had a reasonable degree --- reasonable to comfortable degree that we would have hit it. We would have been, of course, more comfortable being outby, but it wouldn't have bothered me a whole lot at that point more than I was already bothered to have tried to hit one of those three intersections in crosscut 26.
Q. Okay.

MR. RUTLEDGE:
Can we take a minute?
SHORT BREAK TAKEN

BY MR. UROSEK:
Q. Gary, in locating boreholes, in addition to just surveying them in relation to where they're at in the mine, are there other factors, such as topography, that are considered in locating those boreholes?
A. Speaking of boreholes in general?
Q. Well, in general and in specifically at the Sago Mine, this borehole we're speaking about.
A. In general, yes, you do, accept that sometimes you can't pick the place underground. Mother Nature picks it for you by simply where something is underground, and you have to accommodate accordingly. In this particular case, I was not familiar with the ground personally. I had to leave that to other folks to decide where they wanted the borehole drilled. Other issues enter into it as well, like property control, access to water,

drainage. Lots of other things enter into it. And I know from my mining experience and from my knowledge of emergency operations that the decision to put it in a particular place, once made --- I wasn't on site to know the reasons why. Unless I saw some glaring problem with it, I needed to comply with their wishes.
Q. And if someone that was making that decision had looked at the site and it was on the side of a cliff or someplace that was very difficult, that there was some reason they couldn't, would they factor that into their decision on where to put the borehole?
A. Assuming they could move it, yes.
BY MR. RUTLEDGE:
Q. Gary, you stated that someone at the company told you where they wanted the hole. And I believe your comment was, you know, they told you, and that was good enough for you.

You didn't question their decision to

where it was --- where the hole was to be put or anything.
A. I think my question to --- Joe Myers is the one who told me. I think my question to him was something along the lines of who wants it there or why there or something of that nature. He said, that's where Sam Kitts wants it. And that was good enough for me.
Q. And since that time, have you learned anything that --- as to why that site might have been selected?
A. It's my understanding that the goal of the hole was to check the atmosphere and to look around with a video camera to see if one could tell if that was the origin of the explosion. Because at that point I don't think anybody knew for certain where the explosion had come from. So I think, from my understanding, he had two reasons. One was to look around and see if that's where it

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came from. And the other one was check the atmosphere.
Q. And just a general opinion, have you visited that site at that borehole --- the surface site of that borehole since this incident has occurred?
A. Yes, sir.
Q. And in your general opinion, was that site --- I have no idea of what the site looks like, if it's on a steep hillside or flat place or anything else. In your general opinion, was that an easy site to prepare, a moderately difficult or a very difficult site to prepare?
A. I'd have to think about that some because I just don't recall exactly what it all looked like. I was there in the dark.
MR. RUTLEDGE:
Okay. Thanks.
BY MR. UROSEK:
Q. Switching gears, Gary, a couple questions on the seals. Are

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you familiar with the seals that were in the old Two Left mains area?
A. Yes.
Q. Did you have any input in the construction or the design into those seals at all?

A. No.
Q. Did you have any input into using Omega block seals versus some other type of seal at that location?
A. No.
Q. Did you have any input into the location of those seals?
A. No.
Q. Okay. Can you explain --- changing gears again on you, Gary, to the ventilation plan we're going to talk a little bit about now. Do you have any responsibility in the submittal of the ventilation plan to MSHA?
A. Our company prepares the map that goes to MSHA for the ventilation plan and may have, from time to time, prepared other exhibits that go with

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the plan at one time or another. I don't recall right now whether or not we had for Sago in the immediate past, but we do that from time to time.
Q. As part of the ventilation plan for Sago, there was some information provided to use the Omega type seals. Were you involved in that plan process at all?
A. No, sir.
Q. Your company wasn't involved in submitting that?
A. No, sir.
Q. You indicated that you are responsible for the mapping portion of that. And who in your company would be responsible for that, to ensure that it's accurate?
A. I am.
Q. For example, on the location of the seals in Two Left, how would you --- would you survey that or would that information be provided to you or how would you find out about

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that?
A. That was information that was provided to us by the mine management people. We would only locate them by survey if we were requested to.
Q. Were you requested to do that in this case?
A. No.
Q. At some point, someone would have told you that those seals were being constructed and there would be

an amendment to the plan. The amendment to the plan, were you involved in that at all?
A. No, sir.
Q. And how would you have learned that they were going to be putting seals in and the location of those seals?
A. As I recall, we were sent a map that showed the seal locations as proposed. And when the seals were built, we were told that it was completed, and we updated our maps accordingly.

Q. Would any of your staff have seen the seals being constructed or have any part of that?
A. Not to my knowledge.
Q. Are you familiar with the old Two Left mains area, the area inby the seals?
A. Yes, sir.
Q. Have you been there prior to January 2nd?
A. No, sir.
Q. Would your staff have been there prior to January 2nd?
A. Yes, sir.
Q. Do you recall any of your staff ever, prior to January 2nd, indicating to you any unfamiliar --- or any unusual patterns on the roof in that area?
A. Not that I recall.
Q. Subsequent to January 2nd, were you involved in mapping an anomaly in the roof in the Two Left area?
A. Yes.

Q. That anomaly is what I'm speaking of. Do you recall before of anyone mentioning that anomaly, that they had seen it or noticed something unusual prior to January 2nd?
A. Not that I recall.
Q. As far as the investigation, what services did Alpha Engineering provide to ICG after the accident?
A. Through the rescue phase, we provided surveying and some limited mapping services. During the recovery phase, we provided assistance in the mapping and the preparation of the plans to go underground for the rescue teams and

provided technical help through the command center during the recovery process.
Q. The technical help to the command center, would that have --- what would that have been in the form of?
A. Helping them with ventilation, estimating what the ventilation was going to be, which stoppings or which controls were most important to get back into service, in some cases how to do that, the methodology with how to go back into the mine.
Q. Okay. Just to make it clear, that's the recovery. That's after the rescue was completed?
A. Yes, sir.
Q. Are you part of the Sago investigation team for ICG?
A. Yes.
MR. UROSEK:
Do you have any questions, Mike?
BY MR. RUTLEDGE:
Q. Gary, you said a little while ago that you were familiar with the seals that were in the old Two Left section?
A. Only after the fact, yes.
Q. So John asked you, and you didn't see them beforehand, you didn't map them or anything beforehand. So your only familiarity with those seals is after the explosion and during the investigation of that area?
A. I knew that the seals had been installed by the changes to the map. Other than that, had no discussion concerning it until after the fact.
MR. RUTLEDGE:
Okay. Thanks. That's all I have.
BY MR. UROSEK:
Q. Gary, have you been involved in any other investigations in the past where seals have been damaged, compromised, destroyed by an explosion?
A. Would you repeat the question? I'm not sure I understand.
Q. Prior to January 2nd, ---
A. Okay.
Q. --- have you been involved in

any investigation at any mine where ventilation explosion-resistant seals have been damaged, compromised, destroyed by any type of explosion?

A. Not directly. In an investigative team, such as is going on now, no. I have had some experience around the old Birchfield Mine when it had an event that was credited to an explosion behind the seals. And I was doing some work at Oak Grove in Alabama. I'm not certain if that was during or just after they had had a similar event.

Q. Did you actually go underground at those two operations and observe the seals?

A. I did not, no. At Birchfield, as I recall, no one got to the seals that blew out, not that I recall. And at Oak Grove, I didn't go to that area specifically.

Q. Do you recall what type of seals were used at those two operations?

A. I don't recall at Birchfield. It seems to me that Oak Grove may have been pumpable seals, but I don't recall exactly.

Q. Do you recall the time at Birchfield, approximately? The year?

A. '95, '96, '97, somewhere in that time frame.

Q. You were able to go back in after the event and observe the seals at the Sago Mine or the remnants of the seals?

A. Yes.

Q. Is there any information you can provide to the investigation team that would help us understand what happened --- at Sago Mine in particular, what happened to those seals?

A. At this time, I'm working under a confidentiality agreement with ICG. And anything that I would know about the area is covered by that agreement, and I'm not at liberty to discuss it.

MR. UROSEK:

Mike?

BY MR. RUTLEDGE:

Q. Gary, you said that later on

at Sago you drilled --- or excuse me, you plotted a location for a hole to be drilled in One Left?
A. Our company did, yes, sir.
Q. Your company did, yes. Okay. Can you give me any estimate of how long it took you to plot that hole to establish a location for ---?
A. As I recall, it was sometime Tuesday morning. The exact time I don't recall right now.
Q. Can you give me an estimate of the amount of time that your company or employees spent in plotting that location? Did it take them an hour or two hours, three hours, six hours?
A. As I recall, it was three or four hours.
Q. Was that hole as accurate as the first one?
A. It hit the mine.
Q. And one other thing. You mentioned earlier that your employees had helped plum the drill?
A. Yes.

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Q. Can you give me just a brief explanation of what that involves?
A. What you're trying to do is set a point on the surface that is directly above a point in the mine. If the drill doesn't set up vertical and plum, it will drill at an angle. So what we want to do is we want to plum the steel, in other words, make sure that it's vertical, straight up and down, when it starts to drill. Holes have a tendency to drift. It's the nature of drilling. And there's certain things you can do to minimize that drift. But there's one thing that you can do before you start drilling that will help you in that, and that is to make sure that the drill steel and the mast is plum straight up and down, aimed for the point underground. That's what we call plumming the rig.
Q. And is that done with equipment or a tool or by measurements or ---? Very briefly,

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you know, is there --- what's the procedure for doing that?
A. The best way to do it, that I'm familiar with, is to set up two transits at 50 or 60 feet, 100 feet

away from the rig, that are 90 degrees apart, so that you can set the transit up, level it, and then take your scope and look up and down the rig with your crosshair and align it to the crosshair.

MR. RUTLEDGE:

Okay. Thanks. That's all.

BY MR. UROSEK:

Q. Gary, just something I just thought of. When we talked about elevations and getting --- determining elevations, that's something that you said you go back and do. How close do you determine the elevations? Approximately how many feet in the mine do you do an elevation determination?

A. I'm not sure I understand your

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question, but I'll tell you what we do. Typically speaking, we get an elevation on the bottom in about every intersection in the two outside entries of the panel.

Q. So approximately every 100 feet?

A. It would be every 70 feet, every 100 feet, maybe 105 feet. That's typically what we do.

Q. So everywhere there's a spad that's in the intersection in the outside entries, you would determine an elevation there?

A. We don't use the spads to determine the elevations, other than we use them as benchmarks, in other words, an elevation keeper, elevation reference in the roof. We survey the floor to get the floor elevation.

Q. Okay. One other question. If you were going to locate a --- trying to drill a borehole into the mine and you wanted to do it without conducting a survey, just using the

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maps that were available of the mine and the maps that you have on the surface, what do you think, as a surveyor, the success rate may be of just using maps to try and locate a borehole that would enter the mine?

A. Depending on the surveyor and depending on the relative accuracy of the maps, you probably have about the same chances there as in Las Vegas.

It's a crap shoot. By nature, if you're over the works --- about 40 percent of the area is mined. So you can randomly --- if you know about where a panel is, you can go out over top of it --- you got a 40-percent chance of hitting an opening probably just randomly going out. I don't know that I'd give it much better odds than that.
Q. That's all I needed. I just was interested in your opinion on how to do that.
MR. UROSEK:
On behalf of MSHA, I

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want to thank you for appearing and answering your questions here today. Your cooperation has been very important to the investigation as we work to determine the cause of the accident. We ask that you not discuss your testimony with any person who may have already been interviewed or may be interviewed in the future. This will ensure that we obtain everyone's independent recollection of events surrounding the accident.
After questioning other witnesses, we may call you if we need to have any follow-up questions that we feel we need to ask you. If at any time you have any additional information regarding the accident that you would like to provide to us, please

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contact us at the contact information that was previously provided to you.
If you wish, you may now go back over any answer that you have given during the interview or make any statement that you would like to make at this time, any information you think that would help us in our cause to determine the causes of this accident.
A. There was one question asked at break that may help explain the

system that we use. I used the term geosynchronous. Understand that GPS is using satellites that are in orbit above the earth, put there by the Department of Defense. Those satellites are placed in geosynchronous orbit, which means that they stay in the same position around the center of the earth all the time. They're high enough to

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where they stay in the same position. That's why they're --- geo, meaning earth; synchronous, meaning synchronized with the earth. And the earth, in effect, rotates under the satellites. So you're constantly getting different constellations of satellites that ebb and flow with the level of information that you can receive with your receivers.

MR. UROSEK:

Thank you very much.

Again, I want to thank you for your cooperation in this matter.

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SWORN STATEMENT CONCLUDED

AT 11:22 A.M.

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EXHIBIT
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Scale: 1" = 50'