Page 489 1 \* \* \* \* \* 2 PUBLIC HEARING 3 ON THE SAGO MINE DISASTER 4 5 May 2, 2006 - May 4, 2006 б \* \* \* 7 May 3, 2006 8 9 10 \* \* \* \* West Virginia Wesleyan College 11 Rockefeller Physical Education Center 12 Buckhannon, West Virginia 13 14 \* \* \* \* \* 15 16 17 18 REPORTER: Miranda D. Elkins 19 20 21 22 Any reproduction of this transcript is 23 24 prohibited without authorization by the 25 certifying agency.

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4	Chair	4	Daughter, George Hamner
5	BRIAN MILLS,	5	DELEGATE WILLIAM HAMILTON,
6	Inspector at Large, WVMHST	6	Delegate, WV
7	JOHN COLLINS,	7	SENATOR DON CARUTH,
8	District Inspector, WVMHST	8	Senator, Mercer
9	KEVIN STRICKLIN,	9	SENATOR SHIRLEY LOVE,
10	MSHA District Manager, District	10	Senator, Oak Hill
11	Three Office, Morgantown	11	DELEGATE EUTACE FREDERICK,
12	RONALD HIXSON,	12	Delegate, WV
13	Mine Emergency Team Member	13	DELEGATE MIKE CAPUTO,
14	WILLIAM TUCKER,	14	Delegate, WV
15	Assistant Inspector at Large,	15	SENATOR JEFFREY KESSLER,
16	WVMHST	16	Senate Judiciary Committee
17	JOHN MEADOWS,	17	CECIL ROBERTS,
18	Surface Inspector, WVMHST	18	Family Representative
19	JOHN UROSEK,	19	PAM CAMPBELL,
20	Ventilation Expert, MSHA	20	Sister-In-Law, Marty Bennett
21	ANN MEREDITH,	21	PEGGY COHEN,
22	Daughter, James Bennett	22	Daughter, Fred Ware
23	JOHN HELMS,	23	Budghter, fred Ware
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1	P R O C E E D I N G S	1	to ten other mines. Mr. Jeff Rice is
2		2	vice president and trainer, and holds
3	PRAYER RECITED	3	certifications with the State of West
4	PLEDGE OF ALLEGIANCE RECITED	4	Virginia as a mine rescue instructor.
5	CHAIR:	5	Our records show that in
6	I want to make a special	6	2005, two miners received initial
7	mention of the crosses that are here	7	training and became members of the mine
8	and above the photos of the miners.	8	rescue team for Barbour. Twelve (12)
9	These were made by Justin Meredith, who	9	miners make up two teams of six members
10	is the grandson of Sago Miner James	10	each.
11	Bennett. He is an eighth grader at	11	Chapter 22(a) 135 of the
12	Philippi Middle School. There are	12	West Virginia code addresses mine
13	2,200 Lego pieces in each cross,	13	rescue teams. A brief summary of the
14	approximately three hours per cross.	14	portions of this is as follows. One,
15	And there is one miner one cross	15	the operator has the responsibility to
16	for each miner, and one cross	16	provide mine rescue coverage. Two
17	represents all miners, and Randal	17	teams must be available at all times
18	McCloy in the front. Thank you.	18	while miners are underground.
19	We will start this	19	Available, means capable of being at
20	morning with panel four. The	20	the mine in a reasonable time after
21	presentation by the West Virginia	21	notification. Team members are
22	Office of Miners' Health, Safety &	22	considered available, even though
23	Training and MSHA. And we will discuss	23	performing regular work duties or while
24	be discussing the explosion and the	24	in an off-duty capacity.
25	mine rescue. The first presenter will	25	Ground travel time
		20	
	_		
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1	_	1	-
	be Brian Mills, inspector at large at	1 2	Page 497 between any mine rescue station and the mine served shall not exceed two hours.
1 2 3	be Brian Mills, inspector at large at the West Virginia Miners' Health,		between any mine rescue station and the
2 3	be Brian Mills, inspector at large at the West Virginia Miners' Health, Safety & Training, who is accompanied	2	between any mine rescue station and the mine served shall not exceed two hours.
2	be Brian Mills, inspector at large at the West Virginia Miners' Health, Safety & Training, who is accompanied by Doug Conaway, John Collins, Bill	2 3	between any mine rescue station and the mine served shall not exceed two hours. A team consists of five members and one alternate. Each team member must
2 3 4 5	be Brian Mills, inspector at large at the West Virginia Miners' Health, Safety & Training, who is accompanied by Doug Conaway, John Collins, Bill Tucker, Eugene White and John Meadows.	2 3 4	between any mine rescue station and the mine served shall not exceed two hours. A team consists of five members and one alternate. Each team member must receive 40 hours of refresher training
2 3 4 5 6	be Brian Mills, inspector at large at the West Virginia Miners' Health, Safety & Training, who is accompanied by Doug Conaway, John Collins, Bill Tucker, Eugene White and John Meadows. Mr. Mills.	2 3 4	between any mine rescue station and the mine served shall not exceed two hours. A team consists of five members and one alternate. Each team member must receive 40 hours of refresher training annually. When engaged in rescue work,
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	Dogo 409		Daga E00
1	Page 498 approximately 10:45 a.m.	1	Page 500 will discuss the drilling operations.
2	Other rescue teams were	2	MR. COLLINS:
3	notified and made aware of this	3	Good morning. I'm John
4	situation, and asked to provide	4	Collins. I'm the district inspector
5	assistance at the mines. The names of	5	with the West Virginia Office of
6	those teams that responded were, the	6	Miners' Health, Safety & Training. I
7	Tri-State Mine Rescue Association,	7	was off-duty on holiday, January the
8	ICG's Viper team, McElroy Coal Company,	8	2nd, 2006. I live very close to the
9	McElroy Mine team, and teams from	9	Sago Mine. As the storm moved over, it
10	Consol Energy, which were Blacksville	10	awoke me at 6:30. I got up out of the
11	Number Two, Robinson Run, Loveridge,	11	bed and went downstairs and started
12	Shoemaker, Bailey, Enlow and Eighty-	12	drinking coffee and watching TV. At
13	,	12	approximately 15 minutes 'til 8:00, my
14	Four. And please let me note that some of these teams also have more than six	14	wife came in and said, are you talking
15	members.	14	to Johnny Stemple. And I said no, the
16		16	5 1
17	These teams began arriving at the mine in the afternoon	17	phone didn't ring. She said, well, I
18		18	never heard the phone ring, but I heard
19	on January the 2nd, 2006 and prepared	10	the answering machine pick up.
20	mine rescue equipment for use. Notification was also made on the	20	And I went through the house, I heard the last few words of
20		20	Johnny Stemple's message. So of course
22	morning of January the 2nd, 2006 to	21	
22	representatives of the West Virginia	22	it recorded, and here's what the
23 24	Miners' Health, Safety & Training and	23 24	message said. Hey, John Collins, this
24 25	MSHA Mine Emergency Response teams. Some members of these teams arrived at	24 25	is Johnny Stemple. It is about 15
20	Some members of these teams arrived at	20	minutes 'til 8:00, Monday morning,
	Page 499		Page 501
1	Page 499 the mine early morning, January the	1	Page 501 we've got a situation up at the Sago
1 2	_	1 2	-
	the mine early morning, January the		we've got a situation up at the Sago
2	the mine early morning, January the 2nd. Other members and necessary	2 3 4	we've got a situation up at the Sago Mine where there are men underground
2 3	the mine early morning, January the 2nd. Other members and necessary equipment began arriving by afternoon,	2 3	we've got a situation up at the Sago Mine where there are men underground that we have not been able to get ahold
2 3 4	the mine early morning, January the 2nd. Other members and necessary equipment began arriving by afternoon, early afternoon.	2 3 4	we've got a situation up at the Sago Mine where there are men underground that we have not been able to get ahold of, and it's been more than 30 I
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2 3 4 5 6	the mine early morning, January the 2nd. Other members and necessary equipment began arriving by afternoon, early afternoon. The Office of Miners' Health, Safety & Training Emergency	2 3 4 5 6	we've got a situation up at the Sago Mine where there are men underground that we have not been able to get ahold of, and it's been more than 30 I mean, more than 60 minutes. I tried to get ahold of Mark Wilfong, and no
2 3 4 5 6 7	<ul> <li>the mine early morning, January the</li> <li>2nd. Other members and necessary</li> <li>equipment began arriving by afternoon,</li> <li>early afternoon.</li> <li>The Office of Miners'</li> <li>Health, Safety &amp; Training Emergency</li> <li>Response team provided 11 persons</li> <li>during the rescue operation. A total</li> <li>of 19 employees of the West Virginia</li> </ul>	2 3 4 5 6 7	we've got a situation up at the Sago Mine where there are men underground that we have not been able to get ahold of, and it's been more than 30 I mean, more than 60 minutes. I tried to get ahold of Mark Wilfong, and no answer. I've tried to get ahold of
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	Page 502		Page 504
1	Attempting to discuss the situation	1	mine foreman, came out of his office
2	with Johnny Stemple as to what may have	2	about this time, and he said he was
3	happened, he said he did not know what	3	heading underground. I discussed the
4	had happened. He said that it may have	4	events some with Mr. Crumrine, and
5	been a high voltage cable explode. It	5	asked him not to go into the mine at
6	may have been a roof fall. And that	6	this time, because we already had two
7	sort of	7	groups of people that we were unable to
8	we just I could tell I didn't	8	communicate with. One group would have
9	have any answers, so what I did, I	9	been the Second Left crew, one group
10	said, just to consider that the State	10	would have been the five-group people
11	had been notified that there was an	11	• • • •
			attempting in a rescue.
12	emergency at that mine. And since I	12	I asked a foreman, James
13	live about four or five minutes from	13	Scott, to go to the return and get me a
14	the mine, that I was heading to the	14	reading coming out of the fan. I then
15	mine.	15	went to the dispatcher's office and
16	So Mr. John B. Stemple,	16	asked some questions of the dispatcher.
17	assistant safety director, notified	17	I looked at the CO monitor, and signed
18	John Collins, district inspector with	18	the record that the CO monitor was
19	the West Virginia Office of Miners'	19	making.
20	Health, Safety & Training of the	20	As I was coming out of
21	accident at 7:46 a.m. on January the	21	the dispatcher's office, I seen Mr.
22	2nd, 2006. Again, there wasn't a lot	22	Barry Fletcher and Mr. Jeff Bennett,
23	of information about what the event or	23	who are district mine inspectors with
24	accident was.	24	the West Virginia Office of Miners'
25	After discussing the	25	Health, Safety & Training, and both are
25	Arter discussing the	23	nearth, Safety & Training, and beth are
	Page 503		Page 505
1	Page 503 situation with Mr. Stemple for just a	1	Page 505 members of the mine emergency team
1	situation with Mr. Stemple for just a	1	members of the mine emergency team. I
2	situation with Mr. Stemple for just a few moments, I traveled to I told	2	members of the mine emergency team. I asked them also to get an air reading
2 3	situation with Mr. Stemple for just a few moments, I traveled to I told Mr. Stemple that I was going to the	2 3	members of the mine emergency team. I asked them also to get an air reading at the return and ask for Mr. Bennett
2 3 4	situation with Mr. Stemple for just a few moments, I traveled to I told Mr. Stemple that I was going to the mine, and consider that the state had	2 3 4	members of the mine emergency team. I asked them also to get an air reading at the return and ask for Mr. Bennett to secure the pre-shift, on-shift
2 3 4 5	situation with Mr. Stemple for just a few moments, I traveled to I told Mr. Stemple that I was going to the mine, and consider that the state had been notified.	2 3 4 5	members of the mine emergency team. I asked them also to get an air reading at the return and ask for Mr. Bennett to secure the pre-shift, on-shift record books and to sign them.
2 3 4 5 6	situation with Mr. Stemple for just a few moments, I traveled to I told Mr. Stemple that I was going to the mine, and consider that the state had been notified. I phoned Mr. Brian Mills,	2 3 4 5 6	members of the mine emergency team. I asked them also to get an air reading at the return and ask for Mr. Bennett to secure the pre-shift, on-shift record books and to sign them. I discussed the Second
2 3 4 5 6 7	situation with Mr. Stemple for just a few moments, I traveled to I told Mr. Stemple that I was going to the mine, and consider that the state had been notified. I phoned Mr. Brian Mills, inspector at large, my supervisor. We	2 3 4 5 6 7	<ul> <li>members of the mine emergency team. I asked them also to get an air reading at the return and ask for Mr. Bennett to secure the pre-shift, on-shift record books and to sign them.</li> <li>I discussed the Second Left pre-shift examination with Mr.</li> </ul>
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	5 - 54		5
1	Page 506	1	Page 508
1	talked with Mr. Gary Rowan.	1	transported the First Left crew and John Nelson Boni to the surface.
2 3	After receiving the first	2 3	Mr. Toler and Mr.
	air reading out of the return, I'm		
4	finding out that a small amount of	4	Schoonover stayed in the mine with Mr.
5	carbon monoxide was coming out of the	5	Owen Jones from the One Left crew and
6	mine. I issued a control order. Any	6	started assessing the conditions. Mr.
7	presence of carbon monoxide is an	7	John Patrick Boni, who was working at
8	indication of a mine fire or explosion.	8	the Number Four belt conveyor drive,
9	So I issued the control order under	9	exited the mine by the intake
10	Title 36, series 19, section 7.1 of the	10	escapeway, and Mr. James Fred
11	West Virginia Administrative	11	Jamison, who was walking along the
12	Regulations. And that is titled,	12	Number Two belt conveyor, exited the
13	Preservation of Evidence Following an	13	mine in the track entry.
14	Accident. And I, quote, 7.1. Unless	14	Upon arriving on the
15	granted permission by the Office of	15	surface, Mr. Wilfong and Mr. Hofer, the
16	Miners' Health, Safety & Training, no	16	First Left crew unloaded and came up to
17	operator may alter an accident site or	17	the mine office. Mr. Wilfong and Mr.
18	an accident-related area until	18	Hofer loaded ventilation curtain,
19	completion of all investigations	19	obtained additional detectors, perhaps
20	pertaining to that accident, except to	20	another rescuer or two, I think a hard
21	the extent necessary to rescue or	21	hat for Mr. Owen Jones, and they went
22	recover an individual, prevent or	22	back into the mine.
23	eliminate an imminent danger, or	23	They jointed Mr. Toler,
24	prevent destruction of mining property.	24	Mr. Schoonover and Mr. Jones along the
25	At 8:37 a.m. I briefed	25	Four belt conveyor and started
	Page 507		Page 509
1	Director Conaway of what I knew by my	1	installing stoppings where stoppings
2	cell phone. And at 9:00 a.m. I called	2	had been damaged or blown out between
3	Brian Mills with an update, and I	3	the intake and the track entry. I
4	discussed the event with Mr. Mark	4	believe they parked their mantrip at
5	Wilfong, assistant inspector at large,	5	approximately block 43 of Four track.
6	who had arrived at the mine. Mr. Mills	6	The crew installed ventilation curtains
7	arrived at the mine a little after	7	where stoppings had been knocked out
8	10:00 a.m.	8	between the track entry and the intake
9	Once I got to the mine, I	9	escapeways. The crew started at
10	learned that after the event that Mr.	10	approximately block 37 and advanced to
11	Jeffrey Toler, Mine superintendent, Mr.	11	block 58 at Four track.
12	Denver Wilfong, superintendent of	12	They said that as they
13	maintenance, and Mr. James Schoonover,	13	first started, they had enough air that
14	safety director, and Mr. Vernon Hofer,	14	this is the briefing that they give
15	maintenance foreman immediately entered	15	us when they came out, that they had
16	the mine via a battery powered track	16	enough air behind them that a couple
17	mounted mantrip.	17	guys could work on one open break,
18	These men traveled to	18	putting up a curtain. A couple more
19	Four track area of the mine where they	19	guys could move inby to the next one.
20	stopped to use the phone, and the First	20	Pretty soon they only had enough air to
			, , , ,
21	Left crew that was in the intake	21	where they could work on one at a time,
	Left crew that was in the intake		where they could work on one at a time, then after a while it got to where they
21 22 23	Left crew that was in the intake escapeway, heard the mantrip, went over	21 22 23	then after a while it got to where they
22	Left crew that was in the intake	22	
22 23	Left crew that was in the intake escapeway, heard the mantrip, went over to the track and flagged them down. So	22 23	then after a while it got to where they would build one and wait, build one and

	Page 510		Page	512
1	looking for additional damage to the	1	did so.	512
2	intake ventilation devices.	2	I stayed in the command	
3	At 9:30 a.m. Mr. Jeffrey	3	center until along with others	
4	Toler, mine superintendent, called	4	until approximately 7:00 a.m. the next	
5	outside. I'm not sure who else he	5	morning. I went home from seven	
6	talked with, but he asked to speak with	6	o'clock until 1:00 p.m. that day, and	
7	me. And at 9:30, Mr. Toler called me -	7	came back and stayed until the	
8	told me that they had made it to	8	completion.	
9	block 58 of Four track, but had now	9	Mr. Stricklin is going to	
10	encountered heavy smoke and soot.	7 10	start his presentation at that time,	
11	Their detectors had burnt up and there	11	and then we'll cover the State part.	
12	was not enough air to move the smoke.	12	•	
13	Mr. Toler stated that the	12	Thank you very much. MR. STRICKLIN:	
14		13 14	Thank you, Mr. Collins.	
15	crew was coming outside by the intake escapeway because the smoke and dust	15	Before I get started, I'd like to	
16	had now traveled outby in the track	16	introduce a couple of the other people	
17	entry, and it covered up the mantrip at	17	up here on the MSHA committee. Sitting	
18	block 43. Mr. Hofer and Mr. Jones had	18	two people down from me is Ron Hixson.	
19	already started outby in the intake	19	Ron Hixson is a member of the MSHA	
20	escapeway looking for damage to the	20	Mine Emergency Unit. Ron was one of	
20	ventilation controls.	20	the first people to go into the	
22	Mr. Toler, Mr. Schoonover	22	barricade. And during our	
22		22	presentation, if it's okay with you,	
23 24	and Mr. Wilfong caught up with these two men at 12 block of four track where	23 24	Mr. McAteer, we'd like for Ron to put	
24 25		24 25	•	
20	they were repairing an overcast that	20	on an apparatus, just so everyone will	
	Page 511		Page	513
1	had been damaged during the explosion	1	get an opportunity to see what it looks	
2	and was allowing intake air to short-	2	like and how he would wear it. And in	
3	circuit. The overcast was temporarily	3	addition to Mr. Hixson, next to him is	
4	repaired, and the men continued walking	4	Mr. John Urosek. John is the chief of	
5				
5	the intake escapeway to the surface	5	the ventilation division of our	
6	area and arrived at 10:30 a.m.			
	area and arrived at 10:30 a.m. At about this same time,	5 6 7	the ventilation division of our	
6 7 8	area and arrived at 10:30 a.m. At about this same time, Mr. James Satterfield and Pat Vanover,	5 6 7 8	the ventilation division of our technical support group, and both of these individuals naturally were onsite at the Sago Mine.	
6 7 8 9	area and arrived at 10:30 a.m. At about this same time, Mr. James Satterfield and Pat Vanover, with MSHA, arrived at the mine. The	5 6 7	the ventilation division of our technical support group, and both of these individuals naturally were onsite at the Sago Mine. CHAIR:	
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		Page 514		Page 516
1	morning from their interview process.		1	Shortly after they
2	Again, just going over		2	arrived, as John Collins mentioned,
3	some of the points that we'll be		3	they were briefed, and they basically
4	discussing during the presentation is		4	started talking to people who were in
5	the mine portal location where the men		5	One Left, as well as talking to people
6	entered the mine, the One Left or		6	who may have been part of the initial
7	First Left and Second Left sections.		7	rescue attempt to get as much
8	The Two north main seals and the area		8	information as we could.
9	that we'll be traveling between the		9	I think it was shortly
10	mine portals and the Two North main		10	after that time that we realized an
11	seals or the One Left section.		11	explosion and/or a fire had occurred.
12			12	•
	At approximately 8:30		12	That's based on the stoppings being
13	a.m., MSHA Bridgeport field office			blown out, the amount of CO that we
14	supervisor, Jim Satterfield, was		14	saw, the discussions with the people
15	notified of the accident by Johnny		15	who were underground.
16	Stemple. And Jim did issue a 103 (k)		16	Mine rescue teams began
17	order. At that time, Mr. Satterfield		17	arriving at the mine at about 11:00
18	knew that a situation existed at the		18	a.m., and continued to arrive
19	mine. At least nine people were		19	throughout the day. My understanding
20	unaccounted for, and there were a		20	is the first two teams that arrived at
21	couple of stoppings out, and there had		21	the mine were the Barbour County teams,
22	been a lightning strike. So Jim did		22	arriving at about 11 o'clock, and they
23	the appropriate thing by issuing a (k)		23	felt they were prepared to go
24	order.		24	underground at approximately 12:00
25	What a (k) order is, it's		25	noon.
		Page 515		Page 517
1	a tool that we use in MSHA that		1	Approximately at 11:30
2	basically protects the safety of the		2	a.m., the CO readings were 500 parts
3	miners. And what it it doesn't		3	per million, while the methane readings
4	prohibit anything other than the fact		4	had decreased to six-tenths at the
5	that the mine operator is required to		5	return entry in the pit. These
6	submit a plan to MSHA, and we will		6	readings in conjunction with the damage
7	approve it if we feel that it doesn't		7	to ventilation controls indicated there
8	decrease the safety of the operation or		8	still was a hazard for another
9	going back underground. So we		9	explosion. However, at 12:00 noon, the
10	basically had the authority to deny a		10	concentrations of CO dramatically
11	plan or approve a plan in this		11	increased to 2,600 at the return entry.
12	situation with the (k) order.		12	And elevated CO levels
13	Jim got on the phone and		13	were detected in the office building,
14	started contacting people. Again, we		14	where John had mentioned earlier, where
14	were very similar to the state in that		14	a command center was being set up.
16	5		16	Because of this and the concentrations
	it was a federal holiday. Jim was at			
17	home, and Jim did get in touch with a		17 10	that were being seen in it, I think it
10	$\alpha$		18	was mentioned yesterday that depending
18	couple of inspectors, contacted them		10	
19	and asked them to meet him in the		19	on who you talked to, you get different
19 20	and asked them to meet him in the office, gather their gear together,		20	sometimes a little different
19 20 21	and asked them to meet him in the office, gather their gear together, because we have a situation at the Sage	)	20 21	sometimes a little different information. I've heard anywhere
19 20 21 22	and asked them to meet him in the office, gather their gear together, because we have a situation at the Sago Mine.	)	20 21 22	sometimes a little different information. I've heard anywhere between 130 parts per million of CO in
19 20 21 22 23	and asked them to meet him in the office, gather their gear together, because we have a situation at the Sago Mine. They got into the office and traveled	)	20 21 22 23	sometimes a little different information. I've heard anywhere between 130 parts per million of CO in the building, up to 600 inside of the
19 20 21 22 23 24	<ul> <li>and asked them to meet him in the office, gather their gear together, because we have a situation at the Sage Mine.</li> <li>They got into the office and traveled to the mine, arriving at approximately</li> </ul>	)	20 21 22 23 24	sometimes a little different information. I've heard anywhere between 130 parts per million of CO in the building, up to 600 inside of the building.
19 20 21 22 23	and asked them to meet him in the office, gather their gear together, because we have a situation at the Sago Mine. They got into the office and traveled	)	20 21 22 23	sometimes a little different information. I've heard anywhere between 130 parts per million of CO in the building, up to 600 inside of the

Page 30Page 301responsibility at that time to issue anmanagement, they stopped their initial2imminent danger and protect the safetybecause of dense smoke and the4people that were in that area. And webecause of dense smoke and the5basically wanted to get everybody out5I was part of the team6into a safe location so no one would bethat investigated an explosion at the7injured by the concentrations of CO7Jim Walters Resources Mine in 2001.8that were very high, not only coming8There was one individual that was9out of the mine, but in the area of the9caught in the mine after an initial10building.10explosion. Twelve (12) additional11There was a concern at11miners went in to rescue him. They12that time that the increase in CO,12made a valiant effort. Unfortunately,13a second explosion or curred and we had1413 fatalities. That's something that14nave even been a possible second1413 fatalities of a second explosion.15seconcentrations increase that17And we have to look at that, and we16to ko kat trends. It's not19guickly as we can, but we have to20certain number that were basically20protect the mine rescue team members21tied into, as much as we want to know21that are actually going to go into the23in concentrations. It's not					
2       imminent danger and protect the safety       2       rescue attempt early that moning         3       of not only the mines, but of all the       4       people that were in that area. And we       5         5       basically wanted to get everybody out       5       I was part of the team         6       into a safe location so no one would be       6       that investigated an explosion at the         7       injured by the concentrations of CO       7       Jim Walters Resources Mine in 2001.         8       that were very high, not only coming       8       There was one individual that was         9       out of the mine, but in the area of the       9       caught in the mine after an initial         10       building.       10       explosion - a fire that was increasing       11       miners went in to rescue him. They         12       again, was an indication that there may       a second explosion courcard and we had       13       14       13 fatalities. That's something that         14       astimations increase       16       possibilities of a second explosion.       16       possibilities of a second explosion.         17       because or is decreasing       21       into a read is stable or is decreasing       22       mine to rescue people.         18       to dramatically. One of the things we t			Page 518		Page 520
3       of not only the miners; but of all the secure of dense sinoke and the mine scale location so no one would be secure yosibility of a second explosion.       3         4       people that were in that area. And we be assigned to get everybody out into a safe location so no one would be for injured by the concentrations of CO.       1       was part of the team         6       injured by the concentrations of CO.       7       Jim Walters Resources Mine in 2001.         7       There was a concern at       10       explosion. Twelve (12) additional         10       building.       11       miners went in to rescue him. They         11       made a valiant effort. Unfortunately, again, was an indication that there may take ven been a possible reconcentrations increase that       11       male a valiant effort. Unfortunately, as excload explosion.         12       that time that the increase in CO, take wen been a possible reconcentrations increase that       13       asecond explosion occurred and we had         13       taking about or a fire that was increasing in concentrations.       14       13 fatalities. That's something that         14       tad armatically. One of the things we try take have to not only try to get in as       10       guick as we can. but we have to to concentrations.         15       tield into, as much as we want to know       21       that are actually going to go into the         16       tield into, as much as we want to know<	1	responsibility at that time to issue an		1	management, they stopped their initial
3       of not only the miners, but of all the       3       because of dense smoke and the         4       people that were in that area. And we       5       J was part of the team         6       into a safe location so no one would be       6       I was part of the team         6       into a safe location so no one would be       6       I was part of the team         7       into a safe location so no one would be       6       I was part of the team         8       that were very high, not only coming       9       caught in the mine case in 12001.         8       There was a concern at       10       explosion. Twelve (12) additional         10       building.       11       miners went in to rescue him. They         13       again, was an indication that there may       13       a second explosion cccurred and we had         14       have even been a possible second       14       13 faitilies. That's something that         15       explosion or a fire that was increases that       17       And we have to look at that, and we         18       dramatically. One of the things we try       18       have to not only try to get in as         10       to look at trenks. It's nor a       pup with a we are basically       20         21       that are aclually going to go into the <td< td=""><td>2</td><td>imminent danger and protect the safety</td><td></td><td>2</td><td>rescue attempt early that morning</td></td<>	2	imminent danger and protect the safety		2	rescue attempt early that morning
4       people that were in that area. And we       4       possibility of a second explosion.         5       basically wanted to get everybody out       5       I was part of the team         6       into a safe location so no one would be       6       that investigated an explosion at the         7       injured by the concentrations of CO       7       Jim Watters Resources Mine in 2001.         8       that were very high, not only coming       8       There was an eindividual that was         9       out of the mine, but in the area of the       9       caught in the mine after an initial         11       There was an eindividual that was       6       that investigated an explosion cafter that was increasing         12       made a valiant effort. Unfortunately,       a second explosion occurred and we had         13       tatalities. That's something that       9       explosion.         14       a failalities. That's something that       16       possibilities of a second explosion.         15       exe concentrations increase that       17       And we have to look at that, and we         16       that area is stable or is decreasing       1       have to ontolny try to get in as         16       that area is stable or is decreasing       21       that are actually going tog on tothe         23					, , , ,
5       basically wanted to get everybody out       5       1       was part of the team       that investigated an explosion at the         6       into a safe location so no one would be       6       1       was part of the team       that investigated an explosion at the         7       Jim Walters Resources Mine in 2001.       8       There was one individual that was         9       out of the mine, but in the area of the       7       Jim Walters Resources Mine in 2001.         10       building.       10       explosion. Twelve (12) additional         11       There was a concern at       11       miners went in to rescue him. They         13       again, was an indication that there may       13       a second explosion occurred and we had         14       13 fatalities. That's something that       15       explosion.       14       13 fatalities. That's something that         15       explosion or a fire that was increasing       15       we're all aware of, and we hade       16       possibilities of a second explosion.         16       in kine as is table or is decreasing       16       postilities of a second explosion.       17       And we have to look at that, and we         20       certain number that we're basically       20       protect the mine rescue team members         11       taking ab					
6       into a safe location so no would be       6       that investigated an explosion at the         7       injured by the concentrations of CO       7       Jim Walters Resources Mine in 2001.         8       that were very high, not only coming       0       caught in the mine after an initial         9       out of the mine, but in the area of the       9       caught in the mine after an initial         11       There was a concern at       11       miners went in to rescue him. They         12       that time that the increase in CO,       12       miners went in to rescue him. They         13       a second explosion occurred and we had       13       fatalities. That's something that         14       that even been a possible second       14       13 fatalities. That's something that         15       welre all avare of and we realize the       possibilities of a second explosion.       17         16       in intensity. It's very abnormal to       16       possibilities of a second explosion.       18         16       in intensity. It's very abnormal to       16       possibilities of a second explosion.       10         17       bade tareaty being       20       protect the mine rescue team members       21       that are actually going to go into the       22         18       have to not only		· ·			
7       injured by the concentrations of CO       7       Jim Walters Resources Mine in 2001.         8       that were very high, not only coming       0       0       There was a concent at         10       building.       10       explosion. Twelve (12) additional         11       miners went in to rescue him. They         12       that were very abnormal to       10       explosion. Twelve (12) additional         15       explosion or a fire that was increasing       15       we're all aware of, and we realize the         16       in intensity. It's very abnormal to       16       possibilities of a second explosion.         17       sec concentrations increase that       17       And we have to look at that, and we         18       dramatically. One of the things we try       18       have to not only try to get in as         19       to do is look at trends. It's not a       19       quickly as we can, but we have to         20       certain number that we're basically       20       protect the mine rescue team members         21       that are actually going to go into the       22         22       things that we wanted to do. I'm       23       Work had already begun         23       well as the mine operator in the State,       2       discussed at the Two Left to <tr< td=""><td></td><td>,</td><td></td><td></td><td>•</td></tr<>		,			•
8         that weré very high, not only coming out of the mine, but in the area of the building.         8         There was an individual that was caught in the mine area in thial           11         There was a concern at the time that the increase in CO,         12         made a valiant effort. Unfortunately,           13         again, was an indication that there may thave even been a possible second         14         13 fatailities. That's something that           14         have even been a possible second         14         13 fatailities. That's something that           15         explosion or a fire that was increasing         15         we're all aware of, and we realize the           16         in intensity. It's very abnormal to         16         possibilities of a second explosion.           17         see concentrations increase that         17         And we have to look at that, and we           18         naccertain number that we're basically         20         protect the mine rescue team members           21         tiel into, as much as we want to know         21         that are a clusily going to go into the           22         if the area is stable or is decreasing         20         protect the mine rescue team members           21         talking about our agency, I think, as         24         over the surface area of You Left to           25         have tha det aduity the </td <td></td> <td></td> <td></td> <td></td> <td>- · ·</td>					- · ·
9       out of the mine, but in the area of the building.       9       caught in the mine after an initial         10       building.       10       explosion. Twelve (12) additional         11       There was a concern at       11       miners went in to rescue him. They         12       that time that the increase in CO.       12       made a valiant effort. Unfortunately,         13       again, was an indication that there may       13       a second explosion occurred and we had         14       have even been a possible second       14       13 fatalities. That's something that         15       explosion or a fire that was increasing       16       in something that were van about there may         16       in intensity. It's very abnormal to       16       possibilities of a second explosion.         17       see concentrations increase that       17       And we have to look at that, and we         18       have to not only try to get in as       19       quickly as we can, but we have to         20       certain number that we're basically       20       protect the mine rescue team members         21       tied into, as much as we want to know       21       that are actually going to go into the         22       that was one of the first       24       discussed at the Two Left belt         25					
10       building.       10       explosion. Twelve (12) additional         11       There was a concern at       11         11       There was a concern at       11         11       There was a concern at       11         12       that time that the increase in CO,       12         13       again, was an indication that there may       13         14       have even been a possible second       14         15       were all aware of, and we realize the         16       in intensity. It's very abnormal to       16         17       see concentrations increase that       17         18       dramatically. One of the things we try       18         19       to do is look at trends. It's not a       19         20       certain number that we're basically       20       protect the mine rescue team members         21       tied into, as much as we want to know       21       that are actually going to go into the         21       if the area is stable or is decreasing       23       Work had already begin         24       That was one of the first       24       over the surface area of Two Left to         25       things thet we wanted to do. I'm       26       have the ability to measure exacity what         8		, , , , , , , , , , , , , , , , , , ,			There was one individual that was
11       There was a concern at that time that the increase in CO, again, was an indication that there may have even been a possible second       11       miners went in to rescue him. They made a valiant effort. Unfortunately, again, was an indication that there may that we even been a possible second         14       have even been a possible second       14       13 fatalities. That's something that there may that the increase that that and we had that and we have to look at that, and we have to look at that and we ha	9	out of the mine, but in the area of the		9	caught in the mine after an initial
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	Page 522		Page 524
1	course, and we would start trending	1	equipment that he may use. He's putting
2	those, get an idea of exactly where we	2	on the face piece, and I think what it
3	were seeing the concentration of CO and	3	will show you later is one of the
4	methane, and then we were going to have	4	reasons that the communication may not
5	a discussion as to when the rescue	5	have been as clear as what we would
6	teams would be able to go underground.	6	have liked it to be, because the face
7	The increase in CO really	7	piece that he's putting on, he's going
8	did cause a concern, and it caused us	8	to speak inside of it, and when Ron was
9	to sit back and look at the numbers to	9	at the face and we'll talk about it
10	see if we had a second explosion or if	10	later, he's going to try to talk
11	a fire was increasing in size. Well,	11	through a walkie-talkie outside of it.
12	at approximately 4:15, we trended five	12	This type of apparatus
13	samples, and I believe the first sample	13	was the type used by all the
14	taken came back at, I believe it was	14	individuals that did go underground as
15	either 2,600 or 3,700 parts per million	15	far as the mine rescue team at the Sago
16	of CO. And the numbers did start	16	Mine. When we initially went in the
17	indicating a downward trend.	17	mine here, the men were not wearing the
18	We got together with the	18	face pieces. They carried them on
19	company and the state, and we decided	19	their back, but if they had to go over
20	that it was time to try to get the	20	into the return, which they shortly
21	teams underground. The situation still	21	did, because we had water in the return
22	wasn't a very good situation, but we	22	near the old seals that was blocking,
23	felt with a downward trend, that it was	23	that could
24	time to take a shot, to get in there	24	it continued to build up, could
25	right at that time.	25	have blocked airflow. So we had to go
	Page 523		Page 525
1	This would be a good time	1	over there and actually get the pump
2	for you to put that apparatus on.	2	started.
3	At 5:25 the first mine	3	If you would, Ron, just
4	rescue team entered the mine. And	4	as an example, if you could count from
5	basically, our intent wasn't to stop	5	one to ten?
6	and do a whole lot of stuff, it was to	6	MR. HIXSON DEMONSTRATES
7	move forward. We I know the	7	MR. STRICKLIN:
8	question's been asked, were you	8	As I mentioned earlier,
9	following mine rescue procedures, and	9	water was encountered at the 21
10	the answer is no. We basically didn't	10	crosscut, and we basically had to go
11	ask the teams to go over in the returns	11	over there, and it was in agreement,
12	and measure things. We didn't ask them	12	and it was a plan that the company
13	to go in all the entries like you	13	submitted. What we asked is, the
14	typically would do with a rescue team.	14	company to submit a plan. And I know
15	We asked them to stick their hand	15	there's been some discussion on whether
16	through the door in the return and	16	the submittal of plans held up the
17	actually take just a handheld reading	17	rescue operation. And the submittal of
18	with your hand through there to give us	18	the plans, I don't think that it did.
19	an idea of what was there.	19	What we tried to do is
20	As Ron's putting on this	20	look forward and look to issues that
21			may be coming up in front of us. For
00	apparatus, you can see it's a pretty	21	
22	bulky piece of equipment. It weighs	22	instance, we knew we were going to come
23	bulky piece of equipment. It weighs about 40 pounds. In addition to what	22 23	instance, we knew we were going to come up to the One Left area and we talked
	bulky piece of equipment. It weighs	22	instance, we knew we were going to come

1there was any reason to go in there?2Things were thought out3in advance to try to come up with ideas4and situations that, in the future,5when we came upon them, we wouldn't6surprise anybody. Basically, you tried7to put together a flow chart, and you8come up with what you think is going to9occur, and you try to cover all of the10bases to that flow chart as you're11exploring through the mine.12Exploration continued13through the remainder of the day and14evening with the regular exchange of15teams. I believe Mr. Collins said16there were 13 teams onsite. And in a	je 528
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16 there were 13 teams onsite. And in a 16 where an explosive mixture was located,	
$17 \qquad 147 \qquad$	
17 situation where it lasts a long time 17 it could cause an explosion of itself	
18 like this did, you have to be able to 18 as well.	
19 give teams a break. Pull them out and 19 One of the frustrating	
20 let them rest for awhile. 20 things that I found during this whole	
21 Typically, a rescue team 21 operation was that we were basing every	
22 will only advance about two hours, and 22 decision we had on the concentrations	
23 then they come back out of that 23 of CO that we were getting out of the	
24 exploration mode, and they're used as a 24 return air course, which is about two	
25 back up. So you have to have enough 25 and a half miles away. Unfortunately,	
Page 527 Page 527	je 529
1 teams together to keep them fresh as 1 there were no boreholes anywhere where	
2 you can. And as time goes on and as 2 we could get a bottle sample or a	
3 days go on, it becomes tougher and 3 handheld reading closer than that to	
4 tougher for these people to be at their 4 see what we actually had.	
5 best, physically. 5 In the concentrations we	
6 I mentioned earlier that 6 were looking at this return air course,	
7 a decision was made to put a borehole 7 the .6 methane, or higher at one time.	
8 into the mine. And the drill site that 8 The 2,000 parts per million CO would	
9 was selected was pinpointed at the Two 9 indicate, based on dilution and	
10Left tailpiece. And equipment began10stoppings being out, that the	
11drilling set up the drilling at11concentrations had to be much higher	
12about 1:35 in the morning.12inby the area where somewhere where	
13Unfortunately, there was13the explosion occurred. And you have	
14 there was a it was an overcast 14 to remember, at this time, we did not	
15 day and a number of the GPS equipment 15 know where the explosion occurred at.	
16 that was used, I guess couldn't tie 16 We just knew it was somewhere inby the	
17 into the satellites that you had 17 Two Left switch.	
18 that you needed to tie in to pinpoint 18 Well, a decision was made	
19 this location on the surface. 19 that we needed to pull the people out	
20 The teams continued to 20 of the mine before we could kick the	
21 advance underground, and at 2:40 in the 21 power to that CO system. As the people	
22 morning, they came upon an area in the 22 were coming out of the mine, the	
23 belt entry where there was a red light 23 drilling begins for the borehole into	
, , , , , , , , , , , , , , , , , , , ,	
24on. And they went over into the belt24Two Left tailpiece area. It had 25825entry, and it was determined at that25feet from the surface to go into the	

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1 mine.	1 into the seam. And again, this is
2 This just shows an area	2 another possibility of if there's an
3 where the borehole was pinpointed at.	3 explosive mixture in the area where
4 As you can see by this picture, there's	4 this borehole went through because of
5 a lot more areas that are shown in	5 the sparks, it could in and of itself
	6 cause an explosion. So a decision had
7 open entries that are shown in white.	7 already been made that everybody would
	8 have to be withdrawn from the area when
	9 the borehole actually entered into the
	10 coal seam.
, , , , , , , , , , , , , , , , , , ,	11 Well, all the persons are
5	12 withdrawn from the pit area, at 5:35
5	13 the hole punches through, and
	14 approximately 1,200 parts per million
5	15 CO is detected with the handheld
,	16 instrument.
5.5	17 Shown on the map here in
5 1 5	18 addition to the orehole location is the
	19 location of the barricade. It's shown
	20 in yellow, and it's basically about 300
	21 feet away from where the borehole
	22 entered the mine. What we did was, we
<u> </u>	23 shut down all the drilling equipment at
5	that time in the hopes that someone
5 1	that was in the area could come to the
Page 531	Page 533
1 on the computer, so now we knew that	1 bottom of the borehole and actually hit
2 there were no power sources in the	2 on the drill still.
3 mine.	3 The mine rescue team
4 Another tool that we	4 shortly after that were sent back into
5 wanted to use, and it really didn't	5 the mine. And as they're coming into
, , , , , , , , , , , , , , , , , , ,	6 the mine, a camera was lowered into the
7 didn't hold up the rescue at all was	7 Two Left borehole. The camera was
	8 located right over top of the belt
9 looking at the maps, and we were about	9 feeder there, that we just showed a
	10 picture of. And there were no
	11 indications of explosive force in that
5	12 area. And a shuttle car was sitting
	13 there. The section basically looked
	14 like it was ready to mine coal. And I
5.	15 think it caught some people by
	16 surprise, because I think there was
	17 some feeling that the explosion may
5	18 have occurred toward the face of Two
51 1 5 5	19 Left. It was typically you would
5	20 expect an explosion to occur where
	21 people were actually at.
5 5	As I mentioned earlier,
5 1	the robot was disabled, a decision was
5 5	<ul> <li>24 made to bypass One Left. This, again,</li> <li>25 I think was a calculated risk, knowing</li> </ul>

	Page 534		Page 536
1	that a fire could have existed there.	1	going to find, but we was going to
2	And one of the other concerns we had	2	touch base in that area.
3	was, did we think Mr. Helms had left	3	Well, we go over there,
4	One Left. We know he had done his pre-	4	and I recall the mine rescue team
5	shift in One Left, and we had been told	5	calling outside that they were in the
6		6	<b>o i</b>
7	that he was going to go toward the mouth of Two Left, and that's where he	7	Number Ten entry, or maybe it's the
			Number Nine entry, and they were in an
8	would start his shift at.	8	area that was very high. And I think a
9	And I know we did a lot	9	lot of people just looked at each
10	of talking with a lot of people who had	10	other, and it was determined then that
11	been underground and how he typically	11	they had gone inby where the seal
12	did his job. And a decision was made	12	location was, into where the area had
13	at that time to we felt that he	13	been bottom mined. And they basically
14	probably would not be in One Left any	14	worked their way across the entire set
15	longer and he would have moved toward	15	of seals where they were at and
16	Two Left.	16	determined they were all blown in an
17	Approximately two o'clock	17	outby direction, and that the
18	p.m., the team arrived near the One	18	concentrations of carbon monoxide
19	Left section return entry, and we	19	ranged from 300 to 700, and methane
20	basically just checked to see what type	20	ranged from five-tenths to 1.4.
21	of readings we had in that return. The	21	Again, this was an area
22	mine operator had cordoned off the	22	that, I think, gave us an idea
23	intake going into One Left with the	23	naturally at that time, it wasn't
24	canvas checks. And we were aware of	24	conclusive, but it kind of indicated
25	that. And it was in his effort to try	25	that the explosion originated in this
1	Page 535	1	Page 537
1	to push more toward Two Left. We just	1	sealed area.
2	to push more toward Two Left. We just wanted to make sure that there were no	2	sealed area. Well, when you look at
2 3	to push more toward Two Left. We just wanted to make sure that there were no very bad concentrations of gas coming	2 3	sealed area. Well, when you look at the numbers, there was a very good
2 3 4	to push more toward Two Left. We just wanted to make sure that there were no very bad concentrations of gas coming out of One Left, and gave us the	2 3 4	sealed area. Well, when you look at the numbers, there was a very good chance that there could be an explosive
2 3 4 5	to push more toward Two Left. We just wanted to make sure that there were no very bad concentrations of gas coming out of One Left, and gave us the ability to bypass it and go further	2 3 4 5	sealed area. Well, when you look at the numbers, there was a very good chance that there could be an explosive mixture inby this area. And we didn't
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	Page 538		Dago E40
1	blown out, as well as the stoppings	1	Page 540 made to travel toward the face. So
2	that were on the outby side and to	2	between nine o'clock and 11:14, we
3	direct airflow up against the seals to	2	started tying in all these areas as we
4	ventilate them.	4	advanced toward the face.
5	Just shortly after seven	5	About 11:32 the mine
6	o'clock the teams begin advancing	6	rescue team advanced to crosscut 15 in
7	through the mouth of Two Left and begin	7	Two Left, and they were advancing up to
8	exploring the section. All the primary	8	the face at that time. And with that,
9	escapeway ventilation controls from the	9	I'm going to ask Ron Hixson, who was
10	mouth of the section at crosscut 12	, 10	one of the first people into the
11	were damaged.	11	barricade to basically just discuss his
12	At approximately 7:27	12	travel during this time period.
13	p.m. the Two Left mantrip was observed,	13	MR. HIXSON:
14	and the teams advanced toward it. The	14	We were advancing in the
15	mantrip was located at crosscut ten	15	Number Five track entry. We were
16	with no persons in it. The team	16	moving at a very quick pace. We had
17	traveled the track entry two crosscuts	17	already explored as far as 19 crosscut.
18	inby with no miners observed. And at	18	We knew that our goal was to get to
19	that time, the report from the rescue	19	the faces. We thought for sure that's
20	teams out was there was evidence that	20	where the men would be, or we would
21	the crew tried to use the mantrip to	21	just think that we would find the
22	escape in the track entry.	22	miners.
23	Well, the team advanced,	23	Going up, we would have
24	as I said, a little further in past the	24	been traveling the Number Five track
25	mantrip, they came over into the	25	entry. When we got up to 25 crosscut,
		20	
	Page 539		Page 541
1	primary escapeway, and they discovered	1	to our left was a check curtain. The
2	evidence at crosscut 11 where 12 SCSRs	2	check curtain caught our eye. We
3	had been opened. That was the top and	3	thought it may have been a barricade,
4	bottom parts to each of the canisters	4	and we advanced on up to 26 crosscut,
5	were opened in this particular area.	5	saw nothing in the face of Number Five
6	And there were footprints observed from	6	entry, traveled across the crosscut 26,
7	crosscut ten towards the mouth of the	7	and at that point I went outby with
8	section before the footprints were	8	another team member to check the
9	lost.	9	backside of what we thought might
10	At that time, we're	10	may have been a barricade.
11	trying to tie in we have footprints	11	The team captain and
12	coming outby, and we're trying to tie	12	other men traveled through the crosscut
13	in all of the area of Two Left to see	13	towards what actually turned out to be
14	if these gentlemen may have barricaded	14 1	the barricade. When I got down to 25
15	in this area or may have somehow gotten	15 14	crosscut, I found out that that was not
16	turned around and was going into the	16 17	a barricade.
17	area that had previously been sealed.	17 10	When we were in the
18	And we talked to rescue teams as we	18 10	crosscut, before we got to the first
19	debriefed them, and we were confident	19 20	check curtain before the barricade, it
20 21	that they did not go into the	20 21	was at that time we could hear Mr.
21	previously sealed area after talking to	21 22	McCloy trying to breathe. It was a
22	rescue teams, as well as we were	22	real deep type snore, really working
	confident that we tied in all this	25	hard to breathe
	confident that we tied in all this	23 24	hard to breathe.
24 25	confident that we tied in all this outby area here. And a decision was then	23 24 25	Nard to breathe. Whenever I went through the barricade, the team captain had

	Page 542		Page 544
1	already gone through. They already had	1	again. We were hollering at Mr. McCloy
2	Mr. McCloy lying flat and were working	2	telling him to breathe, telling him to
3	with him trying to get an SCSR on him,	3	work with us, anything that we any
4	and they were hollering at him, trying	4	kind of response that we could get.
5	to get him to talk. The rest of the	5	I had then left the
6	miners were checked very quickly.	6	barricade again, come back to 23
7	We checked for a pulse,	7	crosscut. At 23 crosscut I used the
8	checked for any signs of breathing. We	8	walkie-talkie again. I was talking to
9	knew at that time we didn't have enough	9	the men at Number Nine room. We were
10	people with us to bring Mr. McCloy out,	10	looking for medical oxygen, trying to
11		11	
	and I immediately left there and then		find anything that we could get to help
12	went back to 23 crosscut, where the	12	Mr. McCloy.
13	power center was. I ran back to use the	13	All about the same time,
14	walkie-talkie system that we were using	14	the backup team had come in to help us.
15	for communications to call back to	15	Got up to the load center, the power
16	Number Nine crosscut to communicate	16	center at 23 crosscut where we were all
17	that we needed we had all 12 guys	17	at, at that time, myself, another team
18	accounted for, and that we had one man	18	member, and we traveled back to the
19	alive.	19	barricade.
20	I also told them that we	20	We went into the
21	needed help, and we needed help right	21	barricade area, they were still working
22	away. From earlier, when we started	22	with Mr. McCloy. They were trying to
23	exploration, one of the apparatuses had	23	get him on the stretcher and get him
24	failed, so when we started in Two Left,	24	secured to a stretcher for the trip
25	we were one man short going in.	25	out. Again, we checked everybody, made
20	we were one man short going in.	20	out. Again, we checked everybody, made
	Page 543		Page 545
1	Page 543 As this slide is showing	1	Page 545 sure we had everybody accounted for to
1	As this slide is showing	1	sure we had everybody accounted for to
2	As this slide is showing also, at Number Nine crosscut, we had	2	sure we had everybody accounted for to make sure that we didn't have another -
2 3	As this slide is showing also, at Number Nine crosscut, we had to drop a second man with a handheld	2 3	sure we had everybody accounted for to make sure that we didn't have another - a weak pulse or something that we
2 3 4	As this slide is showing also, at Number Nine crosscut, we had to drop a second man with a handheld walkie-talkie so that we would have	2 3 4	sure we had everybody accounted for to make sure that we didn't have another -
2 3 4 5	As this slide is showing also, at Number Nine crosscut, we had to drop a second man with a handheld walkie-talkie so that we would have communications as we traveled on inby.	2 3 4 5	sure we had everybody accounted for to make sure that we didn't have another - a weak pulse or something that we didn't pick up on the first two checks.
2 3 4 5 6	As this slide is showing also, at Number Nine crosscut, we had to drop a second man with a handheld walkie-talkie so that we would have communications as we traveled on inby. Typically, this is not how we do mine	2 3 4 5 6	sure we had everybody accounted for to make sure that we didn't have another - a weak pulse or something that we didn't pick up on the first two checks. It was very shortly after
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	Page 546		Page 548
1	Everything was we	1	from the mouth of the section, in the
2	were doing we were doing it at a	2	intake entry at approximately 58
3	fast pace, and we were doing it with	3	crosscut, we had a man sitting there,
4	all of our gear on.	4	and that was called our fresh air base.
4 5	When the conditions down	4 5	
		5 6	At that location he had a telephone
6	along the track entry, there's a couple		system from himself to the outside. He
7	locations where there's a lot of water,	7	also had on him a headset, which is a
8	knee-deep water, mud. There's the	8	mine rescue headset that we normally
9	rails, the gravel that they ballast the	9	take underground, and that's where we
10	track with. We got down more towards	10	get the 1,000 foot distance from. That
11	the front of the section. There was	11	reel gives a 1,000-foot reach.
12	actually debris from the explosion	12	But that headset that he
13	laying in the track entry. And as I	13	had on extended through the crosscut,
14	said before, it was a very difficult	14	then up the track entry to the switch.
15	travel or a carry.	15	It didn't go inby the switch, it was
16	As we had a couple extra	16	just at the mouth of the switch.
17	men with us, as one man would tire out,	17	At that location we had
18	he would scream out he needed relieved.	18	another man standing with the other end
19	One of the men that was traveling	19	of the headset and the other end of the
20	would jump in, he would take over, and	20	hardwire. We had a second man at that
21	the other man would walk beside and	21	location also, and he had a walkie-
22	rest while we were still carrying. We	22	talkie.
23	never quit carrying Randy Mr.	23	Anybody going inby that
24	McCloy. We never quit moving with him.	24	area had to be under apparatus because
25	About Number Nine	25	of the concentrations of CO. As
	Page 547		Page 549
1	Page 547 crosscut, the apparatus that I just	1	Page 549 we traveled up the entry from prior
1 2		1 2	-
	crosscut, the apparatus that I just		we traveled up the entry from prior
2	crosscut, the apparatus that I just showed you, my warning whistle went	2	we traveled up the entry from prior exploration, we knew that we would not
2 3	crosscut, the apparatus that I just showed you, my warning whistle went off. I was out of oxygen, or low on	2 3	we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine
2 3 4	crosscut, the apparatus that I just showed you, my warning whistle went off. I was out of oxygen, or low on oxygen. I don't want to say I was out. I was low on oxygen.	2 3 4	we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man
2 3 4 5	crosscut, the apparatus that I just showed you, my warning whistle went off. I was out of oxygen, or low on oxygen. I don't want to say I was out.	2 3 4 5	we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.
2 3 4 5 6	crosscut, the apparatus that I just showed you, my warning whistle went off. I was out of oxygen, or low on oxygen. I don't want to say I was out. I was low on oxygen. We continued to carry Mr.	2 3 4 5 6	we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off. At Nine crosscut we
2 3 4 5 6 7	crosscut, the apparatus that I just showed you, my warning whistle went off. I was out of oxygen, or low on oxygen. I don't want to say I was out. I was low on oxygen. We continued to carry Mr. McCloy down to the track switch at 59	2 3 4 5 6 7	<ul> <li>we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.</li> <li>At Nine crosscut we dropped off another man that had a handheld radio, walkie-talkie also.</li> </ul>
2 3 4 5 6 7 8	<ul> <li>crosscut, the apparatus that I just</li> <li>showed you, my warning whistle went</li> <li>off. I was out of oxygen, or low on</li> <li>oxygen. I don't want to say I was out.</li> <li>I was low on oxygen.</li> <li>We continued to carry Mr.</li> <li>McCloy down to the track switch at 59</li> <li>crosscut. At that location, there was</li> <li>men that were in fresh air that were</li> </ul>	2 3 4 5 6 7 8	<ul> <li>we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.</li> <li>At Nine crosscut we dropped off another man that had a handheld radio, walkie-talkie also. His job was to communicate with us, who</li> </ul>
2 3 4 5 6 7 8 9 10	<ul> <li>crosscut, the apparatus that I just</li> <li>showed you, my warning whistle went</li> <li>off. I was out of oxygen, or low on</li> <li>oxygen. I don't want to say I was out.</li> <li>I was low on oxygen.</li> <li>We continued to carry Mr.</li> <li>McCloy down to the track switch at 59</li> <li>crosscut. At that location, there was</li> <li>men that were in fresh air that were</li> <li>barefaced. They took Mr. McCloy, put a</li> </ul>	2 3 4 5 6 7 8 9 10	<ul> <li>we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.</li> <li>At Nine crosscut we dropped off another man that had a handheld radio, walkie-talkie also.</li> <li>His job was to communicate with us, who we were traveling inby, and then he</li> </ul>
2 3 4 5 6 7 8 9	<ul> <li>crosscut, the apparatus that I just</li> <li>showed you, my warning whistle went</li> <li>off. I was out of oxygen, or low on</li> <li>oxygen. I don't want to say I was out.</li> <li>I was low on oxygen.</li> <li>We continued to carry Mr.</li> <li>McCloy down to the track switch at 59</li> <li>crosscut. At that location, there was</li> <li>men that were in fresh air that were</li> <li>barefaced. They took Mr. McCloy, put a</li> <li>BG-4 apparatus on him and continued</li> </ul>	2 3 4 5 6 7 8 9	<ul> <li>we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.</li> <li>At Nine crosscut we dropped off another man that had a handheld radio, walkie-talkie also. His job was to communicate with us, who</li> </ul>
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>crosscut, the apparatus that I just</li> <li>showed you, my warning whistle went</li> <li>off. I was out of oxygen, or low on</li> <li>oxygen. I don't want to say I was out.</li> <li>I was low on oxygen.</li> <li>We continued to carry Mr.</li> <li>McCloy down to the track switch at 59</li> <li>crosscut. At that location, there was</li> <li>men that were in fresh air that were</li> <li>barefaced. They took Mr. McCloy, put a</li> <li>BG-4 apparatus on him and continued</li> <li>down the track entry to the mantrip to</li> <li>get him outside.</li> <li>We were basically</li> <li>exhausted at that point. Speaking for</li> <li>myself, my legs were like rubber. I was</li> <li>just shaking. Some people wanted to</li> <li>come and take my apparatus off, and I</li> <li>told them no, they couldn't do that</li> <li>yet. I had to sit down, and just sit</li> <li>down and regroup. Other guys were in</li> <li>the same condition. We were pretty</li> <li>stretched out.</li> </ul>	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>we traveled up the entry from prior exploration, we knew that we would not be able to travel much past Nine crosscut before dropping another man off.</li> <li>At Nine crosscut we dropped off another man that had a handheld radio, walkie-talkie also.</li> <li>His job was to communicate with us, who we were traveling inby, and then he would relay the information back to the track switch, then he would tell the man that was sitting there with the hardwire, who would then call it back across to the fresh air base, who would then call it outside.</li> <li>When we traveled up the track entry, when we were getting up near the load center in that area, we were getting real weak on communications. If we left the track entry the walkie-talkies are pretty decent communication items, as long as</li> </ul>

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1	Page 550	1	Page 552
1	we lost communications with Nine room	1	excitement and everything that was
2	and everybody else outby. So anytime	2	going on, if I don't hold the mic down,
3	we left that area and went over to the	3	the key button long enough and release
4	barricade, we did not have	4	it too soon, the man at Nine crosscut
5	communications.	5	may be only hearing part of the
6	At that point, as I told	6	message. Again, if the man at Nine
7	you, I called back out the way it	7	crosscut keys in too soon, and he's
8	would have worked is, when I come out	8	trying to answer me or talks to me, it,
9	to 23, I called those messages out to	9	again, takes the communications away.
10	Number Nine. He, again, would call out	10	If I may just say one
11	to 59 crosscut switch. He would relay	11	thing for myself and the mine rescue
12	it to the guy on the hardwire, who	12	team members involved. We apologize
13	would then relay it to the guy at the	13	for any of the problems, or heartaches
14	fresh air base, who would phone	14	that miscommunications caused. That
15	outside.	15	was not meant to be.
16	Some of the issues that	16	CHAIR:
17	we have with walkie-talkies and	17	Thank you, Mr. Hixson.
18	stretching out are as you can see,	18	MR. STRICKLIN:
19	the two curves at the mouth of the	19	At 11:46, as Ron
20	section where the track seems to	20	indicated, and this came from the log
20		20	
22	the entry seems to not be in a straight	22	outside, it was reported that the
	line, that causes to have to drop a guy	22	command center thought we had 12 miners
23	off at Nine crosscut rather than extend		alive. And we celebrated for about ten
24	further in.	24	seconds, and then we went into a
25	Had the faces been any	25	different type of mode. And it was
	Page 551		Page 553
1	Page 551 deeper than 26 crosscut, we would have	1	Page 553 pretty evident probably to the outside
1	deeper than 26 crosscut, we would have	1	pretty evident probably to the outside
2	deeper than 26 crosscut, we would have not been able to reach them without	2	pretty evident probably to the outside world, even without anybody going
2 3	deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23	2 3	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things
2 3 4	deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23 crosscut area.	2 3 4	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things had changed, because we were requesting
2 3 4 5	deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23 crosscut area. The walkie-talkies,	2 3 4 5	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things had changed, because we were requesting ambulances on the surface, 12
2 3 4 5 6	deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23 crosscut area. The walkie-talkies, again, work well when they're fully	2 3 4 5 6	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things had changed, because we were requesting ambulances on the surface, 12 ambulances. Getting as much together
2 3 4 5 6 7	<ul><li>deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23 crosscut area.</li><li>The walkie-talkies, again, work well when they're fully charged. This is at the end of the</li></ul>	2 3 4 5 6 7	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things had changed, because we were requesting ambulances on the surface, 12 ambulances. Getting as much together as we could to go underground as much
2 3 4 5 6 7 8	deeper than 26 crosscut, we would have not been able to reach them without dropping another man off around the 23 crosscut area. The walkie-talkies, again, work well when they're fully charged. This is at the end of the shift. We're talking 11 o'clock, 12	2 3 4 5 6 7 8	pretty evident probably to the outside world, even without anybody going or making any phone calls, that things had changed, because we were requesting ambulances on the surface, 12 ambulances. Getting as much together as we could to go underground as much as stretchers, first aid supplies,
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	Page 554		Page 556
1	remember the most is the only thing you	1	because we had heard something. And
2	could hear is a fan running. I mean,	2	then after we stopped, you know, we
3	there was not a word being said at that	3	heard Randal moan again. And then we
4	time. It just went from a jubilation-	4	ran to the barricade and tore it down.
5	type situation naturally with the	5	And when we tore it down, we saw all
6	rescue of the miners to having only one	6	the miners laying there, and some of
7	survivor.	7	them had visible signs you know,
8	At one o'clock, the	8	you could tell that they were dead when
9		9	we saw them.
	survivor was brought out of the mine		
10	and transported by ambulance to the	10	I started screaming for
11	hospital. And contrary to standard	11	help. Me and Jimmy was there, and the
12	protocol, there was a group decision,	12	other guys went to the right just a
13	the State, the company and MSHA made	13	break or so away. And I started
14	the decision that while we typically	14	screaming for help and saying they're
15	don't remove victims under oxygen, we	15	over here, they're over here.
16	felt in this case it was necessary to	16	I don't recall the exact
17	do so, because of the time involved,	17	words that I used, but and I didn't
18	that it would have taken to re-	18	have a radio. I was just screaming out
19	ventilate Two Left. In addition, we	19	for help. And I think I said they're
20	had an area that we thought a second	20	alive, and that may have been part of
21	explosion was still possible in the old	21	the communication error.
22	sealed area. And before we could	22	In my mind, I knew that
23	really get into there, we were going to	23	most of them dead at the point that we
24	have to put boreholes into the mine to	24	saw them, but again, as Ron said, you
25	ventilate it.	25	know, all the mine rescue members
25	ventilate it:	23	know, all the mille rescue members
	Dago 555		Dago 557
1	Page 555	1	Page 557
1	The decision was made to	1	involved, our heart goes out to the
2	The decision was made to go back in at that time and bring the	2	involved, our heart goes out to the families and the pain that they
2 3	The decision was made to go back in at that time and bring the victims to the surface. And they	2 3	involved, our heart goes out to the families and the pain that they suffered through that communication
2 3 4	The decision was made to go back in at that time and bring the victims to the surface. And they arrived at the surface at 9:55 a.m.	2 3 4	involved, our heart goes out to the families and the pain that they suffered through that communication error.
2 3 4 5	The decision was made to go back in at that time and bring the victims to the surface. And they arrived at the surface at 9:55 a.m. And shortly after that, all the rescue	2 3 4 5	involved, our heart goes out to the families and the pain that they suffered through that communication error. I did do an assessment on
2 3 4 5 6	The decision was made to go back in at that time and bring the victims to the surface. And they arrived at the surface at 9:55 a.m. And shortly after that, all the rescue teams were debriefed, and all the maps	2 3 4 5 6	<ul> <li>involved, our heart goes out to the families and the pain that they suffered through that communication error.</li> <li>I did do an assessment on all of the other miners after we had</li> </ul>
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1			
	Page 558		Page 560
	up bringing the stretcher later.	1	all the other miners, and there was a
2	But after we got Randal	2	lot of people that checked the miners.
3	laid down, and Jimmy was still working	3	All at the same time, we was preparing
4	and talking to him and trying to get	4	Randal to bring him out.
5	the keep the SCSR mouthpiece in his	5	And then Ron's pretty
6	mouth, I did I went and did an	6	much covered the rest. I mean, from
7	assessment on all the other miners.	7	that point we it was non-stop. We
8	And when I was going down the right rib	8	carried him from the Number Three entry
9	there you know, I started on the	9	down to 43 crosscut. We stopped
10	right rib going down, when I shook one	10	once we got to where we dropped the
11		11	
	of them, I heard a slight sound of air,		first guy off there in fresh air as
12	and at one point, I hollered we had	12	part of the communications, we put a
13	another one. And just seconds later I	13	BG-4 on him, because he could get that
14	realized that I was wrong. That, in	14	constant flow then. He didn't have to
15	fact, that miner was dead also. And I	15	worry about trying to breathe, because
16	went on and checked every other	16	the SCSR 100, you have to breathe for
17	individual.	17	it to work. So that gave him a
18	And as I came back, I	18	constant flow at that point.
19	guess one of the other McElroy team	19	I think it was Jim
20	members had brought a radio, and he had	20	Bennett's rescuer, one of our state
21	laid it down. And I picked up the	21	mine rescue members, rescuer that we
22	radio, and I hollered over the radio	22	put on him, and then we immediately
23	that we only had one.	23	carried him on down into the track and
24	And then you know,	24	brought him outside.
25	after they brought the stretcher, we	25	CHAIR:
20		20	
	Page 559		Page 561
1	tried to we was trying to secure	1	Thank you, Mr. Tucker.
12	Randal to the stretcher, and we didn't		
2	Randal to the stretcher, and we didn't have we was trying to get something	2	Why don't we take a break before we
3	have we was trying to get something	2 3	Why don't we take a break before we begin questions.
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	n	age 562		Page 564
1	the drilling of the three boreholes at	aye boz	1	construct roads and drill into the
1			2	
2	Sago Mine. The drilling and planning			underground mine.
3	and operations of surface drills to		3	Near the drill site, four
4	assist in the rescue response to the		4	men met Mr. Kermit Melvin, ICG
5	Sago Mine disaster began at 12:15 p.m.		5	employee, who also had a handheld GPS
6	on January 2nd, 2006.		6	system. Both Mr. Huffman and Mr.
7	Mr. Doug Conaway,		7	Melvin's handheld GPS systems were
8	director of West Virginia Miners'		8	used.
9	Health, Safety & Training, directed		9	Due to weather conditions
10	myself to contact Mr. Mike Ross of Mike		10	or satellite locations, the accuracy of
11	Ross, Incorporated to come to the mine		11	the two GPS surveys was in question.
12	office for a meeting regarding the use		12	By this time, two dozers that were
13	of surface drills to assist in the		12	5
				provided by SW Jack Drilling and the
14	rescue response.		14	three drilling companies had contacted
15	At approximately 1:15		15	the location to inform that the
16	p.m. on January 2nd, 2006, Mr. Ross		16	equipment was en route.
17	arrived at the mine site with Mr. Jerry		17	A decision was made to
18	Willett of SW Jack, and met with Mr.		18	obtain Alpha Engineering Services,
19	Conaway and Mr. Joe Myers, chief		19	Incorporated of Beckley, West Virginia
20	engineer of Anker West Virginia Mining		20	to survey or engineer the exact
21	Company, regarding a situation in the		21	location of the number one hole. The
22	location where the drills where the		22	depth of the number one hole will be
23	drill holes could be used to assist in		23	approximately 257 feet to the floor of
23 24				
	the rescue operation.		24	the mine, and would penetrate the
25	I was then directed by		25	underground mine into Two Left section
	р	age 563		Page 565
1	Mr. Ross to contact Mr. Jacob Huffman,	age 505	1	near the belt feeder on the section.
2	who lived near the mine that assessed		2	A dozer arrived at the
3			2	
	the handheld GPS system. At this time,			site at approximately 5:00 p.m. on
4	I was also directed to contact three		4	January 2nd, 2006 and was used to
5	drilling companies. Power Drilling of		5	construct a road in a tentative drill
6	Rock Cave, West Virginia, and United		6	site. Hyre Drilling provided the
7	Drilling of Jane Lew, West Virginia		7	drill, which was a hammer-type drill
8	were contacted at this time. Both		8	with a six-and-one-quarter-inch drill
9	companies have conventional truck-type		9	bit. We were stopping and had to wait
10	drills.		10	for the engineering crew to arrive and
11				<b>o o</b>
	Mr. Brad Liggett and Mr.		11	complete the engineering survey.
12			11 12	
12	Don Chinister (phonetic) of Phoenix		12	The survey crew arrived
12 13	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this		12 13	The survey crew arrived on the Tallmansville Road at
12 13 14	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a		12 13 14	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd,
12 13 14 15	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a		12 13 14 15	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey
12 13 14 15 16	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman,		12 13 14 15 16	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight
12 13 14 15 16 17	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to		12 13 14 15 16 17	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling
12 13 14 15 16 17 18	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to determine where the first hole was to		12 13 14 15 16 17 18	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling location was relocated approximately 30
12 13 14 15 16 17 18 19	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to determine where the first hole was to be drilled on Tallmansville Road in		12 13 14 15 16 17 18 19	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling location was relocated approximately 30 feet. The drill was placed into
12 13 14 15 16 17 18 19 20	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to determine where the first hole was to be drilled on Tallmansville Road in Upshur County.		12 13 14 15 16 17 18 19 20	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling location was relocated approximately 30 feet. The drill was placed into position, and drilling operations began
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12 13 14 15 16 17 18 19 20 21 22	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to determine where the first hole was to be drilled on Tallmansville Road in Upshur County. The four men traveled to the location where the number one hole was to be drilled. At that time Mr.		12 13 14 15 16 17 18 19 20 21 22	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling location was relocated approximately 30 feet. The drill was placed into position, and drilling operations began immediately. The drilling process was stopped 20 feet above the underground mine at approximately 5:02 a.m. on
12 13 14 15 16 17 18 19 20 21 22 23	Don Chinister (phonetic) of Phoenix Drilling was also contacted at this time regarding, and trying to obtain a drill that was capable of drilling a 36-inch hole. Mr. Ross, Mr. Huffman, Mr. Willet and myself left the mine to determine where the first hole was to be drilled on Tallmansville Road in Upshur County. The four men traveled to the location where the number one hole	5	12 13 14 15 16 17 18 19 20 21 22 23	The survey crew arrived on the Tallmansville Road at approximately 8:00 p.m. on January 2nd, 2006 and the survey began. The survey was completed at approximately midnight on January 3rd, 2006. The drilling location was relocated approximately 30 feet. The drill was placed into position, and drilling operations began immediately. The drilling process was stopped 20 feet above the underground

	Page 566		Page 568
1	was under order to stop the drilling	1	camera was then removed and a one-inch
2	process 20 feet above the mine and	2	outside diameter of metal line was
3	obtain permission from the command	3	installed in the number one hole to
4	center before penetrating the	4	monitor conditions. The top of the
5	underground mine.	5	hole was sealed and capped.
	•	6	
6	At approximately 5:07		During this time, site
7	a.m. on January 3rd, 2006, the drilling	7	preparation was taking place for the
8	restarted. The number one hole was	8	number two hole. Old gas lines in the
9	punched into the underground mine at	9	area that could be affected by the
10	approximately 5:35 a.m. on January 3rd,	10	excavation that was taking place on the
11	2006.	11	road was being identified and marked by
12	Prior to drilling into	12	KeySpan Production. At 6:50 a.m. on
13	the underground mine, light lamps, all	13	January 3rd, the drilling began on the
14	essential equipment and other ignition	14	number two hole. United Drilling,
15	sources were turned off. Non-essential	15	0
			Incorporated used a six and a quarter
16	personnel were evacuated to a safe	16	inch bit and was operating the drill.
17	location.	17	The depth of the hole
18	After penetration of the	18	would be approximately 400 feet. The
19	mine, air readings were immediately	19	goal was to penetrate the One Left
20	taken. The air readings showed 20.3	20	section. At 7:06 a.m. on that day, the
21	percent oxygen, .4 methane CO, 1,200	21	number two hole had drilled
22	parts per million, 1,250 parts per	22	approximately 20 feet. At that time
23	million, and it was stabilizing at	23	two Ingersoll Rand with 1,070 air
24	1,280 parts per million.	24	compressors that were mounted on lowboy
25	The drill was turned off	25	on a lowboy trailer that was parked
			······································
	Page 567		Page 569
1	Page 567 with the drill still in the bit inside	1	Page 569
1	with the drill still in the bit inside	1	near the number two hole. Waco Oil and
2	with the drill still in the bit inside the underground mine. At 5:42 a.m. to	2	near the number two hole. Waco Oil and Gas provided the compressors.
2 3	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the	2 3	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be
2 3 4	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or	2 3 4	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills
2 3 4 5	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or tapping on the drill steel would occur,	2 3 4 5	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was
2 3 4 5 6	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or tapping on the drill steel would occur, with no response.	2 3 4 5 6	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton,
2 3 4 5 6 7	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or tapping on the drill steel would occur, with no response. The drill steel was struck several	2 3 4 5 6 7	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to
2 3 4 5 6 7 8	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or tapping on the drill steel would occur, with no response. The drill steel was struck several times from the surface with no	2 3 4 5 6 7 8	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine.
2 3 4 5 6 7 8 9	with the drill still in the bit inside the underground mine. At 5:42 a.m. to 5:52 a.m., silence was observed on the location to see if a response or tapping on the drill steel would occur, with no response. The drill steel was struck several times from the surface with no response.	2 3 4 5 6 7 8 9	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine. At 2:25 p.m. on January
2 3 4 5 6 7 8 9 10	<ul> <li>with the drill still in the bit inside</li> <li>the underground mine. At 5:42 a.m. to</li> <li>5:52 a.m., silence was observed on the</li> <li>location to see if a response or</li> <li>tapping on the drill steel would occur,</li> <li>with no response.</li> <li>The drill steel was struck several</li> <li>times from the surface with no</li> <li>response.</li> <li>At 5:52 a.m. on January</li> </ul>	2 3 4 5 6 7 8 9 10	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine. At 2:25 p.m. on January 3rd, 2006, the number two hole reached
2 3 4 5 6 7 8 9 10 11	<ul> <li>with the drill still in the bit inside</li> <li>the underground mine. At 5:42 a.m. to</li> <li>5:52 a.m., silence was observed on the</li> <li>location to see if a response or</li> <li>tapping on the drill steel would occur,</li> <li>with no response.</li> <li>The drill steel was struck several</li> <li>times from the surface with no</li> <li>response.</li> <li>At 5:52 a.m. on January</li> <li>3rd, 2006, the drill steels began to be</li> </ul>	2 3 4 5 6 7 8 9 10 11	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine. At 2:25 p.m. on January 3rd, 2006, the number two hole reached the depth of 360 feet. The drilling
2 3 4 5 6 7 8 9 10	<ul> <li>with the drill still in the bit inside</li> <li>the underground mine. At 5:42 a.m. to</li> <li>5:52 a.m., silence was observed on the</li> <li>location to see if a response or</li> <li>tapping on the drill steel would occur,</li> <li>with no response.</li> <li>The drill steel was struck several</li> <li>times from the surface with no</li> <li>response.</li> <li>At 5:52 a.m. on January</li> </ul>	2 3 4 5 6 7 8 9 10	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine. At 2:25 p.m. on January 3rd, 2006, the number two hole reached
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>with the drill still in the bit inside</li> <li>the underground mine. At 5:42 a.m. to</li> <li>5:52 a.m., silence was observed on the</li> <li>location to see if a response or</li> <li>tapping on the drill steel would occur,</li> <li>with no response.</li> <li>The drill steel was struck several</li> <li>times from the surface with no</li> <li>response.</li> <li>At 5:52 a.m. on January</li> <li>3rd, 2006, the drill steels began to be</li> <li>removed from the hole, and this process</li> <li>was completed at 6:12 a.m. on that day.</li> <li>At this time, a camera was lowered</li> <li>into a hole. A mixture of mud and</li> <li>water covered parts of the lens, the</li> <li>vision was obscured. The camera was</li> <li>retrieved to the surface, re-adjusted</li> <li>and cleaned, then lowered back into the</li> <li>hole.</li> <li>The coal breaker and pull</li> <li>cord on the feeder, and the mine cable</li> <li>could be seen with the cables hung on</li> </ul>	2 3 4 5 6 7 8 9 10 11 12 13 14 5 6 7 8 9 10 11 21 22 23	near the number two hole. Waco Oil and Gas provided the compressors. The compressors could be used to assist the conventional drills or to operate the large drill that was on standby and parked at Tennerton, West Virginia or could supply air to the underground mine. At 2:25 p.m. on January 3rd, 2006, the number two hole reached the depth of 360 feet. The drilling process was stopped at this time and awaited permission from the command center to continue and penetrate the underground mine. The number two hole was restarted on January 5th, 2006, when the decision was made to monitor the air on the One Left section. At approximately 11:00 a.m. on January 3rd, 2006, the site had been located for the number three hole, and excavation began. At 4:42 p.m., drilling began on the number three

	5			D 570
1	Page 570	1	and if Lundarstand you correctly you	Page 572
1	the number three hole was to be	1	and if I understood you correctly, you	
2	drilled.	2	said there was not one on the site, at	
3	The goal of the hole was	3	the mine, but it was located in	
4	to penetrate the underground coal mine	4	Pittsburgh?	
5	at the Two Left track heading at four	5	MR. UROSEK:	
6	block of the section belt. At 4:10	6	Yes. We maintain that at	
7	p.m. on January 3rd, 2006, the number	7	the technical support center in our	
8	three hole had reached the depth of 170	8	Bruceton facility. There's another one	
9	feet. Instructions were given then to	9	located in Mt. Hope, West Virginia, and	
10	stop the drilling at approximately 20	10	there's another one located in Denver,	
11	feet above the underground mine and	11	Colorado.	
12	await instructions from the command	12	Yes, sir.	
13	center before proceeding. A decision	13	CHAIR:	
14	was made not to finish the hole, not to	14	And can you explain for	
15	finish hole number three on January	15	me, if you know, when how the gas	
16	5th, 2006.	16	chromatograph from Consol was made	
17	CHAIR:	17	available and when it was made	
18	Thank you, Mr. Meadows.	18	available?	
19	We'll now have questions for the panel.	19	MR. UROSEK:	
20	And let me begin with a few questions	20	I'm not exactly sure of	
21	first. Just a very few questions here,	21	how that occurred, how they were	
22	then I'll turn it over to my colleagues	22	notified and brought to the site.	
23	and to the families. I suspect this is	23	CHAIR:	
24	for Mr. Urosek. Was there an operable	24	Okay. Perhaps we can get	
25	gas chromatograph at the site at the	25	that questions answered another way.	
	gao ooatog.ap at the one at the			
	Page 571			Page 573
1	time of the explosion? If not, where	1	Did the regional HAZMAT team	
2	was it, and how soon did one arrive?	2	I guess this goes to Brian Mills	
3	MR. UROSEK:	3	and Kevin. Did the local regional	
4	MSHA maintains a gas	4	HAZMAT team offer their personnel or	
5	chromatograph in our Pittsburgh office	5	equipment for use with the rescue	
6	and also our Denver office. There was	6	efforts? Brian?	
7	not one onsite at the time of the	7	MR. MILLS:	
8	accident. We were notified at	8	I'm not sure what team	
9	approximately ten o'clock, 10:15, and a	9	you're speaking about.	
10	request was made to get a chromatograph	10	CHAIR:	
11	to the scene.	11	Of the emergency the	
12	We immediately began to	12	county team, the emergency HAZMAT o	r
13	get our resources together, again, it	13	emergency preparedness teams.	
14	was a federal holiday, to respond to	14	MR. MILLS:	
15	the scene. Our chromatograph got	15	I'm not aware of that.	
16	there, it was about five o'clock that	16	CHAIR:	
17	evening. Prior to that, the Consol	17	Okay. Kevin?	
18	chromatograph had gotten there. They	18	MR. STRICKLIN:	
19	are located much closer than we are and	19	I'm not aware of that, as	
20	were able to get there a little	20	well.	
21	quicker.	21	CHAIR:	
22	QUESTIONS OF PANEL FOUR	22	Let me go to the 103(k)	
23	CHAIR:	23	order for a moment. When the (k) order	r
24	Now, if you might explain	23 24	is issued, how is the function after	, i
		L – – – – – – – – – – – – – – – – – – –		
25	where the gas chromatographs are kept,	25	that? How does the process go? Who	

		D 574			D 57/
1	makes who property the plan? And	Page 574	1		Page 576
1	makes who prepares the plan? And		1	MS. MEREDITH:	
2	if you can recall, what was the time		2	First of all, on behalf	
3	that the first plan was submitted under		3	of the families and myself, I would	
4	the (k) order?		4	like to thank the mine rescue teams for	
5	MR. STRICKLIN:		5	the ones who went inside and rescued	
6	The way the Mine Act		6	our miners. I'd like to say God bless	
7	reads is a 103 (k) order would be		7	each and every one of you.	
8	issued to ensure the safety of all mine		8	Mr. Stricklin, this	
9	personnel. And it gives the mine		9	question is for you. Why did the game	
10	operator the opportunity to submit any		10	change, and it sounds like it was	
11	plan to any MSHA with and also to		11	treated as a recovery instead of a	
				-	
12	include the state when it's appropriate		12	rescue and there was no urgency	
13	in the approval of those plans.		13	whatsoever?	
14	I believe the first plan		14	MR. STRICKLIN:	
15	that was approved was setting up a		15	There was no change in	
16	system that bottle samples would be		16	what we wanted to do. It was a rescue	
17	taken every 15 minutes at the return		17	operation until we actually found all	
18	air course coming out of the mine.		18	of the unaccounted for miners. What	
19	CHAIR:		19	changed was the concentrations of CO	
20	And to your recollection,		20	that we had to evaluate to let teams go	
21	what time was that, if you may recall?		21	in, but it was never a recovery	
22	MR. STRICKLIN:		22	operation.	
23	I believe it was		23	MS. MEREDITH:	
23			23 24	MSHA issues stickers to	
	somewhere in the area of 2:45 p.m.				
25	CHAIR:		25	the miners that tell them what to do in	
		Page 575			Page 577
1	Mr. Collins, is that your	Page 575	1	case of an explosion or in case of an	Page 577
1	Mr. Collins, is that your recollection as well?	Page 575		case of an explosion or in case of an emergency. Can you tell us what the	Page 577
2	recollection as well?	Page 575	2	emergency. Can you tell us what the	Page 577
2 3	recollection as well? MR. COLLINS:	Page 575	2 3	emergency. Can you tell us what the stickers say?	Page 577
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	Page 578		Page 580
1	MS. MEREDITH:	1	Stricklin, why did you not bring these
2	Why do you train the	2	miners, which are our loved ones, out
3	• •	2	of the mines with respect, but instead,
	miners to barricade, only for them to		•
4	sit and wait and rescue?	4	you guys piled them on a scoop and they
5	MR. STRICKLIN:	5	were brought to the surface? Why did
6	I don't think we really	6	you not you guys brought Randal
7	trained the miners to barricade first.	7	McCloy out on a stretcher, why could
8	What we ask them to do is we asked	8	you not have brought out loved ones out
9	in a plan submitted to us, is to	9	on a stretcher? They may have been
10	discuss donning the SCSR and trying to	10	deceased, but you know, there's still
11	evacuate if that is just	11	respect that needed to be given to
12	if it cannot be done, and then at	12	those gentlemen.
13	the last step it would be to barricade.	13	MR. STRICKLIN:
14	MS. MEREDITH:	14	We agree with you. And
15	They barricaded	15	we thought we were giving them the most
16	themselves thinking, you know, that's	16	respect we could under the
17	what they were trained to do, was to	17	circumstances. And based on the fact
18	barricade, like you said, in the last	18	that these rescue teams had been
19	resort, but them men, they sat there	19	underground for 36 hours
20	and they waited. They done what they	20	MS. MEREDITH:
21	were trained to do. And you guys	21	Putting them on a scoop
22	didn't do what you told them. You	22	is giving these men respect?
23	failed these miners.	23	MR. STRICKLIN:
24	Okay. You made in your	24	We didn't think that the
25	statement that it was thought that the	25	rescue teams had the ability to carry
	salar and the second second		· · · · · · · · · · · · · · · · · · ·
	Page 579		Page 581
1	miners had tried to use the mantrip to	1	the people out on the stretchers. As
2	get out. Why would guys think that?	2	Mr. Hixson mentioned, the carry with
3	MR. STRICKLIN:	3	Mr. McCloy was very tiresome. We had
4	The rescue teams, when	4	rescue teams that had been working 36
5	they were underground evaluating the	5	hours. They were under oxygen. What
6	area near the mantrip, felt that there	6	we, as a group, decided outside, was
7	was some blocks that were stuck under	7	they could use a scoop, which in some
8	the mantrip, indicating that they hit	8	areas is used as a man carrier, to move
9	these blocks on their way out, and they	9	the miners back to the mantrip and put
10	based that on the amount of dust and	10	them into the mantrip for the trip
11	things that they saw on the rail track	11	outside.
12	in that area.	12	MS. MEREDITH:
13		1	
13	MS. MEREDITH:	13	I understand your point
14	MS. MEREDITH: And you guys were	13 14	I understand your point there. As the rescue teams were tired,
14	And you guys were	14	there. As the rescue teams were tired,
14 15	And you guys were satisfied with that?	14 15	there. As the rescue teams were tired, I understand. But my dad and these
14 15 16	And you guys were satisfied with that? MR. STRICKLIN:	14 15 16	there. As the rescue teams were tired, I understand. But my dad and these other miners needed the respect. Don't
14 15 16 17	And you guys were satisfied with that? MR. STRICKLIN: That's something the	14 15 16 17	there. As the rescue teams were tired, I understand. But my dad and these other miners needed the respect. Don't just throw a sheet over them and pile
14 15 16 17 18	And you guys were satisfied with that? MR. STRICKLIN: That's something the investigation team got into a lot more	14 15 16 17 18	there. As the rescue teams were tired, I understand. But my dad and these other miners needed the respect. Don't just throw a sheet over them and pile them on a scoop and bring them out.
14 15 16 17 18 19	<ul><li>And you guys were satisfied with that?</li><li>MR. STRICKLIN:</li><li>That's something the investigation team got into a lot more depth. I was just explaining during</li></ul>	14 15 16 17 18 19	there. As the rescue teams were tired, I understand. But my dad and these other miners needed the respect. Don't just throw a sheet over them and pile them on a scoop and bring them out. No.
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14 15 16 17 18 19 20 21	<ul> <li>And you guys were satisfied with that?</li> <li>MR. STRICKLIN:</li> <li>That's something the investigation team got into a lot more depth. I was just explaining during the rescue operation why we felt that</li> </ul>	14 15 16 17 18 19 20 21	there. As the rescue teams were tired, I understand. But my dad and these other miners needed the respect. Don't just throw a sheet over them and pile them on a scoop and bring them out. No. MR. STRICKLIN: We agree. Our other
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		500		
		ge 582	4	Page 584
1	ventilated the old Two Left area where		1	were those men asked to come out of the
2	the seals were once located. And it		2	mine. Mr. Toler called me at 9:30 and
3	may have been possibly two to three		3	told me why he was coming out of the
4	weeks before we would have had the		4	mine. And the State order does not
5	ability to go back underground.		5	prohibit to rescue people. So no, I
6	MS. MEREDITH:		6	don't think that caused them to come
7	I'm not sure who this		7	out, Ms. Meredith.
8	question would go to. But were there		8	MS. MEREDITH:
9	handheld walkie-talkies found with the		9	Mr. Hixson, I have a
10	deceased miners?		10	question for you. What was the
11	MR. STRICKLIN:		11	reasoning that they didn't want you, as
12	That may be a question		12	a rescue team, to bring out Mr. Helm's
13	that may be answered for the		13	body when you first found him? Why did
14	investigation team.		14	they want you just to leave him there
14	MS. MEREDITH:		15	
			15 16	and cover him up? MR. HIXSON:
16	Being that Jeff Toler and			
17	Dick Wilfong, Vern Hofer, Owen Jones,		17	That was a decision made
18	James Schoonover were already inside		18	by the command center at the time. And
19	the mines, and you issued the (k) order		19	at the time, we still had the remaining
20	while they were still in there trying		20	men unaccounted for. We had checked
21	to save the Second Left crew, did that		21	Mr. Helms. We were sure that Mr. Helms
22	interfere with them helping with the		22	was not alive at that time. We felt it
23	possibility of saving the Second Left		23	was important to continue the
24	crew?		24	exploration to try to get in.
25	MR. STRICKLIN:		25	We moved the fresh air
		ge 583		Page 585
1	Could you repeat the	ge 583	1	base into the opposite entry and tried
2	Could you repeat the question please, if it's toward me?	ge 583	2	base into the opposite entry and tried to keep all persons away from that area
	Could you repeat the question please, if it's toward me? MS. MEREDITH:	ge 583		base into the opposite entry and tried to keep all persons away from that area with the remaining people underground.
2	Could you repeat the question please, if it's toward me? MS. MEREDITH: It's towards whoever who	ge 583	2 3 4	base into the opposite entry and tried to keep all persons away from that area with the remaining people underground. And Mr. Helms was covered with a piece
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	Page 586		Page 588
1	for Brian Mills. When an emergency	1	Was that from his home?
2	happens, is it the responsibility of	2	MR. STRICKLIN:
3	the coal company to know what miners is	3	Yes, sir.
4	out of the mines and what miners are	4	MR. HELMS:
5	still in the mines?	5	Did he know what was
6	MR. MILLS:	6	going on at that time, and there was 13
7	Yes, sir. There's a	7	men not accounted for?
8	check-in and check-out system at the	8	MR. STRICKLIN:
9	mines.	9	He knew that a situation
10	MR. HELMS:	10	existed at the mine, and there were
11	Are they supposed to have	11	nine unaccounted for, a couple of
12	somebody to monitor when they have an	12	stoppings were out and a lightning
13	•	13	strike had occurred.
	emergency who comes out and who's still in there?		
14		14 15	MR. HELMS:
15	MR. MILLS:	15	So actually, he did not
16	I would imagine that	16	know what was really going on, that
17	would be a good idea.	17	these 13 men was trapped underground,
18	MR. HELMS:	18	and this was stopping other rescue
19	It's not a good idea. Is	19	people to go in the mine; is that not
20	that a fact or not?	20	correct?
21	MR. MILLS:	21	MR. STRICKLIN:
22	When a miner comes out of	22	His understanding was
23	the ground, it's his responsibility to	23	there was a team underground
24	take his tag off the check board.	24	investigating what the situation was.
25	MR. HELMS:	25	MR. HELMS:
	Page 587		Page 589
1	Page 587 Is there somebody	1	Page 589 Who told him this?
1 2	-	1 2	-
	Is there somebody	-	Who told him this?
2	Is there somebody assigned that makes sure that this is	2	Who told him this? MR. STRICKLIN: I assume that came from
2 3	Is there somebody assigned that makes sure that this is done when there's emergency procedures?	2 3	Who told him this? MR. STRICKLIN:
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2 3 4 5 6	Is there somebody assigned that makes sure that this is done when there's emergency procedures? MR. MILLS:	2 3 4 5	Who told him this? MR. STRICKLIN: I assume that came from the mine operator. MR. HELMS: When MSHA got to the
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	D 500		
1 -	Page 590		Page 592
1	tried to rescue these men, how come we	1	think most of the people were that we
2	didn't start at that point and save a	2	had a lot of dilution taking place
3	whole bunch of time to get in there?	3	because a stopping's knocked out and
4	MR. STRICKLIN:	4	there was the distinct possibility of
5	As the command center	5	an explosive mixture inby in the Two
6	looked over the information, as I said,	6	Left area, and the fact that the
7	the concentrations of CO grew a lot	7	instruments that were used underground
8	higher as the day went on. And that	8	had burnt out.
9	was one of the reasons, two other	9	MR. HELMS:
10	reasons, as rescue teams advance in the	10	Due to the CO readings,
11		11	you said it was concentrating, it was
	mine, you have to make sure that		5
12	there's nothing that they bypass that	12	coming into the buildings. Did MSHA
13	could affect their health and safety,	13	and the command center stay in the
14	as they move into the mine.	14	buildings while this use the order
15	The two things that I	15	to evacuate everything?
16	recall that did need to be addressed as	16	MR. STRICKLIN:
17	they're traveling in was the amount of	17	I was not on the
18	water that we saw in that return air	18	property, but my understanding is
19	course, as well, is the power still on	19	everybody was removed from the
20	the belt, mine-wide monitoring system	20	building.
21	that needed to be de-energized. Those	21	MR. HELMS:
22	are two examples of something that	22	Okay. Was the first plan
23	could have caused another situation or	23	to enter the mines rejected that ICG
24	another explosion at the mine.	24	gave you?
25	MR. HELMS:	25	MR. STRICKLIN:
	Page 591		Dama 502
1	Tage 371		Page 593
1		1	Page 593 I don't recall a
1	Was the CO coming out of	-	I don't recall a
2	Was the CO coming out of the mines as much as it's indicated,	2	I don't recall a rejection, that I'm aware of. There
2 3	Was the CO coming out of the mines as much as it's indicated, that a fire was burning?	2 3	I don't recall a rejection, that I'm aware of. There may have been something submitted, but
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4	Page 594	4		Page 596
1	MR. HELMS:	1	But anything concerning	
2	Why is that, Mr. Mills?	2	about getting these guys, to go rescue	
3	MR. MILLS:	3	the men? I mean, I'm sure ain't a	
4	There was concerns	4	little bit of water did fill up all the	
5	expressed by Carl Crumrine, mine	5	airways in these coal mines.	
6	foreman, that if we didn't get the	6	MR. MILLS:	
7	pumps going as quick as possible, that	7	There was concern that if	
8	we would compromise the return.	8	they didn't get the pump running as	
9	MR. HELMS:	9	soon as possible, that that could be a	
10	And what time did you say	10	possibility.	
11	this was?	11	MR. HELMS:	
12	MR. MILLS:	12	How was you going to get	
13	I don't believe there's a	13	the pump running if nobody could go in	
14	time on it, sir.	14	the mines?	
15	MR. HELMS:	15	MR. MILLS:	
16	I mean, in the morning,	16	The discussion about the	
17	it was still in the morning, before	17	pump wasn't to keep people out of the	
18	noon, that Mr. Crumrine wanted to get	18	mines. That was the first plan they	
19	the pump started?	19	submitted. There were other steps that	
20	MR. MILLS:	20	needed to be taken before we could	
21	It was in the afternoon	21	allow that plan to be implemented.	
22	that took place.	22	MR. HELMS:	
23	MR. HELMS:	23	What was the steps you	
24	In the afternoon?	24	was going to do before anything?	
25	MR. MILLS:	25	MR. MILLS:	
	Page 595			Page 597
1	Yes.	1	The first plan approved	Page 597
2	Yes. MR. HELMS:	2	The first plan approved was to monitor the return. And an	Page 597
2 3	Yes. MR. HELMS: This explosion happened	2 3	The first plan approved was to monitor the return. And an additional plan, that first submittal	Page 597
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	D 500		D (00
1	Page 598	1	Page 600
1	So while I was talking	1	was that called?
2	with Carl Crumrine and James Scott	2	MR. STRICKLIN:
3	went to the return. He came back and	3	Based on the information
4	he told me that he had 47 parts per	4	that we had available to us, we knew
5	million CO coming out the return, which	5	the general area the miners were
6	we knew the problem in the mine, John,	6	located. The seismic equipment is
7	was more than two miles away from that.	7	normally used in an area that you don't
8	So you would expect a lot of dilution.	8	know where they're going to be
9	So by getting 47 parts	9	where they're at, and it's very time
10	per million, I did believe that there	10	consuming to set up. It basically
11	was a fire in that mine. Your mine	11	takes a long time to transport all of
12	foreman study guide and your gas books	12	the material you need to the site. A
13	all say, any presence of carbon	13	road needs to be built, as well as you
14	monoxide indicates a fire. However,	14	need a GPS or a survey run to set up
15	that is not enough CO to prevent people	15	your coordinates, and it takes up to
16	from entering the mine.	16	eight hours to set up the coordinates
17	And also, I'd like to	17	of the seismic equipment.
18	comment a little bit about Terry, John.	18	MR. HELMS:
19	We sent a plan in to recover Terry,	19	Well, you had this GPS
20	and Terry was covered up. And then	20	and everything down there while you was
21	when we decided to make a rush for the	21	trying to drill, so that could have
22	Two Left face, because we believed that	22	been incorporated with the same thing;
23	some of those men were still alive, the	23	could it not have been?
24	people that had went in to get Terry,	24	MR. STRICKLIN:
25	we changed them and used them as part	25	Yes, sir. The GPS wasn't
1	Page 599	1	Page 601
1	of that rescue. He was not just left,	1	completed until about midnight, 11:00
2	of that rescue. He was not just left, John.	2	completed until about midnight, 11:00 p.m. or so the night of January the
2 3	of that rescue. He was not just left, John. And he was also not in	2 3	completed until about midnight, 11:00 p.m. or so the night of January the 2nd. By that time we felt we felt
2 3 4	of that rescue. He was not just left, John. And he was also not in the entry where people were working or	2 3 4	completed until about midnight, 11:00 p.m. or so the night of January the 2nd. By that time we felt we felt more comfortable because rescue teams
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1	Page 602	1	-	ge 604
1	room in the command center and asked	1	Yes, sir. I'm well aware	
2	where we thought the people were	2	of that. I work at Loveridge.	
3	barricaded, we would have came up with	3	MS. MEREDITH:	
4	a number of different answers.	4	According to the MSHA, a	
5	MR. HELMS:	5	rescue plan was approved at 2:45 p.m.	
6	I guess a lot of coal	6	on January 2nd. What time did ICG	
7	miners on the seismograph, which I've	7	officials submit the rescue plan to the	
8	worked in the coal mines for 37 years	8	MSHA for approval?	
9	and got these little stickers where it	9	MR. STRICKLIN:	
10	said to barricade, beat on the roof,	10	I don't know I don't	
11	help will come, I better throw them	11	recall any submittal prior to 2:45 from	
12	away; hadn't we? We better come up	12	ICG. And the first entering of the	
13	with some other plan.	13	mine rescue teams was after we saw a	
14	MR. STRICKLIN:	14	trend at the return air course,	
15	I think we need to	15	indicating that the CO and methane were	
16	re-evaluate that, yes, sir.	16	stable, and a plan was submitted to let	
17	MR. HELMS:	17	a team enter the mine shortly after	
18	Everything that's going	18	that.	
19	on, sir, I would recommend that nobody	19	MS. MEREDITH:	
20	barricade the mines. And your	20	Well, the first plan	
21	equipment, checking with checking	21	should have been to go in there and	
22	on the CO coming out of the mines, once	22	rescue 12 good men. Mr. Stricklin, why	
23	your detectors cannot read that high,	23	did you call Consol when they weren't	
24	why does the rest of your teams not	24	sure if they were going to participate	
25	have that on-hand here, and we got to	25	in the rescue? Because they were	
	Page 603		Pao	ne 605
1	Page 603 go to Pittsburgh or some far away	1	-	ge 605
1	go to Pittsburgh or some far away	1	waiting on approval from Pittsburgh.	ge 605
2	go to Pittsburgh or some far away places to get this? Denver.	2	waiting on approval from Pittsburgh. Why did you not make them participate	ge 605
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2 3 4 5 6	go to Pittsburgh or some far away places to get this? Denver. MR. STRICKLIN: What a chromatograph is, is it's a piece of equipment that can analyze a bottle sample taken, which is	2 3 4 5 6	<ul> <li>waiting on approval from Pittsburgh.</li> <li>Why did you not make them participate if you were in charge?</li> <li>MR. STRICKLIN:</li> <li>I did not call Consol to participate, and it was the mine</li> </ul>	ge 605
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Page 60         Page 60           1         representative and the state, and that         they had talked about that at the mine           2         was another plan that was approved.         3M.S. MEREDITH:           3         MS.MEREDITH:         4           4         Well, Barbour County, in         5           5         their transcripts, the first day on         5           6         January 2nd, the day of the explosion,         6           7         all you guys had Barbour County rescue         7           8         teams doing was going down and taking         8           9         samples?         7         That's my understanding.           10         MR.STRICKLIN:         10         the people at the mine.           11         Well, initially we needed         11         MS. MEREDITH:         17           12         to have under apparatus to take samples         16         Mr. Collins, if you could         18           14         saw. So the first teams that arrived,         14         the enplexes?         18           15         that would have been one of the jobs         16         Mr. Collins, if you could         18           16         MS. MEREDITH:         17         answer that, pleases?         18					Dama (00
2       was another plan that was approved.       2       site.         3       MS. MEREDITH:       3       MS. MEREDITH:         4       Well, Barbour County, in       5       command center was evacuated?         5       their transcripts, the first day on       5       command center was evacuated?         6       January 2nd, the day of the explosion,       7       That's my understanding.         7       all you guys had Barbour County rescue       7       That's my understanding.         8       tasamother paparatus to take samples       10       MR. STRICKLIN:       10         10       MS. STRICKLIN:       10       the people at the mine.       11         11       Well, initially we needed       11       MS. MEREDITH:       12       Because in the       13         12       to have under apparatus to take samples       10       the people at the mine.       11         13       that they would have been one of the jobs       16       Mr. Collins, if you could       14       the command         14       they mould have been one of the jobs       16       MR. Coll.INs:       19       I came out of the command         15       that moles were sill alive, why didn't       19       I came out of the command       20	1		1	they had talked about that at the mine	Page 608
3       MS. MEREDITH:       3       MS. MEREDITH:         4       Well, Barbour County, in       4       So you're saying that the         6       January 2nd, the day of the explosion,       6         7       all you guys had Barbour County rescue       6         8       teams doing was going down and taking       7         9       samples?       7         10       MR. STRICKLIN:       10         11       Well, initially we needed       11         12       to have under apparatus to take samples       13         13       based on the concentrations that we       13         14       saw. So the first teams that arrived,       14         15       that would have been one of the jobs       16         16       that would have been one of the jobs       16         16       that would have been one of the jobs       16         17       MS. MEREDITH:       18         18       If yall's belief that       18         20       you send more people in to rescue them?       21         21       kark ceat and time, and there was a       23         22       there was only so many teams that could       23         23       basically determine you		•		-	
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		Page 610		Page 612
1	thing as a mine rescue?		1	that indicated to me that the
2	MR. COLLINS:		2	mantrip should be pretty close.
3	Well, I'm the inspector		3	But I did not think these
4	at the mine. And I want to answer any		4	men were dead. But when Jeff Toler
5	question that I can answer for you, any		5	called me from underground at 9:30, and
6	of the family members. I live in		6	what he told me, and he was crying, and
7	Buckhannon, and any time is good.		7	he said that they had made it up to
8	We, as a state agency, do		8	there, but they had no air. And all
9	have a manual that tells us what to do		9	this at that time, this did turn
10	in an event of an emergency or a mine		10	into a mine rescue event, and I relayed
11	emergency. The first thing I do is		11	that to my supervisors.
12	call my supervisor. And I did that.		12	The Barbour County team
13	And then, of course, he has		13	did show up, you know, shortly after
14	responsibilities to do. And when I go		14	that. They did start getting ready. I
15	to the mine, it's spelled out certain		15	think they were ready to go in about
16	things for me to do. And I think I did		16	noon.
17	those.		17	It was important to setup
18	I started assessing what		18	the device in the return to get
19	happened, trying to get names of the		19	accurate CO readings. I think
20	people that were still underground.		20	repairing the ventilation on the way
21	There was a whole lot of stuff done		21	out fooled us. It started bringing
22	there that day, that you're aware of,		22	more CO out, making us think the
23	you know about, but then based on the		23	conditions were worse than what it was.
24	information that you find, then is when		24	MS. MEREDITH:
25	you make a plan. All of those plans		25	It must have been pretty
1	aren't written, all those plans aren't	Page 611	1	Page 613 bad, because 12 men lost their lives
1	aren't written, all those plans aren't made in the command center	Page 611	1	bad, because 12 men lost their lives
2	made in the command center.	Page 611	2	bad, because 12 men lost their lives inside that mine.
2 3	made in the command center. You know, this command	Page 611	2 3	bad, because 12 men lost their lives inside that mine. MR. COLLINS:
2 3 4	made in the command center. You know, this command center is not a group of people sitting	Page 611	2 3 4	bad, because 12 men lost their lives inside that mine. MR. COLLINS: I know that, ma'am. I
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1	Page 614 center. I did everything I could.	1	Page 616 I'm not sure at this
1	MS. MEREDITH:	2	
2		2	time, sir. MR. COLLINS:
4	Why did you go home? MR. COLLINS:		
		4 5	John, if I might handle
5	I went home at seven	5 6	that. Medical oxygen is part of the
6 7	o'clock the next morning. MS. MEREDITH:	7	EMT kit required to be maintained at that mine. State law allows them
		8	
8 9	Why? We didn't get to go home as miners' families. We sat there	o 9	requires them to maintain that underground. State law allows for a
10	and we waited.	9 10	5
11	MR. COLLINS:	10	first response kit to be maintained on
12		12	each section, which is not does not
13	Well, because my	12	include medical oxygen. The medical
14	supervisor came to the came down and took over for me while I went home	13 14	oxygen for these two crews was kept at the mouth of One Left at block 49,
14	from 7:00 until 1:00. But I wasn't in	14 15	which it's not the best thing in the
16	charge. I mean, they had four or five	16	world, but that is in compliance with
17	supervisors there, but I did everything	17	the law.
18	I could do, or possibly help with. But	18	CHAIR:
19	the decision as to why we didn't go to	10 19	Please, please, please.
20	block 58 and start, I think is a good	20	It's a dignified operation. I would
20	question for this panel, and I can't	20 21	ask, please have questions come through
22	answer that for you.	22	the panel, as we've done. Thank you.
22	I did go over to the lamp	22	MR. HELMS:
23	house when I knew we were going to	23 24	Mr. Stricklin, would you
24	start from the outside, and a foreman,	24 25	agree when you have lives in danger,
20		20	agree when you have lives in danger,
	Page 615		Page 617
1	Mike Triplett, asked me, he said, why	1	you don't second guess in situations
2	are you not going to block 58, and I	2	like getting the CO monitors from
3	said I have no idea why we're not going	3	Pittsburgh or wherever, can that be
4	to block 58.	4	started right away when there is an
5	MS. MEREDITH:	5	emergency such as this?
6	Thank you. If Barbour	6	MR. STRICKLIN:
7	County was there suited up with their	7	I believe we did as
8	apparatus ready to go inside the mines	8	soon as we found out about it, as far
9	at 12:00 noon, these men were still	9	as MSHA, we did start to call our tech
10	alive at 12:00 noon. I know for a fact	10	support to get the people onsite.
11	that they were still alive at 4:25, the	11	MR. HELMS:
12	last entry my dad put on the note that	12	And when these men were
13	he left for us.	13	found, was there a doctor available in
14	MR. HELMS:	14	the mines?
15	I guess Mr. Stricklin or	15	MR. STRICKLIN:
16	Mr. Mills. Is there medical oxygen,	16	My understanding, there
17	especially stored on the sections?	17	was a doctor that was underground.
18	MR. MILLS:	18	MR. HELMS:
19	I believe one of the	19	When they brought Mr.
20	requirements for the EMT supplies,	20	McCloy out, why didn't the doctor go on
21	second response unit is medical oxygen.	21	up to check these other men?
22	MR. HELMS:	22	MR. STRICKLIN:
23	Was there any on the Two	23	Again, that doctor would
24 25	Left section? MR. MILLS:	24 25	not have been he would not have had
20	WIN. WILLS.	20	any training and knew how to wear a

	Page 618		Page 620
1	mine apparatus. And the concentrations	1	agreed to. And again, from my
2	of CO that he was in would not have	2	perspective, I base my thought process
3	allowed him to go up in that area	3	on the amount of CO that I had coming
4	without protection for his breathing.	4	out of that return. It was not
5	MR. HELMS:	5	decreasing, it had increased.
6	Mr. Stricklin, it was all	6	MR. HELMS:
7	right to run a scoop in the mines, but	7	So it was your decision,
8	you couldn't help this doctor put on a	8	you was the top manager, who was in the
9	rescue pack, which takes, what, how	9	State, who was the State's top guy?
10	many minutes to train him? Wouldn't he	10	Mr. Mills, do you agree with that? Do
11	be better qualified to see if these	11	you agree we shouldn't start at block
12	other men was alive or dead?	12	58?
13	MR. STRICKLIN:	13	MR. MILLS:
14	Well, the training	14	Yes, sir, I do.
15	required for someone to put an	15	MR. HELMS:
16	apparatus on is 40-hour training. And	16	What about ICG, did they
17		17	5
18	basically, based on everything that the mine rescue personnel who were up in	18	agree with you? MR. MILLS:
19	•	19	
20	that area have told us, they were	20	That's a question you need to direct to them.
20	they were assured that there were no	20 21	MR. HELMS:
	survivors other than Mr. McCloy.		
22	MR. HELMS:	22	Okay. We will do that.
23 24	With the people going in	23	Okay, here's one. Why was number one
24 25	and out of the coal mines, why wasn't	24 25	hole capped? How come it wasn't left
25	Terry Helms brought out when he was	25	open? Is that Mr. Meadows? You were
	Page 619		Page 621
1	Page 619 only he was the closest person to	1	Page 621 in charge of the drilling. Was number
1	_	1 2	
	only he was the closest person to		in charge of the drilling. Was number
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	Page 622		Page 624
1	Okay. You was there all	1	Yes, sir. We exited the
2	the time; right?	2	mine at that time.
3	MR. MEADOWS:	3	MR. HELMS:
4	There was about a two-	4	How many teams was in
5	hour gap there that I wasn't on the	5	there at that time? Could not another
6	number one hole. For the entirety of	6	team go up and check the other miners
7	everything else, yes.	7	or start bringing them out at that
8	MR. HELMS:	8	time?
9	Let me see here.	9	MR. HIXSON:
10	MR. MEADOWS:	10	I'm not sure if the
11	Excuse me. That would be	11	command center made the decision to
12	about a four-hour gap. It was like 10	12	remove us and bring us outside.
13	o'clock or 11 o'clock there one	13	MR. HELMS:
14	evening, and I came back I got back	14	Why did they do that, Mr.
15	to the drill site about 3:00.	15	Stricklin?
16	MR. HELMS:	16	MR. STRICKLIN:
17	Okay. Mr. Tucker, when	17	Again, we had two teams
18	you was carrying Randal when Randal	18	underground at that time.
19	McCloy was being carried out, there was	19	MR. HELMS:
20	other rescuers in there checking the	20	Yes, sir.
21	other miners; is this true, to see if	21	MR. STRICKLIN:
22	they was alive?	22	And all those personnel
23	MR. TUCKER:	23	that were up at the barricade and
24	I can't say what happened	24	brought Mr. McCloy back, they needed to
25	after we left with Randal. I was	25	be changed out, number one. And number
	Page 623		Page 625
1	helping carrying him out, so I couldn't	1	two, based on the information that we
2	helping carrying him out, so I couldn't answer that.	2	two, based on the information that we had, we felt we needed to regroup
2 3	helping carrying him out, so I couldn't answer that. MR. HELMS:	2 3	two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether
2 3 4	helping carrying him out, so I couldn't answer that. MR. HELMS: You don't know if there	2 3 4	two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims
2 3 4 5	helping carrying him out, so I couldn't answer that. MR. HELMS: You don't know if there was other miners other rescuers	2 3 4 5	two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims from the mine under oxygen or whether
2 3 4 5 6	<ul> <li>helping carrying him out, so I couldn't answer that.</li> <li>MR. HELMS:</li> <li>You don't know if there was other miners other rescuers stayed in there, they all came out with</li> </ul>	2 3 4 5 6	two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims from the mine under oxygen or whether we were going to re-ventilate.
2 3 4 5 6 7	<ul> <li>helping carrying him out, so I couldn't answer that.</li> <li>MR. HELMS:</li> <li>You don't know if there was other miners other rescuers stayed in there, they all came out with you?</li> </ul>	2 3 4 5 6 7	two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims from the mine under oxygen or whether we were going to re-ventilate. That gave the command
2 3 4 5 6 7 8	helping carrying him out, so I couldn't answer that. MR. HELMS: You don't know if there was other miners other rescuers stayed in there, they all came out with you? MR. TUCKER:	2 3 4 5 6 7 8	<ul> <li>two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims from the mine under oxygen or whether we were going to re-ventilate.</li> <li>That gave the command center an opportunity to get our</li> </ul>
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2 3 4 5 6 7 8 9 10	<ul> <li>helping carrying him out, so I couldn't answer that.</li> <li>MR. HELMS:</li> <li>You don't know if there was other miners other rescuers stayed in there, they all came out with you?</li> <li>MR. TUCKER:</li> <li>I'm not sure. Like I say, I know that while we were there</li> </ul>	2 3 4 5 6 7 8 9 10	<ul> <li>two, based on the information that we had, we felt we needed to regroup outside and make a decision on whether we were going to remove the victims from the mine under oxygen or whether we were going to re-ventilate.</li> <li>That gave the command center an opportunity to get our thoughts together as what we wanted to do, and that's when we came to an</li> </ul>
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	Р	age 626		Page 62	28
1	It typically was done	ugo 020	1	Why did we wait five	
2	that way. This was the first time that		2	hours for the robot to come to the Sago	
3	it was not done. Normally the team		3	Mine, but we couldn't get a listening	
4	that was going to go in and replace the		4	device from Beckley? And what good did	
5	team was standing right there when the		5	a robot do us, if we waste time using	
6	other team quit exploring.		6	it?	
7	MR. HELMS:		7	MR. STRICKLIN:	
8					
	Okay. Mr. Stricklin, why		8 9	As I mentioned in my	
9	did plans have to be submitted? Is			presentation, the robot did not hold us	
10	there not a generalized plan in place		10	up. We thought that it could help us.	
11	when there's an emergency such as this		11	Unfortunately, it did not.	
12	take place, or does each? I		12	MR. HELMS:	
13	understand that if a rescue team goes		13	Why couldn't we get the	
14	500 foot, then you got to stop and		14	seismograph instead of the robot?	
15	submit another plan; is this true?		15	Didn't you on it's way. I still	
16	MR. STRICKLIN:		16	don't understand why we didn't get the	
17	No, sir. There was		17	seismograph set up or attempted to do	
18	nothing prohibiting more than a 500-		18	that.	
19	foot exploration. And the reason		19	MR. STRICKLIN:	
20	being, every emergency is different,		20	As I mentioned earlier,	
21	and you need to keep a record of		21	we basically we had an idea of	
22	everything you do as far as a rescue		22	where the miners were located at, and	
23	operation. So we know each step that		23	the seismic is to be used when you	
24	we've taken along the way. And again,		24	don't have an idea of where they would	
25	the plans didn't hold up any		25	be located.	
					_
1		age 627	1	Page 62	29
1	exploration. The plans were done in	age 627	1	MS. MEREDITH:	29
2	exploration. The plans were done in advance of the teams actually moving	age 627	2	MS. MEREDITH: This question is for Mr.	29
2 3	exploration. The plans were done in advance of the teams actually moving forward underground.	age 627	2 3	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript	29
2 3 4	exploration. The plans were done in advance of the teams actually moving forward underground. MR. HELMS:	age 627	2 3 4	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript of your testimony, you said you issued	29
2 3 4 5	exploration. The plans were done in advance of the teams actually moving forward underground. MR. HELMS: How many people was in	Page 627	2 3 4 5	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript of your testimony, you said you issued an order to preserve the scene	29
2 3 4 5 6	exploration. The plans were done in advance of the teams actually moving forward underground. MR. HELMS: How many people was in the command center? Is it four, five,	age 627	2 3 4 5 6	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript of your testimony, you said you issued an order to preserve the scene following an accident.	29
2 3 4 5 6 7	exploration. The plans were done in advance of the teams actually moving forward underground. MR. HELMS: How many people was in the command center? Is it four, five, ten?	age 627	2 3 4 5 6 7	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript of your testimony, you said you issued an order to preserve the scene following an accident. MR. COLLINS:	29
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2 3 4 5 6 7 8 9	<ul> <li>exploration. The plans were done in advance of the teams actually moving forward underground.</li> <li>MR. HELMS:</li> <li>How many people was in the command center? Is it four, five, ten?</li> <li>MR. STRICKLIN:</li> <li>It was a different number</li> </ul>	age 627	2 3 4 5 6 7 8 9	MS. MEREDITH: This question is for Mr. Collins. On page 31 of the transcript of your testimony, you said you issued an order to preserve the scene following an accident. MR. COLLINS: That's correct, ma'am. MS. MEREDITH:	29
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Page 630Page 6301that point, you figured out that the explain?an idea of where the miners were, why 2 were there no shots set off, because, you know, the miners were in there.4MR, COLLINS:				
2       fan chart had been changed. Can you       2       were there no shots set off, because,         3       explain?       3       you know, the miners were in there,         4       MR. COLLINS:       4       They were pounding on the roof bolts,         5       Yes, The order that I       5       using up on the oxygen that they had.         6       issued at 8:30 is a procedural order       6       MR. STRICKLIN:         7       that prevents the operator from       7       The shots are part of         8       changing anything or doing		Page 630		Page 632
3       explain?       3       you know, the miners were in there.         4       MR. COLLINS:       4       They were pounding on the roof bolts,         5       Yes. The order that 1       5       using up on the oxygen that they had.         6       issued at 8:30 is a procedural order       6       MR. STRICKLIN:         7       that prevents the operator from       7       The shots are part of         8       changing anything or doing anything       9       atta seismic equipment that would have         9       other than rescue of people or preserve       9       had to be brought to the site. And it         10       worder han rescue of a people and the command center, because it       10       would have taken a long time for that         11       What I mentioned in there       11       equipment to get there. If the shots         12       them energency manual who should be       10       would have taken a long time for that         13       operator had changed the fan chart.       13       what cell set sky you         14       MS. MEREDITH:       14       where these me were located at.         15       Okay. Is it not stated       15       MS. MEREDITH:         16       in the command center, because it       15       MS. MEREDITH:				
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6       issued at 8:30 is a procedural order       6       MR. STRICKLIN:         7       that prevents the operator from       7       The shots are part of         8       changing anything or doing anything       7       The shots are part of         9       other than rescue of people or preserve       9       had to be brought to the site. And it         11       What I mentioned in there       11       word to the shots       11         12       then, is I found out later that the       12       were set off, we still would hot have         13       had a GPS system to tell us exactly       where these men were located at.       15         14       MS. MEREDITH:       14       where these were were to and if all else         14       sound to show where thery eat. In       16       were set off to find out where you were at?         14       I believe that everyone       21       hit the roof bolts, whatever, to make a         22       could go inside?       20       fails to barricade.       16         23       there for their ideas and thoughts.       24       confrable with a lot of people in       25         24       confrable with a lot of people in       24       shot off to find out where you were at?       24         2       director Doug Conaway.	4	MR. COLLINS:	4	They were pounding on the roof bolts,
6       issued at 8:30 is a procedural order       6       MR. STRICKLIN:         7       that prevents the operator from       7       The shots are part of         8       changing anything or doing anything       7       The shots are part of         9       other than rescue of people or preserve       9       had to be brought to the site. And it         11       What I mentioned in there       11       word at 8:30 is a proceduration of that         12       then, is I found out later that the       12       were set off, we still would not have         13       bad a GPS system to tell us exactly       where these men were located at.         14       MS. MEREDITH:       14       where these were out and their         15       Okay.       Is sounds like everybody or anyone       16       Well, let me ask you         16       in the command center, because it       17       thit the roof bolts, whatever, to make a         20       MR. COLLINS:       20       fails to barricade'.       16       Well, let me ask you         21       believe that everyone       21       hit the roof bolts, whatever, to make a       22         21       believe that ol of people in       23       there for their ideas and thoughts.       24         2       fors to stat of	5	Yes. The order that I	5	using up on the oxygen that they had.
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5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
19transcript that Dr. Blake we was on19had the seismograph, couldn't you have
20our way to the surface with Mr. McCloy.20heard the miners pounding on the roof
21 We ran into, or we came up on a 21 bolts?
22 mantrip coming underground with several 22 MR. STRICKLIN:
23 individuals on the mantrip. They were 23 There's a possibility
24on what we call a supply car.24that we would have. By talking to the
25We met them close25experts, they weren't really sure if
Dana / 25
Page 635 1 right at a switching point. And we 1 they would be able to do that in that
2 didn't know who they were. They were 2 area or not. I have with me, Mr.
3 blocking us from exiting the mines, so 3 Urosek, who may be able to expand on
4 we told them, you know, we had an 4 that a little bit.
5 injured miner, that we needed to get 5 MR. UROSEK:
<ul> <li>6 outside immediately. Their supply car</li> <li>7 and motor would not switch into the</li> <li>6 I can attempt to describe</li> <li>7 a little bit about the seismic system.</li> </ul>
8 spur, so we had to switch our trip into 8 It's operated by the technical support
9the spur track.9arm of MSHA. Dr. Jeff Kravitz is an10While we were in the spur10expert in the seismograph system, and
11 track, I don't know if it was me or one 11 has been since its inception.
<ul> <li>12 of the rescuers in the mantrip,</li> <li>13 hollered is there a doctor on the man -</li> <li>13 developed somewhere in the 1970s as</li> </ul>
14 on the ride. And this gentleman 14 part of a mine rescue apparatus. And
5 1 1
<ul> <li>15 came over, and I think it was Mr.</li> <li>16 Blake. I'm not for sure. But he came</li> <li>16 MSHA throughout the years in the event</li> </ul>
5 S
<ul> <li>17 over, identified himself as a doctor,</li> <li>18 and he did look in the mantrip at Mr.</li> <li>18 and locate trapped miners.</li> </ul>
10and ne did look in the manup at Mr.10and locate trapped miners.19McCloy. He did not physically touch19It was really designed as
J 1 J J J J
<b>5 5 .</b>
22 Are the mine rescue 22 large diameter drill. And it was set 23 up so that in the instance
23 teams, is any of them are any of 24 you all's FMT trained or paramedic 24 for example, there was a large mine
24you all's EMT trained or paramedic24 for example, there was a large mine25trained?25explosion, and it was unsafe for teams
25trained?25explosion, and it was unsafe for teams

	Deres (20		Dame (10)
1	Page 638 to enter at any time. Possibly and	1	Page 640 Okay. We got just a few
1	5	2	more questions here. Let's see. Mr.
2	it was set up in the early '70s right after the Farmington disaster. It was	2	
	-	3 4	Conaway, you were in the command center all this time?
4	set up where in that instance, there		
5	were multiple explosions that continued	5	MR. CONAWAY:
6	to happen. And in that case, they didn't know where all the miners were.	6 7	No, sir.
7			MR. HELMS:
8	So the system was set up	8 9	Were you in the command
9	where you couldn't actually send people		center at any time? MR. CONAWAY:
10	into the mine, mine rescue teams,	10	
11	because that's your first response and	11	On and off, yes. MR. HELMS:
12	your best response. But in that case	12	
13	where you could not, you could set the	13	It says here, you did not
14	seismic system over areas of the mine	14 15	give any statements or answer any
15	where you suspect there may be miners	15	questions, did they not ask you any?
16	and listen for them. And then through	16	Did you give any statements to anybody?
17	the survey system, you could actually	17	MR. CONAWAY:
18	try and locate the best area where you	18	No, sir.
19	may hear miners pounding.	19	MR. HELMS:
20	MR. HELMS:	20	Why not, they didn't ask
21	How long does it take to	21	you?
22	set it up?	22	MR. CONAWAY:
23	MR. UROSEK:	23	I wasn't asked.
24	It's my understanding	24 25	MR. HELMS:
25	that it would take anywhere between	25	Okay. I got Mr. Tucker.
	Page 639		Page 641
1	four to eight hours once it's onsite to	1	How many SCSRs had to be open before -
2	set up. And a lot of that's going to	2	that you have one that work on Mr.
3	depend on the actual surveying system.	3	Randal McCloy?
4	MR. HELMS:	4	MR. TUCKER:
5	Well, you could have the	5	We ended up opening three
6	survey be done before it got here; is	6	or four rescuers. Each one of them
7	that not true? By the time it got	7	worked. Randal, like I said, his jaws
8	here, the site could have been	8	was clenched, and Jimmy was having a
9	prepared, the survey already done, the	9	hard time even getting the mouthpiece
10	equipment set, and be listening for	10	in his mouth. And with that rescuer,
11	these men to pound, and then you could	11	you have to breath into it for it to
12	have drilled your hole while the drill	12	work. And I guess with the situation
13	was set in there and drilled exactly	13	with everything that was going on,
14	where these miners was?	14	those rescuers, we was hoping to see
15	MR. UROSEK:	15	this bag showing a lot of indication of
16	It's my understanding	16	coming in and out.
17	that the survey wasn't for the drill	17	And it wasn't happening
18	hole. They weren't able to complete	18	simply because he was only taking a
19	that until that evening, somewhere in	19	breath, probably every five to seven
20	the neighborhood of 10 o'clock, 11	20	seconds. He would kind of like draw a
21	o'clock. So to actually set the	21	breath from that. So it wasn't that it
22	seismic up and be able to locate the	22	wasn't working, but in our attempt to
23	miners, it would not have been able to	23	make sure that he was getting oxygen
24	do that prior to that.	24	from that, we ended up breaking open a
25	MR. HELMS:	25	few other rescuers.
		L	

	Page 642		Page 6	44
1	And that's a reason also	1	And that is not signed;	
2	why once we got him to a respirable	2	correct?	_
3	atmosphere that we took that self	3	CHAIR:	_
4	rescuer away and put the apparatus on	4	That is not signed. But	_
5	him so he would have a constant flow of	5	that was submitted and not approved?	_
6	oxygen. Then he had it right there at	6	MR. MILLS:	_
7	his face, and then it didn't you	7	It was discussed.	_
8	know, it was a constant flow, much	8	CHAIR:	_
9	better than the SCSR.	9	Okay. So the second plan	_
10	MR. HELMS:	10	that I have is request number two, was	_
11	Okay. We're going to	11	signed by yourself, Mr. Mills, and	_
12	finish up here due to time. But Mr.	12	James Satterfield for and that	_
13	Collins, I would like to thank you for	13	there's an indication of 1300 right	_
14	wanting to start at where Mr. Toler had	14	above your signature, a 1300. I	_
15	left off. And we want to thank the	15	presume that's hours.	_
16	rescue teams going in there and trying	16	But it's in your experience that that's	_
17	to save our men. Thank you.	17	a lengthy time for a plan to be	_
18	CHAIR:	18	submitted. Does that delay or how	_
19	Thank you. I just have	19	is that compared to other instances?	_
20	one question and that is for Mr.	20	MR. MILLS:	_
21	Collins and Mr. Stricklin, and Mr.	21	I got some experience in	_
22	Mills as well, I guess. The first plan	22	Loveridge during the mine fire. And it	_
23	submittal from ICG to initiate the	23	varies, depending on complexity of the	_
24	rescue efforts, while we don't have the	24	plan, what they want, what we need to	_
25	dates, does this seem inordinately long	25	review, what we know.	_
	Page 64:		Page 6	45
1	to get that plan developed, or was it	1	CHAIR:	
2	done in your experience based upon	2	Mr. Stricklin?	_
3	other accidents and other instances,	3	MR. STRICKLIN:	_
4	was that based upon was that a plan	4	I think I heard the	_
5	within a reasonable period of time?	5	comment yesterday from the company that	_
6	MR. MILLS:	6	it was a chaotic scene, and I probably	_
7	Can I ask which plan?	7	tend to agree with that based on what I	_
8	CHAIR:	8	had heard was occurring at the mine,	_
9	The first plan that they	9	and that was just added to by the	_
10	undertook.	10	concentrations of CO that was in what	_
11	MR. MILLS:	11	we would call the command center. I	_
12	Approved or submitted?	12	think that probably slowed some stuff	_
13	CHAIR:	13	down, would be my guess at the site.	
14	What was submitted.	14	And I just happened to get there about	
15	MR. MILLS:	15	the same time that everything started	_
16	And it deals with	16	to clear up. So from what I saw, I	
17	pumping.	17	thought things started moving in an	_
18	CHAIR:	18	orderly fashion with discussion between	
19	The plan I have is dated	19	the state, MSHA and the company	
20	the 2nd of January, in a plan to	20	altogether, trying to work together.	
21	restore power to dewatering pump that	21	There was I don't	
22 23	is located at the Number Two dewatering	22	want to say there was no disagreements,	
23 24	pump, so as not to lose the return airway opening.	23 24	but it seemed like we had the ability, all three parties to work through those	
24 25		124		
	MR. MILLS:	25	disagreements, and we seemed to all be	

1	Page 646	1	Page 648
1	focused on the same thing.	1	There's also a recorder,
2	MR. MILLS:	2	someone keeping track of all the events
3	And I'd like to clarify	3	and decisions that are being made. And
4	that, probably what you're seeing is	4	the structure, the way I see it
5	1/21/06. I never use military time.	5	operate, is an issue is brought up, a
6	CHAIR:	6	circumstance is confronted before the
7	Go ahead.	7	group. They discuss it, and then
8	MR. DEAN:	8	there's a decision made collectively by
9	Yes. This question is	9	the group as to how to proceed. And
10	for Doug Conaway. It's from one of the	10	then that order is carried out.
11	Board of Coal Mine Health & Safety	11	MR. DEAN:
12	members. The question is why hasn't	12	Thank you.
13	the state placed a higher value on	13	MR. MCKINNEY:
14	having a State of the art mine rescue	14	This question is for
15	capabilities and the equipment such as	15	Brian Mills. During John Collins'
16	geophones? And you may not be able to	16	testimony, Brian, he indicated that he
17	answer that, but I wanted to ask that.	17	had an initial conversation with you,
18	MR. CONAWAY:	18	and there was some discussion about
19	Well, the way we've dealt	19	contacting mine rescue teams, and you
20	with mine rescue in the past, and	20	said that, I guess you may do that.
21	obviously everything's being looked at	21	Could you elaborate a little bit on
22	in a different light for Sago. But	22	what you did as far as contacting the
23	prior to that, there was a system in	23	mine rescue teams?
24	place where the state would bring	23 24	MR. MILLS:
25	certain equipment, to certain people	24 25	Yes. Sometime during the
23	certain equipment, to certain people	23	res. Sometime during the
	Page 647		Page 649
1	Page 647 into the equation. MSHA would bring	1	Page 649 early morning I spoke to John, I'm not
1	into the equation. MSHA would bring	1	early morning I spoke to John. I'm not
2	into the equation. MSHA would bring certain items, which is the geophones	2	early morning I spoke to John. I'm not exactly sure what time. And I did make
2 3	into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling	2 3	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment
2 3 4	into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling and so forth.	2 3 4	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment to me that we would probably need mine
2 3 4 5	into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling and so forth. So up until that point,	2 3	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment to me that we would probably need mine rescue teams. So I proceeded to
2 3 4 5 6	<ul><li>into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling and so forth.</li><li>So up until that point, as we trained and as we had exercises</li></ul>	2 3 4 5 6	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment to me that we would probably need mine rescue teams. So I proceeded to contact Tri-State Mine Rescue
2 3 4 5 6 7	<ul><li>into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling and so forth.</li><li>So up until that point, as we trained and as we had exercises together, that was the system that was</li></ul>	2 3 4 5 6 7	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment to me that we would probably need mine rescue teams. So I proceeded to contact Tri-State Mine Rescue Association. I spoke to the gentleman
2 3 4 5 6 7 8	<ul> <li>into the equation. MSHA would bring certain items, which is the geophones and the chromatographs and the sampling and so forth.</li> <li>So up until that point, as we trained and as we had exercises together, that was the system that was in place, Jim, and that was</li> </ul>	2 3 4 5 6 7 8	early morning I spoke to John. I'm not exactly sure what time. And I did make a comment to him, or he made a comment to me that we would probably need mine rescue teams. So I proceeded to contact Tri-State Mine Rescue Association. I spoke to the gentleman by the name of Joe Provola (phonetic),
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	Page 650		Page 652
1	about the chromatograph with Consol?	1	he had asked. And I believe you were
2	MR. MILLS:	2	one of them, Mr. Stricklin. Did he ask
3	That may have occurred. I	3	you for the seismograph, or use of the
4	worked with this gentleman on past	4	seismograph?
5	recoveries at Loveridge. And that	5	MR. STRICKLIN:
6	chromatograph was sent by Consol. It	6	No, he didn't ask me.
7	arrived, I'm going to guess by 2:30	7	But I don't think he mentioned my name
8	p.m. And we set it up in our state	8	yesterday. I believe he mentioned Mr.
9	mine rescue truck.	9	Kravitz, Mr. Brown, and Mr
10	MR. MCKINNEY:	10	possibly Mr. Satterfield.
11	Thank you.	11	MR. CLAIR:
12	MR. CLAIR:	12	And do you have any
13	I have a question for Mr.	13	information, whether he asked those
14	Tucker, or perhaps Mr. Hixson. And	14	individuals?
15	that is, there have been reports that	15	MR. STRICKLIN:
16	the company had devised a code to	16	I believe someone
17	identify miners on the communication	17	contacted the individuals last evening,
18	system. Did you use a code in	18	and none of them recollect being asked
19	referring to the miners?	19	for seismic equipment.
20	MR. HIXSON:	20	MR. MCKINNEY:
21	I could answer for Mr.	21	This question will be for
22	Helms, the first miner. Although I was	22	Mr. Collins. I think the briefing that
23	never briefed on that system, the	23	you had with Mr. Toler when you came on
24	captain and some other people I knew	24	the property there was a discussion
25	were. They were to be called out as	25	about building or rebuilding a stopping
	-		
	Page 651		Page 653
1	Page 651 items, and to mark the location of the	1	Page 653 out of brattice cloth, waiting and then
2	items, and to mark the location of the item on the roof, or the rib, or the	2	out of brattice cloth, waiting and then moving up and rebuilding and waiting.
	items, and to mark the location of the		out of brattice cloth, waiting and then
2	items, and to mark the location of the item on the roof, or the rib, or the	2 3 4	out of brattice cloth, waiting and then moving up and rebuilding and waiting. That was the process, the methodical process that they were using. Did you
2 3	items, and to mark the location of the item on the roof, or the rib, or the bottom, however we found the miner.	2 3	out of brattice cloth, waiting and then moving up and rebuilding and waiting. That was the process, the methodical
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	Page 654		Page 656
1	one. And it got to where all of them	1	CHAIR:
2	had to work on one, and it got to where	2	Was there a battery
3	they would run up and build one with	2	charging station observed near the
4	smoke and wait 'til it cleared, and	4	entrance to the Two Left section? And
5	then move to the next one. So it was	4 5	was there a portable welder in the
6	my belief when they got to block 58	6	maintenance shop that was discussed
7	that they could not get the smoke to	7	yesterday?
8		8	MR. STRICKLIN:
9	move at all. They did stay there some time and tried to yell and scream and	0 9	I think I'll well,
10	5	9 10	
11	anything else they could to try to contact the miners.	10	Mr. Urosek was on the investigation. I think he would be better suited to
12	MR. MCKINNEY:	12	answer that.
13		12	MR. UROSEK:
14	Thank you. MR. MILLS:	13 14	
			Yes, there was, to both
15	Mr. McKinney, I would	15 16	items. CHAIR:
16	like to add, on my calls to mine rescue		
17 18	teams, I also called Mike Crowley, he's the state coordinator of the state mine	17 18	And the battery charging
			power station was on the Two Left
19 20	rescue team early that morning. MR. MCKINNEY:	19 20	Section, where was the portable welder? MR. UROSEK:
20		20 21	I'm not sure of the exact
21	Thank you, Brian. UNIDENTIFIED SPEAKER:	21 22	location of it. I do remember as we
22			
23	Ray, are you okay? CHAIR:	23 24	were going through the area, mapping the area, we did see it. It was
24 25	I have a series of quick	24 25	somewhere, and this is from
20		20	
	Page 655		Page 657
1	factual questions just to develop.	1	recollection, near the track entry at
2	Would the fan charts that were covered,	2	one of the crosscuts.
3	and are they made a part of the record?	3	CHAIR:
4	Have they been made a part of?	4	Maybe we can preserve
5	MR. STRICKLIN:	5	that question to the investigative
6	Yes, sir.	6	panel as well, because they'll have
7	CHAIR:	7	With regard to the Mr.
8	Okay.	8	Urosek, with regard to the listening
9	MR. STRICKLIN:	9	devices, what's the age of that system?
10	I may want to add I	10	MR. UROSEK:
11	mean, there was some discussion on the	11	That system was
12	examination books, and like Mr. Collins	12	originally designed in the early '70s,
13	said, we collected those books the same	13	and they did do some upgrades to it in
14	day, on January the 2nd, as well as the	14	the '80s to improve and I guess
15	detectors that were used underground by	15	really improve the computer part of the
16	this initial rescue, and there was some	16	system.
17	opened SCSRs that we also collected,	17	CHAIR:
18	and we made the mine operator aware	18	And how long does it take
19	that we would be wanting all the	19	to establish that system on the ground
20	original records at that time.	20	if you have clear ground and readily
21	CHAIR:	21	accessible ground?
22	And have they complied	22	MR. UROSEK:
23			
	with that request?	23	My understanding is, it
23 24 25	with that request? MR. STRICKLIN: Yes, sir.	23 24 25	takes anywhere between four to eight hours to do that.

Page 658 1 CHAIR: 2 And if you don't have 3 clear ground, how long does it take? 4 MR. UROSEK: 1 situation at Sago Mine where 2 men underground, that we have 3 able to get ahold of, and it's by 4 more than 30 I mean, more	Page 660
2And if you don't have2men underground, that we have3clear ground, how long does it take?3able to get ahold of, and it's be	
3 clear ground, how long does it take? 3 able to get ahold of, and it's b	
5 Well, that even makes it 5 minutes.	
6 more difficult because the 6 I've tried to get ahold	
5	or luo
5 6 6 1	
<ul> <li>8 from where you have to have the central</li> <li>9 computer location, it's very difficult,</li> <li>9 the number I have for him is I</li> </ul>	
10 because it's a radio signal back to 10 disconnected, and you are nex	
11 them, and it can take much longer. 11 list. We don't know anything	
12 CHAIR: 12 time, at 6:30 when the power	
5	-
5 5 5 5 5	•
16more modern or newer than this?16not been able to get ahold of17MR. UROSEK:17our crew underground, so we	
17MR. UROSEK:17our crew underground, so we18I'm not familiar with18to get that crew right now, and	
19that.19been more than 60 minutes.	
1911319been more than so minutes.20CHAIR:20phone number is, and he left	
21 You're not familiar with 21 number.	1115
22 the Israeli systems or any of the other 22 I immediately called him	
23 systems? 23 back. We talked for just a litt	lo hit
24 MR. UROSEK: 24 He said that he wasn't sure w	
25 I'm not. Mr. Kravitz may 25 happened, but there was an e	
Page 659	Page 661
1 be, but I'm not. 1 he reconfirmed that they could	dn't get
2 CHAIR: 2 ahold of the crew. He started	talking
3 There is, if I might, for 3 that maybe it had been a high	voltage
4 the record, indulge the chair, there is 4 cable exploded, and I can pre-	tty
5 an Israeli system that's available 5 I've known Johnny a long time	e, and I
6 that's much more expeditious and 6 could tell that he didn't as 5	far as
7 smaller and easier to set up. I know 7 I could tell, he did not know w	/hat had
8 we looked into that. 8 happened. So I just told him	consider
9 Mr. Collins, would you 9 us notified and I was going to	the
10please repeat the phone message you10mine.	
11received from ICG, specifically with11CHAIR:	
12regard to, quote, the power, unquote?12Thank you, Mr. Collins.	
13MR. COLLINS:13Would MSHA provide all of the	0
14Yes. Actually, because I14readings taken at the return p	
15 never answered the phone, I never heard 15 including the documented han	
16the phone ring, Johnny Stemple's first16readings, infrared readings an	-
17message was left on my answering17chromatograph readings and r	make those a
18machine. And again, my wife came out18part of the record?	
19and said, are you talking to Johnny19MR. STRICKLIN:	
20 Stemple, and she said well, no, he's on 20 Yes. We will do so.	
20Stemple, and she said well, no, he's on20Yes. We will do so.21the phone.21CHAIR:	
20Stemple, and she said well, no, he's on20Yes. We will do so.21the phone.21CHAIR:22So this is the message22Was the ventilation cut	4
20Stemple, and she said well, no, he's on20Yes. We will do so.21the phone.21CHAIR:22So this is the message22Was the ventilation cut23that John left. Hi, John Collins, this23off at any time at the mine? Note:	Иr.
20Stemple, and she said well, no, he's on20Yes. We will do so.21the phone.21CHAIR:22So this is the message22Was the ventilation cut	Иr.

1			
	Page 662		Page 664
	As far as the fan?	1	made the right decisions as far as what
2	CHAIR:	2	we knew and the possibility of a second
3	The fan.	3	explosion or of a fire.
4	MR. COLLINS:	4	MS. MEREDITH:
5	To my knowledge, the fan	5	Mr. Mills, the same
6	was never stopped.	6	question would apply for you, but in
7	CHAIR:	7	the State's role. If there was
8	Okay.	8	anything that could have been done
9	MS. MEREDITH:	9	differently, and that you could have
10	Mr. Stricklin, if the CO	10	changed?
11	levels were dangerous, why did they use	11	MR. MILLS:
12	a scoop to carry the men out with, and	12	As far as I'm concerned,
13	how did they operate it how did the	13	ma'am, no. The only possible thing we
14	operator fit inside the deck to operate	14	could have did was maybe put the mine
15	that with his apparatus on?	15	rescue team members at a greater risk
16	MR. STRICKLIN:	16	by sending them in earlier, or until we
17	The atmosphere to operate	17	were sure that it was okay to start in.
18	the scoop while we had CO, we didn't	18	MS. MEREDITH:
19	have an explosive mixture of methane,	19	In a mine emergency, or
20	and we didn't know that actually until	20	in a rescue situation, can MSHA or the
21	we got into the area.	21	State make recommendations to expedite
22	The operator would have	22	the rescue mission instead of waiting
23	still tried to he still would have	23	for the mine operator to come up with a
24	had to keep his apparatus on while he	24	plan?
25	was operating that scoop. He would	25	MR. STRICKLIN:
1	Page 663	1	Page 665
	have had to lean hard against the		
1	-	1	The way I saw it
2	apparatus. There was no time that	2	happening is, we all sat down and
2 3	apparatus. There was no time that anybody could be in that area without	2 3	happening is, we all sat down and talked about decisions before they came
2 3 4	apparatus. There was no time that anybody could be in that area without having their apparatus on.	2 3 4	happening is, we all sat down and talked about decisions before they came they would come up. And we
2 3 4 5	apparatus. There was no time that anybody could be in that area without having their apparatus on. MS. MEREDITH:	2 3	happening is, we all sat down and talked about decisions before they came they would come up. And we discussed as a group what the next
2 3 4 5 6	apparatus. There was no time that anybody could be in that area without having their apparatus on. MS. MEREDITH: And so you sent him in	2 3 4 5 6	happening is, we all sat down and talked about decisions before they came they would come up. And we discussed as a group what the next thing should be, and the operator had
2 3 4 5 6 7	<ul><li>apparatus. There was no time that anybody could be in that area without having their apparatus on.</li><li>MS. MEREDITH:</li><li>And so you sent him in that with the 100 percent guarantee</li></ul>	2 3 4 5 6 7	happening is, we all sat down and talked about decisions before they came they would come up. And we discussed as a group what the next thing should be, and the operator had some ideas, and the State had some
2 3 4 5 6 7 8	<ul><li>apparatus. There was no time that anybody could be in that area without having their apparatus on.</li><li>MS. MEREDITH:</li><li>And so you sent him in that with the 100 percent guarantee that there would be another explosion</li></ul>	2 3 4 5 6 7 8	happening is, we all sat down and talked about decisions before they came they would come up. And we discussed as a group what the next thing should be, and the operator had some ideas, and the State had some ideas, and we had some ideas that we
2 3 4 5 6 7 8 9	<ul><li>apparatus. There was no time that anybody could be in that area without having their apparatus on.</li><li>MS. MEREDITH:</li><li>And so you sent him in that with the 100 percent guarantee that there would be another explosion from taking the scoop in the mines?</li></ul>	2 3 4 5 6 7 8 9	happening is, we all sat down and talked about decisions before they came they would come up. And we discussed as a group what the next thing should be, and the operator had some ideas, and the State had some ideas, and we had some ideas that we all worked through to come up with
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1	explain why to your recollection,	1	why wouldn't a rescue plan be the
2	why they would make such a request?	2	first plan to be submitted? Mr.
3	MR. MILLS:	3	Stricklin?
4	The request was made by	4	MR. STRICKLIN:
5	Pat Coleman. And my basic	5	Well, I think there was
6	understanding was that there was a lot	6	some ground work that needed to be done
7	of communication going on outside of	7	as far as we've been talking about
			5
8	the command center. There was	8	the pumping of water would be something
9	telephone I mean, television	9	that needed to be done to allow rescue
10	cameras, satellites everywhere that we	10	teams to go in, as well as this
11	didn't want the wrong information	11	trending of gas concentrations that
12	he didn't want the wrong information to	12	needed before we could all agree
13	get out. So instead of identifying a	13	the rescue teams could enter the mine
14	person as a victim or by name, that we	14	at that time.
15	would just use the term item.	15	CHAIR:
16	CHAIR:	16	Is it true that the
17	Okay. Mr. Collins, the	17	submission by ICG and these items here,
18	message from ICG said the power was	18	are elements in a rescue plan?
19	off. Do you know what power he was	19	MR. STRICKLIN:
20	referring to?	20	Yes, sir. Basically that
21	MR. COLLINS:	21	would be and I think those would be
22	An official from ICG said	22	the first steps of the plan, as you go
23	the power was off?	23	progressively further in that, you'll
24	CHAIR:	24	find that three or four, whatever,
25	The message that you just	25	talks about people entering the mine.
20		20	
	Page 667		Page 669
4			-
1 1	read, as I understood it, said the	1	CHAIR:
	read, as I understood it, said the power was off.		
2	power was off.	2	Is that your
2 3	power was off. MR. COLLINS:	2 3	Is that your understanding as well, Mr. Mills?
2 3 4	power was off. MR. COLLINS: Oh, yes. Okay. In	2 3 4	Is that your understanding as well, Mr. Mills? MR. MILLS:
2 3 4 5	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power	2 3 4 5	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that
2 3 4 5 6	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power was off. I know from the investigation	2 3 4 5 6	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that the plans were submitted depending on
2 3 4 5 6 7	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power was off. I know from the investigation now that the power was off from Two	2 3 4 5 6 7	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that the plans were submitted depending on what we find as we go along, and what
2 3 4 5 6 7 8	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power was off. I know from the investigation now that the power was off from Two head inby, but the power was not off	2 3 4 5 6 7 8	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that the plans were submitted depending on what we find as we go along, and what is needed to get us started.
2 3 4 5 6 7 8 9	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power was off. I know from the investigation now that the power was off from Two head inby, but the power was not off Number One belt. The power was not off	2 3 4 5 6 7 8 9	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that the plans were submitted depending on what we find as we go along, and what is needed to get us started. CHAIR:
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2 3 4 5 6 7 8 9 10 11 12	power was off. MR. COLLINS: Oh, yes. Okay. In Johnny's message, he did say the power was off. I know from the investigation now that the power was off from Two head inby, but the power was not off Number One belt. The power was not off the fan or the surface area. CHAIR: Mr. Urosek, can you	2 3 4 5 6 7 8 9 10 11 12	Is that your understanding as well, Mr. Mills? MR. MILLS: Yes. I would agree that the plans were submitted depending on what we find as we go along, and what is needed to get us started. CHAIR: If I'm understanding you correctly then, these are elements that sort of build toward a rescue plan, you
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	Page 670		Page 672
1	company why wouldn't MSHA come up	1	asked to read by the families. And it
2	with a plan, or the state agency come	2	is as follows.
3	up with a plan to conduct a rescue?	3	It has come to my
	MR. STRICKLIN:		attention that as a result of this
4		4	
5	I don't believe that it	5	morning's session, news reports may
6	was our plan. It was something that we	6	convey the impression that a particular
7	approved and we discussed as a group.	7	mine rescue team member was responsible
8	I accepted it as a plan of all three	8	for the tragic miscommunication to the
9	agencies that signed it.	9	surface that led to the belief that all
10	CHAIR:	10	the miners at Sago had been saved. By
11	Is that the system that's	11	now, I think it should be clear to all
12	-	12	of us that the miscommunication was a
	been in place in the agency, and to		
13	your knowledge, Mr. Mills, through your	13	systemic problem, and not the result of
14	knowledge in the State of West	14	individual error or carelessness.
15	Virginia, for a period of time?	15	Clearly, it had more to do with the
16	MR. MILLS:	16	limitations of equipment,
17	My experiences, although	17	communication's equipment, and speaking
18	they're limited, is that's the way	18	while under apparatus than with the
19	they're handled. Plans are submitted,	19	limitations of human beings. It
20	discussed and approved.	20	would be extremely regrettable in my
21	MR. STRICKLIN:	21	view if the burden of sorrow that the
22		22	
	Yes, sir. That's the way		mine rescue team members already carry
23	we typically are involved in rescue	23	is made even harder to bear by being
24	operations as well.	24	misidentified in the media as the
25	CHAIR:	25	source of the miscommunication. I know
	Page 671		Page 673
1	Page 671 I think that's all the	1	Page 673 the families appreciate what the mine
1 2	_	1 2	_
	I think that's all the		the families appreciate what the mine
2 3	I think that's all the questions I have. Any other questions? MR. CLAIR:	2 3	the families appreciate what the mine rescue team members tried to do for their loved ones. We all owe them our
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	Page 674		Page 676
1	off three shots, even though we could	1	Yeah, you can do the 180
2	put off three shots of dynamite or to	2	with it. It was a good clear picture.
3	note that we kind of knew where these	3	with it. It was a good clear picture.
4	guys were underground? Could that	4	MR. STRICKLIN:
5	possibly have been done?	5	If Mr. Meadows doesn't
6	MR. STRICKLIN:	6	mind, maybe Mr. Urosek could shed some
7	Well, the three-shot	7	more light on that.
8	equipment would have been with the	8	MR. UROSEK:
9	seismic equipment itself. And none of	9	I was present at the time
10	that, as we discussed earlier, was	10	that we did drop the camera. You can
11	brought to the mine site.	11	typically see 20 to 30 feet. It's more
12	MR. HELMS:	12	limited on the light, the light source
13	There is no other way you	13	that you have. Now, as to how far you
14	could have made three loud booms to	14	could see. It's about as far as you
15	tell these guys that, yes, we think we	15	could see with a cap lamp.
16	know where you're at?	16	MR. HELMS:
17	MR. STRICKLIN:	17	Okay. And one other
18	If we would have put off	18	question I got. When you found my
19	three shots we didn't have the	19	brother, Terry Helms, did anybody look
20	equipment available or set up that we	20	to see what his name was? I knew my
21	could have determined where they were	20	family and I waited 40 hours to find
22	located at or to hear them pound on the	22	out if he was alive or dead, and that
23	roof.	23	should not have happened.
23	MR. HELMS:	23	MR. HIXSON:
25	Let see what else here.	24	When we found Mr. Helms,
25		25	when we found with frems,
	Page 675		Page 677
1	Okay. One other thing. How far can	1	we did not turn him or did not move him
2	the camera that was dropped down in the	2	in any way to find out what his tag was
3	borehole Mr. Meadows, how far can	3	on his belt. And his hardhat was
4	it project, see clearly?	4	I'm not sure if that was his hardhat,
5	MR. MEADOWS:	5	but we found a hardhat approximately
	MR. MERBOWS.	5	but we found a natural approximately
6	I'm not a hundred percent	6	100, 200 feet down the track entry, and
6 7			100, 200 feet down the track entry, and we did look on that, and we couldn't
7 8	I'm not a hundred percent sure what the total capability of the camera is, but it	6 7 8	100, 200 feet down the track entry, and we did look on that, and we couldn't find a name on that hat. But we did
7 8 9	I'm not a hundred percent sure what the total capability of the camera is, but it what I saw and I was unfamiliar	6 7 8 9	100, 200 feet down the track entry, and we did look on that, and we couldn't
7 8 9 10	I'm not a hundred percent sure what the total capability of the camera is, but it what I saw and I was unfamiliar with the mine, of course, it was a	6 7 8	100, 200 feet down the track entry, and we did look on that, and we couldn't find a name on that hat. But we did not turn him at that time to look for a name.
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7 8 9 10 11 12	I'm not a hundred percent sure what the total capability of the camera is, but it what I saw and I was unfamiliar with the mine, of course, it was a clear picture. We could see we saw the hole almost center the feeder and	6 7 8 9 10 11 12	<ul><li>100, 200 feet down the track entry, and we did look on that, and we couldn't find a name on that hat. But we did not turn him at that time to look for a name.</li><li>MR. HELMS:</li><li>Okay. That's all I got.</li></ul>
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1	MR. STRICKLIN:	1	MR. HELMS:
2	Could you repeat the	2	We got one more.
3	question, please?	3	CHAIR:
4	MS. MEREDITH:	4	Okay.
5	Is it normal practice to	5	MS. MEREDITH:
6	put glue or epoxy in methane-	6	Do any of you inspectors
7	liberating roof holes (sic)?	7	or investigators have any
8	MR. STRICKLIN:	8	recommendations on how mine rescue can
9	It would be normal if a	9	be improved for the procedures leading
10	roof bolt was installed with the glue.	10	up to the rescue?
11	MS. MEREDITH:	11	MR. COLLINS:
12	Who sent in a mantrip	12	Well, I know seven years
13	knowing that an injured miner was on	13	ago, the State of West Virginia
14	his way out?	14	Legislature reduced the requirements of
15	MR. STRICKLIN:	15	mine rescue teams. It used to be every
16	I believe the mantrip	16	mine with more than 50 people had to
17	I can't answer that question, but	17	have a mine rescue team. So I think
18	my guess is the mantrip had started in	18	more mine rescue teams readily
19	prior to the mantrip starting out with	19	available would be good.
20	Mr. McCloy in the mantrip.	20	MS. MEREDITH:
21	MR. COLLINS:	21	That's all, Mr. McAteer.
22	Yes, ma'am. The trolley	22	CHAIR:
23	phones were out because the power was	23	Thank you. Coal mine
24	off. And the trip that met them was	24	dust, that's always been one of the
25	the doctor and stuff that was going	25	culprits in mine explosions. Can we
	the dooter and otall that has going	20	
	Page 679		Page 681
1	inside. Until that point, they still	1	<ul> <li>this actually should go to the</li> </ul>
2	believed that everyone was alive.	2	investigative team. What was the
3	MS. MEREDITH:	3	surface layer of dust at Sago when the
4	Why was there a doctor	4	explosion occurred? I think the mine
5	going inside if you couldn't go on into	5	rescue investigation team Panel may be
6	where the men had barricaded themselves	6	better equipped to answer that. Any
7	due to the fact of him putting on a	7	others? I think that's all the
8	self-rescuer?	8	questions we have. Thank you very
9	MR. COLLINS:	9	much, gentlemen, for your efforts and
10	When the doctor left from	10	for your presentation here today.
11	outside, he thought we had 12 people	11	If I could ask if the ICG
12	alive. And that the mine rescue team	12	Investigation and Initial Findings'
13	would walk them, the ones they could,	13	Panel could come forward, please?
14	down to where he could have gotten to	14	CHAIR:
15	them. But he also took some staff with	15	Mr. Hatfield, when you're
16	him. That was the group that was going	16	prepared and ready.
17	in and there was no way to call them	17	MR. HATFIELD:
18	and stop them once they had left	18	Mr. Chairman, Panel
19	outside.	19	members, miners and family members,
20	MR. HELMS:	20	with me today on this Panel are Sam
21	That's all we got, Mr.	21	Kitts, our Senior Vice-president of
22	McAteer.	22	Operations for West Virginia/Maryland
23	CHAIR:	23	Region, Gene Kitts, our Senior
24	Okay. Any other	24 25	Vice-president for Mining Services,
25	questions?	25	Chuck Dunbar, General Manager of

	Page 682		Page 684
1	Buckhannon Division, Dr. Tom Novak, a	1	timely answers. With both MSHA and the
2	consultant with emphasis in electrical	2	State predicting that their final
3	and effects of lightning from the	3	investigative reports were three to
4	College of Engineering of Virginia	4	nine months from completion, waiting
5	Tech, and Dr. Steve Sawyer, Ph.D. and	5	was simply not an option.
6	professional engineer, a consultant	6	ICG's independent
7	with emphasis in directional forces.	7	investigation utilized a diverse theme
8	We have assembled this	8	of mining, electrical and combustion
9	group to explain, to the extent	9	consultants. The knowledge of Doctors
10	permitted within this timeframe and	10	Novak and Sawyer was deemed to be the
11	under these circumstances, the initial	11	most significant to reporting on the
12	findings of ICG's investigation into	12	findings made to date, and that is why
13	the cause of the explosion. Our work	13	they are here. In the interest of time,
14	is ongoing and there may be some areas	14	I will provide the following brief
15	that we are not prepared to address	15	overview of the findings and then have
16	today for this reason. However, we are	16	Sam Kitts, who is integral to our
17	confident that to this point, we have	17	investigation, discuss the arduous
18	eliminated many possible causes and	18	investigation process. Sam will be
19	have identified several key factors	19	followed by brief presentations from
20	contributing to the cause of this	20	Dr. Novak and Dr. Sawyer. Questions
21	tragic event. We are here to share	21	may then be posed to the Panelists.
22	that information with you, the	22	Subject to ongoing
23	families, the industry, the regulators	23	verification and analysis, we have made
23	and the public, with the belief and	23 24	
24	hope that this information will aid in	24 25	CHAIR:
23		23	CHAIR.
	Page 683		Page 685
1	Page 683 providing some closure and means of	1	Page 685 I'm sorry. I apologize.
	providing some closure and means of	1 2	I'm sorry. I apologize.
2	providing some closure and means of making our industry a safer one for	2	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the
2 3	providing some closure and means of making our industry a safer one for miners.	2 3	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please
2 3 4	providing some closure and means of making our industry a safer one for miners. Much of this information	2 3 4	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the
2 3 4 5	providing some closure and means of making our industry a safer one for miners. Much of this information was released to the families and to our	2 3 4 5	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please stand.
2 3 4 5 6	providing some closure and means of making our industry a safer one for miners. Much of this information was released to the families and to our miners when we announced our initial	2 3 4 5 6	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please
2 3 4 5 6 7	<ul> <li>providing some closure and means of making our industry a safer one for miners.</li> <li>Much of this information was released to the families and to our miners when we announced our initial findings prior to resuming operations</li> </ul>	2 3 4 5 6 7	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please stand. WITNESSES SWORN EN MASSE
2 3 4 5 6 7 8	<ul> <li>providing some closure and means of making our industry a safer one for miners.</li> <li>Much of this information was released to the families and to our miners when we announced our initial findings prior to resuming operations on March 15, 2006. We made the</li> </ul>	2 3 4 5 6 7 8	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please stand. WITNESSES SWORN EN MASSE
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2 3 4 5 6 7 8 9 10	<ul> <li>providing some closure and means of making our industry a safer one for miners.</li> <li>Much of this information was released to the families and to our miners when we announced our initial findings prior to resuming operations on March 15, 2006. We made the decision to announce those initial findings because it was simply</li> </ul>	2 3 4 5 6 7 8 9 10	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please stand. WITNESSES SWORN EN MASSE MR. HATFIELD: Subject to ongoing verification analysis, we have made
2 3 4 5 6 7 8 9 10 11	<ul> <li>providing some closure and means of making our industry a safer one for miners.</li> <li>Much of this information was released to the families and to our miners when we announced our initial findings prior to resuming operations on March 15, 2006. We made the decision to announce those initial findings because it was simply unacceptable to send our miners back to</li> </ul>	2 3 4 5 6 7 8 9 10 11	I'm sorry. I apologize. Could I ask Ms. Elkins to swear the Panel in? It's my error. Please stand. WITNESSES SWORN EN MASSE MR. HATFIELD: Subject to ongoing verification analysis, we have made these initial findings. The explosion
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	Page 686		Page 688
1	U/S/G/S seismic station. And Number	1	build the seals. Many of the seals,
2	Three, the Sago Mine Atmospheric	2	indeed, were completely pulverized by
3	Monitoring System signaled a combustion	3	the explosion. Also, wood block crib
4	alarm due to presence of carbon	4	structures constructed at the seals, as
5	monoxide. The precise route by which	5	contemplated by the MSHA-approved plan,
6	the lightning electrical charge	6	were also destroyed. And debris from
7	traveled from a surface to strike	7	those cribs within the sealed area may
8	location to the sealed area remains	8	also have contributed to the
9	under investigation.	9	destruction of the seals.
10	Our investigation ruled	10	NIOSH built a seal at its
11	out other potential causes. There was	11	Lake Lynn testing facility similar to
12	no energized equipment located in the	12	the seal built at Sago after testimony
13	sealed area. There was no evidence of	13	had been taken concerning the mine's
14	any new roof falls that could have	14	construction methods. That seal
	5	14	
15	caused an ignition. Monitoring		withstood the test explosion exceeding
16	indicated no methane generation from	16	20 psi. Additionally at Sago, a plus
17	gas wells in the facility. There was	17	1,500-pound battery charger sitting
18	no power source in the sealed area. No	18	outby the seals was hurled a hundred
19	track or conveyor belt extended from	19	- approximately 120 feet by the
20	the active areas of the mine into the	20	explosion. In the NIOSH test, the
21	sealed area to serve as a conduit for	21	battery charger was moved only 21 feet.
22	electrical energy. Steel wire mesh,	22	
23	which was installed to protect against	23	None of the citations
24	roof falls, had been appropriately	24	issued at the Sago Mine during the
25	removed in the area of the seals. Coal	25	accident investigation or prior to the
	Dama / 07		
1	Page 687	1	Page 689
1	or flow dust in either of the active	1	accident, during 2005, were linked to
2	or flow dust in either of the active workings or the sealed area did not	2	accident, during 2005, were linked to the explosion in any way. Each
2 3	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the	2 3	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied.
2 3 4	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the	2 3 4	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will
2 3 4 5	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of	2 3 4 5	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing
2 3 4 5 6	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of the mine.	2 3 4 5 6	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing to verify the findings and will
2 3 4 5 6 7	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of the mine. In the area of the seals	2 3 4 5 6 7	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing to verify the findings and will continue full cooperation with the
2 3 4 5 6 7 8	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of the mine. In the area of the seals particularly, every indication is that	2 3 4 5 6 7 8	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing to verify the findings and will continue full cooperation with the ongoing State and Federal
2 3 4 5 6 7 8 9	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of the mine. In the area of the seals particularly, every indication is that the area was more than sufficiently	2 3 4 5 6 7 8 9	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing to verify the findings and will continue full cooperation with the ongoing State and Federal investigations.
2 3 4 5 6 7 8 9 10	or flow dust in either of the active workings or the sealed area did not appear to provide fuel for the explosion and did not propagate the explosion within the active areas of the mine. In the area of the seals particularly, every indication is that the area was more than sufficiently rock dusted. The seals constructed of	2 3 4 5 6 7 8 9 10	accident, during 2005, were linked to the explosion in any way. Each citation has been promptly remedied. The company will continue with data review and testing to verify the findings and will continue full cooperation with the ongoing State and Federal investigations. I will now ask Sam Kitts
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	Page 690		Page 692
1	explosion, more than 80 employees	1	representatives. More than 100 people
2	worked underground for weeks. Over 50	2	were inside the mine on a daily basis
3	ventilation controls, including	3	at this time. Participants were
	•	4	•
4	stoppings and overcasts were		organized by specialties, which were:
5	reconstructed. Now, for an overview of	5	Mapping, mapping teams were
6	the investigation process. In order to	6	responsible for surveying and
7	fully appreciate the scope of the	7	documenting any items related to the
8	investigation, I will provide a general	8	explosion. These items included the
9	overview of the investigation	9	documentation of damage of each
10	activities that have taken place since	10	ventilation control down to the
11	the accident.	11	distance the individual block fragments
12	The first step was to	12	were displaced. Six mapping teams,
13	establish a breathable atmosphere	13	each with a representative from one of
			•
14	throughout the mine. Before sending	14	the participating parties, combed the
15	mine rescue teams inside to begin	15	entire mine from the portal to the face
16	repairing the damaged ventilation	16	of each section and the area behind the
17	controls, the CO and methane was	17	seals. Each team had at least five
18	flushed out of the mine. Between	18	people and as many as eight. During
19	January 5th and January 20, three	19	the height of the underground
20	boreholes were drilled into the head	20	investigation, 40 to 50 people were
21	end of old Two Left area to allow the	21	documenting their findings in the mine
22	water to be pumped down and air	22	on a daily basis. The results of their
23	circulated to a ventilation shaft.	23	efforts provide the basis of the
24	This allowed the air to be pushed by	24	detailed mine maps that have been
25		24 25	shared with MSHA and the State.
20	the mine fan at the portal, through the	20	Shared with MSHA and the State.
	Page 691		Dage (0)
1	_	1	Page 693
1	previously-sealed area and then to the		
		1	Another specialty was
2	surface.	2	rock dust sampling. Similar to the
3	Mine rescue teams entered	2 3	rock dust sampling. Similar to the mapping effort, four teams comprised of
3 4	Mine rescue teams entered the mine on January 20th to establish	2 3 4	rock dust sampling. Similar to the mapping effort, four teams comprised of three to six people collected rock dust
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3 4 5 6 7	Mine rescue teams entered the mine on January 20th to establish temporary ventilation controls. This process involved installing curtains with foam sealant around the edges in place of the block walls that were	2 3 4 5 6 7 8	rock dust sampling. Similar to the mapping effort, four teams comprised of three to six people collected rock dust samples. Beginning at the mine portal, the samples were collected throughout the mine, including in the sealed area. We do not yet know the results of
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Page 694	Dama (0)
1 coole equipment leastions debris from 1 meetings with the families and	Page 696
1seals, equipment locations, debris from1meetings with the families and2cribs used to support the roof on2the Sago miners to explain in	
3 either side of the seals and other 4 the steps that had been taken 4 the mine for production and the	~
4 physical evidence. By documenting this 4 the mine for production and to	
5 evidence in great detail, the probable 5 any questions. We shared ou	
6 origination of the explosion can be 6 findings based on the informa	
7 estimated. The origination area and 7 available at that time concern	
8 the directional forces are depicted on 8 cause of the accident. We be	
9 the flames and forces map. 9 lightning ignited methane that	
10The evidence team was10accumulated behind the seals	
11also a separate team in the11the explosion. We arrived at	
12 investigation. In addition to the 12 preliminary conclusion by a pr	
13materials and information collected by13elimination of other possible ig	
14 the teams described above, MSHA and the 14 sources and independently do	
15State took possession of and removed15evidence that clearly correlate	s the
16from the mine other materials,16time of the explosion to the	
17 including a battery charger, a segment 17 particularly fierce lightning str	ike.
18of the belt structure, pallets of Omega18ICG continues to	
19 blocks, the SCSR tops and bottoms found 19 investigate the cause of the average of the average of the second se	ccident
20 in the barricade and in other areas of 20 and specifically determine the	
21 the mine, gas detectors, Omega block 21 in which the lightning entered	the
22 remnants from the seals. The 22 mine. We are currently pursu	ing
23 documentation of the result of those 23 sophisticated geophysical mea	asurement
24 tests has not yet been has not been 24 methods in conjunction with N	/ISHA and
25 released by the regulatory agencies for 25 the State involving electromagencies	gnetic and
D	
Page 695 1 every item. 1 resistivity surveys.	Page 697
1every item.1resistivity surveys.2The 103(k) order that was2The efforts of the	
3 put in place on January 2nd restricts 3 individuals involved in the	
4 access to the mine without the 4 investigation are greatly appre-	ociatod
5 permission of MSHA or the State. We 5 It is a testament to the skill a	
6 have sought to preserve the integrity 6 professionalism of all those inv	
5 1 5 5	
	U U
9 The work of the 9 inside the mine in very difficul 10 conditions during this investig	
10 investigation teams in the active 10 conditions during this investig	ation.
11 portions of the mine was substantially 12 sempleted by February Other The (k)	
12 completed by February 9th. The (k) 12 that we ruled out a variety of	
13 order was again modified to allow the 13 potential causes that have nar	
14 removal of debris and the construction 14 focus through these efforts of	5
15 of permanent ventilation controls. The 15 reach our initial conclusions.	
16 (k) order remains in effect for the 16 work is not finished and we w	
17 previously-sealed area where further 17 continue our efforts to analyze	e anu
18 investigation activities continue to 18 refine our views until we are	ava dana
5	ave done
19 this day. Over four weeks later, on or 19 completely satisfied that we h	1 I I I I I I I I I I I I I I I I I I I
19this day.Over four weeks later, on or19completely satisfied that we h20about March 14th, MSHA and the State20all that is possible to find the d	
19this day.Over four weeks later, on or19completely satisfied that we h20about March 14th, MSHA and the State20all that is possible to find the c21modified the (k) order approving the21and develop a means to prevent	
19this day.Over four weeks later, on or19completely satisfied that we h20about March 14th, MSHA and the State20all that is possible to find the c21modified the (k) order approving the21and develop a means to preve22mine repairs and allowing production to22reoccurrence.	
19this day.Over four weeks later, on or19completely satisfied that we h20about March 14th, MSHA and the State20all that is possible to find the or21modified the (k) order approving the21and develop a means to prever22mine repairs and allowing production to22reoccurrence.23resume.23I will now turn the	ent a
19this day.Over four weeks later, on or19completely satisfied that we h20about March 14th, MSHA and the State20all that is possible to find the c21modified the (k) order approving the21and develop a means to preve22mine repairs and allowing production to22reoccurrence.	ent a

	Page 698		Page 700
1	Thank you, Sam. Good	1	track cable or belt conveyor structures
2	afternoon. As Ben said, I am the	2	that extended from the active areas of
3	can you hear me okay?	3	the mine into the sealed area.
4	CHAIR:	4	Okay. So what are the
5	A little louder.	5	possibilities that an explosion can
6	DR. NOVAK:	6	occur in a sealed area when there's
7	Okay. Let me pull it a	7	essentially nothing back there? Well,
8	little closer. As Ben said, my name is	8	there's three things that immediately
9	Tom Novak, I'm the department head and	9	would come to mind. The first being
10	a professor of Mining and Minerals	10	frictional energy from roof falls. The
11	Engineering at Virginia Tech. I have	11	second one being chemical energy from
12	been doing research in the area of	12	spontaneous combustion and the third
13	lightning propagation and possibility	13	being electrical energy from lightning.
14	of methane ignitions in sealed areas	14	being electrical energy from lightning.
15	for a number of years. And for that	15	Okay. If we take a look
16	reason, I was asked to come on as a	16	at frictional energy from roof fall,
17		17	the sealed area was actually accessible
18	consultant for this project. Before I get started, I would like to extend	18	after the roof fall excuse me, I
19	sympathy to the families of the	19	
20	5 1 5	20	should say explosion. That's a mistake
20	victims. And as Sam said, I hope we	20 21	on my part. Was accessible after the
	come up with information in the course		explosion. And the investigators could
22	of this investigation that will prevent	22	not find any evidence that the roof
23	such a tragedy from occurring in the	23	fall that that a roof fall was an
24	future.	24 25	ignition source.
25	I would like to start my	25	Spontaneous combustion?
	Page 699		Page 701
1	Page 699 presentation. I'm going to be using	1	Page 701 There is no history of spontaneous
1	_	1 2	
	presentation. I'm going to be using		There is no history of spontaneous
2	presentation. I'm going to be using PowerPoint, so you may want to refer to	2	There is no history of spontaneous combustion at the Sago Mine, and no
2 3	presentation. I'm going to be using PowerPoint, so you may want to refer to the screen as we go by. I first want	2 3	There is no history of spontaneous combustion at the Sago Mine, and no evidence was found to support
2 3 4	presentation. I'm going to be using PowerPoint, so you may want to refer to the screen as we go by. I first want to talk a little bit about the ignition	2 3 4	There is no history of spontaneous combustion at the Sago Mine, and no evidence was found to support spontaneous combustion as an energy
2 3 4 5	presentation. I'm going to be using PowerPoint, so you may want to refer to the screen as we go by. I first want to talk a little bit about the ignition requirements for methane. And as you	2 3 4 5	There is no history of spontaneous combustion at the Sago Mine, and no evidence was found to support spontaneous combustion as an energy source for the ignition during the
2 3 4 5 6	presentation. I'm going to be using PowerPoint, so you may want to refer to the screen as we go by. I first want to talk a little bit about the ignition requirements for methane. And as you all know and you've probably heard many	2 3 4 5 6	There is no history of spontaneous combustion at the Sago Mine, and no evidence was found to support spontaneous combustion as an energy source for the ignition during the course of the investigation.
2 3 4 5 6 7 8 9	presentation. I'm going to be using PowerPoint, so you may want to refer to the screen as we go by. I first want to talk a little bit about the ignition requirements for methane. And as you all know and you've probably heard many times, that you need a for the methane air mixture to be explosive, it must be within the range of 5 to 15	2 3 4 5 6 7	There is no history of spontaneous combustion at the Sago Mine, and no evidence was found to support spontaneous combustion as an energy source for the ignition during the course of the investigation. So what are we left with? Lightning. And on the morning of the explosion, there was a severe and
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	Page 702		Page 704
1	analyzed and revealed that a seismic	1	Vaisala gives with their report. And
2	event occurred at the location of the	2	I'll point here to the portal of the
3	Sago Mine within a four-second interval	3	Sago Mine that's located here. This is
4	centered at 6:26:38 a.m. Now, this	4	the large 101 kiloampere lightning
5	there was a report written by Dr.	5	strike that occurred to the north of
6	Chapman, who's an assistant professor	6	the portal, and to the south of the
7	of geology at Virginia Tech, who I had	7	portal was the smaller 39 kiloamp
8	no idea that, you know, he was even	8	stroke. There were two other strokes
9	doing this. And after I got in the	9	in the periphery and you can see one
10	investigation, he called me one day and	10	located down here, as well as one up
11	sent over a copy of this report.	11	here. This is a five-mile radius, this
12	Vaisala, which is a lightning-	12	circle that encloses the area. These
13	monitoring service that's located in	13	circles, or the ellipses around each of
14	Tucson, Arizona reported that there	14	the lightning strikes indicates, that
15	were two lightning strokes that	15	there's a 99 percent probability that
16	occurred at 6:26:35 a.m., within a	16	the lightning strike occurred within
17	five-mile radius of the Sago Mine	17	that area.
18	portal. Okay. And they're illustrated	18	Okay. So the lightning
19	there. One of them, the closer one,	19	stroke data was then taken and
20	was a larger one having a peak value of	20	superimposed upon a contour map, which
21	right around 101 kiloamperes, where the	21	also has the layout of the mine. And
22	second one was around 38.79	22	just to show the reference, the
23		22	•
23 24	kiloamperes.	23 24	locations of the lightning strike in terms of the different areas of the
24 25	The third piece of		
25	evidence that fits in with all of this	25	mine. Okay. And if you look here,
	Page 703		Page 705
1	Page 703 is that the clock for the mine's CO	1	Page 705 here's the strike that occurs here, the
1	is that the clock for the mine's CO	1	here's the strike that occurs here, the
2	is that the clock for the mine's CO monitoring system indicated that CO was	2	here's the strike that occurs here, the road that goes out of the mine runs
2 3	is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of	2 3	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And
2 3 4	is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26.	2 3 4	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine
2 3 4 5	is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26. A little bit about the	2 3 4 5	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed
2 3 4 5 6	<ul><li>is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26.</li><li>A little bit about the lightning-detection network. There's</li></ul>	2 3 4 5 6	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed area, all the way up here. Okay. The
2 3 4 5 6 7	<ul> <li>is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26.</li> <li>A little bit about the lightning-detection network. There's always questions when you get data.</li> </ul>	2 3 4 5 6 7	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed area, all the way up here. Okay. The second lightning stroke was further
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26.</li> <li>A little bit about the lightning-detection network. There's always questions when you get data. Vaisala is a company that interprets data from the U.S. National Lightning Detection Network and prepares reports that gives the magnitude, polarity and location of each detected lightning flash that occurs within a defined area and time period. They estimate that their that they have a 80 to 90 percent detection efficiency for flashes with peak currents above five kiloamperes. Okay. But this still leaves open the possibility that not all the lightning flashes that occurred in the vicinity of the Sago Mine were detected at the period at the time of the explosion. So we have to keep</li> </ul>	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 9 20 21 22 23	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed area, all the way up here. Okay. The second lightning stroke was further south in this area. And we did find evidence this one actually hit a tree, so we were actually able to determine the exact location of that lightning strike. Never did find a trace or evidence as to where this strike actually occurred. Just to give you put this into perspective, to give you some idea of the distances from the lightning flash to the different portions of the mine, the distance from the straight to the sealed area is approximately two miles, which is a significant distance. Okay. Also from the strike to the mine entrance is on
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26. A little bit about the lightning-detection network. There's always questions when you get data. Vaisala is a company that interprets data from the U.S. National Lightning Detection Network and prepares reports that gives the magnitude, polarity and location of each detected lightning flash that occurs within a defined area and time period. They estimate that their that they have a 80 to 90 percent detection efficiency for flashes with peak currents above five kiloamperes. Okay. But this still leaves open the possibility that not all the lightning flashes that occurred in the vicinity of the Sago Mine were detected at the period at the time of the explosion. So we have to keep that in the back of our minds.	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 7 8 9 20 21 22 23 24	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed area, all the way up here. Okay. The second lightning stroke was further south in this area. And we did find evidence this one actually hit a tree, so we were actually able to determine the exact location of that lightning strike. Never did find a trace or evidence as to where this strike actually occurred. Just to give you put this into perspective, to give you some idea of the distances from the lightning flash to the different portions of the mine, the distance from the straight to the sealed area is approximately two miles, which is a significant distance. Okay. Also from the strike to the mine entrance is on the order of a mile. These are
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>is that the clock for the mine's CO monitoring system indicated that CO was detected at the exact same time of 6:26.</li> <li>A little bit about the lightning-detection network. There's always questions when you get data. Vaisala is a company that interprets data from the U.S. National Lightning Detection Network and prepares reports that gives the magnitude, polarity and location of each detected lightning flash that occurs within a defined area and time period. They estimate that their that they have a 80 to 90 percent detection efficiency for flashes with peak currents above five kiloamperes. Okay. But this still leaves open the possibility that not all the lightning flashes that occurred in the vicinity of the Sago Mine were detected at the period at the time of the explosion. So we have to keep</li> </ul>	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 9 20 21 22 23	here's the strike that occurs here, the road that goes out of the mine runs right up alongside of it. Okay. And the mine is located here with the mine entrance being in this area, the sealed area, all the way up here. Okay. The second lightning stroke was further south in this area. And we did find evidence this one actually hit a tree, so we were actually able to determine the exact location of that lightning strike. Never did find a trace or evidence as to where this strike actually occurred. Just to give you put this into perspective, to give you some idea of the distances from the lightning flash to the different portions of the mine, the distance from the straight to the sealed area is approximately two miles, which is a significant distance. Okay. Also from the strike to the mine entrance is on

		1	
	Page 706		Page 708
1	one key thing is that the flash	1	remains. Okay. We know lightning hit.
2	occurred within 300 feet of the power	2	How did it get from where it hit to
3	line that connects that feeds the	3	the sealed area of the mine in order to
4	Sago Mine from the French Creek	4	ignite the explosion? Okay. There's
5	Substation. The length of the power	5	two methods for which lightning can
6	line from the lightning flash to the	6	propagate into a mine. It can be
7	mine entrance is approximately two	7	conducted through metallic structures
8	miles.	8	which extend from the surface into the
9	This is a graph which	9	mine, such as cables, conveyor
10	shows an average lightning stroke. Now,	10	structures, water pipes and borehole
11	there's different types of lightning	11	casings. The second method is through
	5, 6 6		а а
12	strokes and you may have noticed that	12	the earth itself, propagating down
13	there was a positive sign and a	13	through the overlying strata in a
14	negative sign. And all that indicates	14	radial fashion. And if there are
15	is if it's positive, is that a positive	15	geological faults, those can even lower
16	charge is transferred from the cloud to	16	the resistivity and provide more of a
17	the earth. A negative sign indicates	17	conductive path into the earth.
18	that a negative charge was transferred	18	Okay. Let's talk about
19	from a cloud to the earth. But there	19	the first one, the conduction through
20	is a difference in the characteristics	20	metallic structures. Okay. If we look
21	of these. Ninety (90) percent of all	21	at the point where the 101 kiloampere
22	lightning flashes are negative. Okay.	22	lightning stroke occurred, it did hit
23	The two that occurred within the five-	23	this tree, which was convenient because
24	mile radius of the Sago Mine are	24	it made it easy to find. Okay.
25	positive. Now, it's not uncommon to	25	Unfortunately, it probably will kill
	Page 707		Page 709
1	-	1	Page 709 the tree. But this tree is located
	have positive flashes during the winter		the tree. But this tree is located
2	have positive flashes during the winter months. That's generally when they	2	the tree. But this tree is located approximately 300 feet from the 12.4 kv
2 3	have positive flashes during the winter months. That's generally when they more frequently occur.	2 3	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds
2 3 4	have positive flashes during the winter months. That's generally when they more frequently occur. Another point that is	2 3 4	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as
2 3 4 5	<ul><li>have positive flashes during the winter months. That's generally when they more frequently occur.</li><li>Another point that is worth mentioning is that the average</li></ul>	2 3 4 5	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the
2 3 4 5 6	<ul><li>have positive flashes during the winter months. That's generally when they more frequently occur.</li><li>Another point that is worth mentioning is that the average peak current of a lightning strike is</li></ul>	2 3 4 5 6	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the preparation plant.
2 3 4 5 6 7	<ul><li>have positive flashes during the winter months. That's generally when they more frequently occur.</li><li>Another point that is worth mentioning is that the average peak current of a lightning strike is on the order of 31 kiloamps and is</li></ul>	2 3 4 5 6 7	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the preparation plant. Now, you might say, well,
2 3 4 5 6 7 8	<ul> <li>have positive flashes during the winter months. That's generally when they more frequently occur.</li> <li>Another point that is worth mentioning is that the average peak current of a lightning strike is on the order of 31 kiloamps and is illustrated in the slide that I have</li> </ul>	2 3 4 5 6 7 8	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the preparation plant. Now, you might say, well, it didn't hit the line, okay, so you
2 3 4 5 6 7	<ul><li>have positive flashes during the winter months. That's generally when they more frequently occur.</li><li>Another point that is worth mentioning is that the average peak current of a lightning strike is on the order of 31 kiloamps and is</li></ul>	2 3 4 5 6 7	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the preparation plant. Now, you might say, well,
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2 3 4 5 6 7 8 9 10	<ul> <li>have positive flashes during the winter months. That's generally when they more frequently occur.</li> <li>Another point that is worth mentioning is that the average peak current of a lightning strike is on the order of 31 kiloamps and is illustrated in the slide that I have here. And just to do a comparison, I want to show you the 101 kiloamp stroke</li> </ul>	2 3 4 5 6 7 8 9 10	the tree. But this tree is located approximately 300 feet from the 12.4 kv power distribution line that feeds is the primary feed to the mine, as well as further down for the preparation plant. Now, you might say, well, it didn't hit the line, okay, so you know, how could it have affected anything? Well, lightning doesn't have to strike something directly. Okay.
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1	Dogo 710		Dogo 712
	Page 710 illustration just to domonstrato this	1	Page 712 underground feed that goes to the
2	illustration just to demonstrate this	2	
2	to you. Here's one of the poles that are located in the 12.47 kv	2	conveyor structure that's located here.
			So those same grounding conductors
4	distribution line. And if we have a	4	that are on top of those utility poles
5	lightning stroke that extends down, we	5	coming into the mine are also tied
6	have an electric and a magnetic field.	6	directly into the conveyor system.
7	Now, these actually occur	7	Now, the conveyor system
8	simultaneously, but for the purposes of	8	extends for approximately two miles
9	illustrations Now, these	9	from the mine entrance back to the One
10	Institute of Electrical and Electronics	10	Left and Two Left sections. And for
11	Engineers actually has an equation to	11	its entirety, for safety purposes in
12	estimate the maximum amount of voltage	12	terms of immediate roof control, ICG or
13	that you can induce in a conductor when	13	the Sago Mine uses a wire mesh that is
14	this occurs. And this is a phenomenon	14	bolted directly to the roof. Okay.
15	that's quite common and well-known to	15	And if you look at a side view of that
16	utility engineers or power-distribution	16	same belt entry, you also have your
17	engineers. And I don't want to	17	conveyor structure, which is supported
18	didn't want to bring the equation out,	18	to the roof by means of these chain
19	but I did the calculation and it	19	supports. The wire mesh runs right
20	indicated that it could induce a pulse	20	along between the interface of the
21	up to 392 kv into that line without	21	bearing plate of the bolts and the roof
22	even without a direct strike.	22	surface.
23	Okay. This shows the	23	So now, essentially you
24	- essentially, the layout of the	24	have a parallel path, okay, through the
25	distribution system. At the top here,	25	structure of the belt, as well as
		20	
	Page 711		Page 713
1	you have two grounded neutral	1	through the wire mesh that is there to
2	conductors. These are essentially a	2	support the immediate roof along the
3	ground potential. They tie into the	3	belt. So you have this continuous path
4	neutral of the transformer at the	4	that extends which I'm going to
5	French Creek Substation and it feeds	5	
		5	draw here if you follow the diagram.
6	the mine. And they're also located at	6	
6 7	the mine. And they're also located at the top of the poles to act as shields		It will start near the lightning stroke, and this is these are the
	5	6	It will start near the lightning stroke, and this is these are the
7	the top of the poles to act as shields for to protect against lightning.	6 7	It will start near the lightning
7 8 9	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your	6 7 8	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from
7 8	the top of the poles to act as shields for to protect against lightning.	6 7 8 9	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the
7 8 9 10	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase	6 7 8 9 10	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from
7 8 9 10 11 12	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for	6 7 8 9 10 11	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure
7 8 9 10 11	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the	6 7 8 9 10 11 12	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the
7 8 9 10 11 12 13 14	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine.	6 7 9 10 11 12 13 14	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes
7 8 9 10 11 12 13 14 15	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting	6 7 8 9 10 11 12 13 14 15	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as
7 8 9 10 11 12 13 14	<ul> <li>the top of the poles to act as shields</li> <li>for to protect against lightning.</li> <li>At the same time, down here are your power conductors, your three phase</li> <li>conductors, Phase A, Phase B and Phase</li> <li>C, which are carrying the current for</li> <li>doing the work and running the</li> <li>machinery at the mine.</li> <li>Now, the interesting</li> <li>thing is, if we look at this, this</li> </ul>	6 7 9 10 11 12 13 14	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the
7 8 9 10 11 12 13 14 15 16 17	<ul> <li>the top of the poles to act as shields</li> <li>for to protect against lightning.</li> <li>At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine.</li> <li>Now, the interesting thing is, if we look at this, this these grounded neutral conductors</li> </ul>	6 7 8 9 10 11 12 13 14 15 16 17	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous
7 8 9 10 11 12 13 14 15 16 17 18	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that	6 7 8 9 10 11 12 13 14 15 16 17 18	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say,
7 8 9 10 11 12 13 14 15 16 17 18 19	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the	6 7 8 9 10 11 12 13 14 15 16 17 18 19	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300
7 8 9 10 11 12 13 14 15 16 17 18 19 20	<ul> <li>the top of the poles to act as shields</li> <li>for to protect against lightning.</li> <li>At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine.</li> <li>Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the mine, those same grounded conductors</li> </ul>	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300 feet of the lightning strike, all the
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	<ul> <li>the top of the poles to act as shields</li> <li>for to protect against lightning.</li> <li>At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine.</li> <li>Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the mine, those same grounded conductors are tied into the station ground bed</li> </ul>	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300 feet of the lightning strike, all the way back to within a few feet of the
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the mine, those same grounded conductors are tied into the station ground bed and the equipment at the mine	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300 feet of the lightning strike, all the way back to within a few feet of the seals.
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the mine, those same grounded conductors are tied into the station ground bed and the equipment at the mine substation. They're also and you	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300 feet of the lightning strike, all the way back to within a few feet of the seals. Okay. At the seals, you
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	the top of the poles to act as shields for to protect against lightning. At the same time, down here are your power conductors, your three phase conductors, Phase A, Phase B and Phase C, which are carrying the current for doing the work and running the machinery at the mine. Now, the interesting thing is, if we look at this, this these grounded neutral conductors extend for the entire distance of that utility line. And when you get to the mine, those same grounded conductors are tied into the station ground bed and the equipment at the mine	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	It will start near the lightning stroke, and this is these are the neutral grounding conductors that extend from where the 300 feet from within the lightning stroke to the entrance of the mine. Okay. Now, from that point, your continuous structure is now picked up by the or the continuous metallic conductor becomes the belt structure itself, as well as the wire mesh that is mounted to the roof. So now you have a continuous metallic path or conduit, as we say, from the lightning from within 300 feet of the lightning strike, all the way back to within a few feet of the seals.

Page 714Page 714Page 7141the sealed area. So Sago Mine, as it1and came up with some very, very low2should have, according to Federal2values.3regulations, severed the screen in3So what's the point I'm4order to install the seal in this4trying to make? Is that there is5location. So there is a gap in this5essentially an extremely low resistance6metallic path across here. However,7lightning strike up into the sealed7when we went into the mine, I made some7lightning strike up into the sealed8resistance measurements from this side8area. Okay. Now, to just to show9of the screen to this side of the9a simple diagram, here's the lightning10screen, and it's extremely low, on the10strike here and this is the this is11order of three ohms, which is extremely11the resistive path that it takes, okay.12low. Now, a couple other people were12This lightning strike is going to13with me at the time, and you know, in13induce voltage onto the conductors and14talking about it, we thought, well,14the power system. Some of it is going15maybe the carbon that was deposited on15to head back in this direction, towards16the surfaces of the roof and the floor16the French Creek Substation, while17and the walls could have lowered19paths to ground where y
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19a semi-conductor and could have lowered that resistive path.19paths to ground where you bleed off 2020that resistive path.20some of the energy associated with that induced voltage. Okay. The poles have 2121So MSHA went in and did 22some studies. And I wasn't I 2322butt grounds where their conductor goes 2323didn't participate in that study, but 2423down alongside the wooden pole and it's 2425case, they actually drilled into the25 within the earth where it'sPage 715
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22       some studies. And I wasn't I       22       butt grounds where their conductor goes         23       didn't participate in that study, but       23       down alongside the wooden pole and it's         24       Larry Dean from ICG did. In which       24       coiled at the bottom of the pole in the         25       case, they actually drilled into the       25       within the earth where it's
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24       Larry Dean from ICG did. In which       24       coiled at the bottom of the pole in the         25       case, they actually drilled into the       25       within the earth where it's         Page 715
25    case, they actually drilled into the    25    within the earth where it's      Page 715
Page 715 Page 71
1 roof and inserted nins so that the 1 installed This is also tied to the
2 carbon coating on the roof would not 2 station ground bed, which is at the
3 contribute to it. And they, too, found 3 mine. Okay. Then when you go in where
4 comparable measurements across this 4 you tie into the belt structure, the
5 seal in the belt entry. 5 green represents the belt structure and
6 Okay. Now, this is the 6 the wire screen, extends back this way.
7 location of the mesh throughout the 7 And you're going to be bleeding off
8 entire sealed area. Okay. These 8 through the roof bolts up into the
9 darkened lines here, these are the 9 roof. And then you're going to pass
10 entries. This point right here 10 into the sealed area where you have
11 well, just to orient you, this ellipse 11 just solely the wire screening that
12 encircles the seals. Okay. So beyond 12 will conduct the material and again, it
13 this point, this is the sealed area 13 will pass.
14 back here, this is going into Two Left 14 Now, you know, keep in
15 up here, and that's where the conveyor 15 mind that the current from the
16 belt goes. So the wire mesh was mapped 16 lightning strike is trying to get to,
17 from the area of the end of the main 17 what we refer to as, infinite earth the
18 conveyor belt back into the sealed 18 easiest way it can. And it will take
101010101010101019area. And as you can see, there's19all possible paths, but the majority of
20 nearly continuous paths that go back 20 its current is going to be confined to
5 61
<ul> <li>small gaps. And, again, MSHA made</li> <li>resistance measurements across these</li> <li>to consider for the sake of</li> </ul>

		age 718		Page 720
1	completeness I mean, you want to		1	in intimate contact with the earth
2	look at all possible things. There are		2	around it. Here shows an example of a
3	a lot of gas lines located in the area		3	horizontal distribution line tied into
4	of the Sago Mine. There's distribution		4	a well. And a mine opening nearby, and
5	lines that run There's one that		5	you can get a propagation path in this
6	runs right across the gob area. And		6	direction. Again, this is just shown
7	I'll show you on the map. There's gas		7	for the sake of completion as to how,
8	wells located in the area. There's		, 8	you know, the possibility for this to
9			9	5
	actually a gas well that's located			Occur.
10	within a hundred feet of the gob area,		10	Okay. Now, our final
11	so not gob area, but the sealed		11	scenario is to look at lightning
12	area. Okay. But the gas lines do not		12	actually propagating through the earth.
13	provide a direct conductive path into		13	Now, for that to occur, though, you
14	the sealed area. Okay. The well gets		14	pretty much have to have a lightning
15	close to it, but it doesn't go into		15	strike directly over the sealed area.
16	it. Okay. The shortest and also		16	As of now, there is no evidence to
17	the shortest distance between the		17	indicate that a lightning strike
18	lightning strike and the gas line is		18	occurred there. However, one of the
19	approximately 1,700 feet. And I think		19	residents who lives across the street
20	it was Monte Hieb from the State,		20	from the sealed area, you know, made a
21	essentially created this map and marked		21	verbal statement to us that he was
22	the gas lines all over. And I've gone		22	awake and had his dog let his dog
23	over them again with a heavier line		23	out at almost exactly the time of the
24	just so that they show up a little		24	explosion and he saw a very bright
25	better. The mine is just a shadow		25	flash and an instantaneous thunder.
20			20	
	Pa	age 719		Page 721
1		age 719	1	Page 721 Now, what does that mean?
1	here. This is the sealed area. I	age 719	1 2	Now, what does that mean?
2	here. This is the sealed area. I meant to change this color. It doesn't	age 719	2	Now, what does that mean? It means the lightning strike would
2 3	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's	age 719	2 3	Now, what does that mean? It means the lightning strike would have had to have been very close.
2 3 4	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking	age 719	2 3 4	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away,
2 3 4 5	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking about. And the shortest distance is,	age 719	2 3 4 5	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away, it would take on the order of it if
2 3 4 5 6	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking about. And the shortest distance is, let's say, from here to here for	age 719	2 3 4 5 6	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away, it would take on the order of it if were two miles away, it would take on
2 3 4 5 6 7	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking about. And the shortest distance is, let's say, from here to here for coupling purposes. So at this point,	age 719	2 3 4 5 6 7	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away, it would take on the order of it if were two miles away, it would take on the order of nine seconds for the
2 3 4 5 6 7 8	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking about. And the shortest distance is, let's say, from here to here for coupling purposes. So at this point, you know, it's hard to tell. There's	age 719	2 3 4 5 6 7 8	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away, it would take on the order of it if were two miles away, it would take on the order of nine seconds for the thunder to get there after the flash
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	here. This is the sealed area. I meant to change this color. It doesn't show up too well. Okay. But here's the lightning strike that we're talking about. And the shortest distance is, let's say, from here to here for coupling purposes. So at this point, you know, it's hard to tell. There's work that still needs to be done in terms of simulations, and that's true for all the cases to see whether or not these scenarios are feasible. Okay. The way this would work is that the strike hits the ground, you create a potential gradient as the currents move down through the earth. If a gas line is in the area of influence of this pressure it's not pressure, but voltage gradient, then you're going to induce a voltage or couple a voltage onto that gas line which will induce currents flowing	age 719	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 9 20 21 22 23	Now, what does that mean? It means the lightning strike would have had to have been very close. Okay. Because if it were a mile away, it would take on the order of it if were two miles away, it would take on the order of nine seconds for the thunder to get there after the flash occurred. All right. Let's just assume that we did have a strike in that area. And the way it would occur is if it hit the ground, again, the potential gradient would be a setup from the current slowing down through the earth, and depending upon the soil resistivity excuse me, depending upon the soil resistivity of the overburden, you can get relatively high voltages down here. From previous work that I have done, I'll give you an example, and I think it's in one of my papers.

	Page 722		Page 724
1	at a depth of 600 feet with a soil	1	working with lightning, okay. I mean -
2	resistivity of around 400, ohmmeters.	2	so what I have to rely on are
3	Now, it turns out the soil resistivity	3	computer simulations and that's going
4	in that area actually is quite low over	4	to be the next step of the
5	the sealed area. We went out and made	5	investigation. Thank you for your
			<b>o i i</b>
6	measurements using an instrument, the	6	time.
7	AMC Model 4500 digital ground	7	CHAIR:
8	resistance measurement. And the	8	Thank you.
9	separation of these probes dictates the	9	MR. HATFIELD:
10	average dictates the depth of the	10	Mr. Sawyer?
11	soil that you're determining the	11	DR. SAWYER:
12	average resistivity for. Okay. So we	12	Hi. My name is Steve
13	separated them at 250 feet, you know,	13	Sawyer. I worked for the Mine Safety &
14	which would coincide with what the	14	Health Administration from 1970 until I
		15	
15	approximate depth of the overburden is		retired in 1999. And in fact, Mr.
16	at the at the sealed area. And	16	McAteer was my boss. I'm a structural
17	this gives you an indication. This is	17	engineer by education. I got my
18	actually the sealed area out here. And	18	professional engineering license in
19	we took two sets of measurements. One	19	structural engineering in 1971. Now,
20	along a direction like so. One not	20	working for MSHA, one of my jobs were
21	perpendicular. You'd like to get it	21	to design and be the construction
22	perpendicular, because but because	22	manager on their facilities. Mr.
23	of the road and some of the other	23	McAteer had me design the multi-purpose
24	interference, we weren't able to. But	24	building down at Beckley, where it
25	we ended up with 200 ohmmeters along	25	stores MSHA's mine emergency equipment,
20	we ended up with 200 oninineters doing	20	stores months mine emergency equipment,
	Page 723		Page 725
1	Page 723 this line and also 120 obmmeters along	1	Page 725
1	this line and also 120 ohmmeters along	1	the fire training center down there
2	this line and also 120 ohmmeters along this line, which indicates that it is a	2	the fire training center down there where a lot of the mine rescue teams
2 3	this line and also 120 ohmmeters along this line, which indicates that it is a very low soil resistivity. Now, the	2 3	the fire training center down there where a lot of the mine rescue teams trained. I designed that and
2 3 4	this line and also 120 ohmmeters along this line, which indicates that it is a very low soil resistivity. Now, the difference between the two is probably	2 3 4	the fire training center down there where a lot of the mine rescue teams trained. I designed that and constructed that. And before I
2 3 4 5	this line and also 120 ohmmeters along this line, which indicates that it is a very low soil resistivity. Now, the difference between the two is probably because of the gas line that runs	2 3 4 5	the fire training center down there where a lot of the mine rescue teams trained. I designed that and constructed that. And before I retired, Mr. McAteer had me going up to
2 3 4 5 6	this line and also 120 ohmmeters along this line, which indicates that it is a very low soil resistivity. Now, the difference between the two is probably because of the gas line that runs through this area caused some	2 3 4 5 6	the fire training center down there where a lot of the mine rescue teams trained. I designed that and constructed that. And before I retired, Mr. McAteer had me going up to our approval and certification center
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	5 70/			
1	Page 726 forces, you use in investigating damage	1	Page 72 CHAIR:	8
1	that's been done.	2	Wait a second. They	
2	I was called in by	2	can't hear you. Here.	
4	called up by ICG and asked if	3 4	DR. SAWYER:	
4 5	they'd like me down here to take a look	4 5	What I had determined	
6	at what happened in the mine, and if I		from the calculations were that those	
7	could tell them what forces the seals	6 7	belt hangers that were visibly bent had	
		8	<b>a</b>	
8 9	had seen. Said they were all	0 9	seen a minimum pressure of 60 psi. That was using a simple beam equation	
10	destroyed. And my answer was yes, sure.	7 10	that my father used and structural	
11	I went underground, spent	10	engineers used. Then I used one of the	
12	a lot of time underground. You know,	12	modern tools called finite element	
13	as a structural engineer, I spent my	12	analysis. I analyzed that. I got 62	
14	time around those seals. And what I'm	13 14		
15	looking for are things made of metal	15	psi. Then I took samples of	
16	that have been deformed. They can be	16	the belt hanger and physically loaded	
17	small or they can be large. And the	17	them up to various pressures, and those	
18	two prevalent items that I found around	18	tests showed 63 psi, which start to	
19	the seals were, around all of them	19	bend those. And the highest pressure	
20	inby, is a roof pan with a roof bolt	20	that they could record before they	
20	plate on it. And that goes up against	20	completely flopped over were 92 psi.	
22	up against the roof. Many is	22	Analyzing the root plates for the	
23	that still on?	22	various configurations again, using	
23	Many of these were	23 24	what is known as the beam equation, I	
25	deformed. I took measurements on those	25	calculated that the pressures that	
25	deformed. I took medsurements on those	25		
	Page 727		Page 72	9
1	and ran calculations to determine what	1	would cause that to permanently move	
2	force what force would cause those	2	would be between 11 psi and 25 psi.	
3	deflections. In track entry Number	3	Now, inby the seals, there were many of	
4	Five G, where Number Six seal was, they	4	these that were completely flopped	
5	had these belt hangers. And if you	5	over.	
6	remember Dr. Novak's slide, he showed	6	So what can I say from	
7	the conveyor belt. You can see a chain	7	what I've done to date as a structural	
8	hanging down from the mine roof. This	8	engineer? I will mention to you that I	
9	is what they connect the chain to.	9	plan to do load deflection tests on	
10	Inby and outby seal Number Six, the	10	these, and that's really going to be	
11	majority of these things were bent in	11	the proof of the pudding. But from	
12	the outby direction. I had measured	12	what I have done to date, I can say and	
13	them. Monte Hieb, from the State of	13	certify to you, as a structural	
14	West Virginia, did a very good job	14	engineer registered in the State of	
15	measuring those items inby and outby	15	Pennsylvania and West Virginia, that	
16	and provided a nice drawing of those.	16	seal Number Six saw a minimum deep	
17	And I agreed with what he obtained.	17	pressure of 60 psi, that could have	
18	I analyzed these	18	been as high as 90 psi. All the other	
19	structurally to find out what force or	19	seals, I can say and tell you saw at	
20	what pressure would cause the	20	least 25 psi. That's all I can say as	
21	deformation that I saw. Each one of	21	an engineer at this point in time. I	
22	these items can be considered as a	22	can also tell you that the explosion	
23	pressure gauge that permanently records	23	took place behind the seals. I don't	
24	the pressure to which it had been	24 25	know where it took place or how it took	
25	subjected. From the belt hangers	25	place. That's not my that's not by	

1         ballivick. But it took place there, 2         1         Yes.         Page 723           2         from the way all these items had been deformed.         1         Yes.         1         Yes.           4         Not speaking as a person to you all, I'll tell you what         2         CHAIR:         3         And could you describe           4         hotspeaking as a person to you all, I'll tell you what         5         DR. NOVAK:         6           7         m ygt feeling is. My gut feeling is a seals Number Four to Ten saw well above 9         25 psi and as high as 60 psi. My work         9         where a steel-cased borehole did not extend from the surface above a gob           1         down at Lake Lynn. They're sharing that 1         1         area directly into a gob.         12           12         down at Lake Lynn. They're sharing that 1         13         information with me. And that work         13         What about in other           14         will continue. My work will continue.         14         countrise, have you examined have you examined directly?         10           10         Thank you. Dr. Sawyer.         18         CHAIR:         18         CHAIR:           20         difficult thing to try to we've questions and then turn it over to         21         I don't rule it out. I'm simply sasgring, it's pecular.		Page 730			Page 732
2       from the way all these items had been       2       CHAIR:         3       deformed.       3       And could you describe         4       Not speaking as a       5       DR. NOVAK:         5       person to you all. [11 tell you what       6       Those are actually         7       my gut feeling is. My gut feeling is       8       First one that I ve encountered         9       25 psi and as high as 60 psi. My work       9       where a steel-cased borehole did not         10       is continuing. MSHA and NOSH are       10       extend from the surface above a gob         12       down at Lake Lynn. They're sharing that       11       area directly into a gob.         13       information with me. And that work       14       Will continue,         14       will continue. My work will continue,       14       CulAIR:         15       but as of today, that's all I can tell       15       you examined directly?         16       DR. NOVAK:       17       No. I haven't.         17       Mar. HATFIELD:       17       No. I haven't.         18       Thank you, Mr. Hatfield.       23       saying, it's peculiar.         24       I conductory       24       L don't rule it out.       Fmage 733	1	-	1	Yes.	rage 752
3       deformed.       3       And could you describe         4       Not speaking as a       4       those?         5       porformation       Display as a       4         6       person to you all, I'll tell you what       6       Display as a         7       my gut feeling is.       7       Display and as high as 60 psi. My work         9       25 psi and as high as 60 psi. My work       9       where a steel-cased borehole did not         10       is continuing. MSHA and NIOSH are       10       extend from the surface above a gob         11       conducting full-scale explosion tests       11       area directly into a gob.         12       down at Lake Lynn. Theyre sharing that       13       What about in other         13       will continue. My work will continue,       14       countries, have you examined have         13       you. Thank you.       16       DR. NOVAK:       16         14       Will continue. My work will continue,       14       countries, have you examined firethy we've         10       guestions.       17       No. I haven't.       17       No. I haven't.         15       you cornted with me corne to prepared for       19       That for me was a       20         20 <td< td=""><td></td><td>•</td><td>-</td><td></td><td></td></td<>		•	-		
4       Not speaking as a professional engineer but just as a 6       4       those?         5       professional engineer but just as a 6       5       DR. NOVAK:         7       my gut feeling is. seals Number Four to Ten saw well above 9       25 psi and as high as 60 psi. My work       7       different than this scenario. This is to the first one that I ve encountered         9       25 psi and as high as 60 psi. My work       9       where a steel-cased borehole did not 9         10       is continuing. MSHA and NIOSH are 10       10       extint from the surface above a gob 11       area directly into a gob.         12       down at Lake Lynn. Theyre sharing that 11       13       What about in other       10         14       will continue, 14       will continue, 14       What about in other       10         14       will continue, 14       Will continue, 15       What about in other       11         15       Thank you, Dr. Sawyer.       16       DR. NOVAK:       17         16       Questions.       10       That for me was a 11       11       That for me was a 12       11         24       Flace Main       14       countries, have you examined irrectly?       12         24       I dont the folks.       Dr. Novak, if I       11       11       Thark you, Mr. Hatfield					
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1		Page 734		Page 736
1	CHAIR:		1	makes a sealed area safe? Don't know
2	The other question in my		2	those answers yet, but I think this
3	mind is, you haven't In other		3	certainly tells us that we've got to
4	words, you have not come to a		4	re-examine the old assumptions.
5	conclusion as to the of the three		5	CHAIR:
6	theories that you're currently		6	I don't disagree and
7	espousing,		7	applaud your suggestion that we look at
8	DR. NOVAK:		8	these alternatives. The difficulty I
9	Correct.		9	have, and I'm not saying this in an
10	CHAIR:		10	argument way, you know, we've been
11	I guess, you have not		11	mining in the country for a hundred
12	come to one conclusion over another?		12	years and this is the first time, I
13	DR. NOVAK:		13	mean, that we've
14	That's correct. In my		14	DR. NOVAK:
15	mind, I probably have a higher		15	Well, it may be. It may
16	probability for one versus others, but		16	not be. It could happen without people
17	until I actually have some scientific		17	even knowing about it. I'll give you,
18	data to back me up, I don't want to go		18	you know, a classic example. When I
19	out on a limb and say that.		19	first got into this was in a mine in
20	CHAIR:		20	Alabama. And the mine was operating at
21	And what does this have		21	the time when the explosion occurred.
22	to do what impact do you think this		22	Now, the area that was sealed was, you
23	has for other mines in the country who		23	know, probably a couple miles away from
24	have sealed areas?		23	it underground and the people working
25	DR. NOVAK:		25	at the time didn't even know that the
23			23	at the time durit even know that the
		Page 735		Page 737
1	That's a very good		1	explosion occurred and they continued
2	question right now. I'm just trying to		2	to work. And they didn't even find out
3	figure out what the cause was. And		3	about it until the next day when the
4	once we can identify that with a high		4	fire boss made his mine examiner run
5	, j			
	degree of probability, then we need to		-	
	degree of probability, then we need to really start taking some serious looks		5 6	and found that the seals, or the
6	really start taking some serious looks		5 6	and found that the seals, or the concrete blocks, were lying on the
6 7	really start taking some serious looks at what we can do to at least minimize		5 6 7	and found that the seals, or the concrete blocks, were lying on the ground where the seals had been blown
6 7 8	really start taking some serious looks at what we can do to at least minimize the possibility of that of occurring.		5 6 7 8	and found that the seals, or the concrete blocks, were lying on the ground where the seals had been blown out. So
6 7 8 9	really start taking some serious looks at what we can do to at least minimize the possibility of that of occurring. MR. HATFIELD:		5 6 7 8 9	and found that the seals, or the concrete blocks, were lying on the ground where the seals had been blown out. So CHAIR:
6 7 8 9 10	really start taking some serious looks at what we can do to at least minimize the possibility of that of occurring. MR. HATFIELD: Mr. Chairman, if I may		5 6 7 8 9 10	and found that the seals, or the concrete blocks, were lying on the ground where the seals had been blown out. So CHAIR: But again, correct me if
6 7 8 9 10 11	really start taking some serious looks at what we can do to at least minimize the possibility of that of occurring. MR. HATFIELD: Mr. Chairman, if I may jump in on that point of Dr. Novak's		5 6 7 8 9 10 11	and found that the seals, or the concrete blocks, were lying on the ground where the seals had been blown out. So CHAIR: But again, correct me if I'm wrong, that was a case where there
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	Page 738		Page 740
1	that doesn't exist in a lot of	1	CHAIR:
2	mines is the wire mesh. Okay. And I	2	Yeah, Beckley. Yeah.
3	think if you can get enough energy	3	MR. DEAN:
4	propagating through the earth And	4	Yes, sir. Mr. Novak,
5	this is for shallow this would have	5	could you explain how you have
6	to for shallow mines. Okay. For deep	6	essentially ruled out roof falls as a
7	mines, you know, you're going to need	7	potential cause?
8	some sort of a metallic conduit in	8	DR. NOVAK:
9	order to conduct the necessary energy	9	I didn't rule it out.
10	to that depth. Okay. But essentially	10	mean, that's not my that wasn't
11	if you can couple currents to wire mesh	11	within my area of investigation. The
12	and if you can picture where the wire	12	other areas of the investigation team
13	mesh overlaps each other, you're going	13	had total access, or pretty much
14	to have somewhat of a discontinuity.	14	access, of the sealed area. And I
15	And where you have discontinuity, you	15	don't know. Sam, maybe you can address
16	have a tendency of having a little bit	16	it. Were there any new roof falls that
17	of resistance between it. And any time	17	were detected in the area there?
18	you get current flowing through there,	18	MR. S. KITTS
19	you're going to get sparking and	19	Yes. The other members
20	arcing. Okay.	20	of the team have that have
21	CHAIR:	20	knowledge of the type of roof fall
22	Yeah.	22	generally associated with longwalls and
23	DR. NOVAK:	23	having a massive fall occur at one
24	It's sort of similar to	24	particular moment where you get a
25	when you go to jump your battery on	25	frictional force that actually creates
25	when you go to jump your battery on	20	metional force that actually creates
	Page 739		Page 741
1	your car, if you don't have the clamps	1	the spark. This particular area was a
2	on as tight, you know, as they probably	2	Roman-pillared area with no second
3	should be, you'll see sparking that	3	mining. And upon investigation inby
4	occurs. And I think, because	4	the seals, there was no falls found
5	there is that discontinuity between the	5	anywhere near that magnitude.
6	terminal and the clamp itself.	6	MR. DEAN:
7	So, you know, you have to have -	7	Mr. Novak, are you aware
8	well, think of this also. I mean,	8	of any reports of lightning causing
9	you have to have a number when you	9	roof falls?
10	have a catastrophe catastrophe like	10	DR. NOVAK:
11	this, it's usually just one not one	11	No, I'm not.
12	thing that occurred. There's multiple	12	MR. DEAN:
13	events that have to fall in place.	13	When you talked about the
14	Okay. You know, it has to be in that	14	seismic event within a
15	right concentration of methane. You	15	four-second interval, would you expect
16	have to have the lightning strike. The	16	that a roof fall would cause that
17	lightning strike has to hit at the	17	seismic event to be recorded?
18	exact point. Okay. And I don't	18	DR. NOVAK:
19	this is a rare occurrence. Okay. It	19 20	I think a large enough
20	has happened before and I think we've	20	roof fall could create a seismic event,
21	noticed it. You know, well, in the	21	certainly. Yes.
22	last ten years, I know of two cases in	22	MR. DEAN:
23	Alabama. There may have been a third	23 24	Could you explain what
24 25	one even in Alabama and then one in West Virginia down around Beckley.	24 25	protection devices would be on the distribution network? I believe it was
120	west virginia down around beckley.	25	

	Page 742		ſ	age 744
1	a 12.4 kv power lines, that would	1	And certain frequencies, the conductor	age 744
2	prevent the transmission. And I forge	2	has a high impendence, too, but with	
3	the exact number, but about 394 kv	3	the low frequencies, it will conduct it	
4	DR. NOVAK:	4	for extremely long distances.	
5	Yeah.	5	MR. DEAN:	
6	MR. DEAN:	6	Well, I think I heard	
7	charge from	7	you, and based on my knowledge of	
8	propagating down that line?	8	electricity, which is not a great deal,	
9	DR. NOVAK:	9	but electricity does try to go to	
10	Well, you've got to keep	10	ground; is that correct	
11	in mind, when it induces currents, it	11	DR. NOVAK:	
12	will induce it into all of them. Okay.	12	No.	
13	Now, what you protect or what the	13	MR. DEAN:	
14	utility company protects, or any	14	to say that?	
15	company protects, the phase conductors.	15	DR. NOVAK:	
16	All right. But those grounding	16	No. It tries to it	
17	conductors were also mounted on the	17	tries to get back to the source that it	
18	pole, acting as shielded as shield	18	came from. You know, if it's a	
19	conductors against lightning. It's	19	let's say if it's a battery and it	
20	kind of ironic, but that's why they	20	leaves the positive terminal, it's	
21	were there. When the power conductors	21	trying to get back to that negative	
22	become if you get a high pulse of	22	terminal. Okay. But in the case of	
23	voltage induced with them, you	23	lightning, you have to think of	
24	generally have lightning arrestors or	24	lightning as a I guess the best	
25	surge arrestors mounted periodically	25	analogy is a huge capacitor. Okay.	
		20		
	Page 743		F	age 745
1	along the line that should act, okay,	1	You have a positive well, positive	
2	in order to dissipate that overvoltage	2	or a negative charge. But in the case	
3	to the ground. Okay. Which is where	3	of the lightning strike that we're	
4	the shielded lines are connected.	4	talking about, the clouds are just a	
5	Okay.	5	big positive charge. The earth is this	
6	So you can't use, like, a	6	negative charge, and you have an	
7	surge arrest or on a grounding	7	insulator between them, a dielectric.	
8	anduator bassues the grounding			
0	conductor because the grounding	8	Okay. And once the electric field is	
9	conductor's already a ground potential.	9	Okay. And once the electric field is greater than the strength of the air,	
10	conductor's already a ground potential. You know, there's nowhere are you	9 10	Okay. And once the electric field is greater than the strength of the air, what ends up happening, it starts	
10 11	conductor's already a ground potential. You know, there's nowhere are you going to connect it to? I mean, it's	9 10 11	Okay. And once the electric field is greater than the strength of the air, what ends up happening, it starts sending down what they refer to as	
10 11 12	conductor's already a ground potential. You know, there's nowhere are you going to connect it to? I mean, it's already at ground. And the thing is,	9 10 11 12	Okay. And once the electric field is greater than the strength of the air, what ends up happening, it starts sending down what they refer to as leaders, okay, which are ionized paths.	
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	Р	age 746		Page 748
1	So in answer to your	ugo / lo	1	That's correct. That's
2	question, with lightning, yes, it's		2	correct.
3	always going to flow into the earth.		3	MR. DEAN:
4	Okay. With other sources, it doesn't		4	I mean, what I'm
5	have to. It could, depending upon the		5	struggling with, Mr. Novak, is how many
6	range mode of the system.		6	of those roof bolts and opportunities
7	MR. DEAN:		7	for that potential source of energy to
8	I guess that kind of		8	go to ground from the mine mouth all
9	leads into another question. How many		9	the way to the top of Two North mains
10	of the butt ground you mentioned		10	was there? And how do you explain how
11	that these poles are butt-grounded.		11	that electricity would have went all
12	DR. NOVAK:		12	the way to the seals and bypassed all
13	Yeah.		13	these opportunities to go to ground?
14	MR. DEAN:		14	DR. NOVAK:
15	And I believe that's also		15	Yeah. And that's a very
16	attached to the overhead ground wires;		16	good question, and I can't give you an
17	is that correct?		17	answer for it. And I don't and
18	DR. NOVAK:		18	to be honest with you, I don't know if
19	Yes. They're connected.		19	we can. That's why I'm saying I need
20	They're just bare conductors that are		20	to do the next step now, once I explain
21	connected to the overhead neutral		21	a possible scenario, to see if enough
22	grounded conductors and they extend		22	energy is able to propagate the length
23	down the side of a pole. And they're		23	of that conductive path.
24	just a coil that are placed in the hole		24	MR. DEAN:
25	before the pole is inserted there. And		25	The other one, I guess
	P	age /4/		Page 749
1		age 747	1	Page 749 with the gas line, you know, the
1 2	to be honest with you, I don't know the exact number of them. I asked that	age /4/	1 2	with the gas line, you know, the
	to be honest with you, I don't know the	age /4/		
2	to be honest with you, I don't know the exact number of them. I asked that	'age /4/	2	with the gas line, you know, the opportunity for that energy to follow
2 3	to be honest with you, I don't know the exact number of them. I asked that question. I didn't walk the lines.	age /4/	2 3	with the gas line, you know, the opportunity for that energy to follow that gas line. Again, in one of your
2 3 4	to be honest with you, I don't know the exact number of them. I asked that question. I didn't walk the lines. They were walked before I got there.	age /4/	2 3 4	with the gas line, you know, the opportunity for that energy to follow that gas line. Again, in one of your slides you showed energy dissipating
2 3 4 5	to be honest with you, I don't know the exact number of them. I asked that question. I didn't walk the lines. They were walked before I got there. And I spent my time in some other areas. But they weren't all poles were not butt grounded, I'll put it	age /4/	2 3 4 5	with the gas line, you know, the opportunity for that energy to follow that gas line. Again, in one of your slides you showed energy dissipating out into the ground. DR. NOVAK: Right.
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	intimate contact with the earth, okay,	1	the one at 1,700 feet away? Or could
2	that it would have enough energy by the	2	it have hit right above the sealed
3	time it got to the bottom. Well, it	3	area?
4	turns out I was dead wrong. Okay. The	4	And we you know, we
5	amount of energy and again, it	5	scoured that area. We looked at it,
6	depends upon the you know, how	6	not only myself, Sam, I know, had
7	close the strike hits, if it's a direct	7	people going all over looking for
8	hit or whatever. But you can get a	8	we even brought in a forester
9	tremendous amount of energy flowing	9	because we thought we had found a tree
10	along You will get current that	10	that was struck by lightning. And it
11	bleeds off as it goes down into the	11	turns out it was because of a late fall
12	earth, but keep in mind that steel is a	12	or early fall snowstorm that caused
13	much better conductor than earth is, so	13	it to snap, instead of the lightning
14		14	itself. But we looked through that
15	MR. DEAN:	15	whole area, trying to find any little
16	I'm sorry, can you repeat	16	bit of evidence that we can. But
17	that?	17	lightning does not always leave
18	DR. NOVAK:	18	evidence either, so
19	I said steel is a much	19	MR. DEAN:
20	better conductor than earth.	20	And we've also looked
21	MR. DEAN:	21	that area over very well. And another
22	Thank you. Well, I guess	22	question, was roof screen present from
23	you know, that's the part I'm	23	the mains into One Left section, to the
24	struggling with. And again, maybe, you	24	best of your knowledge?
25	know, trying to take your figure, I	25	DR. NOVAK:
	Page 751		Page 753
1	think you also had it here of where the	1	Pardon me again?
2	lightning struck the tree, and again		
	and the second state of the second state of a second state of a second state of	2	MR. DEAN:
3	going two miles and then down, down the	3	Was the roof screen
4	borehole to the sealed area, the amount	3 4	
4 5	borehole to the sealed area, the amount of that leakage and well	3 4 5	Was the roof screen present in to the One Left section
4 5 6	borehole to the sealed area, the amount of that leakage and well DR. NOVAK:	3 4 5 6	Was the roof screen present in to the One Left section  DR. NOVAK:
4 5 6 7	borehole to the sealed area, the amount of that leakage and well DR. NOVAK: For the gas lines you	3 4 5 6 7	Was the roof screen present in to the One Left section  DR. NOVAK: In to the One
4 5 6 7 8	borehole to the sealed area, the amount of that leakage and well DR. NOVAK: For the gas lines you mean? Yeah, I agree with that. That's	3 4 5 6 7 8	Was the roof screen present in to the One Left section  DR. NOVAK: In to the One MR. DEAN:
4 5 6 7 8 9	borehole to the sealed area, the amount of that leakage and well DR. NOVAK: For the gas lines you mean? Yeah, I agree with that. That's a stretch. And I don't know. I	3 4 5 6 7 8 9	Was the roof screen present in to the One Left section  DR. NOVAK: In to the One MR. DEAN: belt entry?
4 5 7 8 9 10	borehole to the sealed area, the amount of that leakage and well DR. NOVAK: For the gas lines you mean? Yeah, I agree with that. That's a stretch. And I don't know. I included that in there for you	3 4 5 7 8 9 10	Was the roof screen present in to the One Left section  DR. NOVAK: In to the One MR. DEAN: belt entry? DR. NOVAK:
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	Da	ago 754			Dago 754
1		age 754	1	DR. NOVAK:	Page 756
2	belt entry is screened. MR. DEAN:		2	Near the mine you	
3	I guess back to Mr.		2	know, before it makes a as it comes	
	0		3 4		
4	Novak, if I could, Mr. Chairman?			down, it heads over to the mine, then	
5	Again, I'm trying to understand the		5	it goes straight down to the prep	
6	projected path that you've put upon the		6	plant. CHAIR:	
7	electricity. Why would that not go out		7		
8	to One Left section? That would appear		8	And the other question	
9	to be a lower resistance path.		9	is, the larger lightning strike, the	
10	DR. NOVAK:		10	one you were most suspicious of, is	
11	It probably did. I mean,		11	that across the river from the mine?	
12	you've got to think of it as like a		12	DR. NOVAK:	
13	sheet of current that's going in all		13	Yes, it is.	
14	directions. Okay. It probably did.		14 15	CHAIR:	
15	But there wasn't a methane mixture		15	Okay.	
16	there that would cause ignition.		16	DR. NOVAK:	
17	MR. DEAN:		17	Uh-huh (yes).	
18	And I guess those areas		18	CHAIR:	
19	outby, are you aware of any additional		19	And would you	
20	breaks in the roof screen that would		20	characterize your finding here as more	
21	have prevented a continuous path?		21	of a hypothesis than any conclusions?	
22	DR. NOVAK:		22	DR. NOVAK:	
23	Not that I'm aware of,		23	Preliminary. I'd say	
24	but again, I can't say that. You know,		24	it's a little strong, but yeah, okay,	
25	if I'm going to do the simulations now,		25	it could be, yeah, a hypothesis until I	
	Pa	age 755			Page 757
1	Pa I would want to walk that area or at	age 755	1	back it up with some	Page 757
1		age 755	1 2	back it up with some CHAIR:	Page 757
	I would want to walk that area or at	age 755		•	Page 757
2	I would want to walk that area or at least have somebody walk it to verify	age 755	2	CHAIR:	Page 757
2 3	I would want to walk that area or at least have somebody walk it to verify that it's a continuous path, yes.	age 755	2 3	CHAIR: Sure.	Page 757
2 3 4	I would want to walk that area or at least have somebody walk it to verify that it's a continuous path, yes. MR. DEAN:	age 755	2 3 4	CHAIR: Sure. DR. NOVAK:	Page 757
2 3 4 5	I would want to walk that area or at least have somebody walk it to verify that it's a continuous path, yes. MR. DEAN: We're also working on	age 755	2 3 4 5	CHAIR: Sure. DR. NOVAK: simulations.	Page 757
2 3 4 5 6	I would want to walk that area or at least have somebody walk it to verify that it's a continuous path, yes. MR. DEAN: We're also working on that right now.	age 755	2 3 4 5 6	CHAIR: Sure. DR. NOVAK: simulations. MR. MCKINNEY:	Page 757
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	Page 758		Page 760
1	DR. NOVAK:	1	propagate, particularly when you have a
2	Say this again now.	2	conductor involved like that.
3	MR. MCKINNEY:	3	MR. MCKINNEY:
4	The butt grounds that are	4	The scenario that we just
5	on the utility poles, is the purpose of	5	spoke of, is that the most likely of
6	that ground to dissipate electricity	6	the three you put on the screen?
7	that may be on the neutrals?	7	DR. NOVAK:
8	DR. NOVAK:	8	Until I do simulations, I
9	Yeah. If it happens to	9	don't I would really not like to
10	be struck by lightning, it is a path	10	assign any probabilities to it, but
11	for it to divert, to go to ground. That	11	
12	is correct.	12	MR. MCKINNEY:
13	MR. MCKINNEY:	13	When it came to the mine
14	So the utility companies	14	portals and, I guess, was conducted to
15	do have something in place	15	the belt structure, would that have
16	DR. NOVAK:	16	occurred if all the requirements, the
17	Oh, yeah.	17	arrestors, the grounding fields,
18	MR. MCKINNEY:	18	everything required by the National
19	to address that?	19	Electric Code and all the other
20	DR. NOVAK:	20	particular guidance and policies it
21	Correct. Correct.	21	would have happened?
22	MR. MCKINNEY:	22	DR. NOVAK:
23	And I want to make sure	23	Yeah. It was done right.
24 25	I'm following what you said earlier. It	24	I mean, it was done correctly. I
25	was a lightning strike. Which was	25	mean, you know, the belt structure
	Page 759		Page 761
1	Page 759 nothing direct. There was a magnetic	1	Page 761 needs to be grounded. And it is usually
1 2	-		_
	nothing direct. There was a magnetic	1	needs to be grounded. And it is usually
2 3 4	nothing direct. There was a magnetic field that went over and charged the	1 2	needs to be grounded. And it is usually grounded by the power supply that comes up to it. And yeah. MR. MCKINNEY:
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Page 762 1 three theories, though; right? 2 DR. NOVAK: 3 What's that? 4 MR. MCKINNEY: Page 762 1 critical flashover rating associated 2 with that. And if that doesn't exercise 3 that, then there's not going to be 4 short circuit that occurs. So the	Page 764 d
2DR. NOVAK:2with that. And if that doesn't exc3What's that?3that, then there's not going to be	n 1
3 What's that? 3 that, then there's not going to be	
, 5,5	
4 MR. MCKINNEY: 14 short circuit that occurs. So the	e a
5 That is one of your three 5 circuit breaker won't trip, okay, it	
6 theories that you put up? 6 will just divert those to ground an	
7 DR. NOVAK: 7 eventually, the lightning surge w	
8 Yeah. And I'm still 8 bleed off through any mechanism	
9 having a hard time one of my three 9 could find to get the ground, incl	
10?10the butt grounds, and if it's conn	
11 MR. MCKINNEY: 11 to ground back at the substation	
12 Theories. 12 MR. MCKINNEY:	
13DR. NOVAK:13So would you opine that	
14Which one, the one for14the butt grounds are what the ut	
15the15companies depend upon to dissip	pate that
16MR. MCKINNEY:16energy?	
17Which one will be done in17DR. NOVAK:	
18the summer?18Would I what?	
19 DR. NOVAK: 19 MR. MCKINNEY:	
20Okay. You know, I'm20Would you would it be	
21 hoping all three of them actually. By 21 your opinion that the butt ground	
22 the end of end of the or early 22 what the utility companies depen	
23 fall. 23 to dissipate any energy that may	r come
24MR. MCKINNEY:24into those neutrals?	
25Would there be any way25DR. NOVAK:	
Page 763	Page 765
1 that the power company could confirm or 1 Yeah. And there also	
2 validate some of the assertions you've 2 grounded at the termination poin	
3 made as far as the surge that may have 4 been on these grounds? You indicated 4 Okey You know, it's at the mine	
4 been on those grounds? You indicated 4 Okay. You know, you have if	5
5 that it would have went toward the mine 5 tie into some substation, okay, yo	bure
6 and would have went in other 6 going to tie that ground into the	
7 directions. 7 station ground. I mean, that's al	
8 DR. NOVAK: 8 the that's also the station grou	una
9 You mean, would they have 10 APP MCKINNEY	
10 any data to indicate 10 MR. MCKINNEY:	
11 MR. MCKINNEY: 12 Vec	ra tha
12 Yes. 12 evidence at the mine site of when 12 lightning may have entered the n	
13 DR. NOVAK: 14 that that happened?	nine?
14 that that happened? 14 DR. NOVAK:	
15 Probably not, because that's the way, 16 that's generally what it's supposed to 16 MD MCKINNEY.	
16 that's generally what it's supposed to 16 MR. MCKINNEY:	
17 do. Okay. Under a normal 19 aircumstance Latio sout that did not	
18circumstance. Let's say that did not18DR. NOVAK:19feed the mine, let's say it fed the19Of any burning or	
19 feed the mine, let's say it fed the 19 Of any burning or	
20 prep plant or whatever and these 20 anything?	
20prep plant or whatever and these20anything?21voltages were induced in the21MR. MCKINNEY:	
20prep plant or whatever and these20anything?21voltages were induced in the21MR. MCKINNEY:22conductors. Now, the phase conductors22 burning?	
20prep plant or whatever and these20anything?21voltages were induced in the21MR. MCKINNEY:22conductors. Now, the phase conductors22 burning?23are going to be elevated, and potential23DR. NOVAK:	
20prep plant or whatever and these20anything?21voltages were induced in the21MR. MCKINNEY:22conductors. Now, the phase conductors22 burning?	

1	Page 766			Page 768
1	Anything like that?	1	seals could I say that the pressure	
2	DR. NOVAK:	2	came down those entries and hit those	
3	No, I did not find that,	3	seals. I knew the direction at the	
4	no. No.	4	seals, but as far as, you know, how to	
5	MR. MCKINNEY:	5	bounce around back there, no, I can't -	
6	Is there any surface	6	you know.	
7	evidence of that at the mine site,	7	MR. MCKINNEY:	
8				
	other than the tree and power line?	8	Was the map that	
9	DR. NOVAK:	9	accompanied your report that we	
10	The tree is the only	10	received then, is it inaccurate or is	
11	thing.	11	it not your submission? Because	
12	MR. MCKINNEY:	12	there's a map inside that report that	
13	You may not be able to	13	has a legend that talks about primary -	
14	answer this question, but I think we	14	or indicates	
15	discussed the elimination of ignition	15	DR. SAWYER:	
16	sources. We talked about roof falls	16	Primary and secondary	
17	and I thought I heard somebody say that	17	forces.	
18	there was no new roof falls in the	18	MR. MCKINNEY:	
19	general area, therefore, that potential	19	and secondary forces	
20	ignition source, I guess, was at least	20		
21	pushed farther down on the list of	21	DR. SAWYER:	
22	priorities. Have you also considered	22	Yeah.	
23	the possibility of a roof fall in	23	MR. MCKINNEY:	
24	another area and the waking of a	24	and they're shown	
25	methane concentration to this area?	25	throughout the sealed area in their	
25	methane concentration to this area:	25	throughout the scaled area in their	
	Page 767			Page 769
1	Page 767 MR_S_KITTS <sup>.</sup>	1		Page 769
1	MR. S. KITTS:	1	direction.	Page 769
2	MR. S. KITTS: Yes, we have. We mapped	2	direction. DR. SAWYER:	Page 769
2 3	MR. S. KITTS: Yes, we have. We mapped the entire area inby the seals looking	2 3	direction. DR. SAWYER: Correct. I mean, if	Page 769
2 3 4	<ul><li>MR. S. KITTS:</li><li>Yes, we have. We mapped the entire area inby the seals looking for roof falls. And let me clarify it,</li></ul>	2 3 4	direction. DR. SAWYER: Correct. I mean, if that's what the map says, yes, sir.	Page 769
2 3 4 5	<ul><li>MR. S. KITTS:</li><li>Yes, we have. We mapped the entire area inby the seals looking for roof falls. And let me clarify it, there are some falls that occurred</li></ul>	2 3 4 5	direction. DR. SAWYER: Correct. I mean, if that's what the map says, yes, sir. MR. S. KITTS:	Page 769
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	Page 7			Page 772
1	something that you've used in the past	1	static. The effective force	
2	to make determinations about pressures	2	let's take along the belt	
3	after mine explosions?	3	hangers was, you know, 63	
4	DR. SAWYER:	4	psi applied to it statically	
5	Yeah. For example, at	5	would cause that deformation.	
6	Blacksville Number One in 1991	6	Now, I guess, you know, you're	
7	where we had a if you're	7	asking, well, what about ten psi	
8	familiar with that, an explosion	8	dynamic, would that cause the	
9	that had taken place there. And	9	same deflection? All right.	
10	the shaft had which was	10	Well, any dynamic force, sure.	
11	reinforced concrete had	11	You know, just to explain the	
12	shattered out. And Clete	12	difference between, you know,	
13	Stephan, who was working for me	13	dynamic and static, say you have	
14	at the time, and Steve Luzic	14	your bathroom scale and you put	
15	were out there. And of course,	15	a brick on it. It says one	
16	you know, they came back and	16	pound. All right. You take	
17	said, boy, this looks like this	17	that brick and maybe you drop it	
18	was very high and this is what	18	four feet, the scale says, let's	
19	we have. Could you take a look	19	say, ten pounds. All right.	
20	at this? And I did. And ran	20	That's the difference between	
21	through, you know, the	21		
22	structural calculations and you	22	CHAIR:	
22	5	22		
23 24	know, determined the pressure	23	You're okay. Keep going. DR. SAWYER:	
	that had taken place there. And			
25	it was a it was a static.	25	between dynamic and	
	Page 7	71		Page 773
1	Page 7 Initially, it was a static			Page 773
1	Initially, it was a static	1	static. All I'm saying, all right, is	Page 773
2	Initially, it was a static analysis. Then the question, of	1 2	static. All I'm saying, all right, is that you take that belt hanger, you put	Page 773
2 3	Initially, it was a static analysis. Then the question, of course, came up, what about	1 2 3	static. All I'm saying, all right, is that you take that belt hanger, you put 63 psi static pressure on it, you're	Page 773
2 3 4	Initially, it was a static analysis. Then the question, of course, came up, what about what about the dynamic analysis.	1 2 3 4	static. All I'm saying, all right, is that you take that belt hanger, you put 63 psi static pressure on it, you're going to deform it like you've seen in	Page 773
2 3 4 5	Initially, it was a static analysis. Then the question, of course, came up, what about what about the dynamic analysis. And, you know, that case	1 2 3 4 5	static. All I'm saying, all right, is that you take that belt hanger, you put 63 psi static pressure on it, you're going to deform it like you've seen in the mine, up to 92 psi.	Page 773
2 3 4 5 6	Initially, it was a static analysis. Then the question, of course, came up, what about what about the dynamic analysis. And, you know, that case dragged on for years. And in	1 2 3 4 5 6	static. All I'm saying, all right, is that you take that belt hanger, you put 63 psi static pressure on it, you're going to deform it like you've seen in the mine, up to 92 psi. MR. MCKINNEY:	Page 773
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	Page 774		Page 776
1	got my preliminary report, I've got	1	goes to Mr. Hatfield. When do you
2	references in there, all right, on	2	think your report will be finalized?
3	where I've used this same technique.	3	MR. HATFIELD:
4	MR. MCKINNEY:	4	I don't think we can
		5	
5	So is the answer to my		provide a precise time, other than the
6	question, yes, you've done this in this	6	general feedback you've heard thus far.
7	same situation before?	7	Dr. Sawyer has ongoing testing and Dr.
8	DR. SAWYER:	8	Novak's doing some modeling on the
9	This is the first time	9	various alternatives of possible entry
10	I've been in a gob of an underground	10	into the sealed area that we talked
11	mine.	11	about, but we're generally anticipating
12	MR. MCKINNEY:	12	by the end of the summer, we'll have a
13	Okay.	13	lot more information and we will share
14	DR. SAWYER:	14	that with you.
15	l've never after an	15	MR. MCKINNEY:
16	explosion. I've never seen or been	16	Thank you.
	•		DR. SAWYER:
17	asked to look at, you know, pie pans in	17	
18	the past, no.	18	You know I would add to
19	MR. MCKINNEY:	19	that from my perspective, the work that
20	Mr. Novak, can you hear	20	MSHA and NIOSH are have done and
21	me?	21	probably will continue to do at Lake
22	DR. NOVAK:	22	Lynn is going to be very, very
23	Yeah.	23	enlightening. And I you know, I
24	MR. MCKINNEY:	24	would not want to complete my report
25	A moment ago, I think	25	until they are done, because that's
-			
	Page 775		Page 777
1	_	1	-
1	Davitt asked you a question about South	1	going to shed a lot of light on the
2	Davitt asked you a question about South Africa, and I want to make sure I	2	going to shed a lot of light on the situation. And I don't know when
2 3	Davitt asked you a question about South Africa, and I want to make sure I understood your answer.	2 3	going to shed a lot of light on the situation. And I don't know when you know, how your work's going to
2 3 4	Davitt asked you a question about South Africa, and I want to make sure I understood your answer. DR. NOVAK:	2 3 4	going to shed a lot of light on the situation. And I don't know when you know, how your work's going to progress. I know it's got to be slow
2 3	Davitt asked you a question about South Africa, and I want to make sure I understood your answer. DR. NOVAK: Right.	2 3 4 5	going to shed a lot of light on the situation. And I don't know when you know, how your work's going to progress. I know it's got to be slow and methodical.
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2 3 4 5 6 7	Davitt asked you a question about South Africa, and I want to make sure I understood your answer. DR. NOVAK: Right. MR. MCKINNEY: You said there was some	2 3 4 5 6 7	going to shed a lot of light on the situation. And I don't know when you know, how your work's going to progress. I know it's got to be slow and methodical. MR. MCKINNEY: This question also goes
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		Dago 779			Dago 790
1	Okay. That's what I	Page 778	1	required for ground beds, so yeah, it	Page 780
2	wanted to clarify. So really, the		2	was properly grounded.	
3	agency's posture would be contributing		2	MR. CLAIR:	
4	violations won't be issued until the		3 4	And just to clarify, were	
5	investigation is finished? Do we		5	lightning arrestors in place at the	
6	understand that?		6	time you looked at it?	
7	MR. HATFIELD:		7	DR. NOVAK:	
8			8	At the substation itself?	
9	Yes. It's my understanding that if there is a		0 9	MR. CLAIR:	
10	contributing violation, we haven't seen		10	Yeah.	
11	it and we don't know about it. I can't		11	DR. NOVAK:	
12	represent what you know, obviously.		12	Yes.	
13	MR. MCKINNEY:		13	MR. CLAIR:	
14	Well, yeah. I mean, you		14	Okay. And Dr. Sawyer, I	
15	would expect that to happen when the		15	think you said that this was the first	
16	investigation is finished?		16	time that you had been involved in an	
17	MR. HATFIELD:		17	underground investigation in looking at	
18	I'm not sure what your		18	the physical deflections of the various	
19	procedure is.		19	metallic structures?	
20	MR. MCKINNEY:		20	DR. SAWYER:	
21	Okay. That's the		21	I don't think I said	
22	procedure.		22	that. I said that this is the first	
23	MR. HATFIELD:		23	time I've been in a gob after a mine	
24	Okay.		24	explosion.	
25	MR. CLAIR:		25	MR. CLAIR:	
		Page 779			Page 781
1	Just one or two		1	That's right.	
2	questions, Dr. Novak. Did you examine		2	DR. SAWYER:	
3	the grounding systems into the mine		3	You know, just about all	
4	from the from the portal at the		4	the work I did for the Mine Safety &	
5	? Under your theory, the charge came		5	Health Administration was one time,	
6	in through the belt conveyor?		6	Blacksville, first and only time,	
7	DR. NOVAK:		7	analyzed the shaft, line power,	
8	Station ground beds?		8	explosion-proof enclosure, rollover	
9	MR. CLAIR:		9	protection. You know, each one that	
10	Yeah.		10	you each one is different. Yeah,	
11	DR. NOVAK:		11	this is the first time I've analyzed	
12	• • • • •		4.0		
40	Measurements were taken,		12	pie pans and belt hangers.	
13	yes. But offhand, I don't know what		13	MR. CLAIR:	
14	yes. But offhand, I don't know what they are. But yes, resistance		13 14	MR. CLAIR: Okay.	
14 15	yes. But offhand, I don't know what they are. But yes, resistance measurements were taken, both of the		13 14 15	MR. CLAIR: Okay. DR. SAWYER:	
14 15 16	yes. But offhand, I don't know what they are. But yes, resistance measurements were taken, both of the safety ground bed, as well as the		13 14 15 16	MR. CLAIR: Okay. DR. SAWYER: The first time I've seen	
14 15 16 17	yes. But offhand, I don't know what they are. But yes, resistance measurements were taken, both of the safety ground bed, as well as the station ground bed.		13 14 15 16 17	MR. CLAIR: Okay. DR. SAWYER: The first time I've seen that.	
14 15 16 17 18	yes. But offhand, I don't know what they are. But yes, resistance measurements were taken, both of the safety ground bed, as well as the station ground bed. MR. CLAIR:		13 14 15 16 17 18	MR. CLAIR: Okay. DR. SAWYER: The first time I've seen that. MR. CLAIR:	
14 15 16 17 18 19	<ul> <li>yes. But offhand, I don't know what they are. But yes, resistance measurements were taken, both of the safety ground bed, as well as the station ground bed.</li> <li>MR. CLAIR: So at this point, you</li> </ul>		13 14 15 16 17 18 19	MR. CLAIR: Okay. DR. SAWYER: The first time I've seen that. MR. CLAIR: Okay. But you've come to	
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		1	
	Page 782		Page 784
1	from One Left safely exited the mine?	1	know. All I know is those belt hangers
2	I mean, those are extraordinary forces	2	saw the equivalent of a static pressure
3	that you've	3	of 60 psi.
4	DR. SAWYER:	4	MR. CLAIR:
5	They absolutely are. And	5	And you are basing that -
6	that is out of my bailiwick. I mean, I	6	relating that to the explosion event
	5		•
7	can tell you that those belt hangers	7	based on information that was provided
8	inby the seal, seal Number Six, and	8	by the company that they were all in a
9	directly outby seal Number Six saw the	9	90-degree vertical position prior to
10	equivalent of static pressure of 60	10	the explosion?
11	psi.	11	DR. SAWYER:
12	MR. CLAIR:	12	Sure. Yeah, that plays a
13	Is there did you rule	13	role, yes.
14	out other potential methods for	14	MR. MCKINNEY:
15	deforming those belt hangers and fans?	15	Mr. Sawyer, looking at
16	For example, the removal of the	16	the seals and I just made one trip
17	screens, or other activity that might	17	through there and you spent much more
18	have taken place prior to the	18	time than I did, which seal would you -
			•
19	explosion?	19	seal only, which seal would you
20	DR. SAWYER:	20	think received the most pressure?
21	Well, there's always a	21	DR. SAWYER:
22	lot of possibilities. Now, the miners	22	I couldn't tell you that,
23	reported to me that before the	23	but I would say that certainly around
24	explosion, all those belt hangers were	24	seal Number Six, either at the left or
25	at 90 degrees. All right. Well, to	25	right of that saw, you know,
	Page 783		Page 785
1	Page 783 the visual eye. After the explosion,	1	Page 785 significant pressure.
1 2	-		
	the visual eye. After the explosion, inby and outby, significant	1	significant pressure.
2 3	the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that	1 2	significant pressure. MR. MCKINNEY:
2 3 4	the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that deformation? You could have flying	1 2 3 4	significant pressure. MR. MCKINNEY: More than seal Number Ten?
2 3 4 5	the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that deformation? You could have flying objects that would hit them. All	1 2 3 4 5	significant pressure. MR. MCKINNEY: More than seal Number Ten? DR. SAWYER:
2 3 4 5 6	the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that deformation? You could have flying objects that would hit them. All right. But then at the roof line, high	1 2 3 4 5 6	significant pressure. MR. MCKINNEY: More than seal Number Ten? DR. SAWYER: I wouldn't probably I
2 3 4 5 6 7	the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that deformation? You could have flying objects that would hit them. All right. But then at the roof line, high objects being accelerated to hit them	1 2 3 4 5 6 7	significant pressure. MR. MCKINNEY: More than seal Number Ten? DR. SAWYER: I wouldn't probably I couldn't categorize that at this point
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>the visual eye. After the explosion, inby and outby, significant deformation. Now, what can cause that deformation? You could have flying objects that would hit them. All right. But then at the roof line, high objects being accelerated to hit them and to hit them all could be a possibility, but probably not probable.</li> <li>But let's assume the case that all those belt hangers got hit by debris along with the pressure from the explosion. Those belt hangers they didn't know whether there was debris in the air or how much of it was a compressive wave, how much of it was the velocity. They felt 60 psi. And the seals in front of it, they felt 60 psi.</li> <li>If you're asking me whether that was from static force, the dynamic force or, you know, other</li> </ul>	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>significant pressure.</li> <li>MR. MCKINNEY:</li> <li>More than seal Number Ten?</li> <li>DR. SAWYER:</li> <li>I wouldn't probably I couldn't categorize that at this point in time.</li> <li>MR. MCKINNEY:</li> <li>I guess I'll ask a question, maybe, to help me better understand. If you can use the tensile yield strength to make those decisions about seal Six, could you do the same thing for seal Ten?</li> <li>DR. SAWYER:</li> <li>No. And the problem is that seal Number Six is the only one that had those belt hangers there. And again, you can think of those belt hangers as a pressure gauge. That's a pressure gauge that will record the pressure between 60 and 90 psi. It's</li> </ul>

1sitting there. If it was 150 psi,1technical, and we need a speaker with2you'd see the same deformation. Now,2more expertise. As set forth in the	age 788
2 you'd see the same deformation. Now, 2 more expertise. As set forth in the	
1.2 and Number Ten didukt have a ball 1.2 Net CD 14 14 14 14 14 14	
3 seal Number Ten didn't have a belt 3 Notice of Public Hearing, printed in	
4 hanger in front of it. I mean, none of 4 The Federal Register on April 13th,	
5 the other seals did. They had those 5 2006, we are designating Cecil Roberts	
6 pie pans. Now, you could think of 6 as our representative to ask questions	
7 those pie pans as, again, a pressure 7 of this Panel on our behalf. Thank	
8 gauge. But the limit on that pressure 8 you. CHAIR:	
9 gauge is, let's say, from only 11 to 25 9 Take a short break,	
10 psi, depending on how it was bent. 10 please. And then we'll come back and	
5 5 1 5	
12 MR. MCKINNEY: 12 SHORT BREAK TAKEN	
13     So that's the reason you     13     CHAIR:	
14used seal Number Six, is you used the14Thank you. If we could	
15belt hangers as your to make that15get started. I think there are a	
16decision?16legislator or two there coming down the	
17DR. SAWYER:17hall. If I could ask I'm sorry,	
18Sure. And that's the18Mr. Dean. Mr. Dean is coming.	
19only one I can, you know, as an19MR. DUNBAR:	
20 engineer. 20 If I could ask just two	
21 CHAIR: 21 technical questions, and then Mr.	
22 We'd like to hear now 22 Hatfield has a statement to make. Dr.	
23 from questions from the Panel. 23 Novak, if you could answer, if it's	
24 Sara Bailey, daughter of Junior Hamner, 24 appropriate, or Dr. Sawyer, what is the	
25 George 'Junior' Hamner, has a statement 25 resistance value of the mine substation	
Page 787 Page 787	age 789
1 to make. And then I'd suggest that we 1 ground bed, and is that measured in	
2 take a few short break, and then 2 ohms or what is the measurement in	
3 we'll come back for questions from our 3 ohms, and were they checked?	
4 Panel. Sara? 4 DR. NOVAK:	
5 MS. BAILEY: 5 It is measured in ohms.	
6 Hi. I'm Sara Jane 6 And I specifically for the safety	
7 Bailey. Junior Hamner was my father. 7 ground bed for the mine?	
8 Shortly after the explosion, my mother, 8 MR. DUNBAR:	
9 Debra Hamner, asked the United Mine 9 Yes, sir.	
10 Workers to represent us in this 10 DR. NOVAK:	
11 investigation. My mother and I, along 11 And I according to	
12 with many other families who are here, 12 MSHA regulations, it has to be less	
13 have decided Cecil Roberts should 13 than five ohms, if I'm not correct	
14 represent us in asking questions at 14 if I'm correct. And I think the	
15 this time. The families have done 15 state is actually lower than that, if	
16 questioning ourselves up until this 16 I'm not I thought it might like be	
17point in the hearing, but Panel Five is17three ohms	
17point in the hearing, but Paher rivers17three onins18ICG's investigation.ICG has announced18MR. DUNBAR:	
0	
20 lightning strike in an attempt to 21 influence public opinions before MSHA	
21 influence public opinions before MSHA 22 and the State completed their 23 and the State completed their	
22 and the State completed their 22 I'm not as familiar with West Virginia.	
23 investigation. The issue of the cause 23 But from what I remember, when the	.
24 of the explosion and whether it was due 24 resistance measurements were made, that 25 it most the criteria of the regulations	ι
25to a lightning strike is very25it met the criteria of the regulations.	

		Page 790			Page 792
1	CHAIR:		1	Roberts being designated as the	
2	And then finally, was		2	representative for the families at this	
3	there any evidence of the lightning		3	particular hearing, and we recognize	
4	strike on the French Creek substation		4	that the protocol allows that	
5	anywhere along the line that you found		5	designation, and we will field	
6	in the other direction, away from the		6	questions from Mr. Roberts, but I want	
7	mine?		7	to clarify for the record that Mr.	
8	DR. NOVAK:		8	Roberts and his organization do not	
9	The report that we got		9	represent the miners and Sago. They	
			7 10		
10	only went for a certain distance, so no			have never. Indeed, the miners'	
11	that's a good question, though.		11	representative for Sago, as affirmed by	
12	That may be something to look for if		12	93 percent of our hourly workforce, is	
13	it's a		13	Craig Newsome (phonetic), who is	
14	CHAIR:		14	sitting beside of Mr. Roberts. So 93	
15	Thank you.		15	percent of our workers chose someone	
16	DR. NOVAK:		16	else to speak for them, and I just want	
17	if there's something		17	to make sure that's clear on the	
18	further out, yeah.		18	record. Thank you.	
19	CHAIR:		19	CHAIR:	
20	Mr. Hatfield?		20	Thank you, Mr. Hatfield.	
21	MR. HATFIELD:		21	Senator Kessler. Delegate Hamilton,	
22	Thank you, Mr. Chairman.		22	please.	
23	I would just like to briefly respond		23	DELEGATE HAMILTON:	
24	to Ms. Bailey's statement. Quite to		24	All right. Thank you. I	
25	the contrary, our release of the		25	think this would probably be directed	
20	the contrary, our release of the		20		
		Page 791			Page 793
1	initial findings in mid-March was not		1	to Dr. Novak, I guess, as well.	
2	an effort to influence public opinion,		2	Doctor, you indicated there's three	
3	but frankly an effort to get some much-		3	possibilities that you examine. One, I	
4	needed answers out there to our		4	guess, would be friction from roof	
5	employees and their families. The		5	falls. Secondly would be chemical.	
6	alternative would simply be to wait		6	And third would be electrical, from a	
7	until we have a final federal or final		7	lightning; is that correct?	
8	state report. And by the		8	DR. NOVAK:	
0 9	1 5	in	0 9	That's correct.	
	acknowledgment of the panel members	111			
10	front of me, that may be as late as the		10	DELEGATE HAMILTON:	
11	first quarter of 2007. I don't think		11	And again, I think as	
12	anyone believes that that's an		12	reiterated, I guess, by Mr. Hatfield,	
13	appropriate delay time or it's a		13	these are very and I think as	
14	reasonable time to wait for answers. So		14	confirmed in your response to Davitt	
15	we simply wanted to share the		15	McAteer, this is merely a hypothesis	
16	information we have with our miners,		16	that you're throwing out there? It's	
17	with their families, and we think that		17	by no means intended to be a definitive	
18	was very much the appropriate step. W	e	18	conclusion as to the cause of the	
19	do not believe that we had all the		19	explosion on January 2nd?	
20	answers or we didn't say we did. And		20	DR. NOVAK:	
21	we never said that we stopped the		21	It's ways of describing	
22			22	how I perceive the lightning could have	
~					
	investigation. Our efforts are continuing, and we will continue to		23		
23	continuing, and we will continue to		23 24	penetrated into the sealed area, hoping	
			23 24 25		

1	5			D 70/
	Page 794	1	as in the mine and as in behind the	Page 796
	so I would like to have had more	1	go in the mine and go in behind the	
2	information. So all I can report to	2	sealed area?	
3	you right now is what I have. That's	3	DR. NOVAK:	
4	correct.	4	I was in the mine behind	
5	DELEGATE HAMILTON:	5	the sealed area, but not for the	
6	And at this point, you	6	purpose I'm not a roof mechanics	
7	see that as just a possible scenario or	7	person. That's not my area of	
8	a hypothesis, but it's nothing you're	8	specialty, no.	
9	ready to stand by as a definitive	9	DELEGATE HAMILTON:	
10	conclusion; correct?	10	So your ruling out of a	
11	DR. NOVAK:	11	roof fall is not based on any	
12	No, I'm not going to	12	independent expertise that you had,	
13	it's not a definitive conclusion,	13	it's just by relying on information	
14	that's correct.	14	that?	
15	DELEGATE HAMILTON:	15	DR. NOVAK:	
16	And you know, because as	16	By other experts.	
17	I understood, the sequence of events	17	DELEGATE HAMILTON:	
18	that had to have occurred or would have	18	Provided to you or by the	
19	had to have lined up as nearly a	19	company that it was, in fact, not a	
20	perfect storm in order to have this	20	roof fall?	
21	scenario occur in the manner that it	21	DR. NOVAK:	
22	did?	22	Well, not necessarily the	
23	DR. NOVAK:	23	company, but whoever, you know,	
24	That's not correct.	24	participated in the investigation.	
25	DELEGATE HAMILTON:	25	DELEGATE HAMILTON:	
1	Page 795	4		Page 797
1	No. I mean, they're	1	Was that in conjunction	
1 0				
2	there. I mean, everything that I	2	with state officials? Did they provide	
3	stated was fact. I mean, there's a	2 3	with state officials? Did they provide information?	
3 4	stated was fact. I mean, there's a continuous metallic path from 300 feet	2 3 4	with state officials? Did they provide information? DR. NOVAK:	
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	Page 802		Page 804
1	statement is	1	Now, I don't know exactly. I guess we
2	DR. NOVAK:	2	can delve into that to determine the
3	For the seismic data I	3	delays that you can expect within a
4	think you're talking is that what	4	certain degree of accuracy. They will
5	you're referring to?	5	probably be plus or minus some seconds
6	SENATOR CARUTH:	6	involved with that also.
7	Yes. The seismic network	7	SENATOR CARUTH:
8	recordings were independently analyzed,	8	You actually anticipated
9	that a seismic event had occurred in	9	my question, whether there was
10	the location of Sago Mine within a	10	whether sort of a temporal analysis of
11	four-second interval.	11	how long it would take electricity
12	DR. NOVAK:	12	under any of the different theories
13	Yeah, that's the accuracy	13	that you proposed.
14	of the instrumentation and their method	14	DR. NOVAK:
15	of analysis, you know. That's the	15	It would almost be
16	amount of air that they allow for, plus	16	instantaneous for it to reach you
17	or minus four seconds.	17	
18	SENATOR CARUTH:	18	know, once a conductor becomes energized let's say that grounded
19 20	That is statistical rather than some been a result of	19 20	conductor was energized, it would almost be instantaneous. You could
20	some finding of fact that you made?	20	
22	DR. NOVAK:	22	think of the entire system, the
22			potential being elevated at the same
23 24	No. I didn't do that.	23	time. It's not like it's moving down the line.
24 25	That was independently done by a geology professor at Virginia Tech.	24 25	SENATOR CARUTH:
25	geology professor at virginia rech.	25	SENATOR CAROTTI.
	Page 803		Page 805
1	Page 803 SENATOR CARUTH:	1	Page 805 Would that make would
1 2		1 2	Would that make would
	SENATOR CARUTH:		_
2	SENATOR CARUTH: In terms of your	2	Would that make would the temporal aspect of this make any
2 3	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think	2 3	Would that make would the temporal aspect of this make any one of your theories more likely than
2 3 4	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think you noticed were both at 6:26, at that 35 seconds, and also that the CO	2 3 4	Would that make would the temporal aspect of this make any one of your theories more likely than the other in terms of the electrical
2 3 4 5	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think you noticed were both at 6:26, at that	2 3 4 5	Would that make would the temporal aspect of this make any one of your theories more likely than the other in terms of the electrical lines as opposed to simply conduction
2 3 4 5 6	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think you noticed were both at 6:26, at that 35 seconds, and also that the CO monitoring system, as you suggested,	2 3 4 5 6	Would that make would the temporal aspect of this make any one of your theories more likely than the other in terms of the electrical lines as opposed to simply conduction through the ground?
2 3 4 5 6 7	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think you noticed were both at 6:26, at that 35 seconds, and also that the CO monitoring system, as you suggested, that the CO was detected at 6:26,	2 3 4 5 6 7	Would that make would the temporal aspect of this make any one of your theories more likely than the other in terms of the electrical lines as opposed to simply conduction through the ground? DR. NOVAK:
2 3 4 5 6 7 8	SENATOR CARUTH: In terms of your analysis, the lightning flashes I think you noticed were both at 6:26, at that 35 seconds, and also that the CO monitoring system, as you suggested, that the CO was detected at 6:26, although you don't have the particular	2 3 4 5 6 7 8	Would that make would the temporal aspect of this make any one of your theories more likely than the other in terms of the electrical lines as opposed to simply conduction through the ground? DR. NOVAK: Well, through the ground
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				Dama 000
1	Page 806	1	particular monitoring station?	Page 808
1	Did you go into the previously-sealed section underground?	2	particular monitoring station? MR. S. KITTS:	
2	DR. NOVAK:	2	Yes. It was recorded on	
3 4		3 4		
4 5	Yes, I did. SENATOR CARUTH:	4 5	the computer located there at the mine	
		5 6	site. SENATOR CARUTH:	
6	Did you make any notes or have any recollection of any indication	-		
7 8	of an ignition area that would be	7	Can you tell from that	
0 9	0	8 9	reading or from that recording where it	
10	compatible with electrical ignition? DR. NOVAK:	9 10	was that which monitor, which area of the mine was having that occurrence	
11	Well, the forces people	11	8	
12		12	of carbon monoxide at that particular time?	
13	or investigators are the ones who	12	MR. S. KITTS:	
14	determine where the ignition occurred rather than me, in particular. The	13 14	Yes.	
15	ignition, if it did enter, and the way	14	SENATOR CARUTH:	
16	I feel that it was probably ignited by	16	And was that close in	
17	a spark along that wire mesh screening	17	proximity to the seals?	
18	that's supportive to the roof. It	17	MR. S. KITTS:	
19	could have occurred anywhere, anywhere	19		
20	that that screen exists within the	20	I believe it was, but it was recorded the CO monitoring	
20	seals. Now, the forces people, after	20	system is computerized and records the	
22	they mapped the forces, get a very good	21	data. So that information has been	
22	<b>3</b> 11 <b>3 3 3</b>	22	turned over to MSHA and the state.	
23 24	idea of the general vicinity as to where the ignition actually occurred.	23 24	SENATOR CARUTH:	
24	SENATOR CARUTH:	24 25	Following up with you,	
23	SENATOR CAROTTI.	23	Tollowing up with you,	
	Page 807			Page 809
1	My follow-up question	1	Mr. Kitts, there have been some	Page 809
2	My follow-up question then is either by your own observations	2	questions about it, but it's my	Page 809
	My follow-up question then is either by your own observations or by something that was told to you,	2 3	questions about it, but it's my understanding is my understanding	Page 809
2 3 4	My follow-up question then is either by your own observations or by something that was told to you, is there any particular area in there	2 3 4	questions about it, but it's my understanding is my understanding correct that in the area which was	Page 809
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	Page 810			Page 812
1	Had it ever been a	1	No, sir. No, sir. No.	1 490 012
2	concern or had you had any experience	2	No. I should have mentioned it first.	
3	in the past with some sort of bleeding	3	I had put together a preliminary	
4	or migration of that methane from that	4	report, and it was in yellow. After I	
5	other seam into the seam being mined?	5	published that I published that,	
6	MR. S. KITTS:	6	finalized that and had it run off, I	
7	No, I don't have any	7	noticed three typographical errors. So	
8	recollection of that seam being exposed	8	I redid the report, and it has a	
9	to the seam that was actively being	9	revision date on it, May 1st. And all	
10	mined. Chuck, have you any	10	the changes I made in there I got in	
11	information?	11	italics, and one of which was right on	
12	MR. DUNBAR:	12	the cover. I misspelled Kelly, and you	
13	No, there's not been any	13	know, the SpellCheck didn't pick that	
14	exposure, no connection between the two	14	up. So I added my Curriculum Vitae to	
15	seams.	14	that also. And in the section where I	
16	MR. S. KITTS:	16	had the testing reports from Pittsburgh	
17	So then I think the	17		
18	answer is no.	18	Testing Laboratory, in the yellow-colored report there were not	
19	DELEGATE HAMILTON:	19	- the pictures that they took of the	
20	Mr. Sawyer, please, just	20	samples, I included that in the revised	
20	one question. You indicated with the -	20	•	
22		21	report, which made it thicker.	
22	your investigation there were		And I think one thing	
23	certain patterns around the sealed area	23	that Mr. McKinney had asked me and	
24 25	on the pans. Was there any evidence on	24 25	stated that the forces map, I thought I	
20	the roof bolts themselves, the bottom	20	understood him, he said something to	
	Page 811			Page 813
1	Page 811 of the bolts, in terms of blast	1	the effect it was as part of my report.	Page 813
1 2		1 2	the effect it was as part of my report. Well, it wasn't physically in there.	Page 813
	of the bolts, in terms of blast			Page 813
2	of the bolts, in terms of blast indication?	2	Well, it wasn't physically in there.	Page 813
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2 3 4 5 6	of the bolts, in terms of blast indication? DR. SAWYER: Well, you know, there were several roof bolt plates that had been bent also. As far as roof bolt	2 3 4 5 6	Well, it wasn't physically in there. But if you look on that flames and forces map, at the seals, you know, from the seal around five to ten, the plans and forces, you know, the team	Page 813
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Page 816         Page 816           2         that this is the first time for a lot of         and you just say?           4         this is the first time for a lot of         and you just say?           5         people. One thing with Sago, and we're         5           6         going to learn a lot from it, is that         4           7         we're able tog back in the gob for         7           8         the first correct. Oh,         9           9         might be wrong, and we can see that         9           10         physical evidence and, you know, -so o         11           11         yeah, that's the first time live been         13           12         in a gob after an explosion. But I'll         12         But again, consistent           13         bet there's been a lot of other people         13         with your prior testimony about?           14          14         DR, SAWYER:         18           15         So I, just wanted to         19         18         SENATOR CARUTH:           16         By gob, he means inby the         16         SENATOR Low, And this probably           10         clarify that. And I've been in a lot         20         to Mr. Novak. And this probably           20				
2       that this is the first time for a lot of       2       MR. S´kITTS: '         3       in a gob after an explosion. And I bet       4       the asked the question If         4       this is the first time for a lot of       5       beach       6         5       people. One thing with Sago, and we're       5       said, no, but there was damage to the roof bott plates.         7       we're able to go back in the gob for       8       Oh, that's correct. Oh,       9         8       the first time (ro been       10       physical evidence and, you know, so       10         10       physical evidence and, you know, so       10       still there.       11         11       agob after an explosion. But I'll       12       But again, consistent       10         11        14       DR. SAWYER:       15       Oh, sure. Sure Yeah.       16         12       MR. S. KITTS:       15       Oh, sure. Sure Yeah.       16       SENATOR CARUTH:       17       Thank you.         13       bet here's been a lot of other people       13       with your prior testimony about?       14       DR. SAWYER:       15       Oh, sure. Sure Yeah.       16       SENATOR CARUTH:       12       DR. SAWYER:       17       Thank you.       1		Page 814		
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23       Excuse me. Senator       23       years ago, lightning hit some power         24       Caruth,       24       lines down the way, about a mile or so         25       SENATOR CARUTH:       25       away, and all the way down the line         7       Yes.       1       folks that didn't have any surge         2       MR. S. KITTS:       2       protectors or lightning arresters, they         3       I'd like to clarify. You       3       either had their computers or their TVs         4       asked a question if any damage was done       5       to the roof bolts regarding the       5         6       explosion. I think Dr. Sawyer took       6       equipped with lightning arresters       7         7       your question to mean the actual bolt       7       similar to a surge protector. That's         8       itself.       9       electrician, he toid investigators in         10       No, actually I was       10       the sworn testimony. And inspectors,         11       talking about the head of the bolts and       11       after the January 2nd explosion, they         12       the area of the seal.       12       fount similar violations on three other         13       MR. S. KITTS:       13       electricial systems, according to	21	of coal mines.	21	couldn't happen to you, Mr. Novak. I
24       Caruth,       24       lines down the way, about a mile or so away, and all the way down the line         25       SENATOR CARUTH:       25       away, and all the way down the line         7       Yes.       1       folks that didn't have any surge       2         2       MR. S. KITTS:       1       folks that didn't have any surge       2         3       I'd like to clarify. You       3       either had their computers or their TVs         4       asked a question if any damage was done       5       two electrical systems at Sago were not         6       explosion. I think Dr. Sawyer took       6       equipped with lightning arresters         7       your question to mean the actual bolt       8       according to the mine's chief         9       SENATOR CARUTH:       9       electrician, he told investigators in         10       No, actually I was       10       the sworn testimony. And inspectors,         11       talking about the head of the bolts and       11       after the January 2nd explosion, they         12       the area of the seal.       12       found similar violations on three other         13       MR. S. KITTS:       13       electricial systems, according to         14       the area of the bolt?       14       records from	22	MR. S. KITTS:	22	live out in the country. But a few
25       SENATOR CARUTH:       25       away, and all the way down the line         Page 815       1       Yes.       1       folks that didn't have any surge         2       MR. S. KITTS:       2       protectors or lightning arresters, they         3       I'd like to clarify. You       3       either had their computers or their TVs         4       asked a question if any damage was done       5       two electrical systems at Sago were not         6       explosion. I think Dr. Sawyer took       7       similar to a surge protector. That's         8       itself.       8       according to the mine's chief         9       SENATOR CARUTH:       9       electrician, he told investigators in         10       No, actually I was       10       the sworn testimony. And inspectors,         11       talking about the head of the bolts and       11       after the January 2nd explosion, they         12       the area of the seal.       12       found similar violations on three other         13       MR. S. KITTS:       13       electrical systems, according to         14       The head of the bolt?       14       records from the United States Mine         15       SENATOR CARUTH:       15       Safety and Health Administration.         16	23	Excuse me. Senator	23	years ago, lightning hit some power
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23 Sawyer? 23 that typically is used to run power for				-
				5
124 UK. SAWYER: 124 Underground equipment. But at Sado I				
25What did he say? What25think it was being used as a phone	25	what did he say? What	25	mink it was being used as a phone

		Page 818			Page 820
1	line. Mr. Wilfong said that they	ruge oro	1		1 uge 020
2	should have in there, but it wasn't.		2	SENATOR LOVE:	
3	Now, my question to you, could it have		3	If there was no lightning	
4	been possible that electrical energy		4	arresters or surge arresters, this	
5	entered the mine, traveling perhaps		5	means that lightning could go down the	
6	along the conveyor belt structure from		6	line	
7	a power pole that supplied power to the		7	DR. NOVAK:	
8	mines and eventually igniting a buildup		8	But it would have damaged	
9	of methane in that sealed area? And if		9	it more than likely would have	
10	not possible, tell me how it would be		10	damaged the the surge arresters are	
11	impossible.		11	there to protect the equipment.	
12	DR. NOVAK:		12	SENATOR LOVE:	
13	I'm not sure I follow		13	Not necessarily. Not	
14	your question. Okay. I heard you say		14	necessarily. It only burned my TV out.	
15	that, okay, they didn't have surge		15	It didn't burn my refrigerator	
16	arresters on the telephone lines;		16	downstairs. Didn't burn anything else	
17	correct?		17		
18	SENATOR LOVE:		18	out. It just happened to go that way. Why couldn't it go in the mines from	
19			19	the same telephone pole is what I'm	
20	I think according to MSHA		20		
	and according to the sworn testimony.		20 21	saying? I just want to know if you	
21	Two other citations were listed by			think it's possible. DR. NOVAK:	
22	MSHA, incidentally. This was six weeks		22		
23 24	later. MSHA inspectors handed Mr.		23	From what I understand,	
24 25	Wilfong three citations that alleged		24 25	the location of those, one pump was	
25	violations of lightning arrester		25	coming in from the the 120-volt	
		Page 819			Page 821
1	requirement.		1	line was coming in from the fan house,	
2	DR. NOVAK:		2	if I'm not mistaken, and it didn't have	
3	Yeah, one was I think		3	surge arresters on. The telephone line	
4	one was for a pump.		4	didn't have surge arresters on.	
5	SENATOR LOVE:		5	Okay. The lightning	
6	And two other citations		6	strike, in the proximity of	
7	were listed by MSHA as significant and		7	SENATOR LOVE:	
8	substantial and reasonably likely to		8	I think you've already	
9	cause injuries, each concerning the		9	established that there was various	
10	lack of lightning arresters or power		10	lightning strikes, whether it was	
11	conductors conducted to that		11	tremendous or light. I mean, it could	
12	underground mine. Again, my question		12	have	
13	to you is, could it have been possible		13	DR. NOVAK:	
14	that electrical energy entered the		14	Right.	
15	mine, just like it did a lot of homes,		15	SENATOR LOVE:	
16	and I was talking about traveling		16	hit like this	
17	perhaps along the conveyor belt		17	building here. If we have a	
18	structure from a power line that		18	thunderstorm, it could be down the road	1
19	supplied power to the mines, eventually		19		
20	igniting a buildup of methane in the		20	DR. NOVAK:	
21	sealed area?		21	But the phone line	
22	DR. NOVAK:		22	SENATOR LOVE:	
23	I'm not sure what the		23	and knock a breaker	
24	connection is between the surge		24	off.	
25	arresters on the phone lines or the		25	DR. NOVAK:	

				Daga	004
1 1	But polither of these	Page 822	1		324
1 2	But neither of these lines went back into the sealed area.		1 2	DR. NOVAK: I would say it's	
3			2		
	I'm not sure I understand your			unlikely. Compared to the other	
4	question.		4	alternatives, I think it's unlikely.	
5	SENATOR LOVE:		5	SENATOR LOVE:	
6	Well, I can't explain it		6	Your theory is if it	
7	any better, I don't think. Again, Sago		7	comes from up above, why can't it	
8	was cited for various violations for		8	why couldn't it come through those	
9	not having		9	lines? You had a direct line with	
10	DR. NOVAK:		10	this. I mean,	
11	Yeah, I understand that.		11	DR. NOVAK:	
12	I understand that.		12	No. No, you don't. I'm	
13	SENATOR LOVE:		13	not sure how the phone gets its power	
14	Now, why do you put		14	source, okay. You go through	
15	lightning arresters on a line? To keep		15	okay. You have a 120-volt source.	
16	a surge of electricity coming in;		16	You have step-down transformers. Each	
17	right?		17	transformer has a surge arrester on it	
18	DR. NOVAK:		18	before you know, on the primary of	
19	Right. And they were on.		19	the surge on the primary of the	
20	They were on the power lines coming		20	transformer.	
21	into the line.		21	SENATOR LOVE:	
22	SENATOR LOVE:		22	Well, I'm not the expert,	
23	They didn't go out and		23	so I'll change my question. I thought	
24	take a pair of pliers and snap the		24	maybe you knew but that's okay.	
25	lines in two. That's what you have, I		25	DR. NOVAK:	
		Page 823		Page 8	825
1	presume, lightning arresters or surge	1 ugo 020	1	Well, to be honest with	520
2	protecters to keep that surge from		2	you, I just found out of those	
3	going in.		3	citations this week. And I don't know	
Ŭ	genig in				
4	DR NOVAK.				
4 5	DR. NOVAK: If the strike		4	the specifics of them, so I can't give	
5	If the strike		4 5	the specifics of them, so I can't give you an intelligent offer	
5 6	If the strike SENATOR LOVE:		4 5 6	the specifics of them, so I can't give you an intelligent offer answer. But my initial opinion is	
5 6 7	If the strike SENATOR LOVE: Why do they cite them?		4 5 6 7	the specifics of them, so I can't give you an intelligent offer answer. But my initial opinion is that it didn't have a bearing on the	
5 6 7 8	If the strike SENATOR LOVE: Why do they cite them? Let's put it this way. Why did MSHA or		4 5 6 7 8	the specifics of them, so I can't give you an intelligent offer answer. But my initial opinion is that it didn't have a bearing on the ignition source.	
5 6 7 8 9	If the strike SENATOR LOVE: Why do they cite them? Let's put it this way. Why did MSHA or why did they cite the mine for not		4 5 7 8 9	the specifics of them, so I can't give you an intelligent offer answer. But my initial opinion is that it didn't have a bearing on the ignition source. SENATOR LOVE:	
5 6 7 8 9 10	If the strike SENATOR LOVE: Why do they cite them? Let's put it this way. Why did MSHA or why did they cite the mine for not having them?		4 5 7 8 9 10	the specifics of them, so I can't give you an intelligent offer answer. But my initial opinion is that it didn't have a bearing on the ignition source. SENATOR LOVE: We'll go to I'll just	
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		Page 826		Pa	age 828
1	the explosion occurred and maybe how		1	John Collins, who spoke specifically to	
2	many citations has the mine been cited		2	the point about how well the mine had	
3	for this particular violation in the		3	been rock dusted in the time of recent	
4	past couple of years?		4	months, particularly prior to the	
5	MR. S. KITTS:		5	explosion.	
6	Since the explosion?		6	DELEGATE FREDERICK:	
7	SENATOR LOVE:		7	My first set of questions	
8	Well, in the last couple		8	is for Dr. Sawyer. In the Number Six	
9			0 9	5	
	years, what was how many citations			entry, in the sealed area, and that's	
10	for that particular?		10	the belt I want you talking about	
11	MR. S. KITTS:		11	the belt hangers now, that's my	
12	Well, speaking to the		12	question. You said they were bent, I	
13	rock dust question, the entire mine was		13	think I heard you say, maybe from 25 up	
14	sampled after the explosion. The		14	to 90 psi of static pressure. Now,	
15	results of those samples have not been		15	were all of the hangers here's my	
16	received. Or if they're out there, I'm		16	question. Were they all bent in one	
17	not aware of it. Maybe MSHA or the		17	direction or were they bent in	
18	state could speak to that. But we		18	different directions or could you speak	
19	haven't gotten the results of the rock		19	to that?	
20	dust sampling that was done.		20	DR. SAWYER:	
21	Prior to the explosion,		21	Within an area, if you	
22	there were some rock dust citations.		22	look at Monte Hieb's drawing is an	
23	That was one of the priorities when ICG		23	excellent drawing, but 60 feet inby and	
24	got involved in the management of the		24	60 feet outby, I would say the majority	
25	mine. Additional rock dusting		25	of the there might have been one to	
20			20	of the there might have been ene to	
		Page 827		Pa	age 829
1		Page 827	1		age 829
1	capability was added in the form of	Page 827	1	two that were like at 90 degrees.	age 829
2	capability was added in the form of equipment. And that was one of the	Page 827	2	two that were like at 90 degrees. There might have been one at 89	age 829
2 3	capability was added in the form of equipment. And that was one of the issues that we were working with the	Page 827	2 3	two that were like at 90 degrees. There might have been one at 89 degrees. But by and far, all those	age 829
2 3 4	capability was added in the form of equipment. And that was one of the issues that we were working with the regulatory agencies to address to	Page 827	2 3 4	two that were like at 90 degrees. There might have been one at 89 degrees. But by and far, all those belt hangers were bent in the outby	age 829
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	Dogo 020		Decc 022
1	Page 830	1	Page 832
1	square roof pan that because of the irregularity of the roof, that dipped	2	thing. I haven't determined
3		2	
	down, and when the pressure wave came it took the top of the roof pan, bent	3 4	where I see the primary pressure always went to the seals, that's where it came
4	• • •		
5	it down. And in some cases, it also	5	from first, haven't decided why you saw
6	bent the roof bolt plate. But the belt	6	a reflected wave, okay. One of two
7	hangers, they're horizontal. There's	7	things could have happened. It could
8	no doubt they get hit with the pressure	8	have been a rebound of the compression
9	from an explosion.	9	wave off the seal that came back, which
10	DELEGATE FREDERICK:	10	would have meant the seal had helped.
11	You've come partly to my	11	Or it could have been the expansion
12	third question. The roof bolt pan,	12	wave that follows the compression wave,
13	what direction were they going, all in	13	and the compression wave took the seal
14	the same direction or different	14	out of there, then there is the
15	directions?	15	expansion wave or a negative pressure
16	DR. SAWYER:	16	which bends the other side of the
17	The roof bolt pans were -	17	plate. I mean, that's a possibility.
18	many of them were bent in both	18	DELEGATE FREDERICK:
19	directions. Now, from looking at the	19	Thank you. Moving on to
20	roof bolt pans, you know, you can tell	20	Dr. Novak. Earlier conversation was
21	from the overlapping pattern where the	21	about the shallow depths of your
22	explosion first came from. And we see	22	some of what you were talking about in
23	this on several occasions. Let's say	23	three different areas, and I heard you
24	the explosion is coming from the	24	say that possibly by the end of the
25	audience's left to right and here is a	25	summer you will do an analysis to
	Page 831		Page 833
1	roof bolt pan. What then happens is	1	better determine maybe what happened.
2	the portion on the left bends and in	2	How deep would it have to be where none
3	some cases will bend all around. And	3	of these three theories that you talk
4	then if there is a returning way, the	4	about would probably not occur with
5	other side will bend over and overlap	5	reference to an ignition?
6	the first side. Now, from that evidence	6	DR. NOVAK:
7	I could tell where the first wave came	7	I don't think with
8	from and where the second wave came	8	the first case, the depth really has
9	from.	9	nothing to do with it. You know, if
10	Now, when you have a mine	10	there's a conductive path into the
11	explosion, you'll feel initially a	11	mine, you know,
12	pressure. Let's say you were standing	12	DELEGATE FREDERICK:
13	out in the entry. You will feel a	13	Let me qualify. I should
14	pressure. That's called a compression	14	have put that into the question. No
15	wave in front of the flames. So you'll	15	conductive path coming into the mine,
16	feel a push that will let's say if	16	same question.
17	it's coming from the seal, you'll feel	17	DR. NOVAK:
18	a push that will push you outby.	18	Okay. That one depends -
19	That's called a compression wave. That	19	there's other factors involved.
20	is followed by what is known as an	20	Soil resistivity plays a role in it. So
21	expansion wave, like a negative	21	I don't think you can give a definitive
22	pressure. So if you're standing out	22	answer. You could come up with a
23	there, you get pushed one way and you	23	sort of a series of curves or whatever,
24	get pushed back and then you get	24	in which case you could say anything
25	it's like an inside the soil type	25	above this is safe, anything below this

	Page 834		Page 836
1	is safe, but I don't think there's a	1	DELEGATE CAPUTO:
2	<ul> <li>you know, I couldn't say like, well,</li> </ul>	2	I guess my first question
3	anything at 500 feet, below 500 feet,	3	is to you, Mr. Novak. You was very
4	would be safe. And again, it depends	4	specific when you ruled out some
5	if you have wire mesh on the roof. You	5	things, such as spontaneous combustion.
6	know, if you don't have wire mesh, then	6	And you said there is no history of
7	it may be safe at a relatively shallow	7	spontaneous combustion at the Sago
	5	8	Mine. Is there a history of
8	area.		5
9	DELEGATE FREDERICK:	9	spontaneous combustion at other mines?
10	Could you say that, more	10	I mean, why was you so specific?
11	than likely, the deeper, the less	11	DR. NOVAK:
12	likelihood of this?	12	Absolutely. I mean,
13	DR. NOVAK:	13	there are mines out west, and I think
14	Oh, yes. Yes. It's a,	14	Mr. Hatfield alluded to it, that must -
15	you know, inverse square relationship.	15	that they have large nitrogen
16	As you get deeper, you know, the	16	generation plants that they have to
17	influence is going to keep decreasing	17	pump into their gob areas in order to
18	the deeper you get away from it.	18	keep spontaneous combustion from
19	DELEGATE FREDERICK:	19	occurring. So yeah, with western
20	Thank you. My last set	20	mines, it's not an uncommon occurrence.
21	of questions is for you, Mr. Chairman.	21	DELEGATE CAPUTO:
22	ICG has kind of given us an update of	22	What about eastern mines?
23	where they are. And I think talking	23	DR. NOVAK:
24	about completing, my question would be,	24	Eastern mines I've
25	and I hope we hear it, whether it's	25	seen problems in Alabama with in
	Page 835		Page 837
1	today or tomorrow, when will the state	1	gob areas where when it wasn't so
2	and MSHA give us their conclusions on	2	much spontaneous combustion with coal,
	the initial findings, and when will	L _	
3			
		3	but where the floor would heave and
4	they complete their studies and let ICG	3 4	but where the floor would heave and expose pyrite to oxygen, which would
5	they complete their studies and let ICG speak for it also. I'm very interested	3 4 5	but where the floor would heave and expose pyrite to oxygen, which would cause oxidation and generate heat that
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	Page 838		Page 840
1	That's correct.	1	Mr. Novak, could that be
2	DELEGATE CAPUTO:	2	totally ruled out?
3	And Mr. Sawyer, you	3	DR. NOVAK:
4	stated that the explosion took place	4	Methane will not ignite
5	behind the seals; correct?	5	at that you're talking about .2
6	DR. SAWYER:	6	percent?
7	Yes, sir.	7	DELEGATE CAPUTO:
8	DELEGATE CAPUTO:	8	No. I said that it was
9	There was a lot of	9	determined that there was some methane,
10	testimony about methane coming from the	10	two-tenths at times, in front of the
11	seals. And I'm not sure if anything is	11	seals.
12	on the record to say the seals were	12	DR. NOVAK:
13	leaking. But there is testimony that	13	Okay.
14	there was two-tenths methane on the	14	DELEGATE CAPUTO:
15	fresh air side of the seals, so I guess	15	Could there have been an
16	the new side of the seals. Could that	16	ignition source in front of the seals
17	have acted as a	17	if there was a leak, carried behind the
18	I guess for lack of a better term,	18	seals to what we're referring to as the
19	a wick kind of if the ignition took	19	gob area, the sealed portion of the
20	place out there, carried the source	20	mine, which created the explosion? I
21	behind the seals and then exploded? Is	21	mean, it makes as much sense as
22	that a possibility?	22	lightning coming through the ground to
23	DR. SAWYER:	23	me. I mean, I don't know.
24	Well, you're asking the	24	DR. NOVAK:
25	wrong person.	25	Well, you're wrong.
	Page 839		Page 841
1	DELEGATE CAPUTO:	1	DELEGATE CAPUTO:
2	Well, you're the one that	2	Well, I'm just telling
3	stated that it exploded behind the	3	you, that's my opinion. I just share
4	seals. That's why I'm asking you.	4	it
5	DR. SAWYER:	5	DR. NOVAK:
6	Yes. From the direction	6	Lightning flows through
7	the seals were blown and from the	7	the ground very easily. I mean, I
8	direction that those metal items that	8	you're you know, it
9	I'm missing, showed it was going. I	9	DELEGATE CAPUTO:
10	mean, it happened behind the seals,	10	Well, could it happen?
11	from a structural point of view.	11	DR. NOVAK:
12	DELEGATE CAPUTO:	12	If you had a layer
13	Can you rule out that it	13	you're saying if you had a layer of
14	started the source initially began	14	methane along the roof, okay, which
15	in front of the seals? Can that be	15	would have been pure methane, let's
16	totally ruled out, in your opinion?	16	say, in which case and there was
17	DR. SAWYER:	17	some form of
18	Well, that's for an	18	DELEGATE CAPUTO:
19	expert on methane and, you know,	19	If there was a leak and
20	migration into behind the seals. You	20	the methane was coming from behind the
21	know, I can't answer that. But I can	21	seals.
20		22	
22	tell you, when the pressures reached	22	DR. NOVAK:
23	tell you, when the pressures reached the seals, they were coming from in the	23	And it layered in
	tell you, when the pressures reached		

	Page 842		Page 844
1	the seals. And there's a significant	1	the record endorsing stronger
2	amount of air that is moving by those	2	regulations that would allow these
3	seals that are going to dilute that	3	problems to be fixed with the use of
4	methane. So I mean, you're bound	4	safety chambers, more oxygen, mine
5	it's not uncommon to get leakage,	5	rescue teams employed at the mine and
6	whether it's methane or whatever.	6	tracking devices on miners underground?
7	Changes in atmospheric pressure will	7	MR. HATFIELD:
8	cause air to move through the seals in	8	I'll be glad to respond
9	either direction, okay. And that's the	9	to that. It's certainly a reasonable
10	reason why you don't run intake air	10	question. With respect to the response
11	along the sealed area, is you know,	11	time of the rescue teams, I believe
12	it gets diluted by the return air and	12	regulatory requirement is two-hour
13	then is transported out of the mine.	13	driving distance. And certainly the
14	In answer to your	14	contract service that we were using at
15	question, I would say no, because it's	15	Sago was within that time frame.
16	a you know, in the active area, you	16	Having said that, no, I'm not satisfied
17	have that is well ventilated,	17	as CEO of this company with the
18	you're going to have a significant	18	response time. So it's our
19	amount of air moving through that entry	19	determination at our company we are
20	that's going to keep it below it's	20	going to have at larger mines a rescue
21	going to keep it from layering, for one	20	team at each location and cease relying
22	thing. You have to have like a laminar	22	on contract services. I can only speak
22	flow, which is very, very very,	22	for what our company's commitment is.
23 24	5 5 5	23 24	I believe that's an area that we can
24 25	very low-velocity air before you can	24 25	
20	get a layering of methane near the	20	improve in.
	Page 843		Page 845
1	ceiling. Now, any just a small	1	With respect to oxygen
2	amount of air movement will cause it to	2	storage in rescue chambers, I think we
3	dilute. And the amount of air that	3	can do better than what's in place now.
4	would be coming through that return I'm	4	I'm really not smart enough to tell
5	sure would have diluted that air.	5	you exactly what the right answer is.
6	DELEGATE CAPUTO:	6	I don't think the answer is to put 15
7	Thank you. Mr. Hatfield,	7	or 16 more of these
8	I just have one more question. And I	8	CSC-100s per man in the mine. I don't
9	wanted to ask you this yesterday, but	9	think that gets us where we need to be.
10	we kind of wrapped up a little early.	10	I think there's a better answer.
11	I think it's clear that we had huge	11	First and foremost, as
12	communication problems. And I think	12	we've talked about multiple times,
13	it's clear that the mine rescue	13	we've got to make sure that any time
14	response time maybe wasn't what it	14	there's an opportunity, the miners are
15	should have been, not taking away	15	heading to the outside because that's
16	anything from mine rescue efforts. I	16	where they're safe. They don't get
17	think they were tremendous. I'm	17	safe by staying in the coal mine. And
18	talking about response time. And I	18	the barricading and just like the
19	think the amount of oxygen, everybody	19	rescue chambers is always the
20	agrees, was probably not adequate. And	20	alternative of last resort. So we
21	according to Mr. McCloy, there were	21	don't want to change the methodology of
22	units that failed. There is a large	22	the training to encourage people to
23	question about the Omega-type blocks.	23	stay in an environment where they're
24	Leave and the set 19 set 1 and	$\sim$	
25	I would just like to ask you, on behalf of ICG, would you be willing to go on	24 25	surrounded by fuel and could be killed in a second explosion. So I think that

	Page 846		Page 848
1	area needs more study by people that	1	tracking devices.
2	understand the issues more, but we	2	DELEGATE CAPUTO:
3	certainly will want to participate in	3	So you do support efforts
4	that and encourage further discussion	4	in stepping up in all of these areas
5	on it.	5	that we've talked about?
6	With respect to the units	6	MR. HATFIELD:
7	that failed, as I shared with the	7	Yes, I do.
8	families earlier, I believe the	8	DELEGATE CAPUTO:
9	technology is outdated on the	9	Mr. McAteer, Mr.
10	CSC-100s. I believe we can do better	10	Chairman, one thing. I know that maybe
11	than that. We, as an industry, haven't	11	some of my colleagues here, and I don't
12	really stepped up there in more than	12	know how many folks out there have ever
13	ten years, so I think there's probably	13	even seen an Omega block. You know,
14	a better animal out there that will	14	coming from the industry, I certainly
15	give us more air for longer. And I	15	have. And I know Mr. Frederick has.
16	think that's a big piece of the	16	But maybe, if it could be possible, if
17	solution here. We have already	17	we're here tomorrow, if we don't wrap
18	since Sago, just our own company team	18	up, if one could be brought to the hall
19	has met with people who are talking	19	for those who want to view it and pick
20	about readily available supplies that	20	it up and just kind of see what it
20		20	looks like and feels like, I would
21	may last three, four or six hours and		
	even longer. So I believe the	22	certainly appreciate that.
23	technology is out there to make a big	23	CHAIR:
24	step-up there, and I think that's	24	Mr. Hatfield, the mine
25	something that should be pursued.	25	being located nearby, if you could
	Page 847		Page 849
1	Page 847 With respect to Omega	1	Page 849
1	With respect to Omega	1	
2	With respect to Omega blocks, I think what the testing that	2	MR. HATFIELD:
2 3	With respect to Omega blocks, I think what the testing that NIOSH conducted shows is they meet the	2 3	 MR. HATFIELD: Mr. Chairman, we'd be
2 3 4	With respect to Omega blocks, I think what the testing that NIOSH conducted shows is they meet the standard. They seem to meet the 20 psi	2 3 4	MR. HATFIELD: Mr. Chairman, we'd be glad to bring in Omega blocks, too, for
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	Page 850		Page 852
1	boards, probably ending up more state	1	environment for them to enter the mine.
2	inspectors, which I think would be a	2	The command center, working with MSHA
3	good thing. Do you have any objection	3	and the state and the company, the
4	to that type of legislative change?	4	decision was made that we should not
5	MR. HATFIELD:	5	enter the mine until the trend
6	Your question is aimed at	6	analysis, confirming that there's no
7	whether Kentucky should have more	7	mine fire, had been completed. So the
8	inspections?	8	hold-up was not the availability of
9	SENATOR LOVE:	9	rescue teams, it was confirmation that
10	No, Kentucky has it. The	10	the mine environment was safe.
11	Commonwealth of Kentucky, they have the	11	SENATOR LOVE:
12	state broken into divisions, with a	12	Maybe I was looking at it
13	state-maintained rescue station in each	13	in a different respect. So many of
14		14	those miners walked out. I thought if
	of those divisions, which gives quicker		•
15	response, that you didn't have at Sago.	15	you walked out, somebody else could
16	Now, like I say, this would be	16	have walked in very quickly.
17	it's like having a paid medical	17	MR. HATFIELD:
18	technician available, the same sense.	18	There's a larger issue,
19	I mean, you pay him. You have to pay	19	though. And your question is fair.
20	him. You probably have to go with more	20	There's a larger issue as to whether
21	mine inspectors, which would be a good	21	the rescue should have started at 57
22	thing, but how many lives would you	22	block or should have gone straight in
	5		а а
23	save in a let's say you had this in	23	as opposed to starting from the
24	force when this explosion happened at	24	outside. And I'm sure that's going to
25	Sago. You wouldn't have had to have	25	be talked about in one of these panels.
	Page 851		Page 853
1	been looking for a second or a third	1	But I don't think the issue was
2	been looking for a second or a third backup team to go under. They would	2	But I don't think the issue was availability of rescue teams.
	been looking for a second or a third		But I don't think the issue was
2	been looking for a second or a third backup team to go under. They would	2	But I don't think the issue was availability of rescue teams.
2 3 4	been looking for a second or a third backup team to go under. They would have been here. They could have gone in. They would have backed any team	2 3	But I don't think the issue was availability of rescue teams. SENATOR LOVE: With no disrespect, since
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	Page 854		Page 856
1	a mine rescue team and saving the lives	1	fast or slow? I guess did it actually
2	of its employees, friends and family	2	read 6:21 or did it read 6:31?
3	will have better data available to them	3	MR. HATFIELD:
4	to make that decision.	4	It read 6:31 when it
5	DELEGATE HAMILTON:	5	should have been reading 6:26.
		6	DELEGATE HAMILTON:
6	I just have a follow-up		
7	in examining the report of Dr. Novak. I	7	Mr. Novak, you indicated
8	know that he indicated, and I think	8	that the ignition was lightning and the
9	it's been documented and mentioned	9	fuel was methane. Did I understand you
10	throughout, that the lightning strikes	10	correct?
11	apparently were at 6:26 a.m. that	11	DR. NOVAK:
12	morning. Two lightning strikes hit in	12	Correct.
13	that area and that the CO monitors went	13	DELEGATE HAMILTON:
14	off apparently, which you're relying on	14	If we removed lightning,
15	to help confirm the existence of smoke	15	what other sources could have ignited
16	or fire in the mine at that point; is	16	that methane? What's the other
17	that correct?	17	possibilities?
18	DR. NOVAK:	18	DR. NOVAK:
19		19	Well, I think I mentioned
20	SENATOR KESSLER:	20	them in there, the three possibilities
21	And I do know, is that	21	of spontaneous combustion and the roof
22	the same CO monitor whose time, I	22	fall. And from what I understand
23	believe, was adjusted, if I'm not	23	well, you know, from being post-
24	mistaken? That probably goes to the	24	explosion investigation, those have
25	company official.	25	pretty much been eliminated.
	Page 855		Page 857
1	Page 855 MR. HATFIELD:	1	Page 857 DELEGATE HAMILTON:
1		1 2	DELEGATE HAMILTON:
2	MR. HATFIELD: That's correct.	2	DELEGATE HAMILTON: Okay. It's been I
2 3	MR. HATFIELD: That's correct. SENATOR KESSLER:	2 3	DELEGATE HAMILTON: Okay. It's been I believe yesterday we asked how many
2 3 4	MR. HATFIELD: That's correct. SENATOR KESSLER: Do you know what was	2 3 4	DELEGATE HAMILTON: Okay. It's been I believe yesterday we asked how many battery-charging stations there were
2 3 4 5	MR. HATFIELD: That's correct. SENATOR KESSLER: Do you know what was the actual reading on the clock before	2 3 4 5	DELEGATE HAMILTON: Okay. It's been I believe yesterday we asked how many battery-charging stations there were and where they were located. Is it a
2 3 4 5 6	<ul><li>MR. HATFIELD:</li><li>That's correct.</li><li>SENATOR KESSLER:</li><li>Do you know what was the actual reading on the clock before it was adjusted?</li></ul>	2 3 4 5 6	DELEGATE HAMILTON: Okay. It's been I believe yesterday we asked how many battery-charging stations there were and where they were located. Is it a possibility that a battery-charging
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	F	Page 858			Page 860
1	batteries, generally they vent it	ugo ooo	1	Okay. Where was that?	. ugo oco
2	directly to the return. But it doesn't		2	DR. NOVAK:	
3	take much air to dilute hydrogen. And		3	The two that I mentioned,	
4	you're certainly not going to produce		4	one was north the one that we were	
5	the amount of hydrogen that's going to		5	talking about, the hundred I can	
6	cause an explosion anywhere near what		6	pull up the let me see. If you	
7	occurred at the Sago Mine.		7	look at the Vaisala map, okay, these	
8	DELEGATE HAMILTON:		8	were the two these two right here,	
9	A spark with two pieces		9	because of their proximity to the mine,	
10	of metal hitting together couldn't have		10	okay.	
11	ignited methane?		11	DELEGATE HAMILTON:	
12	DR. NOVAK:		12	Which of those two was	
13	Sure.		13	closest to the portal?	
14	DELEGATE HAMILTON:		14	DR. NOVAK:	
15	You mentioned that the		15	Closest to the portal?	
16	lightning, there was you can't find		16	DELEGATE HAMILTON:	
17	a conduit from the surface to the		17	Yes, sir.	
18	sealed area; is that?		18	DR. NOVAK:	
19	DR. NOVAK:		19	This one here, which was	
20	Correct. Directly from		20	the larger one.	
21	the surface above the sealed area down		21	DELEGATE HAMILTON:	
22	to the sealed area, that's correct.		22	And which of those three	
23	DELEGATE HAMILTON:		23	was closest to the sealed area?	
24	Is there a possibility		24	DR. NOVAK:	
25	there could be a metal substance in the		25	The same one.	
	F	Page 859			Page 861
1		Page 859	1	DELEGATE HAMILTON:	Page 861
1 2	F overlying strata above the sealed area? DR. NOVAK:	Page 859	1 2	DELEGATE HAMILTON: The same one. Okay.	Page 861
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2	overlying strata above the sealed area? DR. NOVAK:	Page 859	2 3 4	The same one. Okay. Thank you. Now, you mentioned in you theory that the lightning had occurred	
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	Page 862		Page 864
1	No, not really because	1	Thank you.
2	it's in contact with the earth. I	2	MR. ROBERTS:
3	mean, you can think of possibly putting	3	Mr. Chairman, is it my
4	a piece of insulation between the two -	4	imagination or is this mic not as clear
5	you know, one side and the other	5	as those over there? If I'm wrong
6	side. But more than likely, it would	6	about that, that's Can I borrow
7	go around it the same way, up through	7	the base for this because I'm going to
8	the roof bolts, into the roof, in the	8	be a few minutes?
9	same fashion that it did that it	9	First of all, let me, as
10	would have around the sealed area where	10	humbly as I can, express my
11	the mesh was removed.	11	appreciation to the families that have
12	DELEGATE HAMILTON:	12	asked me to speak for them today. I
13	There was no lightning	13	must say, though, after listening to
14	strikes near the sealed area?	14	the questions posed by the families
15	DR. NOVAK:	15	yesterday and today, I'm not sure you
16	Not that were reported.	16	need anyone to help you. You've done a
17	Not that were reported by the	17	marvelous job. And I just want to also
18	Vaisala, the lightning detection	18	say that I've watched these families,
19	company.	19	first of all, on television. I didn't
20	DELEGATE HAMILTON:	20	know them at the time. And then I've
21	It would have been east	21	come to know many of them personally.
22	or maybe northeast of the sealed area?	22	And I am totally convinced that they
23	DR. NOVAK:	23	want two things. And I hope that
24	Yeah. Here's okay.	24	everyone in this room wants the same
25	MR. HATFIELD:	25	thing, regardless of which side people
20		20	aning, regaraless of which side people
	Page 863		Page 865
1	It may be helpful to	1	perceive us to be on here. They want
2	explain what magnitude the weather	2	answers to what happened here. And I
3	service can track and what magnitude	3	think momentarily here I'm going to try
4	they can't.	4	to help with that. And I think even
5	DR. NOVAK:	5	more than that, they don't want any
6	Vaisala, anything below	6	other family to have this happen to
7	five kiloamperes they don't record,	7	them. And I think we should unite
8	okay. So generally if there is a	8	together to see that that objective is
9	strike that occurs and they miss it,	9	met. I've listened to these families
10	it's generally because it's a	10	on Capitol Hill. I've watched them in
11	low-level strike.	11	both the United States House of
12	SENATOR KESSLER:	12	Representatives, United States Senate,
13	For your report, the	13	give testimony. They're appealing to
14	preliminary report on the ignition	14 15	their elected leaders to make things
15	source, are you or your educational	15	better. And you're to be commended for
16	institution being compensated by	16	that.
17	anybody for this report?	17 10	I want to thank Davitt
18	DR. NOVAK:	18 10	McAteer. I jokingly told him earlier
19	Am I being compensated?	19 20	that no matter what happens here, he
20 21	SENATOR KESSLER:	20 21	and I are still going to be friends, and I realize how difficult and how
21	Yes, sir. DR. NOVAK:	21 22	
22	Yes. I'm a hired	22	hard this is to try to bring all the parties together collectively to speak
23 24	consultant. Yes.	23 24	to this difficult, hard reality. But I
24	SENATOR KESSLER:	24 25	also think the Governor should be
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	Page 86	6	Page 868
1	commended for seeing that this	1	world?
2	happened. And I also want to say to	2	
3	our legislators who are with us and	3	We did a press release,
4	those who are not with us that they did	4	as you do with most messages that you
5	respond, and they did it in a 24-hour	5	want to communicate, yes.
6	period, in order to try to make things	6	MR. ROBERTS:
7	better for the coal miners in West	7	That's true. When I'm
8	Virginia. And I think sometimes we lose	8	trying to achieve a goal, I do that.
9	sight of that.	9	This press release, I believe, was
10	Twenty-six (26) coal	10	
11	miners have lost their jobs not	11	
12	their jobs, but their lives this year,	12	
13	and this is the first of May. This	13	
14	should give all of us pause and all of	14	
15	us alarm, I would hope. At 11:15 today	15	5
16	two miners were trapped in Tennessee,	16	
17	but the end result of that was much	17	55 5
18	better. I've gotten word that both of	18	5
19	these miners are now safe and with	19	
20	their loved ones. But we came very	20	5
21	near of having two more miners lost.	21	
22	I want to just begin, if	22	
23	I might and this is only in	23	J J J
24	response, Mr. Hatfield, to the comment	24	5 5 1 5
25	that you made to Mrs. Bailey when she	25	
20	that you made to wis. Duriey when she	20	
	Page 86	7	Page 869
1	spoke. Did I understand you correctly	1	state agencies?
2	that the only reason that ICG released	2	
3	this report when you did is to inform	3	
4	the miners that worked for you what you	4	also can't cite any prohibition on
5	had found and that the mine was safe	5	doing so. As you well know, there are
6	and they could feel comfortable coming	6	three organizations that are required
7	back? Is that what you said?	7	by statute to do an investigation, that
8	MR. HATFIELD:	8	being the federal mine regulators, the
9	We made a commitment, as	9	5
10	you'll recall, to the press in front of	10	5
11	the whole world on January 4th or 5th	11	ů l
12	that the mine would not be restarted	12	, , , , , , , , , , , , , , , , , , ,
13	before we had answers and we would not	13	
14	send our people back into Sago until we	14	
15	knew, to the extent we'll ever know,	15	
16	what created this terrible tragedy.	16	
17	And in keeping with that commitment, we	17	<b>j</b>
18	determined we had enough information	18	5
19	and we could share it and should share	19	5 1 5
20 21	it with the families and our employees in mid-March.	20 21	
21	MR. ROBERTS:	21	5
22	You did share it with the	22	5
23 24	families and the employees. But isn't	23	
24	it true you also shared it with the	24	5 5
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	2		
1	Page 870 of any time that this has happened?	1	Page 872 follow you now.
2	MR. HATFIELD:	2	MR. ROBERTS:
3	I can't speak with	3	And since we spent so
4	certainty, but I don't recall any, as	4	long talking about the explosion, I
5	l've said.	5	think there is a distinction between
6	MR. ROBERTS:	6	the cause of the explosion and the
7	Okay. This panel is	7	cause of death here. And I assume,
8	informing the families and the public	8	with all the experts that you've used
9	about the findings of your	9	and the expertise that you have and
10	investigation, which up to this	10	others, that you've come to some
11	point. And I assume that would include	11	conclusions with respect to that, that
12	what you determined as far as what led	12	I would guess is very similar to what
13	to the January 2nd problem, what	13	we have concluded and the state and
14	occurred around and on January 2nd in	14	federal agencies have concluded. We had
15	the course of those difficult couple	15	survivors here for a period of time.
16	days when the recovery and the attempts	16	When I say survivors, I mean people who
17	to save these miners was ongoing. And	17	did not die as a result of the initial
18	I just want to see if your your,	18	explosion. Do you agree with that?
19	being ICG, information would be what	19	MR. HATFIELD:
20	our perspective is on this.	20	I believe we would agree
21	We've done a lot of	21	that one person probably died at the
22	talking here on this panel in the last	22	point of the explosion and the other 11
23	couple of hours and a lot of questions	23	died after that.
24	about the cause of the ignition. Can	24	MR. ROBERTS:
25	you tell me, in your opinion, how many	25	And would the evidence,
	Page 871		Page 873
1	Page 871 miners were killed as a result of	1	Page 873 Mr. Hatfield, indicate that these
1 2		1 2	Mr. Hatfield, indicate that these
	miners were killed as a result of		_
2	miners were killed as a result of explosion?	2	Mr. Hatfield, indicate that these miners were alive, I would say well,
2 3	miners were killed as a result of explosion? MR. HATFIELD:	2 3	Mr. Hatfield, indicate that these miners were alive, I would say well, but any time you're underground in a
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	Dego 074			
1	Page 874 41 hours underground. We know that by	1	I seen the pounding, yes.	Page 876
2	virtue of the notes, that miners were	2	MR. ROBERTS:	
2	alive probably ten hours and, more than	2	These miners did not have	
	likely, longer. Do you disagree with		access to additional supplies of oxygen	
4 5	that?	4 5	on the section; is that correct?	
6	MR. HATFIELD:	6	MR. HATFIELD:	
7		7		
	I think I agree with what		That is generally	
8 9	you've described thus far. MR. ROBERTS:	8 9	correct. They were relying on their individual self-rescuers.	
10		9 10	MR. ROBERTS:	
	Do you disagree that,			
11	based on everything we know, that these	11 12	When you say generally	
12 13	miners who survived perished because of	12	correct, is there something we need to know?	
	lack of oxygen and breathing	13 14	MR. HATFIELD:	
14	contaminated air, carbon monoxide? MR. HATFIELD:			
15		15 14	No. I would only speak	
16	I believe it's common	16 17	to what's apparent in the mapping and	
17 18	knowledge that carbon monoxide	17 10	has been talked about in different	
	poisoning was the cause of death for	18	forums. There was an oxygen tank on	
19	the people in the barricade.	19 20	the section, for instance, that wasn't	
20	MR. ROBERTS:	20	utilized. We don't know why. I'm just	
21	And only Randal McCloy	21	trying to be accurate in my response.	
22	survived this?	22	But they were primarily relying on	
23	MR. HATFIELD:	23	their self-rescuer.	
24	Yes.	24 25	MR. ROBERTS:	
25	MR. ROBERTS:	25	Sago did not have oxygen	
	Page 875			Page 877
1	Page 875 Based on Mr. McCloy's	1	stored on the section?	Page 877
1 2		1 2	stored on the section? MR. HATFIELD:	Page 877
	Based on Mr. McCloy's			Page 877
2	Based on Mr. McCloy's statement and I believe the evidence	2	MR. HATFIELD:	Page 877
2 3	Based on Mr. McCloy's statement and I believe the evidence that the mine rescue teams' members	2 3	MR. HATFIELD: No. I'm talking about	Page 877
2 3 4	Based on Mr. McCloy's statement and I believe the evidence that the mine rescue teams' members came across, these miners did what they were taught to do, and that's pound on	2 3 4	MR. HATFIELD: No. I'm talking about oxygen for use in the acetylene torch	Page 877
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3       arrived around 10:30 on site.       3       We sent a letter directly         4       MR. ROBERTS:       4       to Consol's CEO the day after the         5       Which team went       5       rescue ended and asked him to share         6       underground first?       6       that correspondence with all the Consol         7       MR. HATFIELD:       7       teams. We then sent letters to all the         8       I believe it was the       8       rescue teams, under my signature, and         9       disto the other various emergency       10       services that provided help throughout         11       MR. ROBERTS:       11       that period.       2         12       Why is it that the team       13       The miners found         13       that you contracted       15       this mine, and evidence would indicate         16       The team we contracted       16       they attempted to leave but couldn't.         17       with was ready and available to go       13       The enimers found         18       underground. At that point, when we       18       I say we, the industry, the agencies.         20       multiple number of teams to choose       20       that correct?       17         21       from. And I believe the	1	I believe the call to	1	chance, done that?
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19       actually went underground, we had a multiple number of teams to choose       19       We were unable to speak with them; is         20       multiple number of teams to choose       20       that correct?         21       from. And I believe the consensus in       21       MR. HATFIELD:         22       the command center was to put the most experienced team underground first.       23       MR. ROBERTS:         24       MR. ROBERTS:       24       The failure of the         25       And that most experienced       25       ability to communicate with them, would         Page 879         7       team was one of the Consol teams?       1       you say that that played some role or a         3       I believe that's correct.       3       MR. HATFIELD:       3         3       I believe that's correct.       4       1 think we've         5       Do you know where they       5       acknowledged many times that if not for         6       were from?       7       the only line of communication between         8       Not specifically.       8       us and the trapped miners, we could         9       MR. ROBERTS:       9       have steered them, by communication, to         10       a safe route of exit. That is       11       ce				
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21       from. And I believe the consensus in       21       MR. HATFIELD:         22       the command center was to put the most       22       That's correct.         23       experienced team underground first.       23       MR. ROBERTS:         24       MR. ROBERTS:       24       The failure of the         25       And that most experienced       25       ability to communicate with them, would         Page 879         2       MR. HATFIELD:       2       significant role in this?         3       I believe that's correct.       3       MR. HATFIELD:         4       MR. ROBERTS:       3       MR. HATFIELD:         5       Do you know where they       5       acknowledged many times that if not for         6       were from?       4       I think we've       5         5       Do you know where they       6       acknowledged many times that if not for         6       were from?       7       the only line of communication between         8       Not specifically.       8       us and the trapped miners, we could         9       Max experience and       1       certainly the most tragic aspect of         12       MR. HATFIELD:       13       MR ROBERTS:       14				
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22 whether they were union or non-union, 22 MR. ROBERTS:				
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TARE AND A DESCRIPTION AND A D	23	whether they were company or some other	23	Have you started that
24 position, and thanking them for their 24 yet?		5 1 5		-
25 courageous efforts. Has Sago, by 25 MR. HATFIELD:				5
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1	Page 882	1	Page 8	384
1	Yeah. We've actually	1 2	perhaps I'll make an announcement with	
3	ordered all the equipment for four new	2	regard to the rest of the hearing.	
	mine rescue teams and have been coming		What I would propose is that we	
4	up for volunteers, Sago miners,	4 5	complete the questioning today of this	
5	Sentinel miners. We have a wide number	5	panel and open with panel six tomorrow	
6	of volunteers anxious to serve on the	6	morning at nine o'clock to complete our	
7	team, and that training effort is	7	efforts here. But if we could go	
8	underway now.	8	through the questions, since we're	
9	MR. ROBERTS:	9	pretty close. And I would ask that we	
10	I'm glad to hear that. So	10	follow a rule of germaneness as to the	
11	we I think you and I are in	11	questions and follow a rule and try not	
12	agreement that a lack of oxygen	12	to repeat questions. I know people are	
13	contributed to this terrible event.	13	tired. These chairs are lovely and	
14	Communications was a contributing	14	it's good to sit in them long periods	
15	factor, or lack thereof. And your	15	of time. It builds character. So if	
16	actions of getting your own mine rescue	16	we could try to get to the points that	
17	team would lead us to believe that you	17	we need to make and get to those	
18	feel that that would be helpful in the	18	questions so we don't repeat questions,	
19	future and you need your own team?	19	that would be helpful. And then we	
20	MR. HATFIELD:	20	could close this part of it up and then	
21	Yes. That's a decision	21	go to tomorrow. Mr. Roberts?	
22	we made as a company, that we want to	22	MR. ROBERTS:	
23	be able to contribute in the future and	23	Thank you. In the	
24	not be relying on others, although we	24	interest of time, I'll try to wrap up	
25	did have a tremendous amount of help	25	with Mr. Hatfield quickly. I was just	
	Page 883		Page 8	205
1	from competitors and contract services	1	trying to establish that regardless of	500
2	across the coal fields.	2	the ignition source, the other problems	
3	MR. ROBERTS:	3	with respect to the Sago Mine	
4	That generally happens	4	contributed to these fatalities. And I	
5	when there's an emergency. As you well	5	think we've established that.	
6	are aware, that a number of UMWA mine	6	MR. HATFIELD:	
7	rescue team members did make their way	7	Actually, no, I don't	
8	there.	8	think we've established that at all.	
9	Let's talk about this	9	MR. ROBERTS:	
10	sealed area for a minute. It's the	10	So you're saying the	
11	I want to ask you about the Omega	11	lightning killed these 12 people?	
12	blocks, if I might. Would you	12	MR. HATFIELD:	
13	describe, please, what an Omega block	13	We believe, based on what	
14	really is?	14	we know to this point, that lightning	
15	CHAIR:	15	was the ignition source that caused the	
16	Mr. Roberts, if I might,	16	methane mixture behind the seals to	
17	since we're switching topics, if we	17	explode. And that's what brought us	
18	might take a short break. There's a	18	where we are today. That's what the	
19	request for a break, if that's all	19	evidence to this point demonstrates.	
20	right, and then we'll come back to	20	That doesn't mean we've quit looking.	
21	this, since you're in a new topic.	21	That doesn't mean we've stopped our	
22	Thank you.	22	investigation. We continue to look for	
23	SHORT BREAK TAKEN	23	answers. That's all we know at this	
24	CHAIR:	24	point.	
25	Since everyone's back,	25	MR. ROBERTS:	

	Page 886			Page 888
1	I don't want to be	1	MR. HATFIELD:	Tage 000
2	argumentative. It's somewhat late in	2	Our law firm actually	
3	the day, as the Chairman has pointed	3	hired a group of consultants that are	
4	out. But we had an ignition source and	4	helping with the investigation.	
5	we have established that these miners	5	MR. ROBERTS:	
6	lived a considerable period of time.	6	So the entity that	
7	And the fact that they didn't have	7	contacted Mr. Novak were lawyers;	
	oxygen, you acknowledge that if they'd	8	correct?	
8 9	had additional oxygen, perhaps we could	9	MR. HATFIELD:	
10	have saved their lives. I don't think			
		10 11	Yes. They retained	
11 12	you dispute that?		expertise, as we described to them	
	MR. HATFIELD:	12 13	would be needed in this investigation. MR. ROBERTS:	
13	I don't dispute that. In			
14	hindsight there are lots of things that	14	Would you mind, just for	
15	can be done different to make not only	15	the record, letting us know who that	
16	the Sago Mine safer but all coal mines	16	was?	
17	safer. And that's part of the reason	17	MR. HATFIELD:	
18	we're having these hearings today.	18	Our law firm?	
19	MR. ROBERTS:	19	MR. ROBERTS:	
20	And you have additional	20	Yeah.	
21	oxygen in the mine?	21	MR. HATFIELD:	
22	MR. HATFIELD:	22	Jackson Kelly.	
23	Yes, we do, in compliance	23	MR. ROBERTS:	
24	with the new West Virginia law.	24	Okay. Mr. Novak, how are	
25	MR. ROBERTS:	25	you today?	
	Page 887			Page 889
1	Page 887 To move over to establish	1	DR. NOVAK:	Page 889
1 2	_	1 2		Page 889
	To move over to establish our questioning of Mr. Novak, your		DR. NOVAK: Just fine. Thank you. MR. ROBERTS:	Page 889
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	Dorra 200			Dama 002
1	Page 890 mines there?	1	DR. NOVAK:	Page 892
2	DR. NOVAK:	2	No, I wasn't aware of	
3	Correct.	3	that.	
4	MR. ROBERTS:	4	MR. ROBERTS:	
5	Now, that ignition was	5	Okay. Are you aware that	
6	not caused by lightning going through	6	they put out a report in 2001 with	
7	the earth; right?	7	respect to the Oak Grove Mine?	
8	DR. NOVAK:	8	DR. NOVAK:	
9	No.	9	I may have.	
10	MR. ROBERTS:	10	MR. ROBERTS:	
11	It was caused by a	11	Were you in Alabama in	
12	casing; is that correct?	12	2001?	
13	DR. NOVAK:	13	DR. NOVAK:	
14	There was a steel case	14	No.	
15	borehole that extended from the surface	15	MR. ROBERTS:	
16	to the gob, that's correct.	16	When did you leave	
17	MR. ROBERTS:	17	Alabama?	
18	Do you recall the name of	18	DR. NOVAK:	
19	that mine, where it was?	19	Well, I was in yeah.	
20	DR. NOVAK:	20	I moved in the summer of 2001.	
21	Oak Grove Mine.	21	MR. ROBERTS:	
22	MR. ROBERTS:	22	So for a period of time -	
23	Are you aware that there	23	it was a six-year period that there	
24	was more than one ignition at this	24	were seven explosions of methane or	
25	mine?	25	coal dust occurring in worked-out	
	Page 891			Page 893
1	DR. NOVAK:	1	sealed areas of gob in U.S. coal mines,	
2	That's correct. I said	2	and so NIOSH took a look at this	
3	there were two. And I read somewhere	3	situation. And you knew MSHA did, but	
4	that there were three, which I wasn't	4	you didn't know that NIOSH took a look	
5	aware of the last one.	5	at this; correct?	
6	MR. ROBERTS:	6	DR. NOVAK:	
7	Are you aware that the	7	No.	
8	federal government took a look at this	8	MR. ROBERTS:	
9	situation, that over a period of time	9	Are you aware that of	
10	there were three lightning strikes at	10	those three explosions at the same coal	
11	one coal mine in Alabama, at the Oak	11	mine in Alabama, that there were no	
12	Grove Mine? Are you aware that the	12	fatalities?	
13	government has looked into that?	13	DR. NOVAK:	
14	DR. NOVAK:	14	That's correct.	
15	That's correct.	15	MR. ROBERTS:	
16	MR. ROBERTS:	16	Are you aware that the	
17	Do you know what branch	17	mines in Alabama are much deeper that	[]
18	of government looked into that?	18	the mines here in West Virginia?	
19	DR. NOVAK:	19	DR. NOVAK:	
20 21	MSHA.	20	That's correct.	
	MR. ROBERTS: Would you be surprised if	21 22	MR. ROBERTS:	
22 23	Would you be surprised if it was also NIOSH, National Institute	22	Are you aware they're about 2,000 feet deeper?	
23 24	of Occupational Safety and Health? Are	23 24	DR. NOVAK:	
		14		
25	you aware of that?	25	Well,	

	Page 894			Page 896
1	MR. ROBERTS:	1	MR. ROBERTS:	Paye 090
2	Or not 2,000 deeper,	2	My point is	
3	they're 2,000 deep.	3	DR. NOVAK:	
4	DR. NOVAK:	4	The Blue Creek seam is	
5	The mines in the Blue	5	- okay. I know what you're getting at.	
6	Creek seam I'm assuming is what	6	And the Blue Creek seam is probably	
7	because there's other mines that don't	7	one of the gassiest coal seams it	
8	mine the Blue Creek seam and that	8	probably is the gassiest coal seam,	
9	aren't that deep. But in the Blue	9	although the Pocahontas seam in	
10	Creek seam, the deepest would be around	10	Virginia, too, is also very gassy.	
11	2,000, and that's more like the Jim	11	MR. ROBERTS:	
12	Walters. I'd say Oak Grove is maybe	12	The Oak Grove Mine had	
13	1,500. I'm guessing in that range.	13	three explosions over a few-year period	
14	MR. ROBERTS:	14	of time, blew out the stoppings. Not	
15	They're much deeper than	15	one fatality.	
16	the mines here?	16	DR. NOVAK:	
17	DR. NOVAK:	17	Correct.	
18	Absolutely. Yes. Well,	18	MR. ROBERTS:	
19	yeah.	19	And these mines, as you	
20	MR. ROBERTS:	20	have stated, and I think the record	
20	Well, let's just do the	20	would reflect this, liberate much more	
22	•	22		
22	Sago Mine. Is Sago Mine? DR. NOVAK:	22	methane than any mine perhaps in West	
23 24	It's pretty shallow.	23 24	Virginia perhaps in North America? DR. NOVAK:	
24 25	MR. ROBERTS:	24 25	That's probably correct.	
20	WR. RODERTS.	20	That's probably correct.	
	Page 895			Page 897
1	Page 895 Correct. I just want to	1	MR. ROBERTS:	Page 897
1 2	_	2		Page 897
	Correct. I just want to	-	MR. ROBERTS:	Page 897
2 3 4	Correct. I just want to see what kind of points of agreement we	2 3 4	MR. ROBERTS: Do you find it what	Page 897
2 3	Correct. I just want to see what kind of points of agreement we have here. DR. NOVAK: Okay.	2 3	MR. ROBERTS: Do you find it what would you state as the reason for	Page 897
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1	I don't know for sure.	1	there's information that's been
2	MR. ROBERTS:	2	available since 2001 with respect to
3	Do you know what kind of	3	construction of seals and with buildup
4	seals they used in Alabama?	4	of methane behind those, and
5	DR. NOVAK:	5	particularly, as you alluded to in your
6	The ones that were	6	testimony,
7	initially and I was more involved	7	DR. NOVAK:
8	with the first explosion at the Oak	8	Uh-huh (yes).
9	Grove Mine, were concrete block seals.	9	MR. ROBERTS:
10	MR. ROBERTS:	10	at mines in Alabama,
11	Concrete block. In	11	which are more gassy and arguably more
12	addition to the concrete block, how	12	dangerous, but do you disagree that
13	thick are these seals?	13	this information has been available?
14	DR. NOVAK:	14	DR. NOVAK:
15	Offhand, I don't know.	15	I don't disagree that it
16	MR. ROBERTS:	16	was available. I don't know for sure.
17	If I told you they were	17	I don't follow the construction of
18	five-feet thick, using steel and mortar	18	seals. That hasn't been an area that I
19	or cement, would you be surprised?	19	have followed.
20	DR. NOVAK:	20	MR. ROBERTS:
21	No. And I wouldn't	21	Well, you follow
22	disagree with you.	22	lightning; don't you?
23	MR. ROBERTS:	23	DR. NOVAK:
24	And this report that I'm	24	I follow lightning,
25	talking about we've known about now for	25	that's correct.
1	Page 899	1	Page 901
1	five years?	1	MR. ROBERTS:
2	five years? DR. NOVAK:	2	MR. ROBERTS: You're our lightning
2 3	five years? DR. NOVAK: Uh-huh (yes).	2 3	MR. ROBERTS: You're our lightning person here. In the history of coal
2 3 4	five years? DR. NOVAK: Uh-huh (yes). MR. ROBERTS:	2 3 4	MR. ROBERTS: You're our lightning person here. In the history of coal mining in North America, United States
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	Page 902			Page 904
1	coincidences just couldn't happen, but	1	that there was some kind of metal pipe.	
2	you do want us to believe with your	2	And I think in your testimony, and you	
3	testimony today that this is the only	3	tell me if you're wrong, that you could	
4	time in the history of coal mining that	4	not find any metal pipe that would have	
5	this has happened, that we should	5	been a conduit for the lightning.	
6	accept that as the ignition source?	6	DR. NOVAK:	
7	MR. HATFIELD:	7	I said the area of the	
8	Mr. Chairman, just for	8	mine has a considerable number of gas	
9	clarification, I think the record shows	9	distribution lines. However, the	
10	pretty clearly that Mr. Novak	10	distance from the detected strike is	
		11		
11	Dr. Novak outlined three possible		such that, you know, it would be	
12	conduits and didn't say he knew which	12	questionable. But for the sake of	
13	one had caused it. That's clear.	13	completeness, I would want to look at	
14	MR. ROBERTS:	14	it.	
15	In fairness, I think Mr.	15	MR. ROBERTS:	
16	Novak is a comes in here as a	16	Okay. I think we	
17	learned person with great expertise,	17	understand your position with respect	
18	and you bring him here as the expert on	18	to it. I want to ask, given the fact	
19	lightning, and he's already answered	19	that this is Sago Mining's position,	
20	that question. I was going to go to	20	Mr. Hatfield, you have other seals, not	
21	the other two points, but I think Mr.	21	only at the Sago Mine but other mines;	
22	Novak is very capable of answering	22	is that correct?	
23	these questions.	23	MR. HATFIELD:	
24	CHAIR:	24	That's correct.	
25	Mr. Roberts, if you	25	MR. ROBERTS:	
25		23	MR. ROBERTS.	
	Page 903			Page 905
1	Page 903 wouldn't mind, we do have it is	1		Page 905
1	wouldn't mind, we do have it is	1	Given your theory that	Page 905
2	wouldn't mind, we do have it is late in the day	2	Given your theory that lightning caused this ignition and	Page 905
2 3	wouldn't mind, we do have it is late in the day MR. ROBERTS:	2 3	Given your theory that lightning caused this ignition and I assume that you used Sago block at	Page 905
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	Page 906		Page 908
1	already gassed off, so to speak. And	1	apparently will; is that correct?
2	you know how that works. They have an	2	MR. HATFIELD:
3	inert environment because the oxygen is	3	I'm not sure that there
4	low, the methane is high behind the	4	will ever be another seal at Sago.
5	seals. So those are not areas of	5	MR. ROBERTS:
6	concern. But any new area is certainly	6	How about your other
7	an area of high focus that we will pay	7	operations? Are you using Omega block
8	close attention to going forward.	8	at those other operations?
9	MR. ROBERTS:	9	MR. HATFIELD:
10	So as you seal off these	10	I believe we continue to
11	areas, if over the course of a three-	11	
			use the established practice, but
12	week period, after sealing them off and	12	that's an area under current review.
13	there's a lightning storm, are you	13	MR. ROBERTS:
14	going to evacuate the mine?	14	Let me switch now, if I
15	MR. HATFIELD:	15	might. Mr. Sawyer, quickly, as the
16	Specifically at Sago,	16	Chairman has reminded me three times
17	we're not going to have any sealed	17	now, and I'll try to get to that point,
18	areas until we know more answers. And	18	did anyone we just received this
19	right now, what we're looking forward	19	today, by the way. And the families
20	to is the possibility of using nitrogen	20	received it. The union got it at
21	injection, if we can confirm that to be	21	lunchtime. And obviously, this
22	practical and feasible. We believe	22	document is about an inch thick. Did
23	that's the ultimate solution.	23	you prepare this alone? I'm a little
24	MR. ROBERTS:	24	bit confused about it. Did you prepare
25	Have you shared your	25	this document alone or did others help
	Page 907		Page 909
1	Page 907 theories with the rest of the industry	1	Page 909 vou put this document together?
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2	theories with the rest of the industry in any kind of publications where folks	2	you put this document together? DR. SAWYER:
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1	Page 910	1	Page 912
1	You did?	1	That's right.
2	DR. SAWYER:	2	MR. ROBERTS:
3	I was on those seal	3	When there's heat
4	lines, yes, sir.	4	generated, I know for instance when we
5	MR. ROBERTS:	5	weld or cut in the mines, we heat
6	So you visibly saw	6	something to bend it. Could that have
7	everything that is in this report?	7	any bearing with respect to did you
8	DR. SAWYER:	8	take that into consideration with
9	Oh, yeah. Yeah.	9	respect to the amount of heat that
10	Uh-huh (yes).	10	might have been generated by the
11	MR. ROBERTS:	11	explosion, with respect to the damage
12	Just one question that's	12	to the roof bolts?
13	somewhat confusing. The seal number	13	DR. SAWYER:
14	one area, the roof pan is bent in both	14	That's a nice question.
15	directions up to 30 feet. Can you	15	MR. ROBERTS:
16	explain for us why those roof pans	16	Thank you.
17	might have been bent in both	17	DR. SAWYER:
18	directions?	18	The tests that we have
19	DR. SAWYER:	19	run so far have essentially been at
20	In fact, on that	20	room temperature. Now, we know you
21	particular one, the roof bolt plate was	21	know, when you design a building, you
22	also bent. If you went inby there, you	22	have to design a building to withstand
23	will notice all the roof pans were bent	23	a certain heat. And we know the
24	in the outby direction. At 30 feet in	24	properties of steel when they are
25	there, you find two of them that are	25	heated and how long it takes to heat
	Page 911		Page 913
1	flopped right in half. Inby that,	1	them up. From what has been done with
2	there's two flaps. You can tell which	2	the time of the explosion and the
3	one was first, was going in to old Two	3	flame, which was a
4	Left, and which one came second. At 30	4	passing-type thing, according to all
5	feet in, they both met where they	5	the work that's been done on
6	were equal, the pressures that caused	6	fireproofing steel, bare steel, it
7	it at that instance was equal. So	7	would not have had an effect on the
8	that's what I'm referring to.	8	yield and on the tensile strength.
9	MR. ROBERTS:	9	However, we have planned tests to
10	Okay. Thank you. You	10	I mentioned I took those belt
11	mentioned earlier that you're not the	11	hangers and we loaded them up at room
12	person we should talk to about	12	temperature and we saw how they
13	ignitions or explosions.	13	performed. Well, we've got that in a
14	DR. SAWYER:	14	little chamber. We have plans to heat
15	No. No. I'm a	15	up that chamber and run that other
16	structural engineer. You show me	16	test. So that's go ahead.
17	something that's damaged and they say,	17	MR. ROBERTS:
18	Sawyer, how much is this? And I've	18	So you have not done the
19	done that for MSHA for 35 years.	19	tests?
20	MR. ROBERTS:	20	DR. SAWYER:
1			
21		21	NO, SIL, I NAVE NOL GONE
21 22	In the interest of time,	21 22	No, sir, I have not done that.
22	In the interest of time, just yes or no. Would you agree that -	21 22 23	that.
	In the interest of time, just yes or no. Would you agree that - well, in an explosion there's heat	22	
22 23	In the interest of time, just yes or no. Would you agree that -	22 23	that. MR. ROBERTS:

1		Page 914		Page 91
1	forward to your report, what you do to		1	certify as a registered professional
2	heat generate a source?		2	structural engineer at this point in
3	DR. SAWYER:		3	time.
4	Sure.		4	MR. ROBERTS:
5	MR. ROBERTS:		5	I'm not arguing that.
6	That's good. And the		6	You have not done the heat-generated
7	other thing, you are awaiting the test		7	-?
8	results by NIOSH down at the what		8	DR. SAWYER:
9	is it East Lynn or?		9	No, I have not done that.
10	DR. SAWYER:		10	And as I mentioned, I haven't done the
11	Oh, Lake Lynn.		11	load deflection test on those pipe
12	MR. ROBERTS:		12	ends. It could be very removed.
13	Lake Lynn.		13	MR. ROBERTS:
14	DR. SAWYER:		14	Believe it or not, I
15	They are generating very		15	think you and I are saying the same
16	variable very, very valuable data.		16	thing, we're not done yet, you're doing
17	And as in the past, I'm sure that		17	some more testing, and you're also
18	we'll share it with them with me.		18	waiting on the report from NIOSH?
19	And I'm sure there's going to be many		19	DR. SAWYER:
20	more tests.		20	That's correct.
21	MR. ROBERTS:		21	MR. ROBERTS:
22	And the long and short of		22	In the interest of time,
23	your report is it's a preliminary		23	Mr. Chairman, I'll yield to the
24	report, that you're not finished with		24	families to continue this.
25	this report?		25	MS. CAMPBELL:
<u> </u>				
		Page 915		Page 91
1	DR. SAWYER:		1	I wish I'd had liked
~				
2	What was that?		2	science more now. So you're just going
2 3	What was that? MR. ROBERTS:		-	
			2	science more now. So you're just going
3	MR. ROBERTS:		2 3	science more now. So you're just going to have to bear with me, because I
3 4	MR. ROBERTS: This is a preliminary report, and you're not finished with		2 3 4	science more now. So you're just going to have to bear with me, because I hated it. Mr. Dunbar,
3 4 5	MR. ROBERTS: This is a preliminary		2 3 4 5	science more now. So you're just going to have to bear with me, because I hated it. Mr. Dunbar, MR. DUNBAR:
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	Page 918		Page 920
1	Carl Crumrine and Mr. Collins arrived.	1	DR. SAWYER:
2	And from that point, we started	2	Yes. From 1970, after
3	ensuring that the proper people were	3	the shortly after the passage of
4	being called. I spoke with Johnny	4	the Federal Mine Coal Safety Act, until
			<b>5</b>
5	Stemple several times. Mr. Collins and	5	1999, when I retired.
6	I started a discussion about monitoring	6	MS. CAMPBELL:
7	the gases coming out of the portals,	7	And as a structural
8	and we initiated that. Family members	8	engineer I kind of know what a
9	started arriving at the mine site. I	9	structural engineer is, but could you
10	spoke with a couple of those, and tried	10	kind of just explain that to me?
11	to contact our chief engineer, who was	11	Structural engineer, does that mean
12	not on site. Initiated surveying and	12	like building things or?
13	mapping duties. And also talked to	13	DR. SAWYER:
14	Senator Ross, Mike Ross, about drilling	14	Sure. Building
15	at that point. Then as the command	15	buildings, building small little
16	center was established that morning, I	16	things, big little things, you know,
17	was in the command center with Mr.	17	laboratory equipment. And you know, in
18	Coleman and Mr. Collins, and Mr.	18	my work I started in roof control
19	Halassa (phonetic), with MSHA, and	19	and had to investigate fatalities where
20	other folks that were in there.	20	rollover protective structures failed.
21	MS. CAMPBELL:	21	That was, you know, a medium-sized
22	Did you set up the	22	structure. I was you know,
23	command center or was that someone else	23	evaluated, as I mentioned before, in
24	who set that up?	24	the Blacksville Mine explosion. The
25	MR. DUNBAR:	25	ventilation shaft broke up
	Page 919		Page 921
1	That was a joint effort	1	MS. CAMPBELL:
2	with the agencies and ICG. As I said,	2	So when you I'm
3	I was on the phone with several people,	3	sorry, when
4	contacting drillers and doing those	4	DR. SAWYER:
5	things.	5	I'm sorry. Structural
6	MS. CAMPBELL:	6	engineering is anything that you make
7	Our family was never	7	that you have to design for certain
8	notified of this disaster or the	8	loads, be it a building or, you know,
9			
	explosion. We were never called. We	9	anything small, like a rotor on a car,
10	learned from a scanner. My brother	9 10	anything small, like a rotor on a car, axle on a car.
10 11	learned from a scanner. My brother heard it on a scanner. And Mr. Mike		
	learned from a scanner. My brother	10	axle on a car.
11	learned from a scanner. My brother heard it on a scanner. And Mr. Mike	10 11	axle on a car. MS. CAMPBELL:
11 12	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't	10 11 12	axle on a car. MS. CAMPBELL: So those little pie pans
11 12 13	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't have our phone number. Can you tell us	10 11 12 13	axle on a car. MS. CAMPBELL: So those little pie pans ends that they say they put on the
11 12 13 14	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't have our phone number. Can you tell us why the families were not notified?	10 11 12 13 14	axle on a car. MS. CAMPBELL: So those little pie pans ends that they say they put on the roof, is that like a load-bearing
11 12 13 14 15	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't have our phone number. Can you tell us why the families were not notified? MR. DUNBAR:	10 11 12 13 14 15	axle on a car. MS. CAMPBELL: So those little pie pans ends that they say they put on the roof, is that like a load-bearing thing?
11 12 13 14 15 16	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't have our phone number. Can you tell us why the families were not notified? MR. DUNBAR: No, ma'am, I cannot	10 11 12 13 14 15 16	axle on a car. MS. CAMPBELL: So those little pie pans ends that they say they put on the roof, is that like a load-bearing thing? DR. SAWYER:
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11 12 13 14 15 16 17 18 19 20 21 22 23	learned from a scanner. My brother heard it on a scanner. And Mr. Mike Heim (phonetic) said that they didn't have our phone number. Can you tell us why the families were not notified? MR. DUNBAR: No, ma'am, I cannot answer that. We were under the impression that the families were being notified. And I was not aware that the members were not being notified. MS. CAMPBELL: Thank you, Mr. Dunbar.	10 11 12 13 14 15 16 17 18 19 20 21 22 23	<ul> <li>axle on a car.</li> <li>MS. CAMPBELL:</li> <li>So those little pie pans <ul> <li>ends that they say they put on the</li> <li>roof, is that like a load-bearing</li> <li>thing?</li> </ul> </li> <li>DR. SAWYER:</li> <li>That is a structure.</li> <li>It's a structure made out of steel.</li> <li>And you can analyze that. If you see</li> <li>bends in it, you see how it's deformed,</li> <li>you can determine by the same method</li> <li>you would design the beams in this</li> </ul>

				D 004
1	Page 922		DR. NOVAK:	Page 924
1	you can determine what force bent those	1		
2	to the configuration that you see it.		No. That has I said	
3	That's what a structural engineer does.	3	that I have to simulate that. But the	
4	MS. CAMPBELL:	4	software that I can tell you that	
5	Thank you. Mr. Novak,	5	the software that I use is based on	
6	-	6	Maxwell's equations.	
7	DR. NOVAK:	7	MS. CAMPBELL:	
8	Yes.	8	On page 13 of this little	
9	MS. CAMPBELL:	9	report that we have	
10	when did you	10	DR. NOVAK:	
11	communicate your opinion that it was a	11	Uh-huh (yes).	
12	lightning strike that happened at Sago?	12	MS. CAMPBELL:	
13	DR. NOVAK:	13	you made a statement,	
14	I'm trying to think. It	14	work still needs to be performed to	
15	was probably about a month or so ago.	15	verify that energy sufficient to cause	
16	We were supposed to have a meeting.	16	an ignition is capable of reaching the	
17	And it turns out my son was scheduled	17	sealed area by this means.	
18	for surgery, so I had to call in on my	18	DR. NOVAK:	
19	cell phone on a conference call while	19	Which page is that?	
20	they were having the meeting. But I	20	MS. CAMPBELL:	
21	think it was on the order of about a	21	Thirteen (13).	
22	month ago.	22	DR. NOVAK:	
23	MS. CAMPBELL:	23	Okay. Is that for the	
23	Who was that conference	23	first method? Yes. Yes. Uh-huh	
24	call with?	24		
20		20	(yes).	
	Page 923			Page 925
1	Page 923 DR. NOVAK:	1	MS. CAMPBELL:	Page 925
1	DR. NOVAK:	1		Page 925
	-		So what you're saying is	Page 925
2 3	DR. NOVAK: With the people sitting here at the table.	2 3	So what you're saying is that you don't really know if this here	Page 925
2 3 4	DR. NOVAK: With the people sitting here at the table. MS. CAMPBELL:	2	So what you're saying is that you don't really know if this here is even possible? I mean,	Page 925
2 3 4 5	DR. NOVAK: With the people sitting here at the table. MS. CAMPBELL: Were you asked to write a	2 3 4 5	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK:	Page 925
2 3 4 5 6	<ul><li>DR. NOVAK:</li><li>With the people sitting here at the table.</li><li>MS. CAMPBELL:</li><li>Were you asked to write a written report on that?</li></ul>	2 3 4 5 6	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK: No, no. Absolutely. And	Page 925
2 3 4 5 6 7	<ul><li>DR. NOVAK:</li><li>With the people sitting here at the table.</li><li>MS. CAMPBELL:</li><li>Were you asked to write a written report on that?</li><li>DR. NOVAK:</li></ul>	2 3 4 5 6 7	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK: No, no. Absolutely. And I said and if you read the title of	Page 925
2 3 4 5 6 7 8	DR. NOVAK: With the people sitting here at the table. MS. CAMPBELL: Were you asked to write a written report on that? DR. NOVAK: No.	2 3 4 5 6 7 8	<ul> <li>So what you're saying is that you don't really know if this here is even possible? I mean,</li> <li>DR. NOVAK:</li> <li>No, no. Absolutely. And <ul> <li>I said and if you read the title of this report it says Preliminary Report.</li> </ul> </li> </ul>	Page 925
2 3 4 5 6 7 8 9	DR. NOVAK: With the people sitting here at the table. MS. CAMPBELL: Were you asked to write a written report on that? DR. NOVAK: No. MS. CAMPBELL:	2 3 4 5 6 7 8 9	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK: No, no. Absolutely. And I said and if you read the title of this report it says Preliminary Report. It's not finished.	Page 925
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2 3 4 5 6 7 8 9 10 11 12	<ul> <li>DR. NOVAK:</li> <li>With the people sitting here at the table.</li> <li>MS. CAMPBELL:</li> <li>Were you asked to write a written report on that?</li> <li>DR. NOVAK:</li> <li>No.</li> <li>MS. CAMPBELL:</li> <li>Could you tell me what formula you used to justify current traveling approximately four miles with</li> </ul>	2 3 4 5 6 7 8 9 10 11 12	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK: No, no. Absolutely. And I said and if you read the title of this report it says Preliminary Report. It's not finished. MS. CAMPBELL: Right. I know what preliminary means.	Page 925
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	DR. NOVAK: With the people sitting here at the table. MS. CAMPBELL: Were you asked to write a written report on that? DR. NOVAK: No. MS. CAMPBELL: Could you tell me what formula you used to justify current traveling approximately four miles with as many grounds as there was? DR. NOVAK: What formula? MS. CAMPBELL: What formula you used to justify that current can travel approximately four miles? DR. NOVAK: Well, the software that I which I haven't done yet, okay. I'm just MS. CAMPBELL:	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	So what you're saying is that you don't really know if this here is even possible? I mean, DR. NOVAK: No, no. Absolutely. And I said and if you read the title of this report it says Preliminary Report. It's not finished. MS. CAMPBELL: Right. I know what preliminary means. DR. NOVAK: But I think you're expecting MS. CAMPBELL: I taught six-graders. DR. NOVAK: I know, but I don't mean to sound like that. I apologize. But I guess the point that I'm trying to make is that, yeah, I mean, I would have liked to have had this hearing, you know, three months from now. Of	
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Page 926Page 9261when I was asked to do a report for2this hearing, and I said, well, you3know, if's not the results are not4totally ready. Just give us what you5have. And essentially, that is what6I've done, so,7MS. CAMPBELL:7MS. CAMPBELL:8So one of your theories889was propagation through the earth?10DR. NOVAK:11That's a possibility12- I mean, yeah. For sake of13completeness. I try to list the three14mechanisms you know, three15differint mechanisms that, you know,16there was a possibility associated with17that.18K. CAMPBELL:19O on this. I understood you to say that20on this. I understood you to say that21a neighbor's recollection of a22I by. NOVAK:23DR. NOVAK:24That's correct.24The scientific for?25MS. CAMPBELL:26MS. CAMPBELL:27As a scientist, do you28MS. CAMPBELL:29NOVAK:20No L don't. And I'm not5No. I don't. And I'm not5No. I don't. You know, I'm just7Yaes7Yaes7Yaes7Yaes actint, theore7Yaes actint. </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>						
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		Page 930		Page 93.
1	That one's getting me today. Sorry		1	pieces of sandstone could have hit
2	about that.		2	together and caused an ignition. And
3	Mr. Hatfield, you said		3	we also know that two bolts hitting
4	that you did not want to send miners		4	together, if there's methane in there,
5	back into the Sago Mine on March 15th		5	it could have caused an ignition;
	-			5
6	without knowing what caused the		6	correct?
7	accident. Maybe I just asked you this,		7	MR. S. KITTS:
8	but based on this information that you		8	Yes.
9	have now, what have you done at Sago		9	MS. COHEN:
10	Mine to make sure that there's not		10	Okay. Mr. Kitts, can you
11	another explosion like this at this		11	tell me how you can tell you said
12	mine?		12	there was some roof falls. How do you
13	MR. HATFIELD:		13	determine if those are old roof falls
14	First and foremost, we		14	or recent roof falls?
15	changed the ventilation plan and, with		15	MR. S. KITTS:
16	MSHA and the state's concurrence,		16	If they're covered in
17	eliminated the seal area so that that		17	dust. There was a tremendous amount of
18	area is being vented to the surface and		18	soot that was generated through the
19	does no longer pose a risk.		19	explosion. So if you go in behind
20	MS. CAMPBELL:		20	those seals and find an area where
21	Is there any sandstone in		21	there is a roof fall and it's all
22	Sago Mine? Can any of the?		22	coated in soot, then that tells you
23	MR. DUNBAR:		23	that that was there before the
24	Yes, there is sandstone		24	explosion.
25	in the roof and the floor.		25	MS. COHEN:
		Page 931		Page 93
1	MS. CAMPBELL:	Page 931	1	Page 93 Have you ever had a
1	MS. CAMPBELL: Do you think that maybe	Page 931	1	Have you ever had a
2	Do you think that maybe	Page 931	2	Have you ever had a problem with methane in the Sago Mine
2 3	Do you think that maybe sandstone or something like that could	Page 931	2 3	Have you ever had a problem with methane in the Sago Mine before?
2 3 4	Do you think that maybe sandstone or something like that could have caused an ignition, hitting	Page 931	2 3 4	Have you ever had a problem with methane in the Sago Mine before? MR. S. KITTS:
2 3 4 5	Do you think that maybe sandstone or something like that could have caused an ignition, hitting together, if there was methane?	Page 931	2 3 4 5	Have you ever had a problem with methane in the Sago Mine before? MR. S. KITTS: Not that I'm aware of.
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1	investigation team. During the	1	prepared to discuss tomorrow the	ugo /oo
2	underground phase of the investigation,	2	outline of how he went about looking at	
3	we probably had somewhere on the order	3	these clocks and to try to correct them	
4	of correct me if I'm wrong, Chuck,	4	to the atomic clock. So I think he'll	
5	but I would think 40 to 50 ICG	5	be able to answer those questions.	
6	employees participating.	6	MS. COHEN:	
7	MR. DUNBAR:	7	The lightning strike,	
8	Right. That's correct.	8	where it hit to the seal, how much	
9	MR. S. KITTS:	9	distance is that?	
10	The main people were	10	DR. NOVAK:	
11	myself and clearly Chuck Dunbar. As I	11	From the lightning strike	
12	pointed out in my written statement	12	to the seal would probably be a total	
13	given here today, the team was the	13	of about four miles.	
14	group was broken down into teams by	14	MS. COHEN:	
15	specialty.	15	And the tree that it	
16	MS. COHEN:	16	struck, how did you determine that was	
17	The dispatcher, Mr.	17	a new lightning strike or an old one?	
18	Chisolm, testified that all the	18	DR. NOVAK:	
19	communications went down at the mine at	19	It was the	
20	6:30, and the CO monitor alarms went	20	coordinates that we got from Vaisala,	
20	off as well, and that belt Four stopped	20	the lightning detection company, will	
22	between 6:31 and Dr. Novak, are you	22	give you the proximate coordinates.	
22	suggesting that it took from 6:26 to	22	And it was very close to being on. And	
23 24	6:31 for the lightning to cause the	23 24	you can tell by looking at the tree	
24 25	explosion?	24 25	that it's fresh wood, where the bark	
25	explosion	25		
	Page 935		Р	Page 937
1	Page 935 DR. NOVAK:	1	has been stripped off of it.	Page 937
2		1 2	has been stripped off of it. MR. S. KITTS:	Page 937
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1	MR. S. KITTS:	Page 938	1	from a layman's parapastiva, there are	Page 940
1			1	from a layman's perspective, there are	
2	Yes. It's well,		2	methodologies out there that could	
3	Chuck lives there. Maybe you can		3	possibly allow us to determine if	
4	explain it.		4	lightning would be it would be a	
5	MR. DUNBAR:		5	high probability that lightning could	
6	It's back toward Route		6	enter the mine, more so than when we	
7	20. It's about halfway between Sago		7	have for today's hearing.	
8	Mine and Route 20, up on the hillside,		8	MS. COHEN:	
9	away from the road and the river. It's		9	So I guess I'm a little	
10	kind of hard to describe the exact		10	confused. I thought that's what you	
11	location without taking you right to		11	guys hired Mr. Novak, was to be the	
12	it.		12	expert on the lightning. Did I	
13	MS. COHEN:		13	misunderstand something somewhere?	
14	I live out there. I grew		14	MR. S. KITTS:	
15	up out there, so I And Mr. Novak,		15	What it boils down to is	
16	•		15 16		
	can you explain to me how that would			he needs more data. He's talking to	
17	have traveled under the river or over		17	you today about what he knows at this	
18	the river if it's on the opposite side		18	point. And I don't pretend to speak	
19	of the mine? How would that be		19	for him, but he needs more data to firm	
20	possible?		20	up his conclusions.	
21	DR. NOVAK:		21	MR. HATFIELD:	
22	You mean in terms of what		22	And the data he's talking	
23	which technique, which?		23	about is geophysical testing,	
24	MS. COHEN:		24	resistivity testing and magnetometer	
25	You're saying that		25	surveys. So it requires more talent	
1		Page 939	1	than he can de himself	Page 941
1	lightning caused the explosion. Can	Page 939	1	than he can do himself.	Page 941
2	lightning caused the explosion. Can you explain to me how it could have	Page 939	2	MS. CAMPBELL:	Page 941
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21       Now, if it hit the line directly,       21       DR. NOVAK:         22       absolutely. If there was a direct hit       22       Through the roof bolt,         23       to the line, you would have flashover,       23       into the roof bolt,         24       meaning a short-circuit across the       24       the other side of the screen.         25       insulators that support the lines on       25       MS. CAMPBELL:         1       the poles, and that would cause a       2       the roof approximately 20 blocks behind         2       short-circuit, which would trip the       2       the roof approximately 20 blocks behind         3       circuit-breaker.       4       DR. NOVAK:       5         4       MS. CAMPBELL:       4       DR. NOVAK:       5         7       DR. NOVAK:       7       DR. NOVAK:       7         8       of the screen and then the screen is       6       different, what you're talking about.       7         9       of the screen and then the screen is       9       Hatfield, do you know the anomaly thing       1         10       separated probably about, I'm guessing,       10       that we're talking about, that thing on         11       the rosistance across there,       10       that is? I though tha		5 5				
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	David 044		David	0.40
1	Page 946	1	Page 9	948
1	mapping of the forces, the roof bolt	1	that what, it just didn't shut	
2	plates bending and the debris moving	2	anybody's electricity off? Because	
3	and things like that tells us	3	nobody around lost did you lose	
4	essentially how the explosion went.	4	your electricity?	
5	MS. CAMPBELL:	5	DR. NOVAK:	
6	This is what I'm talking	6	No, neither did the mine	
7	about, Mr. Novak, in case you haven't	7	lose their electricity on that date.	
8	seen it.	8	MS. CAMPBELL:	
9	DR. NOVAK:	9	So if it was that bad of	
10	No, I've seen it. I have	10	a lightning strike I mean, like I	
11	pictures of it.	11	said, I did not like science.	
12	MS. CAMPBELL:	12	DR. NOVAK:	
13	So this is just a?	13	Uh-huh (yes).	
14	MR. HATFIELD:	14	MS. CAMPBELL:	
15	That's something that we	15	But you know, lightning -	
16	don't know that just happens to show up	16		
17	at the same place where the ignition	17	DR. NOVAK:	
18	occurred.	18	I have my problems with	
19	MS. CAMPBELL:	19	it, too, but	
20	Is this going to be	20	MS. CAMPBELL:	
21	something that your next expert can	21	I think you do. Sorry.	
22	maybe figure out?	22	But lightning causes your electricity	
23	MR. HATFIELD:	23	to go off. The mines did not lose	
24	We have people that are -	24	electricity.	
25	including state regulators have some	25	DR. NOVAK:	
20	including state regulators have some	20		
				_
	Page 947		Page 9	949
1		1		949
1	Page 947 people looking at that as well. MS. COHEN:	1 2	Page 9 Right. MS. CAMPBELL:	949
2	people looking at that as well. MS. COHEN:	2	Right. MS. CAMPBELL:	949
2 3	people looking at that as well. MS. COHEN: So can you tell me why	2 3	Right. MS. CAMPBELL: They would have lost some	949
2 3 4	people looking at that as well. MS. COHEN: So can you tell me why when we got this picture in the mail	2 3 4	Right. MS. CAMPBELL: They would have lost some power somewhere.	949
2 3 4 5	people looking at that as well. MS. COHEN: So can you tell me why when we got this picture in the mail none of these pie pans or roof bolts	2 3 4 5	Right. MS. CAMPBELL: They would have lost some power somewhere. DR. NOVAK:	949
2 3 4 5 6	people looking at that as well. MS. COHEN: So can you tell me why when we got this picture in the mail none of these pie pans or roof bolts looked damaged?	2 3 4 5 6	Right. MS. CAMPBELL: They would have lost some power somewhere. DR. NOVAK: It was not a direct	949
2 3 4 5 6 7	people looking at that as well. MS. COHEN: So can you tell me why when we got this picture in the mail none of these pie pans or roof bolts looked damaged? DR. NOVAK:	2 3 4 5 6 7	Right. MS. CAMPBELL: They would have lost some power somewhere. DR. NOVAK: It was not a direct strike to the power line. It was 300	949
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	Page 9	0	Page 952
1	There isn't any?	1	but the mesh that existed on the other
2	MS. CAMPBELL:	2	side was left intact.
3	There isn't any screen in	3	MS. COHEN:
4	the entry with the markings.	4	Okay. Well, yesterday I
5	DR. NOVAK:	5	thought they were saying that the mesh
6	That's correct.	6	was removed.
7	MS. COHEN:	7	DR. NOVAK:
		-	
8	Can you tell me how you	8	No, that's not correct.
9	came up to think that the clock needed	9	MR. HATFIELD:
10	calibrated?	10	It was removed across the
11	MR. HATFIELD:	11	seals. I think that's been verified by
12	From our perspective, we	12	various witnesses, just where the
13	didn't suggest the calibration. Again,	13	actual seal was built, about an eight-
14	I think it was part of the state's	14	foot section.
15	routine investigation as they're trying	15	MS. COHEN:
16	to confirm the time line of this entire	16	And Mr. Novak, if you're
17	sequence of events to check the timing	17	conducting this investigation or
18		18	helping them, I should say, why did you
	on the key instruments.		
19	MS. COHEN:	19	not you said you didn't walk the
20	Dr. Novak,	20	power lines or look at those areas.
21	DR. NOVAK:	21	What?
22	Yes.	22	DR. NOVAK:
23	MS. COHEN:	23	No, I okay. Go
24	could any roof	24	ahead. I'm sorry.
25	movement at all in this section cause a	25	MS. COHEN:
	Page 9	1	Page 953
1	Page 9 spark in the methane and cause the	1	Page 953 I just don't understand
1			_
2	spark in the methane and cause the explosion, not necessarily a roof fall,	1	I just don't understand how you wouldn't go and look at
2 3	spark in the methane and cause the explosion, not necessarily a roof fall, but?	1 2 3	I just don't understand how you wouldn't go and look at everything before you could come up
2 3 4	spark in the methane and cause the explosion, not necessarily a roof fall, but? DR. NOVAK:	1 2 3 4	I just don't understand how you wouldn't go and look at everything before you could come up with
2 3 4 5	spark in the methane and cause the explosion, not necessarily a roof fall, but? DR. NOVAK: I'll pass on that one,	1 2 3 4 5	I just don't understand how you wouldn't go and look at everything before you could come up with DR. NOVAK:
2 3 4 5 6	<ul> <li>spark in the methane and cause the explosion, not necessarily a roof fall, but?</li> <li>DR. NOVAK:</li> <li>I'll pass on that one, not being a rock mechanics expert.</li> </ul>	1 2 3 4 5 6	I just don't understand how you wouldn't go and look at everything before you could come up with DR. NOVAK: Well, there's only so
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		age 954			age 956
1	all yourself. If you ask and they say,		1	MS. CAMPBELL:	
2	yeah, there's something of particular		2	Well, no. I just go	
3	interest here or if there's something		3	ahead and finish, Mr. Kitts. I'm	
4	that's worth considering, then you go		4	sorry. It's been a long day.	
5	look at it.		5	MR. S. KITTS:	
6	MS. COHEN:		6	Well, you folks certainly	
7	Well, you know what, my		7	don't need any help asking questions.	
8	dad is dead. I think you need to make		8	I can tell you that. Well, what	
9	the time if you're going to come up		9	happened at that point was a discussion	
10	with these conclusions that it was		10	was had, and the outcome of that	
11	lightning. And 11 other good men are		11	discussion was that we would wait. We	
12	dead.		12	would do the gas testing. And exactly	
13	MS. CAMPBELL:		13	who said what is, at this point,	
14	I just have two last		14	unclear. I would like to know the	
	questions for Mr. Hatfield. Did you		14 15		
15	1			answer to that question myself. That's	
16	ever ask MSHA, Mr. Hatfield, to send		16	all I have.	
17	rescue intermediately?		17	MS. CAMPBELL:	
18	MR. HATFIELD:		18	Mr. Hatfield, when you	
19	If you don't mind, I'll		19	look at our pictures behind you, how	
20	ask Sam Kitts to respond to that		20	does that make you feel?	
21	because he was there at the point those		21	MR. HATFIELD:	
22	discussions were being had on the		22	I can't even describe how	
23	morning of January 2nd.		23	it makes me feel. You know, sometimes	
24	MR. S. KITTS:		24	I struggle sometimes on emotional	
25	Actually, it will be more		25	issues, but I can say that what it	
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1		age 955	1		age 957
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2	of a composite of what I've learned since then since I didn't arrive until	age 955	2	makes me feel is all the more determined to learn something from this	Page 957
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1	Page 958	1	nook ourront	Page 960
1	From 1970 no, 1984 to	1	peak current.	
2	what, 1993, was the chief in the	2	MR. DEAN:	
3	industrial safety division. I	3	Do you have any other	
4	established	4	evidence besides the seismographic	
5	MR. DEAN:	5	evidence that you can provide that the	
6	No, sir. I believe you	6	CO monitors indicate the explosion	
7	misunderstood my question. Have you	7	occurred at 6:26?	
8	personally developed a forces map of	8	DR. NOVAK:	
9	some of the plate bending and pizza pan	9	Can you say that again?	
10	bending at Sago?	10	Any other evidence besides the three	
11	DR. SAWYER:	11	things that I've already listed to	
12	Me, personally?	12	?	
13	MR. DEAN:	13	MR. DEAN:	
14	Yes, sir.	14	Yes, sir, to tie the	
15	DR. SAWYER:	15		
16	No, no. I've reviewed my	16	DR. NOVAK:	
17	people's work to make sure it was	17	Other than, you know, the	
18	right, though.	18	lack of a better explanation strengths	
19	MR. DEAN:	19	it, but that's I don't have any	
20	Okay. Thank you. Mr.	20	additional facts, no.	
21	Sawyer, as well, would the yield	21	MR. DEAN:	
22	strength and tensile strength numbers	22	What is your estimate of	
23	at elevated temperature actually be	23	the voltage of the 101 kiloamp	
24	somewhat lower than what you show on	24	lightning strike?	
25	page ten of your report?	25	DR. NOVAK:	
25		23		
	Page 959			Page 961
1	Page 959 DR. SAWYER:	1	When it hits when it	Page 961
1	DR. SAWYER:			Page 961
2	DR. SAWYER: Yeah. When you heat up a	2	hit the ground or the tree? You're in	Page 961
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	Page 962		Page 964
1	me?	1	DR. SAWYER:
2	DR. SAWYER:	2	That's right. That's
3	No, not too well.	3	right.
4	MR. MCKINNEY:	4	MR. MCKINNEY:
5	I wonder how you said no	5	I guess my question now
6	then. I'll try to talk a little	6	is, starting at the seal, going inby,
7	louder. I think we came up this	7	how many did you examine? And were all
8	morning with the fact that you did your	8	of them deflected?
9	calculations in Number Six entry	9	DR. SAWYER:
10	basically because of the belt hangers?	10	Well, the ones well,
11	DR. SAWYER:	11	you'd have to look on a mine map to see
12	That's correct.	12	where the undercut area is. I went
13	MR. MCKINNEY:	13	there and went on further back. Now,
14	When you did that, did	14	I'll tell you this, Mr. McKinney, the
15	you look at all of the hangers in the	15	one I'm interested in, okay, I mean,
16	belt entry?	16	the further inby I go, the potential
17	DR. SAWYER:	17	less importance that I could place on
18	All the way out to the	18	those, you know. The ones that were
19	surface, no, sir.	19	right in front of the seal could be the
20	MR. MCKINNEY:	20	most important. Then as you progress
21	How many hangers did you	21	backward, they could potentially
22	look at, starting where the seal	22	individually be least important I
23	location was inby and how many hangers	23	mean, less important on it. But yeah,
24	did you look at?	24	I'm certain that seal number six got
25	DR. SAWYER:	25	hit with 60 psi. I'm certain.
	Page 963		Page 965
1	Well, I went yes,	1	MR. MCKINNEY:
2	sir, I went in inby as far as I could.	2	I understand your
3	And when I got to the	3	certainty. I guess I'm looking at what
4	mined-out area, there wasn't a ladder	4	you're using to substantiate that
5	high enough. But I did continue on	5	certainty. Let me ask my question
6	back to see visually I mean, you	6	again. Maybe I'm not very clear with
7	know, if the belt hanger has been bent	7	it. As you progress inby the seal,
8	let's say more than ten degrees, I'd be	8	let's say 40 feet, you checked every
9	able to visually tell that. If it was	9	belt hanger in that
10	two or three, I couldn't.	10	40-foot area?
11	MR. MCKINNEY:	11	DR. SAWYER:
12	So you're telling me that	12	Oh, yeah. Yeah.
13	they weren't all bent uniformly?	13	MR. MCKINNEY:
14	DR. SAWYER:	14	And all of them were
15	Inby, you know, I'd have	15	deflected at the same degree? They
16	to look at my you know, my book and	16	received the same force?
17	the records, but	17	DR. SAWYER:
18	MR. MCKINNEY:	18	Oh, no, no, no.
19	You were pretty I	19	Different. All different. Different
20	mean, you were pretty certain this	20	degrees.
21	morning and confident that you could	21	MR. DEAN:
22	stand up as a structural engineer and	22	All different?
23	talk about the deflection of these	23	DR. SAWYER:
24	hangers and how important that was to	24	Sure.
25	your calculations.	25	MR. DEAN:
1		1	

	Page	966	Page 968
1	So no uniformity?	1	there was a pressure wave that came
2	DR. SAWYER:	2	down there. And almost every one of
3	No, sir.	3	them are bent. And it takes at least
4	MR. DEAN:	4	60 psi that you see something
5	Did you pick the ones	5	permanently. Now, you know, one of the
6	that were bent the worst, and that's	6	other tests we ran was there was
7		7	
	how you came up with your calculations		always a question
8	that that was the pressure? DR. SAWYER:	8	you could hit those things after
9		9	you take the belt hanger out with a
10	No, no, no, no. This is	10	5 5 .
11	what I did. I knew the geometry of the	11	if a piece of machinery would hit that
12	belt hangers. I had the steel tested	12	
13	to find out what its yield and its	13	5
14	tensile strength was. Then I did	14	
15	simple beam calculations. All right?	15	5
16	And by doing those calculations and	16	
17	treating that as what is known as a	17	5 5 1
18	cantilever beam, that's a beam that's	18	5 1 5 5
19	sticking out like this attached to a	19	
20	wall, and applying uniform pressure on	20	0 0
21	there, I can calculate what uniform	21	to flying debris or equipment and
22	pressure would cause that belt hanger	22	considering that, the way I considered
23	to yield, just reach the yield point,	23	that, when you hit that with a uniform
24	and that's 60 psi.	24	pressure, all right, even though the
25	MR. DEAN:	25	belt hanger might be rotated to the
	Paga		
1	Page		Page 969
1	But one could yield and	1	entry, when it sees the pressure
2	But one could yield and the other one not, is that what you're	1 2	entry, when it sees the pressure that will make my mic stop working. It
2 3	But one could yield and the other one not, is that what you're saying?	1 2 3	entry, when it sees the pressure that will make my mic stop working. It sees the pressure perpendicular to that
2 3 4	But one could yield and the other one not, is that what you're saying? DR. SAWYER:	1 2 3 4	entry, when it sees the pressure that will make my mic stop working. It sees the pressure perpendicular to that face. That's just the nature that's
2 3 4 5	But one could yield and the other one not, is that what you're saying? DR. SAWYER: Sixty (60) psi would	1 2 3 4 5	entry, when it sees the pressure that will make my mic stop working. It sees the pressure perpendicular to that face. That's just the nature that's the nature of pressure. Now, when you
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1	Page 970	1	coving it was the company's position	Page 972
1	little farther when we get a chance to	1	saying it was the company's position.	
2	talk again. DR. SAWYER:	2	I'm saying an opinion was offered. And	
3		3	Mr. Wilfong will certainly say that	
4	Yeah.	4	publicly. But he offered his opinion	
5	MR. MCKINNEY:	5	that he didn't think there was a	
6	Mr. Kitts,	6	significant fire and that the	
7	MR. S. KITTS:	7	in his opinion, he felt that the	
8	Yes, sir.	8	rescue effort could be started at that	
9	MR. MCKINNEY:	9	area. However, there were more issues	
10	you made a statement	10	to be considered, and those discussions	
11	a moment ago that there was a	11	were taking place. And frankly, at	
12	discussion between Mr. Wilfong and some	12	this point I don't have an answer for	
13	other people about what the next step	13	you between how we got from Dick	
14	of the action should be at the mine.	14	Wilfong's opinion to actually waiting	
15	Can you tell me who participated in	15	until the trending analysis went down.	
16	that discussion?	16	MR. MCKINNEY:	
17	MR. S. KITTS:	17	Who would have been the	
18	That's one of the	18	official in charge for ICG at the point	
19	unresolved issues that I mentioned. I	19	in time that the conversation happened	
20	think Mr. Collins was there from the	20	that you just mentioned?	
21	state. I think the people who came	21	MR. S. KITTS:	
22	outside were emotionally distraught at	22	The senior operating	
23	the time. There were family issues	23	person for ICG would have been Chuck	
24	involved. And simply put, their	24	Dunbar, who was mobilizing drill rigs	
25	recollections aren't real good. So I	25	at the particular time that that	
	Page 971			Page 973
1	would like to ask Mr. Collins who was	1	discussion was going on.	-
2	in that discussion because, to this	2	MR. MCKINNEY:	
3	point, in our investigation we have not	3	Were you aware of this	
4	been able to determine exactly who was	4	conversation, Mr. Dunbar?	
5	in that room at that time.	5	MR. DUNBAR:	
6	MR. HATFIELD:	6	No, sir, I was not. I	
7	What I think was	7	was not in that debriefing at all.	
8	mentioned earlier is the ICG people	8	MR. MCKINNEY:	
9	that were in there were Dick Wilfong	9	Well, I think we could go	
10	and Carl Crumrine, and Mr. Collins was	10	a long way, but one of the	
11	there for the state. There's some	11	responsibilities is to keep an official	
12	uncertainty about which of the MSHA	12	in place who makes those kind of	
	5			
13	inspectors were in the room. Mr.	13	decisions for you as a company.	
13 14	inspectors were in the room. Mr. Collins can probably help with that.	14	decisions for you as a company. MR. DUNBAR:	
13 14 15	inspectors were in the room. Mr. Collins can probably help with that. MR. MCKINNEY:		MR. DUNBAR: Thank you.	
13 14 15 16	inspectors were in the room. Mr. Collins can probably help with that. MR. MCKINNEY: Okay. I appreciate that.	14 15 16	MR. DUNBAR: Thank you. MR. CLAIR:	
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1				
	Page 974	1		Page 976
	we proceed with our investigation, if	1	direction and then reverse themselves,	
2	we could have access to your experts	2	the same explosion. Are you aware of	
3	and continue a dialogue with them about	3	that?	
4	possible and probable scientific	4	DR. SAWYER:	
5	factors leading to the issue at hand	5	I said I wasn't. All I	
6	here, which is the cause of this	6	can tell you, as a structural engineer,	
7	accident.	7	which way a pressure wave came first	
8	MR. HATFIELD:	8	and which one come second. Now, to	
9	We're fully committed to	9	explain how that happened? I can't.	
10	supporting the investigation and moving	10	But I can tell you what came first and	
11	it forward as quickly as we can. And	11	what came second from a structural	
12	we will share information with you as	12	point of view.	
13	it becomes available.	13	MR. ROBERTS:	
14	MR. CLAIR:	14	I'm just trying to get a	
15	Thank you.	15	clarification as to what your findings	
16	CHAIR:	16	happen to be here. With respect to the	
17	Same goes for the state.	17	psi findings, if it was the explosion	
18	MR. ROBERTS:	18	that caused this, going forward and	
19	Davitt, I've been given a	19	then coming back, would that have any	
20	couple questions by the families to see	20	bearing on your findings?	
21	if we can get some clarification on.	21	DR. SAWYER:	
22	Most of these questions, Mr. Sawyer,	22	Of what I reported to	
23	goes to, I think, the line of	23	date, that seal number six I can say	
24	questioning that was asked by the	24	from the evidence there in my testing	
25	federal government a moment ago. Maybe	25	and that it saw at least 60 psi.	
	Page 975		Р	Page 977
1	you could clarify just a little bit.	1	And that's based upon the forensic	
2	The families are concerned that you	2	evidence. And the forensic evidence,	
3	have suggested there's a tremendous	3	from a structural point of view, in	
4	wide range of psi differences from one		•	
		4	Iront of the other seals, because they	
1 5	location to the other They seem to	4 5	front of the other seals, because they are weaker, it's like a pressure gauge	
5	location to the other. They seem to	5	are weaker, it's like a pressure gauge.	
6	believe, and I would agree with, that	5 6	are weaker, it's like a pressure gauge. It only goes up to 25 psi. But as a	
6 7	believe, and I would agree with, that that that's a wide range of difference. And	5 6 7	are weaker, it's like a pressure gauge. It only goes up to 25 psi. But as a structural engineer, that's all I can	
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1	Page 978	1		Page 980
1	MR. ROBERTS:	1	That takes me to you, Mr.	
2	Well, maybe we can get a	2	Hatfield. You issued a report March	
3	clarification. But remember, please,	3	14th that said lightning was the cause.	
4	that we only received this over a month	4	What did you base that on? Was it	
5		5		
6	DR. SAWYER:	6	MR. HATFIELD:	
7	Oh, no, no. No, I	7	No. We based it on the	
8	understand that. And you know, I'd be	8	consensus of our experts. As we said	
9	happy to meet with anybody, any	9	very clearly in that press release, we	
10	technical people, and sit down with	10	didn't say the reports were finished.	
11	them.	11	MR. ROBERTS:	
12	MR. ROBERTS:	12	I didn't say they were.	
13	I think the families	13	There's no date, I don't think, on the	
14	would like some clarification of what	14	report we have of Mr. Novak.	
15	you're actually saying here. And we do	15	DR. NOVAK:	
16	await the remainder of your tests,	16	No. I forgot to put it	
17	particularly the heat analysis test,	17	ON.	
18	given the fact when an explosion takes	18	MR. ROBERTS:	
19	place, we have a tremendous amount of	19	When did you issue that	
20	heat generated.	20	report?	
21	DR. SAWYER:	21	DR. NOVAK:	
22	Oh, yeah. Yeah.	22	The report was turned in	
23	Uh-huh (yes).	23	on Sunday, this past Sunday, okay, but	
24	MR. ROBERTS:	24 25	and it's more like two months ago,	
25	Mr. Novak, I want to do	25	okay, that there was a meeting of the	
	Page 979			Page 981
1	Page 979 two things with you.	1		Page 981
1 2	Page 979 two things with you. DR. NOVAK:	1 2	ICG people and the experts. And I	
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	De	age 982			Page 984
1	MR. ROBERTS:	aye 902	1	prior to the Sago accident. I became	Paye 904
2	Okay.		2	aware of it during the investigation.	
3	MR. HATFIELD:		3	MR. ROBERTS:	
4	And that offered the		4	You were in the industry,	
5	benefit of including the information he		5	obviously, in 2001; right?	
6	gained after the initial findings were		6	MR. HATFIELD:	
7	released.		7	Yes.	
8	MR. ROBERTS:		8	MR. ROBERTS:	
9	That's helpful. I was		9	So you just didn't see	
10	going to ask you a question. You saved		10	this?	
11	me a lot of time. So what you did at		10	MR. HATFIELD:	
12	the time, Mr. Hatfield, that you		12	That's correct.	
13	released the press release on March		13	MR. ROBERTS:	
14	14th was based on information that you		14	Are you, by the way,	
15	got from Mr. Novak, not necessarily		15	familiar with the term pressure	
16	this written report?		16	balancing?	
17	MR. HATFIELD:		17	MR. HATFIELD:	
18	That's correct. He had		18	I read that term in the	
19	not offered up a written report. He		19	NIOSH report, actually.	
20	had shared his opinion based on work		20	MR. ROBERTS:	
21	papers, measurements, and whatever		20	So that's the first time	
22	thing he does to develop that opinion.		22	you came across it?	
23	He shared that opinion with us, and		23	MR. HATFIELD:	
24	that's what's reflected in the		23	Yes.	
25	findings.		25	MR. ROBERTS:	
	Pa	age 983			Page 985
1	MR. ROBERTS:		1	Are you familiar with	
2	I asked Mr. Novak, but I		2	what they did in Alabama to protect the	
3	never really asked you about the 2001		3	miners in the Oak Grove Mine?	
4	report by MSHA and NIOSH with respect		4	MR. HATFIELD:	
5	to the Alabama situation. You're aware		5	I don't know the	
6	that MSHA puts out information		6	specifics, no.	
7	periodically, and NIOSH does the same		7	MR. ROBERTS:	
8	thing, so we can deal with certain		8	It was in the report that	
9	tragedies or areas of concern		9	you said you have seen since the Sago	
10	throughout the industry. So if		10	explosion.	
11	something is happening in Alabama		11	MR. HATFIELD:	
12	that's unusual, we want everyone to		12	Yeah. I think the	
13	know it. And as you pointed out, here,		13	suggested action was pressure balancin	g
14	at Sago, whatever we find here, we want		14	of seals so that you don't have these	
15	to pass that along to the industry. So		15	changes driven by barometric pressure.	
16	I guess my question to you would be,		16	MR. ROBERTS:	
17	were you aware of the bulletin put out		17	And they also constructed	
18	by NIOSH with respect to the three		18	seals that were about five feet across	
19	explosions that were caused by		19	and used a mixture of steel and cement	
20	lightning, by the way, that didn't		20	to seal those areas. In case there was	
21	travel through the earth, traveled down		21	an explosion on the inby side of the	
22	through the casings, into the sealed		22	seals, it would not travel out and kill	
23	area?		23	or injure workers in the mine?	
			23 24 25	or injure workers in the mine? MR. HATFIELD: That very well may be. I	

1					
1		Page 986	1		Page 988
-	ust don't know the specifics.		1	estimate?	
	ROBERTS:		2	MR. S. KITTS:	
-	st wondered if you		3	Depending on the seal	
	ad seen that. Thank you.		4	type, you're looking at \$5,000 to	
5 CHA			5	\$10,000 per seal.	
	Hamilton?		6	DELEGATE HAMILTON:	
	EGATE HAMILTON:		7	And how about the	
	Kitts, I believe		8	boreholes, is there a difference in	
9	<ul> <li>Sam Kitts, I believe you testified</li> </ul>		9	cost?	
10 ea	arlier that you talked about the		10	MR. S. KITTS:	
11 bo	oreholes from January 5th through		11	I can't quote the cost of	
12 Ja	anuary 20th, that there was three		12	installing a borehole off the top of my	
13 bo	oreholes drilled, two for air and one		13	head, no. Chuck, do you have an	
14 to	pump water; is that correct?		14	estimate of the difference in seal	
	Ś. KITTS:		15	price versus boreholes?	
16 Actu	ually, the 24-inch		16	MR. DUNBAR:	
	orehole was used for both. But all		17	I don't have that with	
	nree were for air and one was for		18	me.	
	umping.		19	DELEGATE HAMILTON:	
	EGATE HAMILTON:		20	Would it be safe to	
	re those boreholes in		21	estimate or maybe we shouldn't	
	he sealed area or were they in another		22	assume, but it would be safe to say	
	art of the mine?		23	those boreholes were more expensive	
	. S. KITTS:		24	than that \$5,000 to \$10,000 for that	
	. They were in the		25	sealed wall?	
25 163			23	Sealed Wall:	
		Page 987			Page 989
1 pr	reviously-sealed area.		1	MR. S. KITTS:	
2 DEL	EGATE HAMILTON:		2	I don't think there's a	
3 And	I I believe yesterday		3	significant difference in cost, no. A	
	Ir. Hatfield testified I had asked		4	24-inch borehole can be expensive. But	
	question about why you didn't reseal		5	it depends on the depth and the type of	
	hat part of the mine, and your		6	drill you use and there's a lot of	
	formation was that you didn't feel				
	Jean and the second second second			5	
	onfident in those seals, is the reason		7	variables there, that I would hate to	
	onfident in those seals, is the reason		7 8	variables there, that I would hate to just estimate here off the top of my	
9 ус	ou went with the boreholes.		7 8 9	variables there, that I would hate to just estimate here off the top of my head.	
9 yo 10 MR.	ou went with the boreholes. . HATFIELD:		7 8 9 10	variables there, that I would hate to just estimate here off the top of my head. DELEGATE HAMILTON:	
9 yo 10 MR. 11 Yea	ou went with the boreholes. . HATFIELD: .h. I believe my		7 8 9 10 11	variables there, that I would hate to just estimate here off the top of my head. DELEGATE HAMILTON: Would it be safe to say	
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	Page 990			Page 992
1	DELEGATE HAMILTON:	1	MR. ROBERTS:	1 ugo 772
2	If your report was turned	2	I have one last question	
3	in on Sunday, April the 30th,	3	from the families here. Mr. Sawyer,	
4	DR. NOVAK:	4	you may have said this and I missed it.	
5	That was three days ago.	5	How long did you work for MSHA?	
6	MR. HATFIELD:	6	DR. SAWYER:	
7	For clarification, that	7	I started in August of	
8	report was delivered to MSHA, and I	8	1970, I was in the roof control	
9	believe they did the further	9	division, and I retired in 1999. So	
10	distribution, if I recall correctly. Is	10	that's what, 29 years.	
11	that right, Ray? Mr. Clair?	11	MR. ROBERTS:	
12	MR. CLAIR:	12	How many explosions have	
13	I understand it was	12	you investigated and given a report on	
14		14		
	delivered to our attorney on Monday, and then we received a copy this	14	with respect to similar to what you did here?	
15 16	15	16		
	morning from your attorney that gives		DR. SAWYER:	
17	an update on Mr. Sawyer's report. So	17	Myself, personally?	
18	as between Monday and we're all here on	18	MR. ROBERTS:	
19	Tuesday, so	19	Yes, sir.	
20	MR. HATFIELD:	20	DR. SAWYER:	
21	I believe it was	21	Zero. But I will say	
22	delivered to Mr. Crawford over the	22	this, okay, from 1977 until definitely	
23	weekend or perhaps Monday morning. You	23	1993, people under my direct	
24	may be right. But basically that's	24	supervision, in one way or another,	
25	when it came in the hands of the	25	were involved with every mine explosion	n
	Page 991			Page 993
1	Page 991 regulators. And then from there, I	1	that took place. Now, did I personally	Page 993
1 2	_	1 2	that took place. Now, did I personally go and follow around as a supervisor,	Page 993
	regulators. And then from there, I			Page 993
2	regulators. And then from there, I suppose it went to the families.	2	go and follow around as a supervisor,	Page 993
2 3	regulators. And then from there, I suppose it went to the families. DELEGATE HAMILTON:	2 3	go and follow around as a supervisor, no. But I reviewed their work.	Page 993
2 3 4	regulators. And then from there, I suppose it went to the families. DELEGATE HAMILTON: Did ICG have a deadline	2 3 4	go and follow around as a supervisor, no. But I reviewed their work. MR. ROBERTS: The question that I had,	Page 993
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1 2 3	we will reconvene at nine o'clock tomorrow morning. * * * * * * * *
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1	CERTIFICATE
2 3	I HEREBY CERTIFY THAT THE
3 4 5 6 7	FOREGOING PROCEEDINGS WERE REPORTED BY ME AND THEREAFTER REDUCED TO TYPEWRITING AND THAT THIS TRANSCRIPT IS A TRUE AND ACCURATE RECORDING THEREOFF.
8 9 10	SARGENT'S COURT REPORTING SERVICE, INC.
<ol> <li>11</li> <li>12</li> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> <li>21</li> <li>22</li> <li>23</li> <li>24</li> <li>25</li> </ol>	Miranda D. Elkins Court Reporter