Docket No. SA-534

Exhibit No. 2-V

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

INTERVIEW OF SCADA CONTROLS GROUP SUPERVISING ENGINEER

(73 Pages)

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

Investigation of:	*	
	*	
PACIFIC GAS & ELECTRIC COMPANY	*	
SEPTEMBER 9, 2010 ACCIDENT	*	Docket No.: DCA-10-MP-008
SAN BRUNO, CALIFORNIA	*	
	*	

Interview of: MARK KAZIMIRSKY

Marriott Hotel
San Francisco Airport
1800 Bayshore Highway
Burlingame, California 94010

Tuesday,
January 4, 2011

The above-captioned matter convened, pursuant to notice.

BEFORE: RAVINDRA CHHATRE
Investigator-in-Charge

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I N D E X

I N D E X (Cont.)

I N T E R V I E W

MR. CHHATRE: Good afternoon, everyone. Today is Tuesday, January 4, 2011. We are currently in Burlingame, California, at the San Francisco Airport Marriott. We are meeting in regards to the investigation of pipeline rupture in San Bruno, California, that occurred on September 9, 2010. The NTSB accident number for this investigation is DCA-10-MP-008.

My name is Ravi Chhatre. I work for National Transportation Safety Board in Washington, D.C., and I'm the investigator-in-charge of this accident.

I would like to start by notifying everyone present in this room that we are recording this interview for transcription at a later date. All parties will have a chance to review the transcripts when they are completed.

Also, I'd like to inform Mr. Mark Kazimirsky -- how do you pronounce it:

MR. KAZIMIRSKY: Kazimirsky.

MR. CHHATRE: Kazimirsky, okay. That you are permitted to have one person with you during the interview. That person will be of your choice. It can be a friend, family member --

MR. KAZIMIRSKY: Dane Jaques.

MR. CHHATRE: -- or if you choose, nobody at all. So for the record, please your full name, spelling of your name, contact information such as phone, e-mail, mailing address, and who you have chosen to be present with you today.

MR. KAZIMIRSKY: Mark Kazimirsky, K A Z I M I R S K Y. I'm a supervising engineer for PG&E. My phone number is ----- --------- Dane Jaques is my counsel.

MR. CHHATRE: Thank you much. We'll begin with the routine of introducing everyone, your affiliation, phone number, contact information, beginning with the City.

MR. CALDWELL: Geoff Caldwell, City of San Bruno, my information's on the card that I have provided.

MR. FASSETT: Bob Fassett, PG&E. My information is on the card I provided.

MS. JACKSON: Connie Jackson, City of San Bruno. My information's on my card.

MS. FABRY: Klara Fabry, City of San Bruno, information on the card provided.

MR. SHORI: Sunil Shori, California Public Utilities Commission. Information is on the card I provided.

MR. KATCHMAR: Peter Katchmar, USDOT, Pipeline and Hazardous Materials Safety Administration. My information is on the card I provided.

MR. GUNTHER: Karl Gunther, NTSB, Operations Group Chairman, e-mail is karl.gunther@ntsb.gov, phone (202) 314-6478.

MS. MAZZANTI: Debbie Mazzanti. I'm the IBEW Local 1245.

MR. SPERRY: Joshua Sperry, Engineers and Scientists of California, Local 20, IFPTE. My information's on my business

card.

MR. NICHOLSON: Matthew Nicholson, NTSB, M A T T H E W N I C H O L S O N, matthew.nicholson@ntsb.gov.

MR. CHHATRE: Ravi Chhatre, R A V I N D R A, last name C H H A T R E, NTSB. Email is ravindra.chhatre@ntsb.gov, phone (202) 314-6644.

MR. NARVELL: Rick Narvell, Human Performance investigator, NTSB, Washington, D.C., phone (202) 314-6422, e-mail narvelr@ntsb.gov.

MR. JAQUES: My name is Dane Jaques on behalf of Mr. Kazimirsky, and my information is on the card.

MR. CHHATRE: With that, Karl, do you want to go first or --

MR. GUNTHER: Yes.

INTERVIEW OF MARK KAZIMIRSKY

BY MR. GUNTHER:

Q. Mr. Kazimirsky, question, did you do an investigation after the accident as to what went wrong in Milpitas?

A. Yes, I did.

Q. And could you please give us the results of your investigation?

A. We don't have a conclusive result. We suspect two main reasons. One was the failure of a power supply, a PSA and PSB. The other potentially, somebody opened a breaker feeding AC power to these two power supplies, but we could not come to a 100

percent conclusion.

Q. And what kind of diagnostic tests and what did you do?

A. We simulated failure of all power supplies related to the control system. We simulated a failure of AC feeding the (indiscernible), and based on these tests, we compared the reports that we got after the simulated failures, with the reports that we got after the September 9th failure, trying to pinpoint what actually happened on the 9th, and we are the conclusions that we came up with.

Q. And since your diagnostic tests, has the station power supply been running?

A. No, they've been replaced as soon as we were allowed access, well, to work on the system.

Q. And have you had any more problems with it since?

A. No, we did not.

Q. Okay.

MR. GUNTHER: Go ahead.

MR. CALDWELL: Geoff Caldwell, City of San Bruno.

BY MR. CALDWELL:

Q. You said that there were two things where you suspected failure in the APSA. Is that correct?

A. There are two redundant power supplies, PSA and PSB.

Q. PSA, okay.

A. And there were suspicions. They were suspect from the beginning of the investigation.

Q. Right. And then the other thing is that somebody opened the breaker or turned off a breaker?

A. That's -- we tried that only because when we got the statements from the crew working there, we couldn't get a clear picture of whether somebody was still working in the back room or not. So we just wanted to, to eliminate all possibilities. So we checked all possibilities.

Q. Just to get a sense of what the definition of opening a breaker means, what do you mean by that?

A. There is -- there's a UDP panel that feeds all control system, well, several different control system loads. One of the breakers was feeding power to the power supplies A and B. So since the main problem, we kind of focused on losing power supply to the pressure transmitters that were fed from the power supplies A and B, we wanted to make sure or we wanted to try to determine whether it was a failure of the failure supplies or power to the power supplies.

Q. That's it for me. Thank you.

BY MR. FASSETT:

Q. To clarify, I'm a gas guy and it tends to work differently on the electric side. When a breaker is open, that means current is not flowing through the breaker, right? And there's no power then going out.

A. There's no power to the power supplies that provide 24 volts.

Q. Right. To open the switch means no power.
A. Right.
Q. Us gas guys say a valve is open --
A. It's open.
Q. -- and energy is flowing. Thank you.
MR. CHHATRE: Are you done?
MR. FASSETT: Yeah, I said thank you.
MS. JACKSON: No questions.
MS. FABRY: No questions.
BY MR. SHORI:
Q. Mr. Kazimirsky, in terms of when that power supply, excuse me, when the breaker -- Sunil Shori, California PUC. When the breaker is open, would that be part of the process where the backup generator then would feed?
A. No, these, these are distribution breakers. The generators would feed the main power feed to the station in case of a commercial power failure. So this breaker, opening this breaker would have disconnected power to the control system regardless of whether there was a generator running or there was commercial power.
Q. So essentially this breaker, if you lost power upstream of this breaker, and this breaker was closed, that's where the generator would be able to pick this load up.
A. Not quite.
Q. How would this --

A. Not quite. The generator starts only on a loss of the main power to a terminal, to Milpitas Terminal. This breaker was way downstream from the main power.

Q. Okay.

A. There's a main power, main distribution, main power to the terminal. Then there is a power distribution panel downstream feeding the UPS. So the main power feeds the UPS system. Downstream from that system is the UPS distribution panel.

Q. So as long as this break was closed and you didn't have a disruption on your main supply to the facility, there would be no back up kicking in. There would be no generator, back up generator kicking in?

A. Well, the back up generator is -- there was no disruption to the power upstream, whether it was utility power or the generator, and this breaker stayed closed, we wouldn't have lost power to the control system.

Q. You wouldn't have?

A. No, we would not have.

Q. Okay. And that's what I'm trying to figure out. So in other words, if this -- if you lost power, the main power, the generator kicks in, but in order for that generator to have gotten power to these PSA and PSB, this breaker would still have to be closed?

A. That's correct.

Q. And so with this open, there is no alternate source --

A. That's correct.
Q. -- for the PSA or PSB?
A. That's correct. But the power to that breaker was supposed to come from the UPS. That's why that was uninterruptible power. So this breaker normally --
Q. I'm sorry to cut you off. So let's back up a minute.
A. Okay.
Q. The power to the breaker was supposed to come from the UPS?
A. The panel that the breaker was installed in, is the distribution panel from the UPS.
Q. Okay.
A. So the main power provided to that panel comes from the UPS. And the UPS would provide power either from the commercial source, normal power source or from the generator. If we lose commercial power for maybe a half a minute to a minute, the UPS will draw the power from the battery bank until the generator starts. It takes about a half a minute for the generators to start. So we have commercial power, battery bank and then the generator. During this transition from commercial power to the generator, the batteries feed the load of the terminal. So that panel, the UDP panel that we're talking about, where the breaker is installed, would be continuously fed from one of these three sources.
Q. And so all of those again, the commercial power, the

UPS, the generator and then finally getting to RPS PSA, PSB, these are generally in series.

A. No, they're in parallel actually. One at a time, but in parallel.

Q. Right. Okay. But any one of those three can be supplying PSA, PSB depending on what's available?

A. That's correct.

Q. So in this particular case, there is no disruption to the commercial power.

A. That's correct.

Q. To the facility.

A. Right.

Q. The UPS is not connected.

A. Right.

Q. In order for the one with breaker open, it's not seeing the UPS.

A. That's correct. No. In order for the breaker to be open, either somebody had to open it or the current on the circuit of that breaker would be higher than the breaker's rating. Then the breaker would trip or open.

Q. For one reason or another, the breaker opened.

A. We don't know that.

Q. Right. But you said it was open.

A. No.

Q. We don't know how.

A. No, I'm not saying it was open. I said that we suspect one of two things, either somebody opened the breaker or power supplies A and B both failed. And we can't say for sure which one of those two reasons caused the loss of power to the pressure transmitters.

Q. And the failure of PSA or PSB, that itself could have been the trigger for the breaker to open?

A. No, the breaker could still be closed, but the failure of PSA and B would result in a loss of 24 volts to the (indiscernible).

Q. I wasn't sure if I was going to the location on Friday, but after this I will. Hopefully these can be pointed out a little better.

A. I can try to explain it again. The breaker --

Q. Hopefully we understand it --

A. I understand. The breaker feeds 120 volts AC to two power supplies.

MR. CHHATRE: Can I make a suggestion? Can you draw that thing?

MR. KAZIMIRSKY: Absolutely. This is commercial power coming from the transformer (indiscernible). Standby generators, actually we have two standby generators. If we lose commercial power, the generator will start automatically, but for the generator to start to get up to speed and start generating electricity, it takes maybe 15 to 30 seconds. During that time,

the battery bank will provide that AC to maintain power to the terminal. That's a battery bank. You've been to the back room where the UPS is, maybe you remember, there's a couple of trays with the large battery bank. That's what it was for. Once the power is established, whether it comes from here, here or here, it feeds several distribution panels. One of them is called the UDP, and that's the power distribution panel. Now at the time, the old panel had I believe eight breakers. One of those breakers was providing AC power to power supply A and power supply B, with 120 volts AC coming in, 24 volts coming out. These 24 volts out of these two power supplies was feeding a number of pressure, a number of instruments including pressure transmitters that are used for pressure controls. That's kind of what I have there. What we know for sure is that power supply A failed. It failed when we tested it, when we started the testing and it failed later on the bench. We know that. Our supply D, when we tested it after the incident when we had access to the terminals and started testing it, instead of 24 volts, it was generating close to about 17 volts (indiscernible), and that was enough to maintain the loads. But it was marginal. 17 volts is lower than the spec for that power supply calls for. So that's where our suspicion was. Either this one was failing or had failed and this one was marginal. There is a chance that when they noticed the loss of signals, maybe this one being marginal failed as well and maybe it was intermittent on and off.

Short of that, somebody could have opened that breaker, intentionally, unintentionally, but the result would be the same. That would result, that would result in the loss of power supply, one point to the power supplies and consequential to the loss of 24 volts (indiscernible).

MR. CHHATRE: Ravi Chhatre, NTSB.

BY MR. CHHATRE:

Q. How many UDP units you have making these?

A. It's not a unit. It's a panel.

Q. It's a panel.

A. That panel had, like I said, I think about 8 breakers that fed different rows of loads, different parts of the control system for the terminal.

Q. So the 8 breakers is telling me 8 outputs.

A. Correct.

Q. Okay.

A. I think it's 8. I don't remember the exact number.

Q. That's okay. And one of those goes to, is the current AC or DC?

A. This is AC.

Q. You were still at AC at that time?

A. Yeah. It's one 120 AC, 120 AC here.

Q. Okay.

A. And 24 volts here.

MR. SHORI: Again, Sunil Shori, California PUC. Are we

on the record?

UNIDENTIFIED SPEAKER: Yes.

MR. SHORI: Is the normal intent of PSA and PSB to be redundant supplies? Are they both required to provide --

MR. KAZIMIRSKY: No. One of them --

MR. SHORI: -- in order to get 24 volts?

MR. KAZIMIRSKY: One of them is only needed. We had two just for reliability.

BY MR. CHHATRE:

Q. And each supplies 25 volts?

A. 24.

Q. 24 volts.

A. Correct.

MR. SHORI: And that's a continuous. They both, they both supply 24. It's not one kicks in if the other fails or anything. They're both --

MR. KAZIMIRSKY: That's right.

MR. SHORI: -- constantly supplying 24 volts.

MR. KAZIMIRSKY: That's right.

BY MR. CHHATRE:

Q. What does the PT stand for? Is it PT or DT at the bottom?

A. Pressure transmitter.

Q. Okay.

A. There were pressure transmitters. There were position

transmitters. There's different devices (indiscernible).

Q. PSA and PSB, are they like a car battery or the thing your computer back up on.

A. No, it's just a power supply. It's a simple device for converting AC to DC and (indiscernible).

Q. Okay. It has no storage capacity. If it is coming AC, then it will not last.

A. Right.

Q. It has to be as continuous as possible.

A. Correct.

Q. So it's different than like your computer back up system where your computer will continue to work.

A. Well, if you have a battery, the laptop will continue to work.

Q. Right.

A. The desktop will not.

Q. That's pretty much it. It needs a continuous supply.

A. That's correct.

MR. SHORI: And, again, I don't know to what level your investigation has looked at the overall events at the station versus just the electronics, but in the early event of the work related to the UPS, there was a pressure drop from Milpitas. Have you looked into what was the source of that or what would have caused that?

MR. KAZIMIRSKY: I'm not aware of any pressure drop.

Well, we did get some readings at 0, but that happened when the power was turned off for different parts of the controls, to install the temporary UPS system. So during that time, pressure readings were going to either 0 or even to a negative number.

MR. CHHATRE: Ravi Chhatre, NTSB.

BY MR. CHHATRE:

Q. The PSA, PSB are your UPS?

A. No, the UPS is here.

Q. Okay.

A. These are separate power supplies.

Q. I saw several small units.

A. That's part of the UPS. The UPS was a big cabinet in the back room.

BY UNIDENTIFIED SPEAKER:

Q. I'm not an electrician and I (indiscernible). We talked about or there was a discussion about 0 and perhaps even a negative number. In the real world, is that really a 0 or negative number?

A. No.

Q. It's just what the instruments would have been displaying in the absence of power.

A. These instruments are scaled to a certain (indiscernible) scale.

Q. Right.

A. In this case, all of the pressure transmitters at the

terminal are scaled 0 to 800 pounds. When they convert that pressure to the electric signal --

Q. Right.

A. -- it's either 4 to 20 milliamps or 1 to 5 volts. And that's the minimum. 4 milliamps or 1 volt corresponds to a 0 pressure. In case of a power loss, like if we lost both of these or lost AC to them, instead of 4 milliamps or 1 volt, we would need 0 milliamps and 0 volts. On the scale of 0 to 800, that would be 20 percent, 25 percent of the scale and 4 volts on 800 pounds --

Q. Okay.

A. -- that's 200 pounds per volt. So a loss of signal completely would mean minus 200 psi.

Q. All right. So that answers the electrical part of this. In the real world, in the pipe, would the pressure be -- what would the pressure be or can you tell?

A. The pressure would be whatever it was prior to --

Q. That's my question. It's not going to go to 0. It's not going to go to 20.

A. It's not the actual process.

Q. That's what I wanted. Thank you.

BY MR. SHORI:

Q. Mr. Kazimirsky, okay, and basically this is in the analysis at 16:20, we received multiple alarms from Milpitas Terminal indicating changes to controller status between auto,

manual and local as well as pressure on the outgoing lines to a low low, and valve position percentage low indicating closed valves. So -- and again, with the loss of power, with a loss of signal to the control valves, the indication was that they go wide open and that's the way the station is designed. Why --

A. Only the regulators. Not the monitors.

Q. And I understand that, the regulators.

A. Correct.

Q. But again, the monitors are already sitting wide open and assuming that we haven't reached the high point yet, they're staying open.

A. Correct.

Q. So in this particular case, this is indication closed valves, indicating low low alarm. So basically something -- things are closing down, not opening up.

A. Not necessarily, no. First of all, the, the regulators are electrically operated valves and they are supplied with AC, I don't even think from the UPS, but regardless of whether they come from the UPS or not, they're not supplied from this panel. They're supplied from (indiscernible). So a loss of the regulators, no way would move the valves. However, if you lose these signals, the valves would be driven to go wide open because they still have power. Each valve is supplied with a position transmitter. So a loss of 24 volts would result in the signal from a position transmitter going to 0. So again the valve would

be moving to a wide open position but the transmitter on the valve would be showing 0, closed. So the readings in SCADA, in the case of power loss, the readings in SCADA don't necessarily, in fact, in most cases would not reflect the actual position of the valves and again are more likely to show (indiscernible) that's a position transmitter. The valve is somewhere in the pipeline with the electric monitor, and the position transmitter has a mechanical link to the valve stem. So when the valve moves, the position transmitter normally reflects the rotation of the valve stem and converts it to electrical signals. However, it needs to have that 24 volts to do the conversion. If there is no 24 volts, the mechanical part of that instrument will still work. However, conversion from 4 to 20 or 1 to 5 volts is not going to happen because there's no instrument power. So when SCADA show closed positions or low low, that was only the result of a loss of this power because these instruments essentially became disabled.

MR. CHHATRE: Ravi Chhatre, NTSB.

BY MR. CHHATRE:

Q. The main breaker the tie UDP to?

A. No, there's several breakers. I just showed one. Number 14 was feeding --

Q. Okay.

A. -- these power supplies. There are several more.

Q. Number 14 breaker was feeding only those two, PSA and PSB --

A. As far as I remember, yes.

Q. Now how often -- how long you have been (indiscernible) at Milpitas?

A. At Milpitas.

Q. At PG&E.

A. I've been at PG&E for 30 years. I've been working with Milpitas ever since it's been rebuilt in 1989.

Q. Okay. Have you seen both power supplies went bad at same time?

A. No. In fact, we've been using these power supplies for the last 20, 25 years, and we keep using them because this is one of the most reliable and most commonly used (indiscernible).

Q. And from your experience, do you know what a typical life would be and what time you usually replace them?

A. There's no typical life for these power supplies. We never had problems with them. After this incident, we contacted the vendor and they told us that normally the expected life of these power supplies is about 20 to 25 years. But that is not mentioned in any manual nor in any conversation that we have had with them in the past.

Q. How long those two have been in service at the time of that --

A. About 20 years. They were installed in 1988, 1989.

UNIDENTIFIED SPEAKER: Is there ever any -- again, I'm not an electrician. Is there ever any maintenance --

MR. KAZIMIRSKY: No.

UNIDENTIFIED SPEAKER: -- at all? Plugged in. That's all. No periodic --

MR. KAZIMIRSKY: No, they don't require -- they don't have any maintenance requirements. They're not recommended for maintenance testing or anything else.

MR. CHHATRE: Okay. You can continue. I'm sorry to have interrupted you.

MR. KAZIMIRSKY: That was one of the questions that we checked with the manufacturer after the incident, whether they would need to change our practice, to do some maintenance testing and the answer is no. Perhaps when they reach the end of their expected life, we will just need to start replacing them.

MR. SHORI: Just one or two last questions.

BY MR. SHORI:

Q. In terms of the pressure transducers or pressure -- PTs basically that were lost, PSA or PSB are lost, again the operation of the monitors, feeding the header, it's supposed to be they're pneumatic. So that -- the loss of those shouldn't affect whatever the setpoint on the monitors is.

A. Correct.

Q. And so even with that loss, you would expect them, if they were set for let's say 386, you would expect those monitors to control at 386?

A. Correct.

Q. Can you explain why --

A. Having said that, when the regs, in this case, when the regulators opened, the pressure started rising. When it reached 385, I believe that was the setpoint of the monitors. The monitors started reacting. They started closing. However, it took them some short time to reduce the pressure. That's why initially we had an overshot of I think 392 or 94. That was the time required for the monitors to take over the controls.

Q. Is that normal, a 6 pound overshoot?

A. It's normal especially if you consider the pressure ranges, and it's not quite overshooting. When you say the overshoot, that means when the, when the variable exceeds the setpoint, the controller will take over but there will be some overshot. This was a different case because the regulators kept open. So it wasn't quite the overshot. It was the response time that the monitors needed to start reducing pressure. So on that range, 6 pounds is a very practical response.

Q. Thank you.

MR. KATCHMAR: Peter Katchmar, USDOT, PHMSA.

BY MR. KATCHMAR:

Q. Does it make sense to feed both PSA and PSB with the same feed?

A. (indiscernible).

Q. Yes.

A. It's changed. In the new system, we provided two

separate breakers.

Q. Yeah. That just makes sense to me. And I guess, I guess you said they're very reliable. You've never had any problems with them.

A. But had it been done like that even initially, that wouldn't make any difference because if they failed, they failed. Whether they failed on the same breaker or not.

Q. True. If they fail.

A. Right.

Q. But if somebody, if it's number 2, and somebody pulled the breaker --

A. If somebody pulled the breaker, having separate breakers would have helped. However, if somebody pulled the breaker, that should have been done -- that would have been a mistake because it shouldn't --

Q. Right, but it wouldn't have -- having the PSA and PSB functioning correctly, you pull the breaker for PSA and PSB is -- takes over.

A. Correct, but that's kind of Monday morning quarterbacking.

Q. Well, it's hindsight.

A. Yeah.

Q. Have you changed any other setups like this at any other stations? Have you changed it to the two breaker system now?

A. Actually this was probably an exception. In most cases,

we do have separate breakers. In many cases, we even have separate panels.

Q. Okay. Okay.

A. So that's not typical for us. And frankly, this system was installed 27 years ago. I frankly don't even remember what choices we had at the time.

Q. Okay. That makes sense. Could you explain to me, this whole setup of the monitor and the regulators, the control valves, you're talking, you call regulators, is the monitor -- I know it's set at 386. Doesn't it control on 386 all the time?

A. No, it does not.

Q. It does not. Could you explain that to me please? You're welcome to turn the page.

A. Thank you.

MR. CHHATRE: Before you do that, would you mind putting the date and your initials on there so we can identify the document. And one more favor, if you go back to that chart, I think you added another breaker in there but that really is --

MR. KAZIMIRSKY: (indiscernible).

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: The setpoint here is less or equal the MOP. The setpoint for this valve, and this is a monitor valve, is actually not even (indiscernible). So we never allow these valves to exceed MOP. So these valves never actually operate unless there's a problem with these (indiscernible).

BY MR. KATCHMAR:

Q. Is there a control line to that valve downstream?

A. Oh, yeah. This valve, this is a pneumatic valve. These two are electrical valves and monitor themselves.

Q. Okay. But where's the control line for that valve?

A. The same line would go --

Q. What's that UTC?

A. UIC is --

Q. UIC.

A. -- are the Siemens 352 controllers and actually in reality they're two controllers, one for one valve and the other for the other valve. That's (indiscernible).

Q. The flow is from right to left.

A. The flow goes this way.

Q. It goes this way.

A. It doesn't really matter. It can go either way. It depends on -- actually the flow can go either way and the valve arrangement doesn't have to change. It depends on where the MOP break joint is. If the break is here, then the flow goes this way. Otherwise, it would go the other way.

Q. Okay. I guess I'm just not familiar with this. I thought I understood it when I was down at Milpitas and you explained it, and I tried to explain it to Mr. (indiscernible).

MR. CHHATRE: (indiscernible) going there now?

MR. KATCHMAR: Yes.

MR. KAZIMIRSKY: Do you want the flow to go the other way?

BY MR. KATCHMAR:

Q. I think that's the way it is down there, correct?

A. No, I think it's --

Q. It's not.

A. I think it's just -- I don't have the diagram.

MR. CHHATRE: I thought it flowed from right to left. That's what I thought.

MR. KATCHMAR: That's what I thought, too.

MR. KAZIMIRSKY: No, I don't think so.

MR. KATCHMAR: Wow, I'm way off then.

UNIDENTIFIED SPEAKER: Imagine that.

MR. KATCHMAR: I'm not usually off that much.

MR. KAZIMIRSKY: Okay. You're not.

UNIDENTIFIED SPEAKER: It looked to me like the way I understood it.

MR. KAZIMIRSKY: Some flows in Milpitas, some rounds at Milpitas are bidirectional. Okay.

BY MR. KATCHMAR:

Q. I did notice that because you had like three lines --

A. Some of them are bidirectional but the outgoing ones, the lines going to Peninsula are single directional and they are arranged like that. The monitor is downstream from reg.

Q. What I understood on the big chart that you explained

it, what did you call that?

A. The mimic panel.

Q. The what?

A. The mimic panel.

Q. Mimic panel, right. Right. It appears to me the way I remembered it, the lines incoming are on the right and they go up and over and then down and off to the left, bottom left.

A. That's correct.

Q. And so this particular situation was in kind of a top middle.

A. Yeah, you're right. The way the panel is arranged, it kind of matches the physical layout of the plant.

Q. Okay.

A. But the bell sequence is like that. We have regs and the monitors are downstream from the regs. They just appear -- the way the panel is laid out, they appear on this side but the flow actually runs that way. The way the terminal is shown, these are incoming lines.

Q. Right.

A. Then we have these (indiscernible) rounds, several of them.

Q. Sure, the scribers and the --

A. And then they go through the header and when they come out of the header, that's when they go to 132 or wherever else, and I believe the monitors are downstream somewhere before the

header, somewhere here.

MR. CHHATRE: Is that helpful?

MR. KAZIMIRSKY: Absolutely. That's what I was looking for. And right here, going through the terminal, that's where we come into the terminal.

BY MR. KATCHMAR:

Q. You said you had one coarse, one fine control valve, and then I thought upstream of that control valve you had these.

MR. CHHATRE: Sir, can you put that drawing (indiscernible)?

UNIDENTIFIED SPEAKER: Yeah, 26.

MR. KAZIMIRSKY: They're upstream.

UNIDENTIFIED SPEAKER: They're upstream.

BY MR. KATCHMAR:

Q. Okay. That makes sense to me. Now would you explain to me I guess or to the group in your scenario here, the flow's this way. So these are upstream. So -- and, and usually when I'm --

A. If they're upstream, then they -- can I flip the page?

Q. Yes, that --

UNIDENTIFIED SPEAKER: The sensor is downstream. The sensing line is downstream.

MR. KAZIMIRSKY: The flow is this way and the sensing lines will be here.

MR. KATCHMAR:

Q. There you go. That makes sense. Okay. So my point was

I guess is that this thing is always --

A. This valve is always open.

Q. It's always wide open because it's sensing 375 downstream because those two valves are set at 375, the MOP, or less --

A. Correct.

Q. -- depending on, you know, whatever you do. So then, so then if these two control valves then --

A. Yes.

Q. -- the two downstream regulators don't control on MOP any more, they fail open. Then the pressure is going to be allowed to increase to the -- to where this one senses 386 down there, and then it's going to stop. It's going to stop flow at 3 or the pressure to increase to 386.

A. It will control the flow.

Q. It will control --

A. The pressure, I'm sorry. It may still flow. In fact, it will still flow but the pressure will be reduced --

Q. Right.

A. -- to the maximum of MOP plus 10 percent or lower depending on what the setpoint for these valves are.

Q. Okay. Now we were also talking earlier today about perhaps there's an adjustment on that valve that you can set it to react faster or slower. Is that correct?

A. Yeah, that's correct.

Q. Okay. And I guess because it's a pneumatic valve, why wouldn't you set it to the fastest reaction speed? Is there a reason?

A. Yeah, there is a reason and what happens, if you make it respond too fast, too quickly, then under normal conditions the controller will become unstable. If it responds too fast, it will start oscillating.

Q. Got you. Okay.

A. So you've got to --

Q. I've seen that.

A. -- find the balance where you allow some overpressure, but not too much to reach the oscillation point.

Q. I've seen that. You're right. Okay. I've seen that.

A. That's how all the controllers are tuned.

Q. Okay. But there's no way that that valve could fail at a higher setpoint than it is physically set.

A. Possibly there is but that would be a second failure and we design all our systems for a single failure, for a single failure. So for this valve --

Q. That's the second --

A. -- the overpressure, then these two need to fail and then this valve needs to fail.

Q. Okay. And for those two to fail because they're electric, you have to lose your UPS, your generator, and your commercial feed --

A. That's correct.
Q. -- or your power supplies?
A. That's correct.
Q. Okay. Thank you, sir. Thank you very much.
MR. CHHATRE: Questions?
BY MR. SHORI:
Q. I wanted to clarify one more thing from this morning just to make sure that it is the case. That regulating, the monitor valve, has two modes of operation. One is pneumatic which can't be altered. So once you've set it, that's where it will control at. The other is, it does have remote capability to be able to lower the setpoint on it, but you can't raise the setpoint. Is that correct?
A. You can do both. You can raise and lower it. However, it wouldn't allow you to raise it above MAOP. Gas control has the ability to change the setpoints for these valves going both up and down. They also have the ability to manually position valves but even if they position them manually, once the pressure here reaches the maximum, even in the manual mode, these valves will start closing.
Q. So you're saying on the monitor you actually can increase it?
A. Not the monitor, the regulators.
Q. Right.
A. This is the monitor.

Q. That's all I'm trying to, that's all I'm trying to get. I fully understand as far as the (indiscernible). You can change those around and set those to whatever it is you want to feed, but on the monitor, you've got a pneumatic setting.

A. That's not accessible remotely.

Q. That's not accessible remotely, plus it's got a remote setting which I thought could only be lowered, but you're saying it could be lowered or increased.

A. What we have on the monitors in terms of remote, gas control in some cases has the ability to limit the opening of the valves. In other words, they don't change the setpoint but they can say that this valve shall not be opened more than 50 percent. However, if pressure here gets high, it will close more than 50 percent. It will keep closing, but it will not open more than what gas control wants. In other words, that gives them the ability to close the monitor at any time.

Q. And that's what I'm trying to get at is if you lower the setpoint, if you lower --

A. The position setpoint. Not the pressure setpoint.

Q. Position setpoint. So basically you can close it but you can't exceed the pneumatic setting of it --

A. Correct.

Q. -- in any case, in any event.

A. You cannot exceed the opening of the valve by more than what the pneumatic control will call for.

Q. And that has to be manually, that has to be manually changed at the valve?

A. Correct.

MR. CHHATRE: Any questions? Matt?

BY MR. NICHOLSON:

Q. The pneumatic setting on the monitor overrides the more control what you just said.

A. It doesn't override more control. It overrides the control of these valves.

Q. I'm sorry. I mean you said -- yeah, the controller has the ability to change what percent of flows on the monitor, right?

A. Correct.

Q. But the monitor will always respond to the pneumatic setpoint.

A. The pneumatic setpoint will override any other --

Q. That's what I thought.

A. -- control.

Q. So can anyone change the pneumatic setting on that valve or is it locked? Can anyone walking by can have access to the pneumatic setpoint?

A. I believe the cabinets are locked. Well, the controllers are in the cabinets. I can't say with 100 percent certainty that the cabinets are locked but they're definitely closed and the controllers are not exposed to someone walking by and accidentally, routinely change the setpoint.

Q. Can you go back to the first sketch? I have some questions. Okay. So on that layout there, you've got normal power generator and they both go directly into the UPS. There's no automatic transfer switch?

A. Yes, there is.

Q. There is an automatic transfer switch.

A. Absolutely.

Q. And that UPS you're showing there, didn't it fail back in March?

A. Yes, it did.

Q. So it's on bypass now or was.

A. Now there is a new one.

Q. Now there's a new one.

A. We installed a new one, yes.

Q. But on September 9th you didn't have a new one.

A. On September 9th, there was no UPS.

Q. So it was bypassed at that time?

A. Correct.

Q. So that's one failure. And then you're saying possibly power supply A and B failed which is supposed to be redundant. Okay.

UNIDENTIFIED SPEAKER: I'm sorry. Didn't you say PSA did fail and B was at 17 percent.

MR. KAZIMIRSKY: A was in the failed state.

BY MR. NICHOLSON:

Q. On the 9th.
A. After the 9th. I don't know where it was on the 9th, but when we tested it, it failed.
Q. I understand. B actually read 17 volts which is dependent on the threshold control.
A. Right.
Q. Back at the cabinet, the circuit --
A. But, but after the failure of the power supply, we installed several small temporary UPSes with a one hour capacity at some critical moments.
Q. And where did those -- you plugged those in where? Back to the main UPS panel.
A. They were spread over the -- several locations.
Q. And they were just plugged in.
A. They were just plugged in.
Q. That UPS you've shown up there, it's actually got its own panel, right? It's circuit breakers?
A. Right.
Q. And what are those breakers equated at?
A. From here?
Q. Yeah.
A. The UDP and several other panels that --
Q. But how many amps are they rated to? 15 amp.
A. The UPS, no, it's larger than that. I don't remember the rating, but it's larger than that.

Q. What's the rating of the circuit breakers at the panel, the UDP panel?

A. 50, 20 amp, I can't remember that. That's the level of details that you can only get from the drawings. I don't think anyone can remember.

Q. You keep a panel schedule in the UDP, right?

A. Yes.

Q. And that's updated?

A. Yes.

Q. So the person that might have opened that circuit would have known what was on that circuit from the panel schedule?

A. Should have known. Would have known? I don't know. I don't know if it was opened. If it was, I would think if somebody opened it, the person would know what he was doing. Otherwise, he wouldn't open it.

Q. But there was a panel schedule there that he could have referred to?

A. Yes.

Q. And have you checked that panel schedule?

A. Yes, we did.

Q. And it's got all those devices on it?

A. Yes.

Q. The two pressure transducers you show.

A. I show two, but in reality there's probably -- there's a lot more than two.

Q. But the two you're showing there, you're saying those are the controlling transducers to the two regulators? It's not two there. There's 26 controllers in that panel.

Q. Okay.

A. Out of those 26 controllers, I'd say 15 or so have pressure transmitters.

Q. But those transmitters, they're not put in with redundancy as well, right? It's just one --

A. No. They're feeding off the algorithm.

Q. I understand but it's just one. So if you lose a transducer, you've lost a transducer.

A. That's correct.

Q. You don't have redundant transducers.

A. That's correct.

Q. The shaft position, the encoder on the shaft that you got, that gets feedback on position. There's no alarm on that, is there? So if it immediately goes to 0, would the operator know it?

A. They would see that the valve --

Q. They would see the position.

A. -- closed probably.

Q. But they would not see an alarm?

A. They would not see the alarm. However, in most cases, and I can't say for sure they do it here, in most cases we use bulb position transmitters and switches on the valves.

Q. Okay.

A. And generally we use limit switches for the valve status closed because those are more reliable, more accurate. Position transmitters are normally used to show open and it's common knowledge that they're not very precise.

Q. All right. You showed -- on your other drawing, you showed UIC. I didn't catch that. Was that the same as PLC? What's that?

A. No, UIC is a symbol for multivariable controllers. It's the ISA abbreviation for multivariable controller. What we have in reality is Siemens 353 (indiscernible) controllers.

Q. That's got logic.

A. Yeah, it's got logic.

Q. So that's a --

A. It's what we call single (indiscernible) controllers.

Q. Uh-huh.

A. Now they're advanced. They have more than a single (indiscernible), but essentially the same devices.

Q. So it's PID control, full PID control, P I D --

A. Yes.

Q. -- control on that?

A. Uh-huh. That's what they are. And they can run more than one (indiscernible).

Q. Oh, they've got more than one channel on them.

A. More than one (indiscernible). In fact, in this case,

we control (indiscernible) with the same controller.

Q. You talked about the PSA and PSB failing and it seems highly unlikely. Did you say they were installed at the same time?

A. Yes, they were.

Q. Okay. And did you send one back to the manufacturer to have it torn apart?

A. No, we did not. We have both of them in storage. We tested them on the bench after we removed them and on the bench, both of them failed.

Q. You said the monitors are pneumatic. Are they driven by the gas or is there a compressor or --

A. There is a compressed air system.

Q. Is it backed up or is it on emergency power?

A. It's an emergency power. It's in the generator. So during the transition, they're not fed on the (indiscernible). They're not fed (indiscernible). But we have a large air tank and that's for starting the generator and still having enough compressed air to move the valves. We also have two generators, like I said, so that's backed up as well. The UPS is critical during that transition time.

Q. Sure. And the UPS is monitored. It's got alarms off of it to tell you if it's failed or flipped to bypass?

A. The UPS?

Q. Your UPS, is it tied into SCADA?

A. Oh, yeah. It doesn't have to be the UPS. We normally have an alarm on the loss of commercial power and a separate alarm when the generator is running.

Q. Okay. So you don't have any maintenance on the power supply A and B. You just pretty much run to fail with redundancy. That's what it sounded like.

A. Correct. We do have an alarm, a power supply alarm which we did see when -- after the fact. I don't know the alarm came in. It could have been prior to September 9. It could have happened on September 9.

Q. You did get an alarm?

A. It's a local alarm. They have an alarm like locally.

Q. For the power supplies?

A. Yes.

Q. Okay. And where does that show up?

A. On the panel, on the mimic panel.

Q. On the mimic panel.

A. You haven't been to the terminal yet.

Q. I haven't, no, and I want to go there. So I'll save some of these questions for then. But if you lose your battery on the UPS, you get an alarm through the UPS.

A. That's correct.

Q. That's all. Thank you.

MR. SHORI: Sunil Shori, I just wanted to follow up.

BY MR. SHORI:

Q. As far as on September 9th when the UPS was basically bypassed, so in that regard did the generator kick in on that -- during that night? Do you know if the generator had to kick in at all?

A. We didn't need the generator because we never lost commercial.

Q. You never lost commercial. So there was no generator that kicked in. Okay. Also there's --

MR. CHHATRE: Identify yourself.

MR. SHORI: Yeah, I'm Sunil Shori, California PUC.

BY MR. SHORI:

Q. There's also three other monitoring points, MMTPT00388. Do you know what that refers to?

A. No, I can't remember the tags.

Q. May I show you the --

A. Sure.

Q. These three.

UNIDENTIFIED SPEAKER: Would you identify the document if you're going to ask him questions about it?

MR. SHORI: It's NTSB Response 001-013-S1-Amendment.

UNIDENTIFIED SPEAKER: Can you read the question and the answer?

MR. SHORI: The question is does he --

UNIDENTIFIED SPEAKER: No, for that response. What was the question and the answer provided.

MR. SHORI: Sure. The question, provide the pressure readouts four hours before rupture, four hours after rupture. The pressure reads at Milpitas Terminal for lines 101, 109 and 132 have been added to a spreadsheet. Please see attached. The pressure reads were recorded by SCADA and were unaffected by the Milpitas clearance work. These SCADA data points are used for calculations and operations at Milpitas. These data points are inputs into the outgoing flow calculations and are not displayed in gas control. The data points are embedded in the SCADA historian. The data points were identified as part of the incident investigation. Since Milpitas Station feeds the gas transmission lines running up the Peninsula, the pressure reads reflect the highest pressures that line 101, 109 and 132 experienced during the incident.

And what I am referring to are three locations or three sensing points, MMTPT00388, MMTPT0031, MMTPT0032. These are all indicated on respective lines 109, 132, 101 at mile point 0.00.

BY MR. SHORI:

Q. And I guess what I'd like to know is if these transducers or these readings were still available at the station, why were they not being used by the equipment?

A. I'm drawing the same sketch.

Q. Okay.

A. This is what they have at the terminal. Okay. It's simplified. I didn't show all (indiscernible). I just showed one

valve for the sake of simplicity. It's the same monitor valve. They don't use it in instrumentation. It's a direct connection to the pipe, to the pipeline and then pneumatic control to the valve. We have a pressure transmitter going through the UIC, the (indiscernible) controller to control the regulator, and that's the PT, that's a pressure transmitter that is displayed on the SCADA screen. Additionally, they have flow meters on those lines. Each flow meter has at least three transmitters, a pressure, differential and temperature. Those are used strictly for flow calculations. They are not used for controls, and because all instruments have a certain specs, certain accuracies, it's very difficult to have two transmitters next to each other showing the same number. There's always going to be a little difference between. In most cases, there will be a little difference. So what we chose to do is we show these transmitters that are used for pressure control on SCADA screens, so the operators can see what the setpoint is and what their actually controlling at. For the flow measurements, we only display the result of flow calculations, the actual flow rate. Individual instruments, pressure, temperature, I didn't show the temperature. There should be a temperature transmitter here. Those individual transmitters are not shown on the SCADA screen. They still get sent to SCADA. They still get stored in the historian but they're not displayed, first of all, not to confuse the operators and the screens are crowded as it is, not to display data that is not

really essential for operating the system. So these points that you asked me about are here. They're in the middle. The way the system is wired, the transmitters for the meters are not connected to PSA and PSB. They are fed from a different power supply. So when we lost these, these transmitters were probably still in operation. When they did switch over, when they changed power, power supplies that were feeding these, that's where they could have seen 0 on the SCADA records.

Q. Okay. Thank you very much. And you said in this particular case, I mean basically it's transmitting data but there's no control for that reading?

A. Correct. This is data monitoring. This is data monitoring. This is monitoring as well as what we use to monitor the controls, not only monitor the (indiscernible) condition, but also to do the controls.

Q. Thank you.

MR. CHHATRE: Any other questions?

Ravi Chhatre, NTSB.

BY MR. CHHATRE:

Q. Can you go back to the previous sketch? Can you somewhere in there write down what RL and RT means?

A. I'm sorry.

Q. Can you write down what RL means? You can write it at the bottom if you want.

A. This is (indiscernible). These two valves actually

(indiscernible) they set. One of them is in the trimmer and one of them is a wall monitor.

Q. Okay.

A. At least that's the terminology that we use.

Q. But they both require juice, a signal of some sort.

A. Correct. I'm sorry. They both require AC. Not just the signal, but AC.

Q. AC.

A. Correct.

Q. What about M?

A. Mapping monitor valve. It (indiscernible) the controls.

Q. Now those small areas that we saw during our last visit at Milpitas, small UPSes --

A. Uh-huh.

Q. -- why put them up? I don't remember.

A. That's for the UPSes.

Q. And if you go back to your previous sketch.

A. The next one.

Q. No, the previous one.

A. Oh, yeah.

Q. And that was because the UPS failed.

A. Correct.

Q. Those -- I forget your (indiscernible). What they were feeding power to?

A. They were supposed to feed the power to PSA and B --

Q. That's what I thought they were doing at that time.
A. -- and several other loads. They were supplying power to the station PLCs.
Q. Okay.
A. They were supplying power to the Siemens controllers. I frankly don't remember how else (indiscernible).
Q. Does that mean they're bypassing your UDP, the UDP or UDD?
A. Correct.
Q. Is that UDP or UDD?
A. UDP.
Q. UDP. Okay. Now if they were bypassing UDP, why would the breaker become an issue?
A. That's what (indiscernible) wanted.
Q. Okay.
A. Originally we had the UPSes there, as the work is being done, we don't know if the UPS was still left in place or if somebody (indiscernible) tried to rewire it back (indiscernible). That's the part that was questionable and that's why I more personally, that's (indiscernible) conclusion. Personally, I'm more suspicious about (indiscernible).
Q. Those UPSes were supplying power to PSA and PSB, breakers merely (indiscernible) power supply at that time?
A. It becomes available.
Q. So (indiscernible).

A. That's like I said. That's why personally I'm more suspicious about these three devices than anything else, but like I said, there's still a potential of somebody turned the breaker, and that's why I mentioned it.

Q. This sketch is a lot clearer than just listening to you, but now I'm thinking if that is the situation, (indiscernible), somebody accidentally turned the breaker off, PSA and PSB still should be supplying power.

A. Oh, if there was a temporary UPS?

Q. Yes.

A. Yes, it would.

Q. If there was a UPS at the time of the incident.

A. Absolutely. Absolutely. You're absolutely right.

Q. Now PSA and PSB, how many of those do you have of that type, power supply do you have?

A. At the terminal?

Q. At Milpitas Terminal.

A. We have, that particular type, these were the only two we had. We had two other ones of the same brand but different type.

Q. Same vintage, same age?

A. Yes.

Q. Do you have any of these type at other locations someplace?

A. I'm sure we do.

Q. Same vintage, same age?
A. I can't say. We have different vintages. We --
Q. Okay. My question then is with USPes and (indiscernible), has PG&E to your knowledge informed other locations that take a look your PSA --
A. We are doing that as we speak.
Q. But the process has not been completed?
A. That's one of the lessons.
Q. To your knowledge, has any of those power supplies at other locations have been replaced as a precautionary after September 9th?
A. I'm sure some of them have been replaced over the years but when they were, that would be part of the maintenance work that I'm not directly involved with. If the power supply fails, we may be contacted, my group may be contacted asking for advice. In most cases they would simply buy an identical power supply and install it on an as needed basis.
Q. So that is an off-the-shelf item that you store those like any other supplies?
A. Not that I'm aware of and I don't think it's really practical because they don't fail very often. If we buy spares, they're going to be sitting somewhere on the shelves --
Q. That's right.
A. -- and nobody would even remember that they're in existence.

Q. Right.

A. And these things are generally available within two to three days, maybe overnight under certain conditions.

Q. Okay.

A. I'm sure we have some spares somewhere. I know I have some in my office.

Q. Okay. Now again going back to the last sketch that you had, we're told that like 8 or 16 wires coming out of that portable UPS was moved or somebody was, you know, tweaking those wires (indiscernible). Do you have any knowledge of that?

A. It wasn't in the UPS. It was in that large control panel.

Q. Which is the UDP?

A. No, that was the mimic panel.

Q. Okay.

A. We did find some loose wires. It's hard to say if they were the cause of the problem. I doubt it because generally a loose wire becomes a problem if you move it. Once it's in place, generally it maintains contact.

Q. Remains like that. Now where those wires were, which unit you are talking about on your sketch, those wires you just mentioned?

A. I didn't show that but if you remember the arrangement of the panel, as you walk in, there was a distribution panel right across the door in the back room. That was the UDP.

Q. Okay.

A. These were sitting down below the console, beside that panel. That's where the loose wires -- that's where we found loose wires.

Q. Okay.

A. Within the same panel.

Q. Okay. I don't want to crowd that sketch any more. The loose wires, were those feed PSA and PSB or they're not feeding it?

A. No, they were not feeding PSA and PSB. They were feeding different loads. I can't say now how related they were to PSA and B. I know we found some loose wires in the AC distribution logs. So conceivably that could have been found, but again since nobody touched it, when the problem occurred, I doubt if that (indiscernible).

Q. So (indiscernible) the loss of power (indiscernible) that trip the valves related to PSA and PSB --

A. That's absolutely correct. Some were here when power was lost. Whether it was here or here, but the bottom line is that's where the problem started probably.

Q. So the PSA and PSB were fed by the portable units then.

A. I'm sorry.

Q. The PSA and PSB were supplying -- were supplied juice by the portable UPSes. I guess -- can you do that on the same thing? Beyond that, before (indiscernible)?

A. I can't answer that because when it happened, I really don't know if A and B were given power from the (indiscernible) UPS or from here. I don't know. I can't tell you about that.

Q. Is there any way to (indiscernible) that or --

A. We've been trying to but I don't think we came to a solid conclusion.

Q. What kind of information will confirm it? This is making it very interesting as to what could have happened. So --

A. Again, even if it was a temporary power supply, a temporary UPS here, especially if it was a temporary UPS here, then these two power supplies become even more suspect.

Q. That's what I'm saying. To me, if I remember correctly, I thought I was told, I believe we were told in the last visit those portable units were feeding -- right. That's my understanding.

A. I believe you are correct. I think that's how it was when the --

Q. When the event occurred.

A. -- when the event occurred. I believe you're correct. In which case, that breaker becomes irrelevant.

Q. I think everything before that becomes irrelevant at that point.

MR. CHHATRE: Go ahead.

BY MR. NARVELL:

Q. This has been interesting on electricity. I have kind

of one bottom line question that goes back to the --

MR. CHHATRE: Identify yourself for the record.

MR. NARVELL: I'm sorry.

MR. CHHATRE: Identify yourself.

MR. NARVELL: Oh, Rick Narvell, sorry.

BY MR. NARVELL:

Q. I believe this was conveyed (indiscernible) to the incident, but at any point, did the pressure in that line to your knowledge exceed what it was supposed to?

A. No, and that I can say with 100 percent certainty.

Q. Thank you. That's all I have.

BY MR. SHORI:

Q. Just one follow up. I think earlier in my question, maybe one sketch down --

MR. CHHATRE: Identify yourself.

MR. SHORI: Sunil Shori, California PUC.

BY MR. SHORI:

Q. -- the three transmitters that you had on the flow meter, you have the pressure --

A. I'm sorry.

Q. The three transmitters, you have pressure, temperature and what was the --

A. Pressure, differential and temperature are displayed.

Q. Thank you. That's all.

MR. KATCHMAR: Peter Katchmar, PHMSA.

BY MR. KATCHMAR:

Q. Mark, you said a couple of times in your answers that someone could have pulled the breaker or somebody could have done this, somebody could have done that. Did you ask the people that had opportunity to do that specifically if they did that?

A. Yes, we did but we didn't get -- we had some disconnect in the answers and as more time goes by, obviously the worse their recollections are. So that's why I'm saying I can't say.

Q. I just wanted to get that on the record --

A. We did ask.

Q. Yeah, that you had actually asked.

A. I'm still more suspecting that somebody did something, but like I said, seeing both power supplies fail on the bench, that's what I tend to lean towards.

Q. Right, and bottom line is, like you say, the pressure in the pipeline went up 21 to 27 pounds.

A. I looked at the pressures. I said (indiscernible). I looked at the pressures, not at the terminal, but at every station downstream from the terminal, all the way up the Peninsula and in no place at any time did we see a pressure greater than 392 or 94, something like that which is still below MOP --

Q. Right.

A. -- let alone MOP plus 10 percent.

MR. CALDWELL: Geoff Caldwell, City of San Bruno.

BY MR. CALDWELL:

Q. How many times to your knowledge has line 132 been filled with greater than 392 or 94 pounds?

A. I have no idea.

Q. Has it ever?

A. I can't answer that. That is something that perhaps we can look at the records over the years, and I'm not even sure those records exist.

MR. FASSETT: This is Bob Fassett. For clarity, that's been provided in one of these NTSB reports, responses, but I can't remember which one.

BY MR. CALDWELL:

Q. One other question, Mark. When PSA and PSB failed or when the power failed, did all of the pressure regulators go full open at the station, all of them? All that were controlled by those?

A. I would say yes, but again I need to -- I would need to look at the schematics because most of the pressure transmitters used for controls were fed off these two power supplies but there are other transmitters that are fed from different sources. So maybe some of them were not impacted.

Q. But the ones that were controlled by this, would have gone full open?

A. (indiscernible).

Q. Thank you. That's all I have.

UNIDENTIFIED SPEAKER: I've got a question.

BY UNIDENTIFIED SPEAKER:

Q. The pneumatic actuator on the monitor, is that double acting or single acting?

A. I (indiscernible).

Q. Okay. You're saying they're double acting but they don't fail (indiscernible).

A. (indiscernible). In the case of a valve actuator, yeah, (indiscernible). In the case of a (indiscernible).

Q. Okay. And then the actuator, just to clarify, the actuator is on the regs (indiscernible)?

A. Correct.

Q. So they're (indiscernible).

A. (indiscernible).

Q. That's it.

BY MR. CHHATRE:

Q. Going back to your monitoring valve (indiscernible) there is some overshooting of the pressure because the pressure sensor keep kicking in and out. Is that --

A. Because the controller has set a response time.

Q. Do you have an idea as to how much play or how much overshooting the valve will do?

A. There is really no single answer to that. It depends on what the pressure is and how fast the pressure changes. That response time will change depending on process conditions.

Q. But neither the manufacturer or PG&E has done anything

to develop an estimate on that or --

A. Well, like I said, there's no estimate. What we do is we tune the controller to get the fastest response without going into oscillation.

Q. Okay.

A. That's how every controller is tested.

Q. So individually tweaked?

A. Yeah.

Q. Now I believe at some location we saw a reading that was close to 390 psi.

A. I'm sorry.

Q. We saw a number about 390 psi --

A. You mean at Milpitas?

Q. Not at Milpitas. I think it was further downstream very close to Martin Station I think.

A. Right.

Q. Somewhere in there. Way downstream of Milpitas.

A. Correct.

Q. Again, going back to that pressurization, if your monitoring valve will take some time, has been done any calculations as to how much volume or what pressure has to be for the downstream pressure to be around 390?

A. I don't know if PG&E has done any calculations, but again for that pressure to propagate, there's no single number or time. It depends on the flow at the time. If you have a high

flow in the line, the pressure may never actually get to a high point downstream because it's going to dissipate along the way.

Q. Correct.

A. If you don't have any flow and the line is packed, that's going to be a fairly quick pressure rise, even farther away from the station. So you can't really do any calculations if it changes. It changes continuously.

Q. So is there a history that you are aware that -- of the packing of line 132?

A. I don't know. That's part of the operations. Perhaps they --

Q. That's operations. Okay.

A. I wouldn't know.

Q. Okay.

MR. CHHATRE: No further questions. Anybody has any questions?

Thank you so much for the --

UNIDENTIFIED SPEAKER: I've got one more question.

MR. CHHATRE: Okay.

BY UNIDENTIFIED SPEAKER:

Q. I could save it for when we go to the station but the parallel regs that are run, you called one a load and one a trimmer. Are they redundant regs?

A. No.

Q. They're not.

A. The way they operate is the load valve is a larger size valve. A trimmer is a small size value, and their characteristics actually overlap. So when the controls say pressure downstream, the first response is by the trimmer valve, by the small valve. It's like the (indiscernible) controller.

Q. Okay.

A. So the pressure is higher than the setpoint and the trimmer valve starts closing. If the small valve, closing that small valve is sufficient for bringing the pressure back to the setpoint, at some point that small valve is going to start moving. If that valve gets below 20 percent open, that's when the large valve starts closing. As soon as the large valve starts moving, the pressure will drop below the setpoint, and the small valve will start opening up again. As soon as the pressure comes within a setpoint, and the small valve is above 20 percent open, the large valve will stop moving. The same goes in the opposite direction. So it's like a --

Q. That makes sense, yeah. And earlier you said when you would have lost power to the transducers, they're 4 to 20 output you said?

A. Yes.

Q. They're not 0 to 5?

A. No. They don't use 0 to 5 for that very reason. You want 0 to be an invalid signal.

Q. Well, that's where I'm going. So they're 4 to 20 out,

but if you lost power to them, wouldn't they have gone invalid because they would have dropped below 4 which is --

A. As far as interpreting it, yeah, you're absolutely right. Minus 200 pounds is not a valid reading.

Q. Isn't that what the operators would see?

A. What the operators would see?

Q. Yeah.

A. They may see 0. They may see minus 200 and as far as operators are concerned, 0 or minus 200 is equally invalid. You cannot have 0 pressure in the pipes. As far as the controllers are concerned, they don't know figures. They'll just respond to that low pressure and they'll try to increase the pressure to bring it to the setpoint. That's why the valves (indiscernible).

MR. SHORI: Sunil Shori, California PUC.

BY MR. SHORI:

Q. One last question I promise. Are you, are you making modifications to the monitor valves at this stage to have them respond faster or make any kind of a response change?

A. No, we're not, and I don't think we should or we can because like I said, we always tune them to be as responsive as they can be but we can't make them too quick because that would bring the system to instability. We periodically check them. We verify that the controls work. I really can't say how frequently we do that but normally once you tune it, once you set it up, there is no need to change it. You can change the operation of

the valve, if it's not working correctly, but as far as tuning is concerned, once it's set, it's set. You don't need to change it.

Q. Not so much the setting but the response. That's all I'm --

A. That is prior to the setting.

Q. -- like a booster or anything else?

A. That's prior to the setting. The response time (indiscernible).

Q. Okay. Thank you.

A. The only time you would change it if there are pipeline modifications, then we may look at the controls. Otherwise, there's no need to change them.

MR. CHHATRE: Anybody else?

MR. KATCHMAR: Peter Katchmar, PHMSA.

BY MR. KATCHMAR:

Q. Mark, one thing. We talked to a controller this morning and I asked the question --

A. You mean the operator.

Q. Operator. I'm sorry. Pipeline controller, the pipeline operator, right. It was a gas system operator I think is what his title was. And I asked the question, if the clearance was for the whole Milpitas station, why didn't it include just turning off the SCADA to that whole, that whole station? Because if they couldn’t rely on it, and they were relying on communication by phone or radio or whatever, and I knew nobody knew there was going to be a

release, but it tends to confuse the issue perhaps by having data that's wrong or that's not reliable, and I'm just wondering if there's a reason that that wasn't -- the communication just wasn't shut down from Milpitas Station to --

A. I can't speak for gas control, but I can give you my guess. First of all, some of the data was invalid, some at the time, but at no time they lost all the data. So a lot of data was still valid. That's number one. Number two, when they did the work, like that example that you showed me in the table, at some point they were reading 0s. When the system was put back together, they were able to right away tell the construction crew that, yes, we've got the data back. Milpitas has, I don't know, dozens and dozens of points. It would be very time consuming to override these points to take them off the SCADA and the make them ride again. So --

Q. That makes sense.

A. But there's also a chance that once they override something, they may leave it overridden and not realize that.

Q. Right. All right. That makes sense, too.

BY MR. FASSETT:

Q. Just so I understand that a little. It's still communication, right? So if you're playing a piano and you have some sour notes, you're still playing the piano. It's still telling you something, and you're able to communicate and make sure that you can get that piano back in tune and therefore the

system is working again.

A. Uh-huh.

Q. So to ignore communication that you've already trained your people to understand, when it's valid or not valid, is probably not a prudent thing to do for an operator. Would you agree with that?

A. Yes.

Q. Also, could you explain again that the flow data pressures aren't seen by the GSOs necessarily on their screens but SCADA, you can -- SCADA is still collecting that.

A. Not all data sent to SCADA are displayed on the graphics. Some of the information is sent to SCADA and logged on the historian. It's like a big archive. It's not necessarily visible for the operator on the screen. It's more of a troubleshooting tool, more of what we're doing today.

Q. Right. So when we say SCADA, check me on the acronym, but SCADA is supervisory control automated data acquisition.

A. And data acquisition.

Q. And data acquisition. The supervisory part of that does not necessarily mean the GSO that's staring at the screen.

A. No, the supervisory part means that the GSO has the ability to remotely provide control for some of the facilities and that includes sending command to open and close a valve for example, or put a valve in a specific position, change setpoints and stopping and starting units at the compressing stations and so

on. That's the supervisory part. That's called supervisory points. That's the commands that gas control has the ability to send to the local controls.

Q. And the data acquisition part means not just what the GSO is going to be seeing. It is data acquisition for a database of various --

A. Correct.

Q. -- items that you want.

A. It's collecting whatever data we think we're going to need for whatever purposes we may need it. It's not necessarily running the system on a daily basis. It may be for condition based maintenance. It may be monitoring the state of the equipment. It may be, like I said, what we're doing to day. Maybe it's some backtracking, some troubleshooting. So not all these data are needed by the operators to run the system, and if we try to display it all on the same screen, it's going to be a little difficult for them to handle.

Q. Okay. Thank you.

MR. CHHATRE: Any other questions?

MR. NICHOLSON: Matt Nicholson, NTSB.

BY MR. NICHOLSON:

Q. While we're talking about data collection, is SCADA running -- is it collecting data by exception or is it --

A. No, it's, it's collecting data continuously. We have (indiscernible) locations that are continuously scanned by

different means of communications.

Q. At what frequency?

A. An average, 10 to 15 seconds per site. What goes in the exception base is supervisory control.

Q. Okay.

A. If the gas control operator issues a command that would interact the normal scan, send the command to the appropriate remote site, and then it will resume its scanning.

Q. Were you involved in the clearance that was written?

A. No, I was not.

Q. And when they put the regulators in manual, there was some testimony about putting them in manual? Is there a handoff on the switch? How does that work?

A. The work on the Siemens controllers, there's mode selection. So they can put them in a manual mode meaning that they go and do the PAD control. The valves also have local, I forget what the switch is called, I think it's local remote switch, that can also be put in local control in which case the valve is not going to take a command coming from the outside.

Q. So which would they have used?

A. Probably both. I didn't see the clearance and I can't recall. I know one was for sure. Most likely at least on the controller so they don't wind up with (indiscernible).

Q. You're saying they would have gone to the Siemens to make the change?

A. No, no. I'm saying that the Siemens controls were put in manual.

Q. Okay.

A. And whether they did it at the valve itself or not, I can't say for sure but they will start with Siemens and after that, they could have went to the valve itself.

Q. Okay. That's all I have. Thank you.

MR. FASSETT: No more questions.

MS. JACKSON: I just have one question. Connie Jackson, City of San Bruno.

BY MS. JACKSON:

Q. I think you indicated that the window disruption -- that the disruption caused some of the data to be inaccurate. Is there any way that the operator who's using this SCADA information can distinguish between the data that might be accurate and the data that's not accurate?

A. Yes, several reasons. If the site loses communication, then the color of the data coming from that site will change. In this case, we didn't lose communication. So the data remained, at least it appeared, valid on the screen.

Q. So that didn't happen in this case.

A. No. But in addition to just changing color, they can look at the value and as I said, if the pressure in the pipeline all of a sudden becomes a 0, they know it's not going to happen. Even if the line ruptures, it remains pressurized but we're going

to see a sudden pressure drop, but it's not going to go down to 0. We also saw during that incident that some of the pressures went over I think 600 pounds, something like that, and they also knew that that's impossible because you cannot have 500 or 400 pounds coming in and 700 pounds coming out. So by some analysis, your basic analysis, then you will be able to determine which data is valid and which is not.

Q. Thank you.

MR. CHHATRE: Anybody got any questions? Before we close the record, I've got two questions for you.

BY MR. CHHATRE:

Q. One is has anything been done since September 9th, (indiscernible) of the accident, with Milpitas and San Francisco?

A. Yeah, a lot of things have been done. We installed a new UPS. We replaced three power supplies including obviously A and B. We did a lot of clean up work.

Q. Can you repeat that again? Because the recorders are sensitive to the noise. We may lose you.

A. Okay. A new UPS has been installed. The power supplies, A, B and I believe power supply 1 have been replaced and new power supplies have the addition redundancy models available to us (indiscernible) predesigned model to monitor both of them and switch from one to another. We cleaned up the wiring inside the panels. We checked essentially all the wiring inside the panels. We found all places where the wires were loose or we have

more wires per terminal than should have been there. We corrected all of that. We updated all drawings to reflect either as-built or as is condition and the drawings are being issued as we speak. We replaced the battery bank. The batteries that you saw have been removed and a new battery bank is being actually installed today. We also have a list of some of the things that we would like changed at Milpitas unrelated to that. We can thing of some things that we can make better, and that's about it, and I believe we have a project for doing some control system upgrades at Milpitas as a preventative measure relating to any problems there.

Q. Is Milpitas Station still operational or you are still running it from San Francisco?

A. Yes, it is.

Q. It is not back.

A. Yes.

Q. Is it still unmanned?

A. Yes, it is.

Q. Any personnel change since September 9th? Promotions, change.

A. A new district supervisor there. Other than that, I know there's a permanent supervisor (indiscernible).

MR. CHHATRE: If we have no questions, thank you so much for your time and patience. Thank you so much. Off the record.

(Whereupon, the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PACIFIC GAS & ELECTRIC COMPANY SEPTEMBER 9, 2010 ACCIDENT SAN BRUNO, CALIFORNIA Interview of Mark Kazimirsky
DOCKET NUMBER:	DCA-10-MP-008
PLACE:	Burlingame, California
DATE:	January 4, 2011

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

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Kathryn A. Mirfin
Transcriber