UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of: *
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PACIFIC GAS & ELECTRIC COMPANY *
SEPTEMBER 9, 2010 ACCIDENT * Docket No.: DCA-10-MP-008
SAN BRUNO, CALIFORNIA *
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Interview of: MARK KAZIMIRSKY and
ANDY WENZEL (Telephonic)

NTSB Headquarters
Washington, D.C.

Wednesday,
April 20, 2011

The above-captioned matter convened, pursuant to notice.

BEFORE: MATTHEW NICHOLSON
National Transportation Safety Board

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I N D E X

I N T E R V I E W

MR. NICHOLSON: Today is April 20, 2011. We are conducting a follow-up interview, technical questioning of Mark Kazimirsky with PG&E. This is for the Operations Group report, specifically focused on the SCADA and alarms of the day of the event.

We'll go around the room, maybe, and introduce all persons present. My name is Matthew Nicholson. I am the SCADA group lead engineer at the NTSB.

MR. HALL: Robert Hall, Pipeline Investigator, NTSB.

MR. CHHATRE: Ravi Chhatre, IIC, San Bruno Accident.

MR. KAZIMIRSKY: Mark Kazimirsky, Supervising Engineer, PG&E.

MR. JACQUES: Dane Jacques on behalf of Mr. Kazimirsky.

MR. COMBS: Bob Combs, Office of GC, NTSB.

MR. NICHOLSON: Okay. So as I explained, I really just want to walk through each of these trends which you have copies of --

MR. KAZIMIRSKY: Yes, I do.

MR. NICHOLSON: -- labeled C through AD. We're not going to touch every one of them, and I want to kind of put this storyline together. I've got some general questions and then I've got questions specific to the trends, and I don't know which way is best to start, but maybe we'll just dive into the trends and some of these general questions.

MR. KAZIMIRSKY: All right. I want to make a note before we do.

MR. NICHOLSON: Yes, definitely.

MR. KAZIMIRSKY: That cover sheet shows Milpitas --

MR. NICHOLSON: Yes.

MR. KAZIMIRSKY: -- being a 24-hour manned station. It is not.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: It's an unmanned station. It used to be a manned facility --

MR. NICHOLSON: Oh, right.

MR. KAZIMIRSKY: -- but it's an unmanned facility.

MR. NICHOLSON: Okay. Thank you. And that's a correction to Appendix A, which actually I noticed that, too.

UNIDENTIFIED SPEAKER: And it was unmanned --

MR. CHHATRE: Unmanned.

MR. KAZIMIRSKY: It is unmanned. There is no personnel working there.

UNIDENTIFIED SPEAKER: And it was that way at the time of the accident?

MR. KAZIMIRSKY: Yes, it was.

MR. NICHOLSON: Yeah, I think I pulled that from this sheet here, 24-hour manned control room. Okay. Thank you for that.

BY MR. NICHOLSON:

Q. All right. So the trends I wanted to start with are the valve trends, which would be my Appendices C through L, and really all I've done is take the data that was provided under NTSB 53-9, the valve states that I think you provided, and plotted them. And the way I've presented them here is I tried to divide them out by line. So if we look at Appendix C, for example, I've got --

A. I'm not sure if I have this.

Q. Oh, you've got the -- here I printed a new set for you.

MR. CHHATRE: You get a bigger piece, a bigger sheet there.

MR. NICHOLSON: It's a large size. I didn't bring the old ones. Yeah.

BY MR. NICHOLSON:

Q. You want the big size? There you go.

MR. JACQUES: And so I can follow, which one are you referring to?

MR. NICHOLSON: Appendix C. Is there another copy floating around here?

MR. CHHATRE: Here, you can take it.

MR. NICHOLSON: A copy -- here's another set right here.

MR. CHHATRE: Okay. Great.

BY MR. NICHOLSON:

Q. Okay. So the way I've -- just so you're not lost, on Appendix C, and most of the valves will be displayed. This is all

the valves that appear on line 300A, the primary set of regulators and monitor valves.

A. Uh-huh.

Q. So I've got monitor valve 3 plotted alongside regulating valve 10R and 10, and I guess -- so I just wanted to talk about all the milestones on these plots a little bit. The first dip we see on all the monitor valves is between 1620 and 1630, and I just wanted to get your explanation again as to why we see that first dip.

A. Yeah, and that's really consistent --

Q. Yes, right.

A. -- on all charts. And this is the time when -- the best we could figure out, that was the time when the crew was switching Genius blocks to the temporary UPS.

Q. Okay. So this is the Genius block work. Okay. And the Genius blocks, again can you give me kind of a layman's --

A. Genius blocks are PLC inputs and outputs.

Q. Okay. There's strictly no logic, just analogs and digitals?

A. No, strictly analogs and discretes, digital.

Q. Okay.

MR. CHHATRE: Let me ask a basic question here. Does this represent all the valves for line 301 according to you or are we missing anything?

MR. KAZIMIRSKY: I'm sorry? Line 301 you said?

MR. CHHATRE: For line 300A, right? Are these all the valves?

MR. KAZIMIRSKY: These are the valves. I would expect the same trend for probably most valves. I can't say all of them because -- for the valves, most likely, all of the valves are consistent with that. Some of the station data pressures, flow and so forth, that's not necessarily would be applicable to all of them because some of the data is hardwired through the Genius blocks and some are provided to the PLC through the comm links, communication links --

MR. NICHOLSON: Yeah.

MR. KAZIMIRSKY: -- between the controllers and the PLC.

BY MR. NICHOLSON:

Q. That's something I wanted to ask you. Okay. So now that we're on the subject, the Genius block -- so some of the inputs -- do we know which ones go through Genius blocks and which ones -- you said all the controllers. I'm sorry. The controllers you said are comm.

A. I said that some of the pressure data --

Q. Okay.

A. -- are connected to the Genius blocks and some are sent through the comm links. So you may not see the same dip for some of the pressures, and -- you have a copy of the PMID we sent.

Q. Uh-huh. I've got it here.

A. So if you look at the PMID, you'll see that there are

several transmitters installed next to each other. If I have a copy of the PMID --

Q. Do you actually?

A. Oh, here. For example, PG7B, PG8B, 9B, 10B and so on and so forth.

Q. What page are you on?

A. That's page 1 of 3, 228.

MR. CHHATRE: Page 1 of 3, 228.

MR. JACQUES: Which ones are we looking at?

BY MR. NICHOLSON:

Q. Okay. So there's something in that that will tell me if it's going to the comm or --

A. I'm sorry.

Q. Is there something in the tag name that tells me if it's going to the communications port or the Genius block or do you know that --

A. You need to go through the wiring diagrams for that. But the point being that if you have two transmitters installed next to each other --

Q. Yep.

A. -- there's no need to have both of them connected to the PLC. Each of them is connected to its own controller, as you can see from the PMID.

Q. Uh-huh. Right. The UICs are the same as the Siemens 353.

A. Right. That's what they are.
Q. Okay.
A. But only one of them will be connected to the Genius block. The other one would send a pressure signal to the communication link to the PLC.
Q. Okay.
A. So each controller speaks to the PLC.
Q. Right. Just through different paths.
A. Through the communication link we have, if in that link.
Q. Right, but you just said one of these speaks through the --
A. No, no. What I'm saying is each of these pressure transmitters is connected to its controller.
Q. Okay. Okay. To the UIC.
A. Right.
Q. Okay.
A. But only one of them is hardwired to the PLC, to the Genius block.
Q. Oh, okay.
A. Only one.
Q. Since the pressures are identical, you just take one point back.
A. Right. That (indiscernible) point.
Q. But I wouldn't know that from this?
A. No.

Q. I'd have to go to the --

A. No, that PMID would be unreadable if we included all the details.

Q. That makes sense.

MR. JACQUES: Do they have the wiring diagrams that are needed to trace that back?

MR. KAZIMIRSKY: I'm not sure if they have been sent to you. They're definitely available. I don't know if you ever got a copy of them.

BY MR. NICHOLSON:

Q. I've got -- all I've gotten really that shows that sort of detail, possibly are the drawings for the UPS project at Milpitas.

A. They would be a part of that batch.

Q. Okay. And I've got them here. So we might look at those.

A. At least they would have references to all connection diagrams. That's where that level of detail is shown.

Q. Okay. We can either do that now or we can go to it in a little bit, but I'm guessing that you have a standard that says always take either the trimmer or the load transducer back or --

A. Well, the load valve doesn't really see pressure. The load valve only looks at the position of the trimmer.

Q. I've got it. Okay. You did mention that before. Okay. Okay. So there's really no way without going back to the diagram.

A. That's right. And it's a fair amount of work to try to solve that.

Q. So then these really aren't redundant transducers in the sense that if you lose one, the other is communicating to the PLC. If you lose it, you lose it on SCADA?

A. Well, now when you mention it, I want to clarify one other thing. Different companies use a term SCADA in different ways.

Q. Okay.

A. For us, SCADA is strictly an interface between the operators and the local control systems.

Q. Okay. Right.

A. In our world, in our environment, SCADA per se doesn't do any control, and I want to make it very, very clear.

Q. Okay.

A. Local control systems are totally independent of SCADA, and they are self-protected. They are self-contained. SCADA operators can read the data from the local controls.

Q. Right.

A. They can send a limited number of commands such as set points and in some instances, they can position the valve manually. They can stop and start compressors at the compressor stations, but a loss of SCADA, a complete failure of SCADA is not going to impact any of the controls anywhere. All systems are self-protected. The loss of SCADA would only mean that gas

control lost the ability to monitor the system.

Q. Right, and send set points. Right.

A. Yeah, but the last set point, the last good set point sent would stay --

Q. Sure.

A. -- in the system.

Q. It's in the PLC at Milpitas and it's still running.

A. In the PLC and in the controllers.

Q. In the controllers, right. Okay. Yeah, that makes sense with that.

A. So when we talk about failure of SCADA, I want to make sure that that by no means would impact the system --

Q. Yes,

A. -- and by no means would make anything unsafe.

Q. Yeah. Exactly. So in those terms, if you lost one of these pressure transducers, they wouldn't see anything back at -- you lose it on the PLC, so --

A. You lose it in what sense? If it fails?

Q. Yeah, if it fails.

A. If it fails, it may fail to zero. It may fail to some negative --

Q. But this second pressure transducer doesn't pick up. There's nothing in your lateral logic that says flip to 14B if 13 --

A. Oh, no.

Q. Okay.

A. No, that -- actually that controller is used strictly by the -- that transmitter is used strictly by the controller and nothing else. The PLC reads it. It doesn't do anything with it.

Q. Right.

A. The whole control is contained in the UICs.

Q. I understand. Okay. But these aren't backups to one another?

A. No.

Q. Okay. They're one to one.

A. They are dedicated to their own controllers.

Q. Okay.

A. And again the reason being that each of the line also has a monitor. So failure of that transmitter, like similarly to what happened on the 9th, when we lost power, it was somewhat similar to losing a transmitter, the valves would open but the monitor valves would catch up and would still protect the system.

Q. Okay. Yeah, I wanted to explore that a little bit more, too. So let's go back now -- we're saying that's the Genius block work at 1620 to 1630.

A. That's --

Q. As best you can tell.

A. As best we can tell.

Q. And that does appear -- I know in the control center logs, there's calls made where I think they're talking about

getting ready to do that kind of work, and I just wanted to see, then in the alarm logs -- and I've divided these alarm logs. I don't know, if you want to pull yours, that's fine. I've kind of divvied them up by time segments so if I look at 1617 to 1638, I get -- the first line of alarms I get are these which -- can you tell me, is that when Oscar is putting the valves in manual? Because he talks about doing that before the work.

A. 1617, that could have been him putting them in manual prior to doing that work.

Q. That's the sort of alarm message I would get if someone is putting the controller to the regulating valves in a manual mode and locking out --

A. Yeah.

Q. -- the control center.

A. That's what we would see --

Q. Okay.

A. -- but I was also able to replicate these alarms by the loss of power.

Q. Okay.

A. Controllers do get impacted by the loss of that famous PSA, PSB. We get similar alarms.

Q. You get these. Okay. So here's no way to determine whether this was Oscar or --

A. No, not after the fact. But during this time, that's, all 617, 618. That's prior to them doing the work and that's what

they would be expected to do.

Q. Well, that's what he says he's going to do actually on the phone, so --

A. That's consistent with what you see here.

Q. And that's kind of the way I was seeing this is maybe this is Oscar's work here, and then the controller errors --

A. That's a loss of power.

Q. That's a loss of power? Okay. Not a loss of communication, or is it -- are we saying the same thing?

A. Well, that's when they powered down the Genius blocks.

Q. Okay.

A. And, for example, a loss of a Genius -- powered down Genius blocks, I can't say for sure if controller errors -- they've got to be related to that, but I can't say for sure, but I can say with certainty that monitor not open.

Q. Yeah, right.

A. The monitor not open alarms are caused by the shutting of the Genius blocks, and the reason being that we monitor a fully open position of the monitor valves. So the --

Q. Only open?

A. That's what's important to us.

Q. Sure.

A. Because if the monitor is not fully open that means that the regulator failed and a monitor had to kick in and start closing it.

Q. Okay.
A. So in normal conditions, the monitors are wide open.
Q. Okay. So you just have one limit switch or position?
A. We may have two, but the alarm is based on a not fully open.
Q. I've got you. Right. Okay.
A. I don't know how. I don't remember if we have both or just one. What's important is to know when the monitor is not wide open. As soon as monitor starts moving from fully opened position, that means that it kicked in for controls.
Q. But now you say -- I mean, if I look at these trends, it looks like you're monitoring -- on the monitor valve, it looks like you get an analog signal. So it's more --
A. We may.
Q. Okay.
A. But again, position transmitters are notoriously inaccurate.
Q. Okay.
A. So if the position transmitter is inaccurate and moves, say, 5 percent of fully open position, we'll get a false alarm, that the valve is not wide open.
Q. Right.
A. So we use limit switches which are a lot more accurate and hold calibration better --
Q. Right.

A. -- for alarms.
Q. Okay. So limit switches are tied to alarms.
A. Right.
Q. But there's also an analog?
A. There may be an analog but that's strictly for monitoring position of the valve.
Q. Does that show up on this? Would I be able to -- because you said maybe. I was wondering if we could be certain.
A. We have position transmitters. Which one are you looking at?
Q. Pick any. 300B. I'm on page 1. My monitor valve should be up here. I see flow meters.
A. You can see monitor valves up on 227.
Q. What page are you on?
A. 227.
Q. 227. I've only got 220- -- you know, that's all they sent, I think, were the 228s.
A. I'd be willing to share. These are monitor valves.
Q. Uh-huh.
A. You see ZTs --
Q. Yeah.
A. -- and then that's position transmitters.
Q. Okay.
A. And again the reason for the position transmitters, if -- kind of floating around all that. Gas control has the ability

to remotely close monitor valves.

Q. Oh, that's right. Okay.

A. So they need to know how close they are to the set point that they sent.

Q. Okay.

A. However, for alarms we will use limit switches and --

Q. Yeah.

A. -- as you can see here, the monitor valves have both limit switches and position transmitters.

Q. Yep. Okay. That makes sense now. You're right. Okay. Okay. So when I see the alarms I know it tripped the limit switch.

A. Although, I may, I may be wrong.

Yeah, we have limit switches.

Q. The limit switch, you're calling the ZT?

A. ZT is position transmitter. ZS is the limit switch.

MR. CHHATRE: Should I make a copy of that drawing, Matt, if you want to make notes on that one? Let me just make a copy. That's easiest. The machine is right there. That way you can --

MR. NICHOLSON: I don't remember seeing that.

MR. CHHATRE: Yeah, I don't want you to write on his copy. So you can write on yours.

MR. KAZIMIRSKY: These are old drawings. So the symbology is a little different than what we would show now. We

would show ZSO and ZAC today.

BY MR. NICHOLSON:

Q. Yeah, okay, that's kind of what I'm used to. Right.

A. Yeah, this is ZS, which is still a limit switch.

Q. Okay. That's good.

A. So what we do, we use limit switches for alarms, but --

Q. Right.

A. -- conceivably we could use a position transmitter as well, and we do it in some places and if it's less than 95 percent, then we know that the valve is not wide open.

Q. Right. Yes. But like you said, you don't -- they're not as accurate.

A. Right. So the key or to answer your question, these alarms are triggered when the valves are not fully open.

Q. Okay.

A. You need a position transmitter or a limit switch.

Q. All right. Can I get my alarm -- I want to write it on there.

MR. CHHATRE: That is yours.

BY MR. NICHOLSON:

Q. Okay. So we know -- back to what you were saying. We know the monitor alarms are loss of power.

MR. CHHATRE: I made one for him. You have another one? That is the one you gave me.

MR. KAZIMIRSKY: No, no, this is your copy. This is

mine.

MR. CHHATRE: Okay. You have it. Okay.

BY MR. NICHOLSON:

Q. And this gets back to wiring diagrams. Is there something that tells me which points are tied to PSA and B?

A. PSA and B. Oh, you mean --

Q. Yeah, because -- how do you know that's a loss of power?

MR. CHHATRE: This is 27. This is 28.

MR. KAZIMIRSKY: No, I think the most reliable way to track it is to go to the connection diagrams.

MR. CHHATRE: So you can make a marking on this one if you want.

BY MR. NICHOLSON:

Q. So these are the red lines from the project.

A. The other way to check it, which is probably more difficult, is with the PLC program.

Q. Yeah, I got that.

A. But -- you saw the program.

Q. Yeah, that was --

A. Plus the -- what you would need in addition to the program, you would need -- to be sure that that's what it is, you need the SCADA database to say that this alarm is indeed --

Q. Right.

A. -- the output coming from the PLC, and that's just unrealistic, frankly, for you, I mean. It's a huge amount of work

and I --

Q. Okay. So there's not a PLC drawing that's going to show me all the analog inputs and what they go to and all the digital?

A. Wiring diagrams will show that.

Q. Oh, okay. And is that not what I have then for the project? I don't know how you guys do your -- this looks like something I would be using.

A. This is a wiring diagram for the panel itself. That shows you --

Q. That's for the UDP, yeah.

A. No, that's the control panel, that mimic panel.

Q. Oh, oh, okay. This is the mimic panel.

A. That's what drives the lights in the mimic panel.

Q. Right. Okay. So we don't have a wiring diagram --

A. Well, this is one of them. This is what you'd be looking for. These are alarms for the new UPS system.

Q. Right. Okay.

A. This is a Genius block.

Q. Okay. That is a Genius block.

A. This is the new -- this is a terminal sweep of a Genius block. This is the alarms from the new UPS.

Q. Right. And so is that a digital block then?

A. That's a discrete block, yes.

Q. Okay. Does it say it on there? How do I know? Does it say DO or DI?

A. It says 60 end circuit block. And so, essentially what you're going to see -- no, this is the block. That's the block, the part number.

Q. Yeah.

A. IC660.

Q. Oh.

A. In general, what you're looking for, if it says BBA, that's an analog block. Forget the numbers.

Q. Okay.

A. The three characters, says BBR.

Q. Yep.

A. That's a relay block.

Q. Okay.

A. That's a discrete --

Q. Got you.

A. -- relay block. It's a BBD.

Q. Yeah, I'll write that on there.

A. That's a relay block.

Q. I'm sorry. Relay block.

A. And that's -- that was an output block.

Q. Right.

A. BBD would be a discrete block, could be inputs or outputs. BBA would be an analog block.

Q. Okay.

A. And the rest of the numbers means the number of points,

the type of --

Q. Okay. So then we would have, you've got these for every Genius block?

A. Yes, we do.

Q. Okay. So that might be something we should request, I guess.

A. If you --

Q. Well, I'm thinking from that, then you would know from the alarms which Genius block went down when or can you not correlate?

A. Yeah, but like I said, you can look at what -- from the alarms you can't have a direct correlation because the way it's set up is -- should I use the --

Q. You can go to the board if you'd like.

MR. CHHATRE: And then we can -- Matt can do a telephone copy of it, and we have the drawings, so --

MR. NICHOLSON: Yeah, I'll take a picture.

MR. CHHATRE: Yeah.

MR. KAZIMIRSKY: This is the Genius block. You have a limit switch. That would be the input, the number.

BY MR. NICHOLSON:

Q. Right. Some address.

A. That comes to the PLC and then from PLC, it goes to SCADA, and that is where the alarms are triggered. That's the space, alarms, bus. This is a mod bus.

Q. Okay.

A. Now mod bus only recognizes inputs, outputs. Only three types of data can be transmitted by mod bus.

Q. Okay.

A. So all the wirings would be to this -- what happens when we get that input here, whether it has any logic associated with it or not, eventually that input gets converted to an output and output goes into SCADA.

Q. Right.

A. So if you want to make an association between this and that one, you have need to find what input it is. You need to find the conversion of that input in the logic in PLC --

Q. Okay.

A. -- those three volumes that I sent you.

Q. Yes.

A. Then you want to look at the SCADA database and see if this alarm that you're looking for is indeed that queue, because maybe it's a mistake in the SCADA database and it's a different queue.

Q. Okay.

A. I don't think you want to do that.

Q. Yeah, I was missing the PLC part. I saw it going into the Genius block and I was thinking from there it pretty much went straight through.

A. It's a tremendous amount of work, and it's been done.

It's been done more than once because that system was installed in '89, and it was upgraded in 2001, and both times I went through the full database test. Every single point has been tested.

Q. Yeah. Right.

A. It's hundreds of points. Granted, there could have been an error somewhere, but it's probably as reliable as it gets.

Q. All right. Well, then let's go back to just using you as my filter --

A. Thank you.

Q. The first set of the work was Oscar. It's much easier just to ask you than go through that database. And then you're not really sure about this next block of controller errors. We've got a copy of it here, Mark.

A. I --

MR. CHHATRE: Do you have an extra one for him?

MR. NICHOLSON: Whoever would like one.

MR. KAZIMIRSKY: I'm not sure only because --

BY MR. NICHOLSON:

Q. I'm on this one. It says 1617 to 1638. I kind of divvied them up.

A. I'm not sure about the errors, and only because I, frankly, went through so many reports that I'm a little --

Q. Okay.

A. -- lost. What I do know is that during the -- when the investigation when we started the -- our (indiscernible) --

Q. Right.
A. -- investigation, I was able to replicate essentially all alarms that popped up in SCADA. And when I'm saying replicating them, I -- we were turning off either power supplies themselves or power to the power supplies, and we had the same consistent errors.
Q. Meaning you got the controller comm lock, auto man and --
A. Right.
Q. -- or just the controller errors? You got all three?
A. We were consistent with whatever we had in SCADA. I don't remember --
Q. Okay.
A. -- what caused specific alarms. So I don't remember the controller errors.
Q. Okay. So we're not certain of those controller errors. It could have been --
A. I know that when we shut off power supplies A and B, we did get controller errors. That I know for sure.
Q. Okay.
A. I remember that for sure. Shutting off the --
Q. But you wouldn't --
A. -- Genius blocks, that's what 1620 is.
Q. Right.
A. The shut off --

Q. The monitor's not open, right?
A. Yeah. That I frankly don't remember. But I can check on it and get back to you if you need it.
Q. But you wouldn't get a controller error if someone was just putting a regulating valve into a local control?
A. No.
Q. Okay. That's not normal.
A. It wouldn't happen. A controller error --
Q. So it's most likely the power?
A. Probably. Controller error is essentially either internal problem in the controller, which we didn't have --
Q. Right.
A. -- or a loss of communication. The wedge (ph.) dock timer in either controller or PLC times out.
Q. Okay. All right. Yeah, and you actually answered that on Friday. Okay. And I'll just continue down this list. On the next page, we get more controller errors. That's fine, and then we get these percent open errors down at like 16 -- we're still at 1620, 12.9. Milpitas terminal line 132, valve 49.
A. Oh, these alarms, these alarms are triggered within SCADA itself.
Q. Okay.
A. So we have a capability of triggering alarms --
Q. It's a software alarm.
A. -- in the PLC. Both of them would be software alarms

but --

Q. Okay.

A. -- what we can do, we can -- and what we do, we trigger some alarms in the PLC.

Q. Uh-huh.

A. Those are kind of absolute alarms if you will.

Q. Okay. I follow you.

A. But SCADA software, SITAC system --

Q. Uh-huh.

A. -- has the ability to trigger its own alarms based on what the operators may need. In other words, say -- a painful subject, the MAOP. As we get to, say, MAOP 400 --

Q. Right.

A. -- in this case, the alarms most likely would be triggered in the PLC itself.

Q. Okay.

A. Because that's the most closest, most reliable part of the system.

Q. Right.

A. However, say that gas control wants to operate the system at 350, and the actual pressure dropped down to 340, for whatever reason they don't have enough gas or a valve fails somewhere, they have the ability to trigger alarms at set points that they set in gas control.

Q. Okay. That's like them setting --

A. Operational --
Q. -- a low low or a low and a high.
A. Operational alarms. They may be low low, high high.
Q. Okay.
A. But they may be not necessarily related to the physical installation. It's more of an operational --
Q. Yeah, right. Yeah, it's something just for the controller.
A. May be the same set point but --
Q. But I won't know, for instance, looking at the tag or there's nothing that tells me that on this sheet, on the alarm sheet?
A. No, you need to look at the SCADA database, the addresses.
Q. Again, I have to go back, okay.
A. And you will see what's triggered. Within the PLC, it'll have a PLC address --
Q. Okay. Right.
A. -- or if it doesn't have a PLC address, that will be --
Q. Okay. Then you'd know --
A. -- SCADA generated.
Q. -- it's a SCADA.
A. Correct. We can also help you to define those rather than you perhaps diving in the database. If you have specific questions, specific alarms that you want to know were they

triggered, like this --

Q. Yeah, okay.

A. -- then we can help you to obtain and see that, whether it's PLC generated or SCADA generated.

Q. Yeah, it would be a relatively quick search for you in your database.

A. For us, it's probably easier, yes.

Q. If it has an address, it's PLC. Okay.

And this is where I'm starting to get confused then because if the first alarms back here, and these are all on unacknowledged. The first set of alarms at 1617 are Oscar putting the regulating valves in manual, and then I get the errors which looks like the power going out. Then I get at 1620, I get another set of unacknowledged, like 1620.55. where it shows up in green again.

A. Yeah. What I found was that on the power interrupts or power up actually --

Q. Okay.

A. -- the errors come up and then they clear themselves. They're temporary alarms.

Q. Oh, okay. So this first batch that came up actually cleared itself; is that what you're telling me? Because the cleared are back here a little farther. They're separate. So off clear shows up on page 5 -- it's page 12 of 37. Those are the off clears. I see the controller errors clearing. Would an auto

manual clear?

A. The auto manual wouldn't clear because most likely these were not errors. This was actual switching.

Q. Yeah, right. Okay. So it's not so much an alarm as it is a notification.

A. Well, it's an alarm -- yeah, it's an alarm and it's notification. It depends on what it's used for. Gas control expects the valve to do automatic control and somebody switches the valve to manual, they need to be aware of that.

Q. Right.

A. For them, it's a notification, but it's --

Q. So if they acknowledge it, it's gone?

A. It's still -- no, it still stays.

Q. Oh, it still stays there?

A. As long as it's active, it still stays there.

Q. So on -- I see on acknowledged. I see the controller autos but I -- would it be an off acknowledge or clear? Oh, here maybe -- well, I see down here, 1634, but that's after the dip, I see that they clear.

A. 1634, that's about the time the power was returned.

Q. Okay.

A. I think it's returned at 1632.

Q. 32, right. Exactly.

A. So I don't know if the time stamps are --

Q. Yeah.

A. -- synchronized.

Q. So I see them cleared there. I guess my question is I see it coming in twice back here on the first -- second page. I mean, we had it at 1617, it looks like the controllers were put in manual and then again at 1620, and I'm trying to figure out, is Oscar over there doing something with the controllers?

A. Not necessarily.

Q. Okay.

A. The other -- I went through the same exercise. I went through the same reports.

Q. I figured you did.

A. More than once. What I also found that we have several paths for the data to come in, and it comes from different servers, if you will, to SCADA.

Q. Okay.

A. So in some cases the alarms are duplicated, and it's not, it's not easy to analyze --

Q. There's nothing on the tag that will tell me which server?

A. No.

Q. All right.

A. Not from here. And I had the same questions, and I spoke with our gas control engineers who support SITAC and --

Q. Who's that?

A. Penny (ph.).

Q. Yeah, okay. We talked to her.
A. So you spoke with her. She can probably explain it better than I can.
Q. But your take on it is this is duplicate data coming in from a separate server?
A. Some of it is duplicate server, duplicate data.
Q. Okay. Okay. So it's not really -- Oscar's not out there messing with it?
A. Not necessarily, no.
Q. Okay.
A. And like I said, what I did to confirm that that's indeed what was happening there, I simulated the same type of --
Q. Right.
A. -- failures and we were able to come up with the same set of alarms.
Q. Did you record that? Was that a test that you actually captured screen shots from or --
A. I probably did.
Q. Okay. Can we have that as a submittal?
A. I need to go back to my office and see if I can -- if it's in a submittable format.
MR. CHHATRE: Do you want a pad to make a note of it or you want us to --
MR. KAZIMIRSKY: No, I'll make a note of it.
MR. NICHOLSON: Well, I was hoping either Robert or --

MR. CHHATRE: Yeah, I mean. Robert is taking notes but in case he wanted to --

MR. JACQUES: It would be helpful, I know there's one other thing where you asked for something for him. I guess you guys are going to compile them and let him know?

MR. CHHATRE: Right. What I was thinking is, like he can get head start before we go back to -- and send you request. At least it gives him -- because you guys are getting so many requests these days, but I'm getting complaint from Mr. Hayes. So I just thought he can start working on it.

MR. NICHOLSON: I'll make a note because it could very well be that we go through this and say, nah, we don't need it.

MR. JACUES: Okay.

MR. NICHOLSON: But I'll just make a note that we were discussing it.

MR. JACQUES: Yeah, the main thing is let us know after the interview what you need.

MR. CHHATRE: Yeah.

MR. KAZIMIRSKY: I think I can pull up all these reports, Matt.

MR. NICHOLSON: Okay.

MR. KAZIMIRSKY: Frankly, be careful what you wish for.

BY MR. NICHOLSON:

Q. I already asked for the lateral logic.

A. That should teach you something.

Q. That was 1250 pages.

A. And I didn't send you reference tables.

Q. I haven't gotten that far. Okay. So then the next alarms that are at 1632 are controller error alarms.

A. That's when the power was brought back up.

Q. Yeah. Okay. Which is great because that is exactly what the trend shows. So at 1632, every regulator valve, it was or every monitor valve that showed out comes back.

A. Uh-huh.

Q. So that's a pretty easy time stamp to follow.

A. Uh-huh.

Q. Continuing on that 1620 to 1630 dip, I wanted to ask also why -- you said nearly every monitor valve will go out, but what I noticed is none of the regulator valves drop out at 1620. What's the takeaway? What's -- why is that? They're just not into -- you're telling me those are comms or --

A. They could be comms. I really can't answer that without tracing them.

Q. Okay. And without tracing them, that has to be the assumption then is that they're not Genius block.

A. Let me take a look at that. Well, I can show you why I think that's what you just said, that they are connected through the comms link, why it's most likely so. Take a look at any monitor valve or any regulator, I'm sorry. What page are you on? The PMID?

Q. Yeah, let's just go back to the ones we had.
A. What page?
Q. It's page 228, sheet 1 of 3. Right.
A. Okay. If you look at the ZTs, you can see the ZTs are shown being connected to the UIC.
Q. Uh-huh.
A. And from the UIC they go to UU 1000, which is the PLC.
Q. Very good.
A. I don't see a direct connection to the PLC unlike PTs, for example. PTs are connected here and here.
Q. Okay. Yeah, I didn't notice it. All right. Well, wait. It connected here and here, but that's just back to the UIC. It's not hardwired back.
A. No, it goes to UI --
Q. Oh, I see, right there, yes. Okay. So it's hardwired back.
A. It's hardwired and the ZT is connected only to the UIC.
Q. And the only connection between the UIC and the PLC is through a comm.
A. A comm link.
Q. Okay.
A. That's the 1200 pages that you have.
MR. CHHATRE: Which page you're on, Matt?
MR. NICHOLSON: I happen to be on page 1 of 3.
MR. CHHATRE: No, no, I just want to -- just in case,

just in case you want to go back and listen to yourself.

MR. KAZIMIRSKY: 228, sheet 1.

MR. CHHATRE: Okay. 228, sheet 1.

BY MR. NICHOLSON:

Q. Is there just one PLC out there at Milpitas?

A. Yes, just one PLC.

Q. Okay. Let me back up just a little. So I don't think I have a clear understanding on the operating diagram, what the difference is. I'll just go to mine. The ARs, I know where the regulating valves and the Rs, for instance, and I think your definition was remotely positioned valve, or the definition on the SCADA sheet.

A. Which valves?

Q. These valves, so I know these. Valves like R23 for instance. Can you just --

A. 23.

Q. Yeah. When are they used and --

A. Oh, that's the bypass.

Q. Well, I know -- okay. It's the bypass, but how's it used by the SCADA operators? What's its function? It's on/off only?

A. I'm not sure the SCADA operators have access to them.

Q. Well, okay. It says remotely positioned valve, position controlled over SCADA. I think your definition probably says position controlled by remote location?

A. Which valves are we talking about?
Q. It could be R23, R24, 1815 or the outlet valves 64, 49, 48.
A. Let me find them. On the PMID that's --
Q. So, for instance, look at -- where I'm going with this, one, I need to know a little bit more about what they do, and then secondly, I notice like R24, he doesn't drop out with the other valves.
A. Let me find where 24 is.
Q. Okay. Let's see. He's tied to -- he's the bypass for 300B is what it looks like.
A. These are just manual block valves.
Q. Oh, they're manual.
A. I mean, not manual, they are -- yeah, they are manual in the sense that they can be only controlled by the open/close switch.
Q. Locally?
A. At the terminal.
Q. Oh, okay.
A. But gas control has the ability to see them.
Q. Okay. But the definition then on your symbol requirements, operating maps and diagrams, it says remotely positioned from a point outside the station. Is that --
A. That may not be --
Q. Does that not mean --

A. In this case, it's a little gray area --
Q. Okay.
A. -- because it is controlled from the control room, not at the valve. That switch that turns it on and off, is in the control room, not at the valve itself as you would normally --
Q. Okay.
A. -- treat a local control.
Q. Okay. So it's on the mimic panel somewhere?
A. Well, if you remember the mimic panel, there's a console --
Q. Uh-huh.
A. -- with some displays.
Q. Yeah.
A. There are also push buttons and switches on it. So that's where these valves would be controlled.
Q. Okay. But not from the control center?
A. Not from control center, but not from the valve either.
Q. Okay.
A. So that's why it's a gray area.
Q. Outside station gets fuzzy.
A. Yeah.
Q. Good. That's what I was looking for. Perfect.
MR. CHHATRE: You got it?
MR. NICHOLSON: I got it.
BY MR. NICHOLSON:

Q. Now, then, can you tell me, while we're on the subject, so prior to any of the accident information, I just went through and looked at all the valve positions, kind of colored them on this diagram. So I was just curious why -- is it typical then to have your bypass open? For instance, R15 was open and R23 were open to the mixer bypass and R18 and 24 were closed.

A. 15.

Q. Yeah, 15. Well, 15 is basically line 107, which was isolated. You weren't running on it. You were running off of 300B it looks like at the time.

A. Valve 15 is -- this is valve 15.

Q. That's your -- is that your bypass there?

A. This is not the bypass. That's header 1.

Q. Okay.

A. That's the main header from which we --

Q. Yeah, that's your discharge header.

A. And these valves would normally be closed under normal conditions, 15, 23.

Q. Okay. Then I need to go back on the valve, because I'm just looking at the trends. Are the trends inaccurate at points prior to -- let's see what --

A. But if they were not closed, that's actually -- I can't really answer to that.

Q. Okay.

A. They could have been open for some reason, for

operational reasons at the time.

Q. Okay.

A. And I really don't know what, what position these valves were in.

Q. Okay. But it has to be done at the station. So it wouldn't have been anything the control room would have asked for?

A. No.

Q. Okay.

A. No.

Q. Yeah, like here's R23 here. It says it's open prior to the work at 1620 and R15 as well. So -- okay.

A. I can't answer that.

Q. Okay. And that's fine. That's good.

Okay. Did you look at that at all? Was that a factor? I mean, I guess to me it looks --

A. No.

Q. -- like if all these swung open and you had these open already, you're going to get a slug of flow through your bypass. I mean, had these been closed, then these going open would have not been able to --

A. No, even if they were open, we still have a monitor in the reg --

Q. True.

A. -- that would protect the header.

Q. Right.

A. So if you look at these valves --
Q. You had a monitor. Because your reg would have --
A. You have a monitor in the reg on both sides of 15, 23. Look here.
Q. Yeah. No, I know. I see it here, 28 and 29.
A. So you have 17 on this side and you have 29, 29 and 27 on this side. So even if 15 was open, the gas, through 15, would go either to here or back to here. So either 28 or 29 or 17 would still protect the header --
Q. Uh-huh.
A. -- depending on -- regardless of what direction gas would be going through.
Q. Okay. So that's not -- you didn't see that as an issue?
A. No.
Q. Okay. I'm going to skip ahead while we're on the monitoring valves. I was just curious why -- I think this will be a pretty easy answer -- why the valve position goes way below zero like at 1720 on some of these monitor valves?
A. At 1720, that's the point when we lost the A/B power supplies, and at that point, when I'm saying lost, I don't even know if we completely lost the power or it was floating between -- it was floating from -- when they saw that they lost the data --
Q. Yeah.
A. -- and they checked the voltage on the power supplies, it was about 3 to 7 volts.

Q. Right. I remember that.
A. Prior to that, I guess it was close to zero because they saw no pressure at all, and then when they did the troubleshooting, it's almost -- it's not almost. It is unpredictable what data we would see.
Q. Okay. So losing the power at 1720 causes some of these to go negative.
A. And some went to 600 and some.
Q. Now that's pressure. I'm only talking about position right now.
A. Oh.
Q. Sorry. We'll get into that a little bit.
A. The position --
Q. But some of these weren't impacted at all. So MR71, it rode right through the 1720 power drive.
A. Same thing. We need to see what -- how these transmitters are powered by A/B or by different power supplies.
Q. Okay. And you haven't done that yet, to trace it out?
A. We have, but I don't remember that.
Q. Okay. So that's available somewhere?
A. The connection diagrams.
Q. Okay. We're back to the wiring diagrams?
A. Yeah.
Q. Okay.
A. That's where you would see what feeds them.

Q. Okay. All right. So that's the only difference. Okay. But see, if 1620 to 1630 impacted two valves, I guess I would have thought that the 1720 work would have had the same --

A. Not necessarily. 1620, we powered down the Genius blocks.

Q. Oh, okay. That's right.

A. And 1720, we lost power A and B.

Q. The whole power supply.

A. Well, the power supply to some of the control loops.

Q. Right.

A. We had several different power supplies. We had PSA, B, 1, C. So these are different power sources.

Q. This isn't about whether it goes to the Genius block or not. This is where it's powered from. That's this argument.

A. Exactly.

Q. Okay.

A. Exactly. That's what makes it so difficult to trace, that we have different power sources.

Q. Okay. And then -- so we talked about the Genius block work, I know we lost power supplies. The other work Oscar talks about with the control room is moving the communications. What does that mean?

A. Well, the same UDP, the same distribution panel --

Q. Right.

A. -- that fed the whole control system also fed some of

the communication equipment. We have a communication 1 with communication center in Milpitas that --

Q. Yeah, I remember seeing it, right.

A. -- on the left side -- on the right side --

Q. Uh-huh.

A. -- when you go into the control room.

Q. Yes, adjacent to the UPS.

A. And that's where our IT department equipment is installed at.

Q. Okay.

A. Since that equipment also needs uninterruptible power, UDP was used to feed part of the communication equipment.

Q. So that's communication between the PLC and the control center?

A. That's communication between the PLC and control center. It's the phone system at the terminal.

Q. Yeah.

A. It's a lot of things that we as a control group don't even get involved with. It's IT assisted.

Q. Okay.

A. So since we were going to replace the UDP, they installed a mini UPS for that communication equipment.

Q. Yeah, because it's critical.

A. As far as impact on controls in SCADA, when the communication was interrupted, when they did that switching, as

far as SCADA is concerned, it just stays with the last good data that it received.

Q. Okay.

A. And that explains some of the questions you had like the power did because you look at --

Q. So it holds last state?

A. It holds the last state until the data comes back, and then on its chart, it simply draws a straight line from --

Q. Yeah --

A. -- the time it lost link -- yeah, and that explains one of your questions where you asked for a dip in an hourly chart.

Q. Yes.

A. That dip was because during that time, they didn't have the data.

Q. And what is that time? Do you know? I think you had it on here but it's -- I jumped ahead of my question.

A. Well, let me take it back. They didn't -- the dip that I was referring to wasn't a loss of communication. That was a loss of the Genius blocks.

Q. Okay.

A. I misspoke. On communication, they didn't see any dip --

Q. Oh, okay.

A. -- because we didn't have any fluctuations in pressure.

Q. Okay. So there's no alarms or --

A. There could have been an alarm on loss of data. I don't know if SCADA --

Q. Okay.

A. -- gets them. I'm not sure if they get it.

Q. But that's all it would be.

A. That's all it would be.

Q. Like PLC down or like a heart --

A. No.

Q. -- it wouldn't be a heartbeat.

A. No.

Q. Well, it could be a heartbeat.

A. No, I think -- it could have been -- it could be a heartbeat but once it comes back, it clears.

Q. Okay.

A. Since it was a short time and pressure didn't fluctuate during that time, on the chart it was still --

Q. Yeah, okay.

A. -- a good number.

Q. Okay.

A. The dip that -- I misspoke. The dip that you did see is 4:20 to 4:30.

Q. Yeah, 1620 to 1630. That's the dip we saw, right.

A. And that impacted your hourly average because for 10 minutes we had 0 pressure.

Q. Hourly average, is that on the flow rate? Was I asking

it on the flow rate?

A. I think you asked on pressure.

Q. On pressure, okay.

A. It's one of your --

Q. Well, we'll get there eventually.

A. Yeah.

Q. Some of these questions, like you said --

A. But on SCADA, the only impact was a loss of data, then the data would come back and if there was no fluctuation, it would be invisible.

Q. Okay.

MR. NICHOLSON: And I'm not watching the time, but if anyone needs to take breaks or --

UNIDENTIFIED SPEAKER: I think we'll speak up.

MR. NICHOLSON: Yeah, feel free to stop me.

BY MR. NICHOLSON:

Q. So we talked a little bit about the monitor valves and why some went down and some didn't, and I was asking about the negative. You know, some of these go extremely negative. Others don't go, you know, some go more negative than others.

A. At what time?

Q. This would be at the 1720 time. Is that -- what's that a function of or is it even a real value or indicator?

A. Well, at 720, that's the failure of the power supplies, and --

Q. Here would be an instance that I'm talking about here, just to clarify. You know, some of these go way below.

A. What is it? Valve positions.

Q. Yeah, I'm looking at like this monitor valve right here.

MR. CHHATRE: Which figure you're on?

MR. NICHOLSON: I'm on Appendix E.

BY MR. NICHOLSON:

Q. There's an indicator. This one didn't (indiscernible) at all.

A. I see a 0.

Q. Well, I guess my 0's like right here. Right.

A. Oh, okay.

Q. So this thing probably goes -- this would be -10.

A. Yeah. Well, in the case of a complete power loss, you do expect to see a negative number --

Q. Right.

A. -- because from 4-millionths, we go to 0-millionths, which is 25 percent on a scale. So you do expect to see a -25 percent there.

Q. Okay. But if it's greater than that, is it an indication of anything else?

A. I don't think it would ever get lower than that. I don't think it's physically possible.

Q. No, I think you're right actually. But the ones I'm looking at might be more like at 1806. Here's a dip here at 1806.

Here's one that's spiking up.

A. Well, at 1806, that's prior to that failure and what I suspect was happening is that that power supply was getting flaky.

Q. Oh, okay.

A. Or 18 or 1706.

Q. 1806.

A. 1806, that -- after 1722, none of the readings are reliable because once the power supply failed, once they noticed that the power supply failed, they started troubleshooting.

Q. Okay.

A. At that time, nobody knows what -- at what time they did. They checked the wiring. They pulled on wires. They found some loose wires.

MR. CHHATRE: But the reason they're playing with those wires is the --

MR. KAZIMIRSKY: Yeah.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: So from 1722 until 2040, 20 to 9:00, that's when the power came back.

BY MR. NICHOLSON:

Q. Until when? I'm sorry. 2040.

A. 8:40.

Q. Yeah, 2040.

A. 2040.

Q. Okay.

A. From 1722 to 8:40, you really cannot rely on any of the readings, especially related to PSA and PSB.

Q. Okay. So these odd spikes --

A. That's the work that the crew were doing.

Q. That's just them moving wires and -- okay.

A. Maybe just pulling on the wires and finding bad connections.

Q. Okay. So they're not real -- I can't take those as being real --

A. No.

Q. -- position values?

A. No. There's 3 hours and what, 20, 19 minutes is unreliable data. In fact --

Q. Okay.

A. In fact, even data unrelated to A and B could have been affected because I don't know what they did when they did the troubleshooting. They could have pulled on wires related to different power supplies.

Q. Out of that terminal strip.

A. They worked on everything inside that panel.

Q. Okay.

A. We did some analysis for that and I think you might have seen that, that screen. Let me see if I can find it. Yeah. This is the screen that -- you have a copy of that, and that shows what data was reliable, relatively reliable during that time and what

not.

MR. CHHATRE: Let me make a copy so you can make notes on this one.

MR. KAZIMIRSKY: We've submitted that before.

UNIDENTIFIED SPEAKER: It didn't have the circles on it like that. Otherwise, it's identical.

UNIDENTIFIED SPEAKER: That's the only thing I had on monitor valves. You need a break or anything?

MR. KAZIMIRSKY: Not yet.

BY MR. NICHOLSON:

Q. While we're on those monitor valve trends though, on the regulating valves, there's just a slight dip off 0 and just to confirm, and that was at 1720.

A. No, that dip is --

Q. That's just our power loss again.

A. Well, that dip is -- that's a position you're talking about or a pressure?

Q. No, it's position. So if it's closed at 0, it dips down to -5 or so.

A. That probably is for the same reason.

Q. It's consistent. But if you didn't -- you said you didn't pull the wiring diagrams.

A. Hum?

Q. Did you go through the wiring diagrams on all these to know it's invalid or how did you arrive at this conclusion? Just

from the data, the plots?

A. No, I think we looked at --

MR. KAZIMIRSKY: Actually, Dane, I take it back. We have that part I think cut off.

MR. JACQUES: Let him know. Just so you know the difference between what you provided him or not.

MR. KAZIMIRSKY: I think the database supplied to you didn't have that bottom --

BY MR. NICHOLSON:

Q. Okay. Is that something that's redacted or --

A. No.

Q. -- or is it just simply --

MR. JACQUES: I think it's for display. Obviously, you're welcome to it.

BY MR. NICHOLSON:

Q. And when it says invalid -- okay. So it's more than just positions here?

A. That's the readings that --

Q. I mean, you've circled all these valves. Okay. So these valve positions here, flow rates and mean pressures.

MR. CHHATRE: What is the reason for calling it invalid?

MR. KAZIMIRSKY: That's what was impacted by the loss of power.

MR. CHHATRE: Okay.

BY MR. NICHOLSON:

Q. And you determined that from?
A. We looked at what data was -- what instrumentation was impacted by the loss of power, and some of the -- I'm not sure if you have some of the spreadsheets.
Q. Yeah, I've got the why notes one where you've highlighted in yellow and you said --
A. Yeah, I don't remember. I don't know --
Q. Yeah, it's like 14. I mean, I made plots from some of it. You know, this --
A. Yeah.
UNIDENTIFIED SPEAKER: The big ones, you colored for him.
MR. KAZIMIRSKY: If you look on top --
MR. CHHATRE: Do we have that?
BY MR. NICHOLSON:
Q. This is 64 156.
A. Look at the power source line. You're looking at the power source.
Q. I don't have this. Is this a new submittal?
A. You tell me.
UNIDENTIFIED SPEAKER: I can't -- I don't know.
UNIDENTIFIED SPEAKER: We don't have anything that goes as high as 64. I see it says NTSB 64 1557.
UNIDENTIFIED SPEAKER: Oh, is this the one that they just send last night?

MR. KAZIMIRSKY: Uh-huh.

UNIDENTIFIED SPEAKER: Did you get one last night?

MR. CHHATRE: Yes, I got it. I forward it to him, but he had no chance to look at it. I didn't look at it either. I just told Bill that I'll look at it after our meeting today. So they were e-mailed from him last night.

UNIDENTIFIED SPEAKER: I'm pretty sure that's what this is.

MR. KAZIMIRSKY: This is actually what I was talking about. You already traced that. So that will give you a better tool to analyze --

BY MR. NICHOLSON:

Q. So anything that's PSA or B, you've highlighted them for me, okay, would have been faulty. Okay.

A. Questionable.

Q. Questionable.

MR. CHHATRE: That is because of wiring? Is that a wiring diagram or --

MR. KAZIMIRSKY: Because once A and B failed, it's essentially unpredictable what could have happened with the data based on the fact that we lost A and B, was the fact that they were doing troubleshooting. And by the way, even the ones that are not connected directly to A and B --

MR. NICHOLSON: Yeah.

MR. KAZIMIRSKY: -- like I said, during these 3 hours,

could have been affected because they did the work inside the panel.

BY MR. NICHOLSON:

Q. Inside the UDP or inside the mimic?

A. Inside that mimic panel.

Q. Okay. And all the power supplies sit together in there?

A. No, but some of the equipment in that mimic panel is powered by the power supplies installed elsewhere. We have power supplies A, B, C, 1, something else. I don't remember. Several power supplies.

Q. Okay.

A. Equipment in the mimic panel is primarily powered by A and B.

Q. Okay.

A. But some of the equipment is powered by the other power supplies.

Q. Right.

A. When they did troubleshooting in the mimic panel, they could have pulled on any wire related to A and B -- connected to A and B or connected to maybe 1 or --

Q. Because they didn't know which --

A. They didn't know which --

Q. -- power supply it went to.

A. They didn't know where the problem comes from. It could have been a short.

Q. Oh, okay.

A. It could have been a ground. So they tried to find what triggered the problem.

Q. All right. Well, okay. We'll keep that in mind. Some of that --

A. You have -- we have --

Q. -- itself out in the trends, right?

A. The mimic panel has a number of terminal strips. I don't know if you remember but there's a huge number of terminal strips.

Q. Yeah, you showed me the terminal strips. It's amazing.

A. Some of these connections could have been powered by PSA and B, but conceivably (indiscernible) when they worked on this terminal strip and they were pulling on the wires.

Q. Yeah, okay.

A. Nobody knows what got impacted during that time.

Q. But the wires are all labeled, right? They would know if they were pulling --

A. They would have -- they wouldn't have a PS1 or B number. They would have a wiring number.

Q. Okay. Okay.

A. Even if they had A and B, when they pull this wire, there's no guarantee that it didn't touch the other wire. They found loose wires.

Q. Yes, I remember them saying that.

A. So whether that loose wire was here.
Q. Okay.
A. It's like I said, during that time, the data -- all data is questionable. A and B is definitely unreliable.
Q. I guess I'm thinking if they're pulling wires on PS1 though, you'd see something like a spike or --
A. But they didn't pull the wires on the specific power supply. They were checking all terminal strips inside that panel, all of them, and some of them were AC. In fact, you remember that part where they found some burning marks --
Q. Okay.
A. -- the AC terminal strip.
Q. Okay.
A. The AC was powering several different power supplies.
Q. Okay.
A. So it's impossible to say what really happened at that time.
Q. And that's the period from 1722 through --
A. 8:40.
Q. -- 8:40, yeah.
A. Right.
Q. Okay. Which pretty well covers the whole episode.
A. That's why I said before, and I'm saying now that the most -- if you're talking about Milpitas, that's one subject. If you're talking about San Bruno, then the most important part is

the readings downstream from Milpitas.

Q. Yeah.

A. Milpitas is a different issue.

Q. Okay.

A. They definitely had issues at Milpitas, but --

Q. And that's what I'm trying to understand. The pressures downstream seem to speak for themselves.

A. Exactly.

Q. And you could actually use the downstream pressures to kind of correlate what is going on in -- which ones are sort of believable in Milpitas, right?

A. Yeah.

Q. Because they sort of follow the same --

A. And you can also see the correlation. Some of the data at Milpitas that we feel was reliable at the time and that is these flow meters.

Q. Uh-huh.

A. The flow meters were not impacted by any of the work because they have a separate set of transmitters, and that's the most reliable data that we have.

Q. Right, and that looked really pretty good.

A. And you can see the data from the flow meters as reliable, as clear as anything especially when you plot it against each other.

Q. And that's what I did here. I plotted your -- what's

the failed signal against what you said was the unaffected signal, and I guess we could talk about that now since you're there. But I just wanted to be clear because it looks like at 1630 that -- I'm on Appendix M.

MR. CHHATRE: Appendix M.

MR. NICHOLSON: Uh-huh.

BY MR. NICHOLSON:

Q. The L132, what's the purple line or the affected pressure, it look like it came back at 1630 and it looks like it's right back where it was prior to the 1620 where it was 1632 or whatever.

A. Uh-huh. That's what it's supposed to be.

Q. Okay. But then -- so what happened then at 1722?

A. That's a loss of power, pressure spiked.

Q. Okay.

A. And that's --

Q. But it just holds last state, and --

A. No, the pressure -- the actual pressure did spike.

Q. No, I know. I see that on the real one but I'm -- the one that failed, why does it --

A. No, the flow transmitters didn't fail.

Q. No, I know. I'm looking at the purple line though. The one -- the bad transmitter. It just seems to hold last state.

A. What's the attachment?

Q. Appendix M.

MR. CHHATRE: Appendix M.

UNIDENTIFIED SPEAKER: Page 13 of 30.

BY MR. NICHOLSON:

Q. So it diverges here like at 1722 --

A. Uh-huh.

Q. -- when you had the power outage, but power loss to this purple line, wouldn't that result in a loss of pressure, a drop?

A. I don't know what's --

Q. It seems to just go flatline there, right? So it's like a loss of communication. That should be about 1722 where they diverge.

A. What transmitter does that purple line read?

Q. That purple line -- I'd have to look in my schedules. I think it's your -- it's this pressure here on your outgoing lines as I recall. You've even circled it here impacted, right? So I think that line 132 is this pressure point here because I understand it's your leading pressure at Milpitas. I can pull it up if you want.

A. Let me see what you've got here. This is probably not. I don't know where the difference comes from. This is PT7, for example.

Q. Okay. I don't know where that is.

A. Okay. You said which one are you looking at?

Q. It's -- well, I can pull -- which trend or which --

A. 132. What's the transmitter number?

Q. 132.
A. PT what?
Q. It looks like MMTPT083.
A. PT83. PT83 at 1620.
Q. It's Milpitas line 132 terminal pressure.
A. PT83 is still reliable. It says it's still reading actual pressure.
Q. On your submittal, 13-1-S1, it says SCADA pressure reads affected by clearance work.
A. At 1722 --
Q. You've listed 40, 83 and 84.
A. Right, but at 1722, there was no --
Q. Oh, okay.
A. -- work done.
Q. 1722 is when the power loss happened.
A. That's when the power loss happened but --
Q. Are we off by a minute maybe somewhere?
A. Not necessarily. It looks like some, some were impacted and some not. This is the chart and you see that at 1722, some of PSA transmitters that is reading 0's or -200.
Q. Okay.
A. .000000.
Q. Yeah, which makes sense for a power loss.
A. But some were still reading the data.
Q. But it clearly differs from the flow meter pressure

reading, right, at 1722. That's when they take off. So it's as if it just froze.

A. Yeah, it looks like it.

Q. It goes horizontal.

A. It looks like it froze.

Q. Okay. So we don't have an explanation then?

A. No, I can't answer that.

Q. Okay.

A. I can't answer that.

Q. But it's true if it lost power, it should go -- you'd see it dip?

A. Yeah, it should have.

Q. Okay.

A. So I don't -- what we look at here is the SCADA data.

Q. Right.

A. So I don’t know if we read -200, if SCADA interpreted it as an invalid entry and froze on the last valid entry.

Q. Okay.

A. That is very conceivable. It does do that.

Q. Is that programmed into it or --

A. Yeah.

Q. -- is that just an error?

A. Yeah, SCADA has a valid range of values. That really was outside of that range and it could have froze the last good value. So I can't answer. It does look like it's a frozen value.

It doesn't fluctuate. It doesn't change. So maybe that's how it got there, but I can't say for sure.

Q. Okay. All right.

MR. CHHATRE: You can make note of it. If you something comes to your mind.

MR. KAZIMIRSKY: That's the best I can do. I looked at the same things from a different perspective, and I did find out that SCADA does have, in fact, some of the alarms I think show out of range, something like that.

BY MR. NICHOLSON:

Q. Yeah, there were some out of range alarms.

A. And I think that's what it could have been. When it was out of range, it just used the last good value for it. And the SCADA alarms, you will have -- you will find some alarms that say out of range.

Q. I do remember -- there's a lot of them.

A. Right.

Q. Okay.

A. So I suspect that that's what happened.

Q. Okay.

A. But what we do know is that that red line is the reliable value.

Q. Okay. It sure looks like it matches up.

A. And not only that, it matches -- it shows you what happened with the pressure when it spiked in the loss of power and

that's the high point --

Q. Well, that's actually --

A. -- and the monitors took over.

Q. Yeah, okay. That's a question I had. So that initial peak is a surge --

A. Uh-huh.

Q. -- and then when I see it decreasing, that's your monitor valve.

A. The monitors caught up.

Q. And which monitors were controlling then at that point? The primaries or the --

MR. CHHATRE: Which, which --

MR. NICHOLSON: I'm on Appendix M and I'm going to the --

MR. CHHATRE: Still M.

MR. KAZIMIRSKY: The monitors --

MR. NICHOLSON: Yes, still on Appendix M.

MR. KAZIMIRSKY: That would be monitors 26, 20 and 16, I believe, because these are the monitors limiting pressure to the header.

BY MR. NICHOLSON:

Q. Okay. Monitor 16, 20 and 26.

A. Right. These are the monitors that limit pressure going to header 1, which feeds the Peninsula.

Q. Okay. Now I'm going to skip ahead real quick because

you're talking about monitors and pressure. I'm going to go to my Appendix -- you just submitted this data. So on Appendix AA and AD, you've given us header pressures.

A. AA and AD.

Q. Yes, AA, at the very back there.

MR. CHHATRE: Okay. AA and AD.

BY MR. NICHOLSON:

Q. Okay. So on -- these are the header pressures that are identified, just downstream of the primary regulators it looks like, 4, 5, 6 and 7.

A. Uh-huh.

Q. Now, they show a rise at 1722-ish --

A. Uh-huh.

Q. -- up to close to 500.

A. These are the primary regulators taking gas here. These are these numbers.

Q. Yeah, where -- actually where is that read? It's off of the downstream side of the regs?

A. That's these parallel incoming rounds. Sheet 1 of 3.

Q. Uh-huh.

A. 488228.

Q. Right.

MR. CHHATRE: Sheet 1 of 3.

MR. KAZIMIRSKY: This one.

MR. CHHATRE: Yeah.

BY MR. NICHOLSON:

Q. Oh, okay. So that's my PT12B, 11B.

A. Uh-huh.

Q. Okay. Okay. So the question is there. So they got up to 500.

A. Well, okay. Go ahead.

Q. I mean it looks like it or close -- just under 500, but then upstream of those readings are monitor valves 3 through 70, right? So did these monitor valves not catch --

A. Which monitor valves are you talking about?

Q. I'm talking about this primary set of monitors. For instance, 3, 4, 5, 6, 71, 70 and we can talk about just one if you want, header 6, it looks like it's 300B pressure reading off of AR8 and 7.

A. Are you talking about these monitors here, 66, 67, 71?

Q. Yes, uh-huh.

A. Uh-huh.

Q. That series. So why didn't they catch --

A. I don't know the settings of these monitors but they -- where's the operating diagram? That would help us.

MR. CHHATRE: Which diagram is that?

MR. NICHOLSON: That's the newer one.

MR. KAZIMIRSKY: This is the operating -- well, that part hasn't changed.

MR. CHHATRE: Let me -- which drawing is that?

MR. NICHOLSON: I know what it is. It's revision 55 of the Milpitas Terminal Operating Diagram.

MR. CHHATRE: Okay. 383510. Okay. Change 55.

MR. HALL: What was that number, Ravi?

MR. CHHATRE: The number is 383510, change 55, 5-5, Milpitas Terminal Operating Diagram.

MR. KAZIMIRSKY: I don't know what the setting of these monitors is.

BY MR. NICHOLSON:

Q. Oh, okay.

A. But that setting is probably higher than the settings of the monitors 28, 26, 20 and 16.

Q. I didn't know that. Okay. I thought they were all set to 386.

A. Not necessarily.

MR. CHHATRE: And what was the purpose of being different?

MR. KAZIMIRSKY: Well, I don't see the MAOP breakpoints here.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: But what I suspect is that the breakpoint is here and here, and this, this part of the station, may have a higher MAOP than this part plus the other, the other aspect of that. These are bidirectional meters. So these monitors may only be used if you try to flow out of the terminal.

MR. NICHOLSON: Okay.

MR. KAZIMIRSKY: And then the set points would be set to what these lines are, (indiscernible).

BY MR. NICHOLSON:

Q. Because I've got a question about that, too. Okay.

A. When they flow in, this monitor would stay open (indiscernible) MAOP.

Q. Okay. That's something we need to know, I think. That's fairly critical to our story.

A. It is. I need to check on that.

MR. CHHATRE: If you can check it and get back to us?

MR. KAZIMIRSKY: Yes. I can't answer it.

BY MR. NICHOLSON:

Q. I didn't realize that.

A. Well, if you look at the arrows on the PMID, that shows bidirectional flow.

Q. Yes, I see it there. Yep. Okay. I didn't realize that. So the terminal's actually designed to flow --

A. It's hardly ever used for that and I can't even remember if it's ever been used like that, but it's designed for bidirectional flow.

Q. Okay. I'm going to go with that for a second, because there are alarms that appear that say backflow.

A. That is because gas control selects what direction they're going to flow. They select a flow to the terminal and the

flow meters detect flow -- I think I have mine somewhere. I need to watch my pencil.

Q. What are you looking for? There's pens over here. Was that something --

A. I had a pencil 5 minutes ago. I thought I was in good company.

MR. CHHATRE: Use this one anyways.

MR. NICHOLSON: Actually, why don't we take -- you want to take a 5-minute break?

MR. CHHATRE: Yeah, we can take a 5-minute break if you want.

MR. NICHOLSON: I need to reorganize my material here and --

MR. CHHATRE: Yeah.

MR. NICHOLSON: Maybe what we'll do is pick up with the backflow because --

UNIDENTIFIED SPEAKER: I take it there's no control for temperature in this room? I saw Robby close the curtains. I assumed it was for heat control.

MR. CHHATRE: No, that was mainly to get the picture.

UNIDENTIFIED SPEAKER: That was to get the glare off the wallboard.

(Off the record.)

(On the record.)

MR. NICHOLSON: Okay. Picking up, part 2 of the

questioning on SCADA.

BY MR. NICHOLSON:

Q. Mark, we were kind of talking about backflows and bidirectional flows at the station and that reminded me of a question I had on the alarms that came in at 1721. There were two alarms, M13 and M14, the backflow. I wonder if you could just talk to that a little bit as to what that means. So 13 and 14 are tied to line 107.

A. What question number is it?

Q. What question number?

A. Yeah.

Q. It's number 5 on my list here. I think it might be a new question though. I'm not sure it's one that was previously -- it's under my new questions list.

UNIDENTIFIED SPEAKER: Do we have that? Your new questions list or --

MR. NICHOLSON: No, I just did it like last night.

BY MR. NICHOLSON:

Q. I've got the alarm log here.

A. No, not that. There was --

Q. This is theirs.

A. Question 5 you said, okay.

Q. Well, it's a new question. I don't think it was previously submitted to you.

A. The back pressure, the backflow alarms, that's a new

question.

Q. I believe it is, yes.

A. Okay.

Q. I don't see it on my previous list.

A. I think it's related to this.

MR. CHHATRE: Which sheet? Are we still on that same sheet?

MR. KAZIMIRSKY: I believe --

MR. NICHOLSON: Yes.

MR. CHHATRE: Okay.

BY MR. NICHOLSON:

Q. I'm asking about the backflow alarms that appear at 1721 on meters 13 and 14 on line 107.

A. I believe what happened is when --

MR. CHHATRE: Any particular one?

UNIDENTIFIED SPEAKER: Yes.

MR. KAZIMIRSKY: At 1722, when we had that failure --

BY MR. NICHOLSON:

Q. Yes.

A. I think all pressure, all lines coming to terminals were equalizing in that header.

Q. And which head are we talking? Header 2 or header 3.

A. Let me see here.

Q. It would have to be header 2 because 13 and 14 are on line 107.

A. Well, this 13 and 14 are on header 7 I believe but all these --

Q. Yeah, there are others that come in at 1722, MAM7, 11 and 12.

A. These headers go 28 sheets, 28 -- okay. They're all coming to headers 3 and 2.

Q. Yes, right.

A. So I would guess without having much data, I would say that at that point, the pressures between all the lines were equal or pressures in all lines were equalizing, and since 107 was running at the lower pressure than the other lines, it started backfeeding to 107.

Q. That's what I wanted to get to. Okay. So we were actually backfeeding --

A. I believe that was --

Q. -- lines.

A. -- a legitimate alarm based on the fact that all incoming lines were equalizing to each other.

Q. At 500 pounds, right? Because that's what they're showing or just under 500.

A. Yes, somewhere in that time.

Q. Except the down -- on header 3, we should be or I mean header 2, we should have been controlled, right, because you pass through regulators. So that the 500 is up on headers 5, 6 and 7. Actually it's on header 4, too, but between headers 4, 5, 6 and 7,

you go through another bank of regulators and monitors.

A. And these headers -- let me put my drawings in order. 107, let me see. Without seeing what the pressures were -- do you know what the pressures were when we got that alarm?

Q. Yes, I can --

MR. CHHATRE: We have that information.

MR. NICHOLSON: Yeah, I've got all these here.

BY MR. NICHOLSON:

Q. So if you pulled out S, U, these are the upstream pressures coming in.

MR. CHHATRE: So looking at Appendix S and U.

MR. NICHOLSON: Yeah, S as in Sam and U as in --

MR. CHHATRE: Utah.

MR. NICHOLSON: -- umbrella, Utah.

BY MR. NICHOLSON:

Q. Okay. And even AA and AB. So here's what I'm trying to figure out. It looks like the headers went to just under 500.

MR. CHHATRE: I don't have U. I have T. I don't have -- oh, I'm sorry.

BY MR. NICHOLSON:

Q. It looks like the headers went to roughly 500 and then I'm seeing a corresponding rise on line 107 and 300B that looks like maybe we backfed and started pressurizing those lines. So I'm trying to put these four trends together here. Because line 107 was upstream.

A. You're talking about these.
Q. Yeah. That's your upstream. Now I don't know where you were measuring, where those are measured at. That's the data that was provided to us.
A. I don't know. You tell me where this came from.
Q. Well, it came from you. I just don't know where you measured it.
MR. CHHATRE: We're looking at the transducer I guess.
MR. NICHOLSON: Yeah, I'm sorry.
BY MR. NICHOLSON:
Q. The location of the transducer.
A. At the terminal or -- I assume it's at the terminal somewhere.
Q. That's what I'm assuming, too, based on the rise I see here. We asked for upstream pressures and I got these, and then we also asked for incoming pressures and I got these.
A. The upstream pressures could be --
MR. CHHATRE: You going to a different diagram now?
BY MR. NICHOLSON:
Q. So it's MIRPT008.
A. 8?
Q. I'm sorry. That's line 131.
MR. CHHATRE: But which page you are?
MR. KAZIMIRSKY: 8 is 300B.
BY MR. NICHOLSON:

Q. 300B, the point name you provided was JTLPT0003, Tully Road. I don't know where that's physically located.

A. That's -- I think it's outside the station.

Q. Which would make sense because that's what we requested is upstream pressures.

A. Yeah, that's outside the terminal. That's --

Q. And then all I've got are hourly data for incoming pressures at Milpitas. So they're not, they're not very well defined.

A. And this is what I was referring to.

Q. The dip.

A. The dip when we lost the --

MR. CHHATRE: Which page is that, Matt?

MR. NICHOLSON: We're looking at Appendix S.

MR. CHHATRE: Okay.

BY MR. NICHOLSON:

Q. And we'll get back to that dip. But even this trend does show a rise, you know, between 1700 and 1800.

A. Well, what I think happened here is that when we lost pressure for 10 minutes, that resulted in --

Q. Between 1620 and 30?

A. Yeah.

Q. Okay. Right.

A. Maybe that's what it is.

Q. That first descent.

A. Right, and then when we recovered --
Q. It's got to make --
A. -- we went back to normal pressure.
Q. But your next point, it looks like the next point it picked up was 1700.
A. That's the average. That's the time stamp. So we go --
Q. 1630 would have been a point up here, right?
A. Yeah, but I think the averaging is done on an hourly basis. It says --
Q. Oh.
MR. CHHATRE: It's a moving average.
BY MR. NICHOLSON:
Q. It's a rolling average. Is that what you're saying?
A. No, I'm saying it's an hourly average. So 16 to 17, we had a 10 minute drop to 0. From 16 to 17, it dropped off. Then we recovered at 4:30. So we went back to normal pressure, and the pressure here recovered as well.
Q. Yeah, okay.
A. That's what I suspect.
Q. That's an average between 1600 and 1700.
A. That's how I see it. I'm not sure.
Q. But when I get my 20 second intervals which I requested, I'm hoping to see a little better resolution, kind of like the one above it.
A. But then you'll be comparing apples and apples.

Q. Right.
A. Now it's --
Q. Well, but is -- did we backfeed and can we say that the rise -- what's going -- can you explain to me what's going on in S?
A. No, that's upstream from the terminal.
Q. So that's independent of anything.
A. Yeah, I would suspect that that is more of an operational call, how gas control wanted to run the station.
Q. Well, I see the same -- this is a totally (indiscernible) then. Let's talk about this upper one. I mean at 1722, I see a drop, right, on the incoming pressure.
A. That's what I want to understand, where these points are measured at.
Q. Okay. So just having the point name and the location.
A. Yeah.
Q. Would Andy Wenzel know if we called him or --
A. He might.
Q. Is it past his --
UNIDENTIFIED SPEAKER: He's awake.
MR. NICHOLSON: Do you have his number?
MR. KAZIMIRSKY: But he doesn't have these appendixes. We need to find the old appendix. We have it in the old appendixes.
BY MR. NICHOLSON:

Q. What are you calling old appendix?

A. Well, the ones that --

BY MR. NICHOLSON:

Q. I can tell you which request number it came from, where my data came from. It's from -- well, it's on the -- it would our NTSB Request 58001.

MR. KAZIMIRSKY: This is yours or mine? This is yours or mine?

UNIDENTIFIED SPEAKER: I don't know. But what' mine is yours. So take what you need.

MR. KAZIMIRSKY: Thank you. It is mine. No, it's not. Where's the one that I highlighted that bottom line?

UNIDENTIFIED SPEAKER: This one?

MR. KAZIMIRSKY: No, I remember somewhere I highlighted --

BY MR. NICHOLSON:

Q. You have say like Appendix 1, 2 --

A. I highlighted --

Q. It's an old one.

A. Yeah, that's mine. This is 17. That's the answer.

Q. Which one?

MR. KAZIMIRSKY: Can I just present the answer to these gentlemen?

MR. JACQUES: I think you ought just describe it, just talk through it. I don't know what else is on that document. I

wouldn't just hand it over. I mean we can provide something in writing. I just don't know what's there. So I would talk them through it.

BY MR. NICHOLSON:

Q. Just to clarify then, it looks like you've got typewritten answers to these questions. Did you -- you didn't prepare all these then, Mark?

A. No.

Q. Okay.

A. That came from gas control.

UNIDENTIFIED SPEAKER: I've got Andy's number.

MR. KAZIMIRSKY: Hum?

UNIDENTIFIED SPEAKER: I've got Andy's number if you want to talk to him.

MR. KAZIMIRSKY: 3219 I think.

UNIDENTIFIED SPEAKER: 3218 is what I have.

MR. KAZIMIRSKY: All right.

UNIDENTIFIED SPEAKER: That's what the e-mail says.

MR. KAZIMIRSKY: Okay. It's 18 or 19. Our offices are next to each other. So 19 is probably --

MR. NICHOLSON: Okay. Do we want to call him? We're trying to get an explanation as to where these are measured. Right. He can help us -- he doesn't need to see the trend to talk to this, right?

UNIDENTIFIED SPEAKER: I don't know.

MR. KAZIMIRSKY: His response was that 107 pressure went up because the 300B and 107 went up because the pressures at Milpitas were equalizing during the power outage.

BY MR. NICHOLSON:

Q. Well, that's what we're -- okay. So it's backfeeding. So then it is backfeeding.

A. Yeah, it is backfeeding.

Q. Okay. So 300A and 131 are backfeeding into 107 and 300B.

A. Yes.

Q. That's what I was trying to figure out.

MR. CHHATRE: They're kind of matching trend. What is coming down and what is going up.

UNIDENTIFIED SPEAKER: Right.

MR. CHHATRE: And they match.

BY MR. NICHOLSON:

Q. Yeah, they also match these headers.

MR. JACQUES: That's something that Andy said though, just so we're clear.

MR. KAZIMIRSKY: Right.

MR. JACQUES: As opposed to you. So you ought to confirm that with Andy is my only point rather than -- I don't think --

MR. NICHOLSON: Yeah, now we did kind of ask that whoever can respond to these questions be out here. So --

MR. CHHATRE: If necessary, maybe we can call Andy and you guys can get back to us immediately.

MR. NICHOLSON: Well, that's true. He's available by phone.

MR. JACQUES: I think the answer's right. I just want to make sure that Mark doesn't start telling you something as if he's telling you and analyze it when he didn't. That's my only concern.

MR. CHHATRE: No, no, no.

MR. JACQUES: And you need to be careful of that, too. So if that's something that Andy --

MR. KAZIMIRSKY: We already said that.

MR. JACQUES: Okay.

MR. KAZIMIRSKY: That's the response provided by gas control.

MR. JACQUES: Okay.

MR. CHHATRE: He did mention that earlier. So I'm fine with that.

MR. JACQUES: It's up to you. I just wanted to make it clear that it's not.

MR. NICHOLSON: Okay. It makes sense. I'm not quoting anybody. I'll just be talking to it probably in the report, but I think the answer makes sense with the trends.

UNIDENTIFIED SPEAKER: I think we all agree.

MR. NICHOLSON: So I'm perfectly okay.

BY MR. NICHOLSON:

Q. So then I want to go back then to this little dip I see on Appendix S off of line 131 and 300A. Then that dip I see there in pressure is just a pressure drop as flow backfeeds into 300B. There's no commands that I saw in the alarm logs for that pressure dip on 131 and 300A at 1722.

MR. CHHATRE: What happened between 1800 and I guess 1940 for line 300B?

MR. NICHOLSON: Yeah, okay. Yeah. Let's answer the first question and then we'll get to that.

MR. CHHATRE: Yeah.

MR. NICHOLSON: That's another question like that, too. So you're right.

BY MR. NICHOLSON:

Q. But I'm looking for confirmation that that initial dip on 131 and 300A is not a, as far as you know, Mark, is not a commanded --

A. No, I think it's related to the loss of power at the terminal.

Q. Well, these pressure signals weren't impacted, right? It doesn't appear that they were.

A. It does not.

Q. So I would -- that dip to me looks like a drop in pressure because of the backfeed to 300B and 107.

A. I think that drop in pressure is caused by the fact that

the valve started opening.

Q. Okay.

A. And that causes obviously increase in flow and drop in pressure.

Q. Okay.

A. Also the shape of that trend is pretty realistic.

Q. Yes, it looks like a valve trend. Okay. And where it dips again at 1756 roughly, it's this little knee in the trend.

A. 1756.

Q. Yeah, I'm -- it looks to me like that's the set point change made.

A. And I have a response from gas control from Andy --

Q. Uh-huh.

A. -- that at 1752, they did change a set point --

Q. Right.

A. -- for line 300A, no, for line 300.

Q. So if I make a set point change for 300 at --

A. At PLS-7A and 7B.

Q. -- that impacts both of them.

A. No.

Q. You do them independent?

A. That I can't say. They have independent set points. They may.

Q. Okay.

A. I have --

Q. Yeah, I see a PLS-7B pressure set point change and a PLS-7A set point change.

A. Uh-huh.

Q. Okay. So that -- that's another question I had. That 7B and 7A, they're the same as 300A and 300B?

A. No. PLS-7A and 7B is one pressure limiting station.

Q. For flow coming into Milpitas.

A. Flow coming into Milpitas but also line 100 goes back to PLS-7. It's the same facility. This is something we have not provided yet.

Q. Uh-huh.

A. But that's the depiction of PLS-7.

MR. KAZIMIRSKY: Ravi, would you mind --

MR. CHHATRE: Yeah, sure. I'll make copies. That's what I'm here for.

MR. JACQUES: Let me just make a note of it that they have some record of the exhibits that have been turned over.

MR. KAZIMIRSKY: Everything that I have given them, Barbara is aware of it. I will send her a copy of everything that I --

MR. JACQUES: Give to them.

MR. KAZIMIRSKY: Yes.

MR. JACQUES: Is there anything other than that that they didn't already have?

MR. KAZIMIRSKY: Not yet.

MR. JACQUES: That? How about that?
MR. KAZIMIRSKY: That you got -- oh, one of the sheets.
MR. NICHOLSON: I was missing a sheet, I think. I didn't have the one with the tanks on it.
MR. KAZIMIRSKY: 227.
MR. NICHOLSON: 227, I don't recall seeing that.
MR. JACQUES: What is it?
UNIDENTIFIED SPEAKER: Drawing 488227, Rev 5, sheet 1 of 1.
MR. JACQUES: Okay.
BY MR. NICHOLSON:
Q. So this was a point of confusion, Mark, this because I see that it says 2PLS-7A and 7B.
A. I figured that out. That's why I brought that picture.
Q. And I think that's been cleared up.
A. I read your questions, and I could see that there was some confusion between the pipeline and the facility names.
Q. Yeah. Okay. And I think I had seen it called both things before but -- so then these trends I've got for PLS-7B and 7A, I shouldn't be surprised that they look just like 300A and 300B.
MR. CHHATRE: Mark, these pressures indicated here, they are on the day of the accident, at that time or --
MR. KAZIMIRSKY: No, no, that was the screen that I made just before I left.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: Because like I said, I was looking at Matt's questions --

MR. CHHATRE: Sure. Yeah, I know.

MR. KAZIMIRSKY: -- and I thought that that would be --

MR. CHHATRE: This is helpful. This is helpful, but --

BY MR. NICHOLSON:

Q. Well, can you talk us through it? I'm sorry. I don't think it is for me helpful. I see they're tied together but I kind of imagined that already. Which way is flow and --

A. I'm sorry.

Q. Which way is flow on our drawing? Is it from left to right?

A. Flow is --

MR. CHHATRE: You can mark on that.

MR. KAZIMIRSKY: -- from right to left. It goes to Milpitas. See the upper two lines are 300A and B. The very upper one is the B line. You can see it here.

MR. NICHOLSON: Where's 300? Oh, 300B.

MR. CHHATRE: It's blue in color, 300B.

MR. KAZIMIRSKY: Yeah, the colors are not the best for printing. The second line from top is 300A, and the bottom one is 100 feeding back. This is 100 coming back.

BY MR. NICHOLSON:

Q. So line 100 feeds left to right on this drawing?

A. 100 comes back from Milpitas and goes to Hollister. If you look at the PMID or the operating diagram --

MR. CHHATRE: Go ahead and draw the arrow on this one if you want to, on the diagram.

MR. KAZIMIRSKY: I'm sorry.

MR. CHHATRE: Go ahead and draw the arrow of flow if you want on that diagram. We have another copy undisturbed. So we can -- we are good.

BY MR. NICHOLSON:

Q. Oh, here's Hollister up here.

A. This is going this way, and this is going that way.

MR. CHHATRE: Yeah, the flow, okay. That helps.

MR. KAZIMIRSKY: Let me just make sure I'm not --

MR. NICHOLSON: I'm not even sure how that occurs. If you're flowing --

MR. CHHATRE: Both A and B are the same MOP. So the valves are open I think there. Can I ask you, what are the vary yellow and green color means?

MR. KAZIMIRSKY: Yellow is valve in the middle position. That's my copy.

MR. CHHATRE: Oh, that's your copy? No, that's my copy, the flow. Your copy is with Jack.

MR. KAZIMIRSKY: Oh, okay. So yellow is valve is traveling somewhere between open and closed, anywhere between open and closed, and red is valve is fully open, green is valve is

fully closed.

MR. NICHOLSON: Yeah, we've got that information. We're good there.

BY MR. NICHOLSON:

Q. Okay. So walking through it. Tully Road comes back up and into --

A. And feeds Hollister.

Q. And how does it get there? It goes into 300A first, right?

A. Uh-huh.

Q. It goes through 300A. It's flowing this way up into 300A and then over. Hollister is at the very top to the right as far as I can tell.

A. No, Hollister is here. It's one --

Q. Oh, oh, I see it. Okay. Okay.

A. It can go either way.

Q. Which way was it going that day?

A. I don't -- that's something we need to look to see. If this valve is closed, this is open. That's when we feed Hollister back.

Q. Uh-huh. Okay. So we'd have to look at the valve state.

A. We need to see where the valves were that day.

Q. Well, do I have that valve? What valve is that? That's 65. Is that what valve that is?

MR. CHHATRE: 64A I think.

MR. KAZIMIRSKY: I don't see the numbers but that's --

BY MR. NICHOLSON:

Q. I'm looking at the one on 300A.

A. It's 490.65A and 490.64A.

Q. Is that how they would show up on SCADA? Because all I have are --

A. This is the SCADA screen.

Q. I mean is that how they'd show up on the trends you provided?

A. I'm not sure if you have trends or anything from PLS-7. So far I've been --

Q. Oh.

A. -- you have been requesting Milpitas.

Q. Right.

A. So this is PLS-7 screen.

Q. Okay.

A. And I only brought it to --

Q. Illustrate the --

A. -- to address some --

Q. So PLS-7 is located upstream from --

A. From Milpitas.

Q. -- south of Milpitas.

A. Right.

Q. And it's just a terminal or is that a pressure station?

A. No, that's what we call a pressure limiting station.

PLS --

Q. Right.

A. -- stands for pressure limiting station.

Q. No compressors?

A. No.

Q. Okay.

A. That's actually where we dropped the pressure --

Q. Yes.

A. -- after that incident.

Q. Okay.

A. So the point that I wanted to make is that PLS-7 or PLS-7A and B is the name of the facility. So the lines coming here would be line 100 going to PLS-7, 300A and B, are coming from PLS-7.

Q. But see, now PLS-7 then rises -- PLS-7B goes up to like 475, and then -- but this says the MAOP is 400. So I'm confused then.

A. Well, this line 100 --

Q. Line 100 is that 400A.

A. Yeah. Line 400 has MAOP of 400.

Q. Okay.

A. That's not --

Q. Oh, that's this line here, the Tully Road.

A. Right. That's not necessarily PLS-7.

Q. Okay. I've got you. Okay.

UNIDENTIFIED SPEAKER: Even though it goes to PLS-7.

MR. KAZIMIRSKY: Yeah.

MR. NICHOLSON: I know.

MR. KAZIMIRSKY: And like I said, I read your questions and I understood that question, and I understood that there was some confusion between the name of the facility and the line number. So that's why I made that screen.

BY MR. NICHOLSON:

Q. I think I'm still confused. Where's Hollister then? What is Hollister? That's a --

A. Hollister is the name of a town. That's where the line is coming from.

Q. Okay.

MR. CHHATRE: Do you know how far upstream that is roughly?

MR. KAZIMIRSKY: It's not that far, but I don't know the distance. That is something that perhaps --

MR. CHHATRE: I'm just curious. I mean the name sounds familiar but I couldn't realize where that is.

MR. KAZIMIRSKY: It's I'd say maybe 20 miles, maybe less. Yeah, I'd say maybe 20 miles.

BY MR. NICHOLSON:

Q. Okay. So then what are -- what's line 131S and line 107 West?

A. I'm sorry.

Q. On Appendix U, I've got line 131S and line 107 West. It was submitted on a very early request.

A. U.

Q. Yeah. They show a rise, too, very similar to 300B and 107. It's smaller in magnitude.

A. I would suggest that we refer that to gas control.

Q. Okay.

A. Again, I'm not sure where the pressures are measured.

Q. Does the PMID you supplied me have every pressure measurement point on it?

A. For Milpitas Terminal. Not necessarily what's coming from PLS-7.

Q. Okay. This does -- I did label it upstream pressures. So maybe these are read outside the station.

A. That's exactly why I'm hesitant to answer.

Q. Okay.

MR. JACQUES: Is this something you -- this drawing something you brought a hard copy with you or did you e-mail that to them as well?

MR. KAZIMIRSKY: No, I just brought a hard copy.

MR. JACQUES: Okay. That's fine.

MR. KAZIMIRSKY: And I made a note that we will compare our notes --

MR. JACQUES: Okay.

MR. KAZIMIRSKY: -- as to what I need to submit.

MR. JACQUES: Yeah, that's -- work that back to the company so that it gets logged in.

MR. KAZIMIRSKY: I made a note of 227.

MR. JACQUES: Right. I've got that and then --

MR. KAZIMIRSKY: PLS-7 screen, that's this one.

MR. JACQUES: Okay.

MR. KAZIMIRSKY: And just in case, I also will e-mail that one to validate the SCADA screen?

MR. JACQUES: That.

MR. KAZIMIRSKY: Yeah.

MR. JACQUES: I thought they had that.

MR. KAZIMIRSKY: I think so, too.

MR. JACQUES: Except for the --

MR. CHHATRE: Footnote.

MR. JACQUES: Yeah, whatever you call it.

MR. KAZIMIRSKY: Well, just in case, I'll send it since -- even if --

MR. CHHATRE: It would be good to update it or submit it. They can put it in the docket. It might help.

MR. NICHOLSON: Or just tell us which request it's in. I have a feeling I know. It might be in that control room where you guys did kind of an internal investigation. Is it part of that report maybe?

MR. KAZIMIRSKY: I can't remember.

MR. JACQUES: We'll figure it out and let you know.

MR. CHHATRE: Can you maybe do the lunch break and maybe call whoever needs to be answering this question for Matt. Maybe they can get -- e-mail it to us or how are we going to handle that?

MR. NICHOLSON: It's Andy, right?

MR. KAZIMIRSKY: Yeah.

MR. JACQUES: I don't know. If you want to talk to Andy, he's available by phone. If you want to just talk to him or if you want us to get the answer.

MR. CHHATRE: Well, the diagrams --

MR. NICHOLSON: Well, we were going to call him --

MR. KAZIMIRSKY: He would have the same diagram.

MR. NICHOLSON: -- but I think we got our answer from Mark. So I'm trying to remember why we -- we were talking about this trend but he had an answer written by Andy, right?

MR. KAZIMIRSKY: That's what they did.

MR. NICHOLSON: And it seemed to validate --

MR. KAZIMIRSKY: For that, we have the answer.

MR. CHHATRE: Well, even the last question we asked.

MR. NICHOLSON: The last one I made a note of. It's not something I want to waste time calling him on right now.

MR. CHHATRE: Okay. That's fine.

MR. NICHOLSON: I can pick and choose my --

MR. KAZIMIRSKY: If you decide to, that's the old Appendix 19.

MR. NICHOLSON: Yeah, he's going to be referring to that. Okay.

BY MR. NICHOLSON:

Q. Mark, the next question, I want to just be sure, which -- when we talk about the incident at 1720, I was under the impression we were saying the pressure transistors lost power --

A. Uh-huh.

Q. -- showing as 0 pressure, and the regulating valves opened to adjust.

A. Correct.

Q. Okay. Well, I don't see any pressures dropping at the station at that time.

A. We do.

Q. Are they not trended?

A. No, they have been.

Q. They have been.

A. If you look at PT38, 40.

MR. JACQUES: Is it on here or no?

MR. KAZIMIRSKY: Yeah.

MR. CHHATRE: What is the number again? I'm sorry.

UNIDENTIFIED SPEAKER: PT38.

MR. KAZIMIRSKY: We have these. I don't know if you've seen these or not.

BY MR. NICHOLSON:

Q. Did they come in last night?

A. No, I brought them with me.

MR. JACQUES: Are those different or are those three copies the same?

MR. KAZIMIRSKY: No, these are different.

MR. JACQUES: Okay.

MR. CHHATRE: Do you want me to copy them?

MR. KAZIMIRSKY: Yeah.

MR. CHHATRE: All right.

MR. KAZIMIRSKY: In the meantime, I'll tell you where you can see the --

MR. NICHOLSON: I got this electronically, this enormous spreadsheet here?

MR. JACQUES: Yes.

MR. NICHOLSON: This is good information. Okay.

BY MR. NICHOLSON:

Q. So PT38 is valve 38.

A. Yes. If you look on page -- okay. We'll go to page 12 please.

Q. Okay.

A. You can see -200, -200.

Q. Okay.

A. So these are the pressures that forced the regulator valves to go open.

Q. What's PT38A versus 38? Is that trimmer versus --

A. No. 38, 38A. These are different transmitters.

Q. Are they on that --

A. PT -- oh, by the way, there are also PLC addresses here and the SCADA address is here and the actual analog inputs. You can see how much chasing you'd need to do to figure it out.

Q. Yes. Okay.

A. But --

Q. We have to register them.

A. PT38A, based on the address -- oh, these are two different pressure transmitters. See both of them have AI numbers. One is 93. One is 123.

Q. Where do you see the I number?

A. It's down below. It says --

Q. Oh, oh, I see. 93 and 123, analog input.

A. These are different transmitters. Let me see if I can locate them in the PMID.

Q. That's an oddball one anyway. The valves are down here by --

A. But one of them are duplicates and some of them -- in fact, something that we discussed earlier today, if you go to say the first column on that same sheet --

Q. Uh-huh.

A. -- it says PT13B.

Q. No. Yes, got it. Yep.

A. If you go down to the left it says SLDC source.

Q. Uh-huh.

A. And it says UIC 13R.
Q. Yes.
A. That means that this transmitter is not hardwired to the Genius block but it's fed back to the PLC via the UIC.
Q. Oh, I know that because of the prefix UIC.
A. Because it's UIC.
Q. Okay. Good.
A. It does not have an AI as you can see.
Q. Yeah, AI would be the Genius block.
A. Right.
Q. Okay. I'll make a note of that.
A. So that spreadsheet will keep you busy for a little while.
MR. KAZIMIRSKY: That also needs to be added to our list.
BY MR. NICHOLSON:
Q. Who developed this spreadsheet?
A. That was developed during the initial troubleshooting in September of last year when we got access to the site, and that was one of engineers in my group. Well, actually there were several people doing it. It started with just making a spreadsheet with the transmitters versus power supplies.
Q. Uh-huh.
A. And then we added analog inputs to them, and then we added SCADA addresses to them.

Q. So the story remains the same. Good.

A. Yeah, nothing -- and if you look at these trends, that will probably be --

Q. Helpful.

A. -- very, very useful to you.

Q. So then the power outage took out the pressure transducers and the monitor valve position since --

A. If you go through that spreadsheet, you will see a consistency of everything that we discussed.

Q. And I've got more than just pressures on here. It's also going to be positions.

A. There is --

Q. These are all the points at Milpitas basically.

A. No, this is on the (indiscernible).

Q. Here's the pressures. Okay.

A. Milpitas is a --

MR. JACQUES: I think you have this electronically but maybe not, and the reason I say that is there was -- remember, this is the truncated version and there's a complete version that is even longer. Is that what it is? The other one has everything and this is -- you get whatever you want. I just want to make sure we know what they have.

MR. KAZIMIRSKY: I don't know if it's the same data, the same spreadsheet or it's a different spreadsheet. There is another one that has more like set points and all that.

MR. JACQUES: I want to at least -- it's a lot easier to sort. You get it all. I just don't know. Let me make a note. You'll, you'll get it all. I just don't know whether if that's what was sent last night. I'll check.

MR. CHHATRE: And if anything came in last night, I don't think anybody else knows, but I'm the one who got it first.

MR. JACQUES: Okay.

MR. CHHATRE: We haven't looked at anything yet.

MR. JACQUES: That's fine. I just want to make sure you have it.

UNIDENTIFIED SPEAKER: We got it just before the meeting. So --

MR. CHHATRE: Last night, 10:30.

BY MR. NICHOLSON:

Q. That was fundamental to the story, and I wasn't seeing the trends.

A. This spreadsheet and this chart probably -- will probably answer a lot of your questions.

Q. Yes.

A. That spreadsheet has been developed over time. So -- and like Dane said, there are bigger versions of it.

Q. Yeah, well, here's the one that we were talking about earlier, right?

A. Uh-huh.

Q. Okay.

MR. CHHATRE: So you have seen pressure drop. You have seen --

MR. NICHOLSON: Yeah, he's pointed out an instance here where we -- he lost pressure, loose it completely.

MR. CHHATRE: What page is that?

MR. NICHOLSON: Well, our example was on page 12 of this NTSB 641577 spreadsheet, and we were looking at valve --

UNIDENTIFIED SPEAKER: PT38.

MR. NICHOLSON: -- PT38.

MR. CHHATRE: Okay. 38, I see it.

BY MR. NICHOLSON:

Q. What about -- so if I want to find valve AR8R or --

A. Don't look at the AR. Look at 8.

Q. Just the 8, right.

A. Yeah, AR is not going to tell you.

Q. Right. So just PT8.

A. PT8, you would start with valve 8 which is page 1.

MR. CHHATRE: Page 1 of?

MR. KAZIMIRSKY: 228, sheet 1.

MR. CHHATRE: 228, sheet 1.

MR. KAZIMIRSKY: No, no, PMID.

MR. NICHOLSON: So PT8 shows --

MR. CHHATRE: I don't have 228.

MR. KAZIMIRSKY: There's PT8B. That's what used for the controls.

BY MR. NICHOLSON:

Q. Oh, here it is. You've highlighted it in yellow but it just stays the same.

A. No, yellow -- on this chart, yellow says PSA/B.

Q. Okay. Well, there's two PT8s now.

A. What sheet are you looking at?

Q. I'm sorry. I'm on sheet 3.

A. Sheet 3.

Q. PT8, 8B and PT8 again. One's to the UIC. One is hardwired or one is to the Genius block.

A. Two are hardwired. One is to the UIC.

Q. Okay. So the one to the UIC would have been the one to drive the valve open.

A. Yep.

Q. Which is the negative number and the hardwired one just seems to hold last state. Okay.

MR. CHHATRE: You got it? I'm confused.

MR. NICHOLSON: I want everybody to understand.

MR. CHHATRE: I'm looking at two PT8Bs, 169 and 171, the same sheet.

MR. NICHOLSON: 169.

MR. CHHATRE: And 171, next block.

MR. NICHOLSON: That's 8B.

MR. CHHATRE: They're both 8B, 169 is 8B and 171 is 8B.

MR. NICHOLSON: And what is 8B then? Is it just a

separate point?

MR. CHHATRE: I'm not sure what those two points mean, those two columns mean. They're not two (indiscernible) separate, but they are consistently lower for 8B. 171 was -- 169 is like --

MR. NICHOLSON: Well, it tells you below, 8B is line 300B, header 6 pressure and 8 is the upstream pressure of 8R. So which one's controlling? The one controlling has to be to the UIC but 8B and 8 are actually -- so it would be 8B that's controlling, wouldn’t it because it's downstream?

MR. CHHATRE: I'm seeing duplicate columns with -- I wasn't quite sure what it means. For each, it's a duplicate column.

MR. KAZIMIRSKY: I can't answer that without looking at the PLC program. What it could have been is that these are the same transmitters and the first two columns, 168, 169 --

MR. CHHATRE: Uh-huh.

MR. KAZIMIRSKY: -- show them hardwired and then the same two transmitters seem to be fed back to the PLC through the controllers. So these may be duplicate points, but I need to look at the PLC program to answer that.

MR. CHHATRE: Okay. Maybe you can just make a note of it and get back to us. It's not consistent to the entire (indiscernible).

BY MR. NICHOLSON:

Q. Well, did Andy put this sheet -- you said it's --

A. No, that's -- that's the -- it's a joint effort. There was a lot of --

Q. So we can't just get the answer from Andy.

A. No. Different people have knowledge of different parts of that spreadsheet. The SCADA people are not really familiar with the physical installation at the terminal.

Q. Okay. Right. Well, was there a response that came with this electronically that might explain it?

MR. JACQUES: You guys don't have that. I just made -- I just found an e-mail and you're welcome to it. I made a request that Bill e-mail it to Robby. So there's this one and then there's one they call a full version that has -- I'm not sure.

MR. CHHATRE: I think the (indiscernible) seem to be working fine now. He did send me a couple of items. So initially we had some problem in the past. So we should be okay.

MR. JACQUES: If you don't have this, you will have it shortly.

MR. CHHATRE: Okay. Great.

MR. KAZIMIRSKY: I'll need to follow up on that and let you know.

MR. CHHATRE: Okay.

BY MR. NICHOLSON:

Q. They've got different addresses, right? They look like different points.

A. Well, but what that means is one of the addresses comes

through that upper line or upper sketch.

Q. Yeah. Right.

A. And the second that I didn't show, here's what could happen there. I can't answer without doing some more checking. Let's say that we have a PETITION. PT can be wired to here and then it goes through the same path and comes as AI here, gets transferred to the register and the register gets here.

Q. Right.

A. The same PT would have been sent to the UIC, for the pressure control.

Q. Yeah, right, right. And then back --

A. And then here to here and draws from the comm link.

Q. Yeah.

A. So that PT would have two addresses. It will come here also to register, by a different register.

Q. Okay.

A. That is what could have happened. I'm not sure. I need to, like I said, trace --

Q. Does that show up on the alarm record when I see a point name?

A. Not necessarily.

Q. PRT or --

A. Once it gets to the PLC -- to the SCADA system, if that is indeed duplicative information run through the hardwired connection, run through the UIC --

Q. Yeah.
A. -- they could use either one of them.
Q. They could use --
A. Either one of them for alarms, displays. This should be the same value, right? It's the same PT.
Q. Right.
A. It's just delivered through different means.
Q. But different registers.
A. Yeah, but once it gets to SCADA, they would know that this is register 1 and this is register 2.
Q. Yeah, it would be --
A. It's the same values, the same PT. So they could utilize either one of them. And normally it shouldn't happen, but it could have. It doesn't hurt anything.
Q. Okay.
A. So I'll need to check on that and see how it is.
Q. Who would answer that? Is that --
A. I probably would.
Q. Okay.
A. No, that's probably -- I would start with myself first.
Q. Okay. You would send that to yourself.
A. I need to figure out why they have duplicate tags.
Q. Okay.
MR. CHHATRE: Yeah, I asked you what is the purpose of having two duplicate sets?

MR. KAZIMIRSKY: You shouldn't. Like I said, normally I wouldn't do it, but it's a huge program. So maybe I made a mistake and sent it twice. Like I said, it doesn't hurt anything.

MR. CHHATRE: Sure.

MR. KAZIMIRSKY: It just increases the number of points.

MR. CHHATRE: Like with the redundancy with those power supplies, you know, when one fails, the other one will work kind of deal.

UNIDENTIFIED SPEAKER: Because you're off one transducer. You're splitting the signal.

MR. KAZIMIRSKY: Okay. So I'll follow up on that --

MR. CHHATRE: Okay. Great.

MR. KAZIMIRSKY: -- and let you know.

MR. CHHATRE: Are you going through your chronological set of questions or are we -- I want to make sure we don't miss --

MR. NICHOLSON: We're jumping around.

MR. CHHATRE: I want to make sure we don't lose any questions.

MR. NICHOLSON: Yeah, me either.

BY MR. NICHOLSON:

Q. So another clarification, which is sort of in my general questioning here, while we've got the station drawings out, can you talk a little bit about the function about valves L1 and L2?

A. That's not L1. It's valve. Again that's kind of part of our symbology. It's valve 1 and valve 2. Valve 2, these are

ESD valves, emergency shutdown valves.

MR. CHHATRE: Which page we're on? I'm sorry.

MR. NICHOLSON: I'm asking about the (indiscernible) diagram.

MR. KAZIMIRSKY: It's line 300A and line -- I've memorized these valves. It's line 300A, 300B coming to the terminal.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: These are emergency shutdown valves, fail closed with a spring return.

BY MR. NICHOLSON:

Q. Oh, yes.

A. If you remember the terminal, on the far end of the terminal, there are two valves with long, long cylinders, huge cylinders.

Q. Yeah.

A. That's --

MR. CHHATRE: On the lower level.

MR. KAZIMIRSKY: Right.

MR. CHHATRE: Yeah, yeah.

MR. KAZIMIRSKY: Well, they're not in the --

MR. CHHATRE: They're not in the basement but they're on the ground level.

MR. KAZIMIRSKY: Right.

MR. CHHATRE: Yeah.

MR. KAZIMIRSKY: These are --

BY MR. NICHOLSON:

Q. One more time. They're --

A. Emergency shutdown valves. They're fail closed, gas to or air to open, spring to close.

MR. CHHATRE: I'm sorry. I missed that. Say that again please.

UNIDENTIFIED SPEAKER: Air to open, spring to close. I've got it --

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: These are fail closed valves used for isolating terminal in case of emergencies, isolating line 300A and B actually.

BY MR. NICHOLSON:

Q. Okay. And Oscar says -- there's a phone call conversation early on before the work starts where he says he's going to lock them out.

A. Yes.

Q. I didn't see it in the alarm logs.

A. No, if he locked them out, you wouldn't see an alarm. He just made the valves stay open because when they disconnected the power from the UPS, from the old UPS to replace the UDP panel or one of the breakers --

Q. Yeah.

A. -- they would cut off power to these valves, and that

would shut off lines A and B to the terminal. It would pretty much cut off --

Q. You said air to open, spring to return. So there's no power to it.

A. No, no. There is a solenoid that needs to be powered. That's what keeps them open.

Q. Oh, it's a solenoid.

UNIDENTIFIED SPEAKER: A small solenoid valve on the air.

MR. KAZIMIRSKY: Well, I think -- yeah, the air.

UNIDENTIFIED SPEAKER: To leave off the air.

MR. KAZIMIRSKY: Actually to keep it air on the cylinder. If you de-energize the solenoid, it will bleed off and the spring will shut the valve closed. So they knew that they were going to cut the power off and that locking them in the open position would maintain gas to the terminal. They're not regulating valves. They just block valves. They're either open --

MR. NICHOLSON: Right.

MR. KAZIMIRSKY: -- or closed.

BY MR. NICHOLSON:

Q. Okay. What -- it's like a little 24 volt DC sets it off or is it a 120?

A. I don't remember but I think it's 120. That's my guess again.

Q. So it's not off a power supply.
A. I'm taking a guess.
Q. While we're on the subject, one of my questions was just to have you reiterate the fail position and the actuator type on each of these valves. You did --
A. 1 and 2.
Q. Well, you did it for L1, L2. The monitor valves again.
A. The monitor valves are fail closed valves meaning that the loss of a control signal will close the valves.
Q. Okay.
A. The regulator valves --
Q. On the monitors, they're air to open? Are they dual acting?
A. They're dual acting, fail closed on the loss of control signal. The regulator valves are electric motor operated valves failed as is or failed last on the loss of power.
Q. Okay.
UNIDENTIFIED SPEAKER: Loss of motor power.
MR. KAZIMIRSKY: Right. Correct.
BY MR. NICHOLSON:
Q. Fail open on signal.
A. Correct.
Q. Okay. So L1 and L2 remained locked out throughout this work?
A. That's V1 and V2.

Q. V1, V2. They're not L1, L2.
A. They're shown --
Q. I'm reading this from your SCADA screen.
A. There is something on the operating diagram that does show them as --
Q. That was just your --
A. L is local operated. That's what I suspect it is.
MR. CHHATRE: I made a change. It's not L1. It's V1.
MR. NICHOLSON: That's an easy change.
MR. KAZIMIRSKY: It's correct valve number is --
BY MR. NICHOLSON:
Q. But they didn't shut. I didn't have any trend information on them.
A. No.
Q. I take that back. I did have trend information. It shows them going closed but they were -- you're saying they actually locked it. Here they are here. It's L1, L2, V1, V2.
A. Again, that's not the -- that's 4:20 or so. That's not the actual valve position.
Q. Right.
A. It the switch signal from the valve, when they shut off the Genius blocks.
Q. Yes, right. That's what this is from 1620 to 1630.
A. The valves did not close.
Q. Okay.

UNIDENTIFIED SPEAKER: That's G, right?

MR. NICHOLSON: This was Appendix G that I was looking at.

BY MR. NICHOLSON:

Q. Well, they did not close because they were locked out. Is that correct?

A. Yes.

Q. All right. Just to clarify, C1, C2, C4, C5, C6, on the operating diagram are --

A. Those are separators.

Q. Those are the separators.

A. And generally what I see --

Q. It's a cooler.

A. No, on -- in our system, C is unfired vessel, pressurized vessel.

MR. CHHATRE: Unpressurized vessel.

MR. KAZIMIRSKY: Unfired pressurized vessel.

MR. CHHATRE: Oh, unfired pressurized. What does that mean?

MR. KAZIMIRSKY: Reboiler -- a fired vessel would be a reboiler or a boiler, anything that has a burner and is pressurized.

UNIDENTIFIED SPEAKER: (indiscernible) vessel.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: Unfired vessel is separator.

UNIDENTIFIED SPEAKER: Receivers.
MR. KAZIMIRSKY: I'm sorry.
UNIDENTIFIED SPEAKER: Air receivers.
MR. KAZIMIRSKY: Correct. Yep.
UNIDENTIFIED SPEAKER: Filters.
MR. CHHATRE: So would mixer be considered unfired vessel or --
MR. KAZIMIRSKY: I'm sorry.
MR. CHHATRE: Is the mixer considered unfired vessel?
MR. KAZIMIRSKY: It would be but we don't have a mixer any more.
MR. CHHATRE: Okay.
MR. KAZIMIRSKY: It's been removed. In this case, these are separators.
BY MR. NICHOLSON:
Q. Okay. When they talk about that mixer bypass though, I know it's not there, but --
A. Well, essentially it's a station bypass now.
Q. Okay. You're calling that a station bypass. It's over here. To me a station bypass --
A. Valve 62, 63.
Q. Yeah, oh, okay. 62, 63, I have listed as a station bypass.
A. Correct.
Q. And then 28, 29, I was calling the mixer bypass. Am I

incorrect?

A. No, you're not.

Q. Okay.

A. We don't have a mixer any more.

Q. Is that why I'm getting confused? So you don't --

MR. CHHATRE: You don't have any more --

BY MR. NICHOLSON:

Q. I didn't know if this manifold here at --

A. Which one? What are you looking at?

Q. I guess that was -- so here I understand that's what they call --

A. That's the mixer bypass.

Q. So then am I to interpret this header down here as maybe the mixer where it used to be?

A. It used to be.

Q. Okay.

MR. CHHATRE: Now when you say not any more, after the accident or at the time of the accident you didn't have it?

MR. KAZIMIRSKY: I'm sorry.

MR. CHHATRE: When you say we don't have it any more meaning --

MR. KAZIMIRSKY: Oh, no, we don't have it for years and years.

MR. CHHATRE: Okay. So at the time of the accident, you didn't have it.

MR. KAZIMIRSKY: No.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: We kept the terminology. We still call it a mixer.

MR. CHHATRE: That is fine. I just want to make sure.

MR. KAZIMIRSKY: That header became a mixer. You remember earlier we talked about the different -- the blending of gas --

MR. CHHATRE: Right, right.

MR. KAZIMIRSKY: That's where the mixer was.

BY MR. NICHOLSON:

Q. It was in that header or --

A. Well, it was in this area.

Q. Okay. That's all I needed.

A. You had indicated that part of a conversation. We used to take a low quality gas to the terminal --

UNIDENTIFIED SPEAKER: Yeah, I was here when that -- you talked about that. Yeah.

MR. KAZIMIRSKY: In fact, one of the sources of gas still may have a low BTU gas but they don't need the blender any more because we try to control the BTU contents upstream from the station.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: So when it gets to --

MR. CHHATRE: You've taken care of it upstream before it

comes to Milpitas.

MR. KAZIMIRSKY: Right. So when it gets to the terminal, we may take different quantities of gas but that's strictly for operational reasons, not for gas quality reasons.

MR. CHHATRE: Okay. Okay. You already had a BTU requirement met before it comes to Milpitas.

MR. KAZIMIRSKY: Right.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: Yes.

BY MR. NICHOLSON:

Q. Another general question. Actually, these are all questions that were submitted to you. So maybe you can answer them. Is there a place on these construction drawings that I can see the six breakers and what they feed?

A. Are you talking about the UDP panel?

Q. Yes. Is it on the construction drawings somewhere?

A. The panel itself? If I can look at the drawings, maybe I can help you with that.

Q. They might not be in order.

A. We did send you the schedule in that last submittal.

Q. No.

A. The last submittal --

Q. Schedule of?

A. Well, I think we sent you that. It should have come in the last submittal.

Q. I haven't gotten this yet. I remember asking for it. I said, yeah, send me a circuit.

A. I think we sent it to you but --

Q. If I got it, I don't remember.

MR. CHHATRE: I don't think we got it here. Unless it came like yesterday. That's the only thing I can think of. If it came earlier --

BY MR. NICHOLSON:

Q. I was just trying to make sense out of these construction diagrams, at least get a feel for what work Oscar was doing.

MR. CHHATRE: If you send it to us, maybe I should make a copy. If not, you have this information, 1, 2, 3, 4.

MR. KAZIMIRSKY: Okay. I don't know if you can see the --

BY MR. NICHOLSON:

Q. Yeah, that is a pretty busy drawing there.

A. No kidding. The control room.

Q. Yeah, that's where the mimic panel -- this is the mimic. Where's the mimic? Here it is right here. Okay.

A. Is it?

Q. Isn't it? I thought I got my bearings because the UPS is here, right?

A. The UPS is here.

Q. So the comm room is there, right here.

A. This says control room. That's where the operators used to sit.
Q. Is that the mimic panel?
A. The mimic panel should be somewhere here.
Q. Yeah, okay.
A. No, that's the -- yeah, this is the mimic panel.
Q. Yeah, okay.
A. This line here.
Q. Oh, that line. It's this line.
A. It says UDP.
Q. I thought -- okay.
A. No, this is. That's the old control room.
Q. Okay. So it no longer looks like that.
A. Well, there's nothing there now. Remember there some cubicles here by the walls.
Q. There's some partitions, yeah.
A. This is the door --
Q. Yep.
A. -- outside the terminal. That's where all the valves are.
Q. Yes, right.
A. This is the mimic panel --
Q. Okay.
A. -- right here. No, here. This is the mimic panel.
Q. Yeah, okay. That. That makes more sense.

A. That's the mimic panel.
Q. Because it's up on the wall.
A. This is what they call a computer room.
Q. Okay.
A. That's where the PLC is.
Q. Yes.
A. So the UDP is here.
Q. On that wall.
A. In fact, I think it says UDP, doesn't it?
Q. It does, but there's a bunch of UDPs I noticed, like seven, six.
A. No, no, these are home runs from the conduits. See it says UDP 135, 3/4 conduit.
Q. Oh, okay. Okay.
A. That's a conduit going to UDP circuits 1, 3, 5.
Q. I've got you. Okay.
A. But the UDP itself --
Q. Is back here.
A. -- is here or --
Q. Okay.
A. -- actually here on the back wall.
MR. CHHATRE: Highlight that. Circle that. Write it down.
MR. NICHOLSON: I kind of know where all of this is.
MR. CHHATRE: Okay.

MR. KAZIMIRSKY: It's a better drawing. Oh, it says here, Panel UDP.

MR. NICHOLSON: Yep.

MR. KAZIMIRSKY: That's what it is. Right here.

BY MR. NICHOLSON:

Q. Right.

A. That's on the back wall.

Q. Yeah, okay.

A. That's where it was. That's where it still is. These are genius cabinets.

Q. Right. I remember that. Yes. So that work -- the UDP is detailed. That looks like a station wiring, that line there.

A. That's UDP. You want to see the --

Q. The circuits. He said he transferred power off six circuits I think.

A. That's on this schedule.

Q. Okay.

A. That's up here.

Q. Okay. So maybe this is all.

A. That's what it was on September. That was --

Q. Okay. Because here's circuit 14 which is the one he said --

A. This is what it was on March 30th when we found out that the UPS failed.

Q. Right.

A. So at the end of March, early April, I think April 1st or so, one of the engineers went to the site and installed a couple of temporary UPSes --

Q. Yes, I wanted to ask about that.

A. -- for the -- strictly for the UICs.

Q. Yeah, right.

A. So he switched the UICs, right.

Q. So why was Oscar back out doing it again?

A. No, no, no. What happened, this breaker was feeding --

Q. This breaker meaning 14.

A. 14 was feeding power supplies and controllers.

Q. Okay. So the controllers are off of 120.

A. The controllers were switched. The controllers were 120.

Q. Okay.

A. They were switched on April 1st --

Q. Okay.

A. -- to the temporary UPS but the A and B remained on breaker 14.

Q. Okay.

A. So they did partial switching.

Q. April what?

A. I think April 1st --

Q. Okay.

A. -- maybe the 2nd, something like that.

MR. CHHATRE: Beginning of April.

MR. KAZIMIRSKY: Yes. So this is what you see here. The red (indiscernible) was --

BY MR. NICHOLSON:

Q. Oh, you've got it there. Okay.

A. -- what was done prior to beginning the work on September 9th.

Q. Okay. So did they -- so the UICs went through a terminal block before going back to the panel.

A. The UICs were -- they installed temporary --

Q. Right.

A. -- strips inside the panel --

Q. Uh-huh.

A. -- connected them to the temporary UICs -- to the temporary mini UPSes and connected all controllers to these mini UPSes. Everything else that was on the old UDP remained there. So essentially they separated this load from one breaker to --

Q. Right, but this circuit, the wires came out of this circuit to a terminal block and then from that terminal block it went to the UICs and then to the PSA and B. Is that how the load was split off one circuit? How did you --

A. Originally?

Q. Yeah.

A. Originally it was on one circuit. It went to the mimic panel --

Q. Okay.
A. -- and from there it was distributed.
Q. To the terminal block in the mimic panel.
A. Yeah.
Q. Okay.
A. So in April they separated this power.
Q. Right.
A. They separated UICs from the A and B.
Q. So the only thing left on 14 --
A. Was A and B.
Q. -- was A and B.
A. Correct.
Q. Off that terminal strip.
A. Yep. The same applies to these.
Q. But you drew earlier a terminal strip that had PSA and B but also PS1.
A. No, that was an example.
Q. Oh, okay. I'm sorry.
A. The terminal strips had different powers on them.
Q. Yes. But in this case this terminal strip only had A and B after the UICs were removed.
A. Not necessarily. What I'm saying, Matt --
Q. Well, then they would have been off circuit 14, wouldn't they?
A. No, no. What I am saying is that originally I can --

MR. CHHATRE: You are drawing, right?

MR. KAZIMIRSKY: Pardon me.

MR. CHHATRE: You can. Now do you have battery, juice in here? I want to make sure we don't lose it.

UNIDENTIFIED SPEAKER: I replaced mine at the break.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: That breaker 14, it went to the mimic panel, a number of terminals. Some of these terminals were going to UICs, but I don't know how many, so on and so forth.

BY MR. NICHOLSON:

Q. Got you. Right.

A. One definitely went to PSA, the other went to PSB. Okay.

Q. Okay.

A. What the others did, I don't know. The other UICs but that's about it.

Q. The only other thing on that terminal strip would have been UICs.

A. No.

UNIDENTIFIED SPEAKER: There could have been other loads --

MR. KAZIMIRSKY: There could be another CB --

UNIDENTIFIED SPEAKER: -- but he doesn't know what they are.

MR. KAZIMIRSKY: -- on the same terminal strip depending

on the loads.

BY MR. NICHOLSON:

Q. There would have been a second circuit breaker.

A. Circuit breaker or -- yeah. Circuit breaker. It could be a lot of them. Now from PSA and B, we have where the value (indiscernible) and --

Q. Right.

A. -- that went to yet another terminal strip, right.

Q. Right.

A. They're both (indiscernible) PTs (indiscernible) but that doesn't mean that there were other terminals coming from maybe PS1, also 24 volts.

Q. Okay.

A. So when they did troubleshooting, they could have worked on these wires but accidentally they could have tugged these wire as well.

Q. Okay. I didn't know you had dual power supplies feeding a terminal block.

A. No, it's not the block. It's the terminal strip. These are isolated, totally isolated terminal strips.

Q. Oh, they're completely isolated.

A. It's just a terminal strip.

Q. Okay.

A. So when I'm saying they worked in there, they worked on a terminal strip that could have several different power supplies.

Q. Right.
A. Or power sources I should say.
Q. Right. That's the part I didn't understand. Okay. And even upstream, you had multiple circuit breakers tied to --
A. Yeah, this was an AC strip --
Q. Right.
A. -- that we know we have problems with. That we know. When we did the troubleshooting, we found that some of the wires were loose.
Q. Yes, right. Okay.
A. We had a bad terminal there. So we did find some issues there.
Q. Okay.
MR. JACQUES: Mark, you ought to put a question mark by both of those diagrams because you don't know that there were multiple circuit breakers to that particular strip.
MR. KAZIMIRSKY: No, no, I'm saying it's --
MR. JACQUES: On the diagram because they're going to keep the diagram, just put question marks next to it so that it's clear --
UNIDENTIFIED SPEAKER: Or write example.
MR. JACQUES: Or example, yeah.
MR. KAZIMIRSKY: Okay.
MR. JACQUES: Because we don't -- I don't want anybody to look at this after the fact and think that you're representing

that that's the way it was here.

MR. KAZIMIRSKY: All I'm trying to say is that --

BY MR. NICHOLSON:

Q. I guess I'm trying to understand, don't we have drawings that would reflect --

A. Oh, yes.

Q. Okay.

A. Absolutely.

Q. So we don't have to refer to examples. We can look at the actual terminal strips in the wiring diagram.

A. Yeah.

Q. And are they contained in this work? Was that available --

A. Are they contained -- I'm sorry.

Q. Were those drawings available to Grapetti (ph.) and Oscar then when they were --

A. Oh, yeah.

Q. Okay. Well, which one of these --

A. By the way, this is the drawing that I was referring to. You have it. You can see --

Q. I didn't know I had it.

A. You have individual loops here.

Q. Yes, I did see those.

A. Yeah, and the references to where the wiring diagrams for them are shown.

Q. Yes, I know. I was looking at that and I don't have them.

A. And you also -- you can also see that these group of instruments, whatever they are, is powered by PS1.

Q. Yes, I saw that.

A. And this group is powered by PSA and B.

Q. Uh-huh.

A. And you also can see where these devices are listed.

Q. Right. I just don't have these other drawings I don't think.

A. Remember, I said be careful.

Q. Uh-huh. Okay. So I've got that. Now where does it show me --

A. But that summary is actually or the summary of all that information is shown on that spreadsheet that we just gave you.

Q. Yeah, the big one.

A. The big one.

Q. Yeah, yeah, right. Okay. That should correlate to that.

A. That would help you perhaps.

Q. This gets me back as far as the power supply, right?

A. Yeah.

Q. But it doesn't get me back to the terminal strip and circuit feeding the terminal strip.

A. And why would you need that?

Q. So I can better understand what got messed up.
A. It'll take you -- these drawings will take you to the specific terminal strips.
Q. These here. These are going forward. These are loops to the device, right?
A. Well --
Q. I need this here, right? Here's from panel board, circuit 14.
A. Yeah, that's one of them.
Q. It tells me here, circuit breaker 15A.
A. That's 15 CDA.
Q. Oh, 15. I'm sorry. Yeah, circuit 14. Okay. So maybe that's as much as I need.
A. Yeah.
Q. That's all the devices on --
MR. CHHATRE: Sheet 6.
MR. KAZIMIRSKY: This is what we call loop diagrams. That's the type of drawings that -- you don't have that. This is -- this doesn't exist any more. These are old recordings, but this is what the old diagrams would look like.
BY MR. NICHOLSON:
Q. Yeah, okay. This looks like everything I need right here then actually.
A. Yeah, it is.
Q. This one drawing pretty much, right, because here's all

the loops fed by -- no, that's PS1. There was one that had A though, right?

A. Here.

Q. PSA and B. These are all the loops, and this is fed from circuit 14, continued -- do I have that continuation? 388273 --

MR. CHHATRE: 273 --

MR. NICHOLSON: -- to --

MR. CHHATRE: 273 --

MR. KAZIMIRSKY: This is the loop diagram that we -- similar to the loop diagram. You have this.

BY MR. NICHOLSON:

Q. Sheet 2, yeah.

A. The others would be more --

Q. What was this last one? What am I reading from this?

A. That's the actual -- that's the panel. These are terminal strips that we were talking about if you really want to see a terminal strip.

Q. So this is what is being fed from PSA.

A. You would normally -- we would normally try to have one set of drawings. You don't want to duplicate the information especially wiring --

Q. Right.

A. -- on two different drawings. However, there are two types of drawings for two different reasons. One is a panel

drawing --

Q. Okay.

A. -- that shows you terminations inside the panel, and that drawing is initially made for fabricator, whoever is going to build the panel.

Q. Right.

A. Then you have the loop diagrams that by definition need to show the same terminals.

Q. Okay. Right. And the connections --

A. And the wires coming from the outside.

Q. Right.

A. So this is what this drawing has. It shows you terminations from one end, and then if you want to follow through, I mean you need to find the second drawing you the terminations of the other end.

Q. So these are the valve terminations.

A. This shows you where these wires come from.

Q. Right.

A. It shows you the drawing number, circuit number and where the termination is made, what valve. So that -- this would be the field terminations.

Q. But this is downstream of PSA and B, right?

A. This is the panel itself.

Q. Oh, this is back at the UDP?

A. No, this is the panel. The UDP --

Q. What panel is this though?
A. That's the mimic panel.
Q. Oh, this is the mimic panel.
A. Yeah.
Q. Okay.
A. The UDP, the UDP would show in many different places. You have a schedule that I just gave you.
Q. Okay. So that's the terminal block in or the terminal circuit in the mimic panel.
A. For the UDP, you'll have a schedule that I gave you.
Q. Yes, right.
A. And then you'll have to go to a specific drawings where these breakers are being used.
Q. Okay.
A. And that one that I just showed you, is one -- here. This is one of the breakers. This is breaker 14.
Q. Right. Yes.
A. Other breakers would be shown wherever they're used at.
Q. Right. Because it wasn't part of the project.
A. Some of them were because there's a PLC. They provide power to the PLC as you can see here.
Q. Yeah.
A. The UPS -- the UDP supplies power to all critical station loads.
Q. He was bypassing all 24 circuits, I mean number 24 spare

then, right. So every one of those circuits --

A. So every one of them, when he was installing the mini UPSes --

Q. Uh-huh.

A. -- he had to interrupt -- he had to open that breaker and switch the wires from the breaker to that temporary UPS.

Q. I thought he talked about six breakers that he had to do though. I wonder if he just means six critical.

A. Well, these are communications. That's one of the questions you asked.

Q. Yeah, we know he did that, right.

A. PLC, we know he did that.

Q. We know he did 14.

A. We know he did all. The only question we had, at what point --

Q. Well, he did this.

A. -- did he or did they not do the 14?

Q. But he said it was the last one they went to in his testimony. We just don't know what time that was.

A. That's where we have that uncertain time on when the work was done. And we also know that when we got there after the incident, the A and B were still connected to 14.

Q. Okay. Say that again.

A. The A and B were still connected to the 14. There was no mini UPS on A and B.

Q. Yeah, because he stopped work when he was on the phone with the controllers.

A. Yeah, that's what we know.

Q. Yeah, about the time you showed up or -- okay.

MR. NICHOLSON: It's noon. Did you guys want to take a mini lunch break or --

MR. JACQUES: At some point. It depends probably on how much longer you think you'll do. If you're going to finish in an hour, then we can keep plugging. Otherwise take a short break and get a bite. What do you want to do?

MR. CHHATRE: I think we should take a small break.

MR. NICHOLSON: Let's take a small break because I just want to organize. Grab lunch. You want to say 30 minutes.

MR. CHHATRE: Okay. Thirty minutes sounds good. I'm okay with that.

(Whereupon, at 12:00 noon, a lunch recess was taken.)

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

MR. NICHOLSON: We're back on. Part 3 of the Kazimirsky interview. And when we broke last we were going to pick up with Appendix S.

MR. KAZIMIRSKY: Appendix S?

MR. CHHATRE: Yeah.

MR. NICHOLSON: As I was stating -- to get back to (indiscernible) and try to finish these up, because (indiscernible) questions. So --

MR. KAZIMIRSKY: S is the same 17.

MR. NICHOLSON: S. Yes, 17.

MR. KAZIMIRSKY: 17, that's --

BY MR. NICHOLSON:

Q. What we were looking at is, one, the pressure shown here, the upstream pressures, the upper plot, line 300B at 1722 begins to rise and then it steadies out at --

MR. CHHATRE: 470, you'd say? About --

MR. KAZIMIRSKY: 17, that was --

MR. CHHATRE: No. No, no, no, 470 pressure we are looking at.

BY MR. NICHOLSON:

Q. 1756, roughly -- and maybe at 1756 or so you see it kind of flatline, line 300B pressure. And I guess we're looking for -- it flatlines from there all the way out to roughly 1944. And I'm trying to get an explanation for that flatline. Can you offer us

one?

A. Let me see what gas control provided us with. Again, probably the best way to get the answer is to talk to our gas control. But based on the information they told me, they don't have a time stamp, but they said that line 300B was isolated between PLS-7 and Milpitas. If that's the case, then obviously the pressure will stay steady while it's isolated.

Q. So it was isolated at 1756?

A. I don't --

Q. That would show up in the log --

A. That don't give me a time stamp. They said the pressure of line 300B was isolated between PLS-7 and Milpitas.

Q. Which that would show up in the alarm logs, right?

A. No, not necessarily.

Q. A valve closure would show up?

A. It depends on how they isolated it and not every valve moment is necessarily an alarm. It may be simply a valve position.

Q. But it wouldn't show up -- there wouldn't be a notification or --

A. Not necessarily.

Q. Okay.

A. A notification would normally be either an abnormal condition in the system or command issued by the -- not every command even, issued by the operator. I'm not sure if every

command gets logged. I don't know what valve was closed to isolate the system.

MR. CHHATRE: But if it normally open, then closing it would be unusual, would it not?

MR. KAZMIRSKY: Well, it depends on what valve they closed.

MR. CHHATRE: No, no, I mean I'm talking about this 300B, the --

MR. KAZMIRSKY: Yeah, but there's several different valves that could have been closed --

MR. CHHATRE: Okay.

MR. KAZMIRSKY: -- to isolate it.

MR. CHHATRE: I see.

MR. KAZMIRSKY: I don't know which valves was closed to isolate it.

MR. CHHATRE: Are you planning to call Andy? Are you --

MR. NICHOLSON: Yeah, we're calling Andy, can elaborate like where the valve -- the valve number or tag?

MR. KAZMIRSKY: I would say so.

MR. CHHATRE: Okay.

MR. NICHOLSON: Well, where's that drawing we had, actually? Shouldn't it be on here? You're saying a valve was isolated between 7A --

MR. CHHATRE: Milpitas and 7 -- PLS-7.

MR. NICHOLSON: Yeah, okay, which is upstream, and we

don't have that.

MR. KAZMIRSKY: I have a question. How come line 300B and 107 don't show a similar dormant pressure at 1752?

MR. CHHATRE: Right.

MR. KAZMIRSKY: That's your question, essentially.

MR. CHHATRE: Um-hum.

MR. KAZMIRSKY: The response was that line 300B was isolated between PLS-7 and Milpitas. So, based on your question, perhaps the isolation did happen at 1752 and closed.

MR. NICHOLSON: Looks like it. Well, it looks like it. It looks like the line went static, basically.

MR. KAZMIRSKY: Yeah, but I really can't clarify it any more than what I, what I have.

MR. CHHATRE: And then it's coming back again around 740, something close to that, and it's kind of now they are in sync pretty much, not quite, but in here now they are in sync, so --

MR. KAZMIRSKY: Yeah, but then later on they reduced the set points at PLS-7.

MR. NICHOLSON: Yeah, they had done that at 1752. I mean, PLS-7A and B, right, that's what you were talking about?

MR. CHHATRE: And did you say why they isolated 300B?

MR. NICHOLSON: Well, they really only isolated PLS-7B.

MR. CHHATRE: Do they say why they isolated only line 300B and not 300A or any other lines?

MR. KAZMIRSKY: No. Line B.
MR. NICHOLSON: Why don't we call Andy --
MR. CHHATRE: Yeah, let's call Andy.
MR. CHHATRE: What is the number? We can do that from here so everybody can hear him.
MR. NICHOLSON: Yeah.
MR. CHHATRE: Oops, I'm sorry. This is the one. Ah, what did I do?
(Dialing telephone.)
MR. KAZIMIRSKY: 415- -- 3219.
MR. CHHATRE: Go ahead.
(Phone ringing.)
MR. CHHATRE: It's a different number?
RECORDING: (indiscernible) in system gas control.
MR. NICHOLSON: 20 is what I have.
MR. CHHATRE: The main one, line 1. Line 1.
(Redialing telephone.)
MR. WENZEL: Good morning. This is Andy.
MR. KAZMIRSKY: Andy?
MR. WENZEL: Yes.
MR. KAZMIRSKY: Good morning, Andy.
MR. WENZEL: Hey, Mark, how are you?
MR. KAZMIRSKY: Good.
MR. WENZEL: What can I do for you?
MR. KAZMIRSKY: I'm in Washington with Matt Nicholson,

Ravi --

MR. HALL: Robert Hall.

MR. CHHATRE: And Robert Hall.

MR. KAZMIRSKY: And Robert Hall, who you haven't met yet.

MR. WENZEL: Okay.

MR. KAZMIRSKY: And we have a question regarding Appendix 17.

MR. WENZEL: Okay. Let me get it out, one second. Is it one of the questions that we responded to or provided feedback to yesterday or no, or something different?

MR. KAZMIRSKY: That's correct.

MR. WENZEL: Okay. Go ahead.

MR. NICHOLSON: So Matt is going to ask you a few questions. Hopefully, you can answer them.

INTERVIEW OF ANDY WENZEL

BY MR. NICHOLSON:

Q. Well, the question that came up, Andy, was we're looking at that line 300B and where it kind of goes flatline at 1756, roughly, 1752.

A. Correct.

Q. And I think your response back was that the line was isolated between PL7 -- or PLS-7 and Milpitas?

A. Right.

Q. Okay. So we're trying to figure out when that was done,

does it show up as an alarm log command or -- why was it done; why not 300A or PLS-7A?

A. The --

MR. CHHATRE: By the way, Andy -- I'm sorry to interrupt, but we are recording this stuff. So I just wanted you to be aware.

MR. WENZEL: Oh, no, you're all right.

MR. CHHATRE: Everybody is aware, but -- okay.

MR. WENZEL: Okay. The PLS-7 -- okay, the PLS-7 reduction in pressure that was done at 1752 was a remote operation that was done from the control room. At that time there was information, over-pressure information and so they went to the upstream station, which was PLS-7 along with Sheridan Road, where they could operate remotely, and put a remote set point there.

BY MR. NICHOLSON:

Q. Yeah, I see those in the alarm log.

A. Okay. Okay. Then in the -- having to do with the 300B, at that point, again, with the information being somewhat unreliable at Milpitas, there was a coordination between the gas control operator in system gas control and the field personnel, and that was on the transcript that -- which we made reference to, page 98 and 99, which at some point trying to gain control of the downstream pressure. Not having a complete understanding what was taking place at Milpitas, they requested gas control to the field person to close the monitor valve on 300B to eliminate the -- or

initiate a pressure reduction if 300B happened to be the line that was feeding to the Peninsula. So then the field person shut in the monitor, which basically then isolated 300B at Milpitas to PLS-7. And that's why the pressure --

Q. Oh, okay. So this is a monitor valve at Milpitas?

A. Right.

Q. Oh, okay. Which one is it on --

A. Monitor would be on mine --

MR. KAZMIRSKY: We should be able to find that --

BY MR. NICHOLSON:

Q. Yeah, 5 or 6?

A. 5 or 6, you got it.

Q. Okay, 5 and 6. Okay. But that will -- I won't see it on the valve states trends because they didn't have power to them?

A. That's correct.

Q. So -- okay.

A. And if you're looking at, on page 99 in the transcripts, it said, I'll go ahead and lower the monitors 5 and 6.

Q. Yes, I remember that discussion. I didn't realize the impact would be -- okay. Thanks, Andy.

BY MR. CHHATRE:

Q. Andy, you did mention over-pressurization. Which over-pressurization you are talking about?

A. Could you --

Q. You said the 300B was isolated because over-

pressurization situation. And I'm not quite sure which over-pressurization you are talking about.

A. Oh, we were -- they were looking at the Peninsula downstream of Milpitas where they had that realtime data. And so based on the over-pressurization that was taking place on the Peninsula line, they chose to eliminate one of the primary sources or reduce one of the primary sources that was potentially feeding that -- the Peninsula lines, (indiscernible) 13.

Q. And they, meaning the SCADA operators, right, in San Francisco?

A. Right.

Q. Okay.

BY MR. NICHOLSON:

Q. Okay. So they isolated 300B because of the downstream over-pressurization?

A. Correct.

Q. But 300B was where it was at because it was being backfed from the other headers, right?

A. The pressure in 300B, once it had become isolated, right, increased up to that point --

Q. Well, even before that. It started rising at 1722.

A. Right. Right.

Q. Okay.

A. It was increasing up to that point.

Q. Yes.

A. And then when the monitor is closed, then at that point the two -- the system between PLS-7B and Milpitas was isolated. So, yes, all the lines were open equalizing to each other, causing the higher pressure lines to decrease, the lower pressure lines to increase.

Q. Right.

A. And so during that time they were trying to mitigate the situation by -- they chose at this point to close the monitors (indiscernible) under B.

Q. Okay. And nothing was done on line 107?

A. Nothing was done on line 107. I believe the control set point at Milpitas, monitor set point at Milpitas, I believe, may have been lowered. So it seems that -- I was looking for the documentation there, but it just seems like it actually leveled out at 370-some-odd pounds, so --

Q. Yeah. Okay.

MR. KAZMIRSKY: Yeah, the set points on the monitors were lowered a little later.

BY MR. CHHATRE:

Q. And did line 107, Andy, did it ever exceeded MAOP?

A. No.

Q. Do you recall what the MAOP for 107 was?

A. It originally was 477. At that point even with the 20 percent reduction, it would have put it at 380.

Q. Okay.

A. Okay?

Q. I got one question on the same, I guess, graph or plot. On all these lines -- and I realize this is an hourly average, but all four lines are going down and all four lines are going up. You have any explanation for that?

A. Is this the one -- which one are you referring to?

Q. I'm referring to pressure on L131 300A, 300B, and L107, on incoming pressures at Milpitas.

MR. NICHOLSON: That's the lower plot on Appendix 17.

MR. WENZEL: Okay. One second.

Okay, the lower plot on 117, I'm not sure where that data had originated. We suspect that it may have been capturing some of the zero pressure, some of the inaccurate pressures were demonstrated during that time frame. The -- so that's why we referred to the upper graph as being more representative of what actually occurred. The lower one, I think it was capturing some data that was inaccurate.

BY MR. NICHOLSON:

Q. No, I asked for that data in 20-second intervals. Is that possible to get for that lower part?

A. I believe so. Sure.

Q. Okay.

A. But I would say that, you know --

Q. It's going to look like the upper plot?

A. It's going to look like the upper one. You're not going

to -- the upper one is really a true reflection of what took place.

MR. KAZMIRSKY: And actually, this is what you have. One of these spreadsheets that we gave you has these 20-second intervals.

MR. NICHOLSON: Oh, okay. Is it part of this large spreadsheet?

MR. KAZMIRSKY: The big one, yes.

MR. NICHOLSON: Okay.

BY MR. CHHATRE:

Q. One of the questions I have, Andy, is why 300B is dropping when the incoming pressure -- I mean, see that -- downward slope for 300B, I'm a little confused.

A. Well, I think, again, it's because it's capturing data. At some point when your data -- I have not looked at the trends, but if -- specifically that were applied to this graph.

Q. Um-hum.

A. But I have looked at some where if you're capturing a 0 pressure, which is an inaccurate pressure read, then it's going to drive your average pressure downward.

Q. Right. Okay.

A. It doesn't coincide with any of the other information that we have --

Q. Okay.

A. -- with the upstream pressures coming into Milpitas.

That's why I didn't --

MR. NICHOLSON: This is what we were talking about earlier, hourly averaging.

MR. CHHATRE: Um-hum.

MR. NICHOLSON: Okay.

MR. CHHATRE: But if you look at 107, the pressure on 107 when -- if you look at the draft, at the incoming into Milpitas and pressure at Milpitas, the pressure at Milpitas is still pretty high for line 107. And that's where I was getting confused a little. But it's not -- it is not -- like if you look at the plot just above that, the incoming pressure seems like it settles at 340 or something like that, close to that. Whereas the pressure at Milpitas itself --

MR. KAZMIRSKY: It's about the same.

MR. CHHATRE: It's about the same, yes. I think the scale is different. No, never mind.

MR. NICHOLSON: Well, the one at the top is 20-second intervals.

MR. CHHATRE: Yeah.

MR. NICHOLSON: Okay. The one at the bottom is on hour intervals.

MR. CHHATRE: Okay.

MR. NICHOLSON: So it's got a lot of averaging.

MR. CHHATRE: But with the scale slightly different, I think, not a whole lot -- slightly different. Yeah, they look

different, but they are not. Okay.

MR. NICHOLSON: No, they're the same scale.

MR. CHHATRE: Yeah, they are the same scale.

MR. NICHOLSON: 350 to 600, same time stamp.

MR. CHHATRE: Yeah. Okay.

MR. NICHOLSON: But they are different transmissions, different locations.

MR. CHHATRE: I think you ask some other questions --

MR. NICHOLSON: We do have more, but I didn't know if we want to just go back to Mark at this point.

BY MR. NICHOLSON:

Q. Andy, could you just tell us where the upstream pressure transducers are located, do you know?

A. Not off the top of my head. For which line and --

Q. Well, for the lines that were, that were trended for Appendix 17. I mean, are they taken from the next station upstream; is that where those came from?

A. I would have to -- I think Mark actually could provide that information. I'm not certain. I'd have to look at a map to determine that.

MR. KAZMIRSKY: I'm sorry, what was the question?

MR. NICHOLSON: Well, I was just trying to figure out how far upstream these pressures -- these upstream pressures was.

MR. CHHATRE: Yeah, but you said you had to talk to Andy --

MR. NICHOLSON: Yeah, you said Andy might know and then you said (indiscernible) --

MR. KAZMIRSKY: Andy, on that upper graph, where did the measurement was taken, at Milpitas or at PLS-7 or up at whatever station upstream we had?

MR. WENZEL: Well --

MR. NICHOLSON: I can read you --

MR. WENZEL: I'd have to say -- I'd have to look at to see if it's the incoming -- what was the -- deemed as an accurate measurement. It could have been at Tully (ph.) Road, which was upstream of Milpitas on line 300A and 300B.

MR. NICHOLSON: I think it said -- I think your tag number said Tully Road in there.

MR. WENZEL: Okay. So that's -- okay, so that was --

MR. NICHOLSON: Yeah, (indiscernible). Tully Road, Irving Station?

MR. KAZMIRSKY: Yes.

MR. NICHOLSON: And Irving Station.

MR. KAZMIRSKY: Yeah. So that's upstream. That's not --

MR. WENZEL: Okay. So it would -- okay, so you have your answer there.

MR. CHHATRE: Okay.

MR. WENZEL: Tully Road, which was the next station upstream of Milpitas on the A and the B. Irvington Station was

probably the line 303 pressure, which becomes the line 131/30 pressure when it leaves Irvington to Milpitas. So when you see 131, that's actually line 131 -- what we call line 131/30. And the 107 most likely was -- I think that -- actually, now it's coming back. I think the 107 and 131 South at Irvington were the two pressures that they were actually both being held -- or supported in the same pressure regulation, so they use one for the other. And then they -- and there was one graph I looked at, if you look at graph -- in the Appendix 19, it indicates that, that both the 131 South and the 107 West pressures came up.

BY MR. NICHOLSON:

Q. Yeah, I was going to ask you. Yeah. And again, what's the L -- 131S and L107 West?

A. The 131 South is a pipeline that comes -- that actually originates in Brentwood and terminates at Irvington Station. And the -- it is not tied to 131 at Milpitas.

Q. Okay.

A. 131 at Milpitas or what we call 131/30 at Milpitas is actually part of the line 303. Line 303 originates at Brentwood. At Irvington line 303 becomes line 131/30.

Q. Okay.

MR. KAZMIRSKY: Are you confused enough?

MR. CHHATRE: Yeah, I'm totally confused.

MR. NICHOLSON: No, I mean, I'm following you, but, boy, a drawing would help. You guys have a drawing somewhere? I'm

sure you have a --

MR. KAZMIRSKY: We do.

MR. CHHATRE: Yeah, I mean, it would really help us. Especially for the board meeting presentation, as to where these lines have come in because the numbers are different.

MR. NICHOLSON: I'll need that at some point.

MR. KAZMIRSKY: Okay.

MR. NICHOLSON: That does help. Thanks, Andy.

MR. WENZEL: Okay.

BY MR. NICHOLSON:

Q. And there were -- actually, I had an alarm, I think, at Irvington mixer. I was a little confused by what the Irvington mixer was. Are you familiar with that?

A. The Irvington mixer is the pressure that -- it's sort of like the hub that -- like we have the Milpitas mixer. The Irvington mixer is similar, where we have two interconnects that come into Irvington and then they supply the downstream customers from Irvington.

Q. But, I'm sorry, my -- this says Irving Station -- Irving Station mixer; is that it?

A. That's the same.

Q. Okay.

A. It's called Irvington.

Q. Why is it alarming at 1752? You said it was a high pressure alarm?

A. They may have -- high pressure alarms are set by the operators themselves.

Q. Oh.

A. So it doesn't mean that it's not -- that it's any -- it's more of a detail to them to see if there's an increase that's on the system itself. And then they -- it allows them the ability to make changes or not. Basically, it just draws their attention to the station.

Q. So it was unrelated to the events at Milpitas?

A. It could have been related because, again, the -- in your Appendix 19, the pressures in 131 South and 107 West, which were tied together, did increase.

Q. Okay.

A. But it did not exceed a MAOP or MOP issue.

Q. Right.

A. It just, again, drew their attention to a higher pressure than what they had originally had it set for.

BY MR. CHHATRE:

Q. Andy, this Ravi. General question for line 107. In all the plots I see that is kind of going through some kind of a cyclic behavior, whereas all the other three lines seems to be pretty smooth. Small (indiscernible) 20-second scan. I'm wondering whether you have any explanation for that, why 107 is behaving that way? I mean, you can be -- I'm talking about like after 6:20 p.m., 1820.

A. On the plot?

Q. All plots. If you look like Appendix S -- what that will be, Appendix S.

MR. NICHOLSON: I've added and reconfigured these plots, Andy.

MR. WENZEL: Which appendix?

MR. NICHOLSON: You're on 17, weren't you, Ravi?

MR. CHHATRE: Yeah, I was on our Appendix 7. What is the last plot we talked about? Maybe 17.

MR. NICHOLSON: That one there is 17.

MR. CHHATRE: Yeah. See, the line 107, 300B.

MR. NICHOLSON: Where are you saying it's cyclic? That's not --

MR. KAZMIRSKY: 17.

MR. NICHOLSON: The sawtooth is 131, isn't it?

MR. CHHATRE: No. Yeah, 131, I guess. Yeah, I'm getting colors confused here, yeah.

MR. NICHOLSON: It looks like there's valve Hunting (ph.) or -- there's a sawtooth pattern on --

MR. WENZEL: Yeah, I'm looking at it now.

BY MR. CHHATRE:

Q. That's the only one I see, so I'm just curious.

A. I can't say for certain what's causing that. They may be a monitor controlling where typically they don't control as a smooth pattern, or it could be a regulator that's -- and it's not

much of a 10-pound -- it looks like about 10-pound swing. I can't answer that. I think it's a valve that's regulating it, I would say.

Q. Now, since the accident have you guys checked all your valves for functional and operability? Are they all working fine? Did you do any checking on any of these valves?

A. The valves at Milpitas, or --

Q. Correct. I mean, all the valves at Milpitas Station.

A. I think all our -- all valves in our system are maintained through a maintenance department, so we've continued to complete the maintenance as required for each and every valve.

Q. Right. That will be a regulation maintenance. What I'm saying is after the accident did you guys go and make sure that all these valves are functional, I mean, immediately after the accident or sometime --

MR. KAZMIRSKY: Well, I don't think either Andy or I can answer that question.

MR. CHHATRE: Okay.

MR. NICHOLSON: We have some information on --

MR. CHHATRE: We have some information.

MR. NICHOLSON: -- calibration and strobe (indiscernible) analysis.

MR. CHHATRE: Okay. That is fine.

MR. NICHOLSON: I don't know about post-accident. We have it pre-accident.

MR. CHHATRE: No, I'm looking for -- I'm thinking (indiscernible) we need a board meeting and what questions might come up. So if you guys can maybe look up and see if anybody can provide that? I realize you cannot, but --

MR. NICHOLSON: Actually, we might have it post-accident. I think Sunil (ph.) asked for that, so --

MR. CHHATRE: Right. But we don't -- he got the information or not. I --

MR. NICHOLSON: Okay. Well, we can check our records.

MR. CHHATRE: We can check, but you guys can check also just make sure. Check and see if -- those are the questions that might come up.

MR. KAZMIRSKY: I would ask if you can check your record first and then send us a request if you don't have it. That would be a help for us.

MR. CHHATRE: Sure. I understand.

BY MR. NICHOLSON:

Q. One other question, Andy, that came up today that I wasn't aware of, but it sounded like from Mark here that the first line of monitor valves in Milpitas might have higher set points on them? For instance, MR3, 4, 5, 6, 71, 70, 66 and 67, they've got higher set points than those, say, at MR26, 16, 20? Can you -- do you know what those set points are or --

A. The monitors on 16, 20, 26, 28 actually are protecting the Peninsula line, so they would be set much lower. The monitors

that you had mentioned are gauged towards one of the headers in Milpitas itself, so they protect for that header pressure.

Q. Okay.

MR. KAZMIRSKY: That's what we thought.

BY MR. NICHOLSON:

Q. But, now, then the other question was they might protect in one direction versus another, but I guess if you're saying they're protecting the headers, then they're --

MR. KAZMIRSKY: They'll do both.

BY MR. NICHOLSON:

Q. That tells us which way?

A. Yes.

Q. Okay. Andy, you don't know what that set point is?

A. The monitors on the Peninsula line are set at 297, currently. The monitors at Milpitas, I would have to check. I'm not -- it would be, again, to allow full utilization of flexibility between the pipelines, flowing between the pipelines, and it would be, obviously, not to exceed the allowable pressure on the header.

MR. CHHATRE: Can you guys give that information to us, Andy?

MR. WENZEL: Sure.

MR. CHHATRE: Great.

MR. NICHOLSON: That's it.

MR. KAZMIRSKY: One less question for me to answer.

MR. NICHOLSON: Which one?

MR. KAZMIRSKY: The settings and the functions of the monitors.

MR. NICHOLSON: He didn't know them either.

MR. KAZMIRSKY: Well, he told -- he confirmed what the monitors were for, but he'll check in the system.

MR. NICHOLSON: Okay, he said he'll check. All right, that's your action item, Andy?

MR. WENZEL: Sure.

MR. NICHOLSON: Mark's checking it off his list.

MR. CHHATRE: Mark was all smiles. He has one less item to deal with.

MR. KAZMIRSKY: Thank you, Andy.

MR. WENZEL: Oh, sure. No problem.

MR. NICHOLSON: Anything else on --

MR. CHHATRE: Well, I have a general question. Looking at all the -- I could be a little bit off base on this one, but does that mean, looking at this backflow and stuff, that at least Milpitas was over-pressurized to close to 500? Is that a correct assumption or that is not a correct assumption?

MR. WENZEL: No.

MR. CHHATRE: Is backflow at 500 or close to 500 coming in --

MR. KAZMIRSKY: No. It was never over pressure.

MR. CHHATRE: Okay.

MR. KAZMIRSKY: No.
MR. NICHOLSON: Meaning the internal lines at Milpitas are raised for something higher than 500?
MR. KAZMIRSKY: Correct.
MR. CHHATRE: Right.
MR. NICHOLSON: But you don't know what that is?
MR. KAZMIRSKY: No, we have to get that. That's what this monitor is.
MR. NICHOLSON: Okay. Do we still need Andy or --
MR. CHHATRE: Well, I guess not for now, I guess. And if --
MR. KAZMIRSKY: Don't leave the office.
MR. CHHATRE: I guess we are done for now, but that doesn't mean we are done for the day.
MR. NICHOLSON: Yes.
MR. WENZEL: Okay.
MR. CHHATRE: So, if you don't mind --
MR. WENZEL: Okay. I'll find out that information. I think the monitors that you're talking about are probably set at 10 pounds over the MOP of the pipeline that's feeding the header itself. But I will double check that.
MR. CHHATRE: Okay.
BY MR. NICHOLSON:
Q. Ten pounds over the MAOP of the feed line?
A. The header. So, for instance, if you were looking at

the 5 or 6, which is line 300B, then the monitors there would be set to something less than the MAOP of that -- of 300B. The same with 300A and the same with the rest. I'm almost certain of --

Q. Oh, so they're all different? Okay.

A. Well, it's because they're really -- what you're really protecting is the pipeline -- what is the pressure behind the monitors, the incoming pipelines. You have a set of monitors that are protecting the downstream that we already mentioned, 28 and 26.

Q. Right.

A. Those are protecting --

Q. Oh, okay.

A. -- the downstream.

Q. Right.

A. But if you were to, say, for instance, have a flow pattern where line 300A and 300B had met together or were equalized to the two, you would have to protect 300A's incoming pressure because it's lower --

Q. Oh, okay.

A. -- than 300B's incoming pressure.

Q. So that's in a backfeed situation?

A. Right. Exactly.

Q. Kind of like what you had here. So the monitor will control both directions?

A. Yes.

Q. Okay. Thanks. That makes sense.

MR. CHHATRE: Thanks, Andy.

MR. WENZEL: Okay. All right?

MR. CHHATRE: Okay. Thank you.

MR. WENZEL: Thank you.

(End of telephonic interview of Mr. Wenzel.)

INTERVIEW OF MARK KAIMIRSKY (Cont.)

MR. KAZMIRSKY: That's what my guess was.

BY MR. NICHOLSON:

Q. They're bi-directional. You mentioned that before when --

A. All these lines are bi-directional. So, what Andy was saying is that, let's say that you want to feed these two lines. So you have 590 here and monitor for this line set to 590 plus 59 pounds in pressure. So if for some reason they are feeding it from, say, 300B with a high MAOP --

Q. Right.

A. -- and 300B for whatever reason got over-pressurized, that over-pressure will never match this line.

Q. Right.

A. And that's any of these cross feeds would work the same way.

Q. Yeah, that makes sense.

MR. CHHATRE: You said the monitors bi-directional since --

MR. KAZMIRSKY: Well, the monitor would always look at the pressure on either one side or the other, and it's almost irrelevant which side --

MR. CHHATRE: Which way -- yeah.

MR. KAZMIRSKY: -- it's looking at because it started -- it will start closing when the pressure gets high on either side of the monitor. Either way it will sit there and the lines going out.

MR. NICHOLSON: It's not like (indiscernible) --

MR. CHHATRE: Yeah.

MR. NICHOLSON: It's just pressure. And but it sees it.

MR. CHHATRE: Yeah, in both directions, doesn't really care which direction that it sees, yeah. Okay.

MR. NICHOLSON: So are we done on S? Can we -- yeah, can we put that Appendix S to bed?

MR. CHHATRE: I think -- I have no more questions on S.

MR. NICHOLSON: Yeah. Let's roll back -- or forward to Appendix D. I have one other question. I just wanted to get -- Appendix D is the monitor valves on 300B.

MR. KAZMIRSKY: Just one second. Okay. You can look at 488, 227.

UNIDENTIFIED SPEAKER: Oh, looking at the wrong page. I was going to say, they're not the same.

MR. KAZMIRSKY: If you look at 227 -- that's what will put it to -- 227 on the one sheet. On the right side you'll see

these monitors that we just talked about.

BY MR. NICHOLSON:

Q. Right.

A. And you'll see all monitors. There are no controllers shown here. They all say from PUI, whatever that --

Q. Um-hum, 70A, or whatever? 71A?

A. Yeah. If you look on the left side, in the C2, and the 2, coordinate 2, vertical, that's where the sensor is. And the controller is these monitors that are -- so they're sensing pressures on this incoming lines. And then they protect them from the other side.

Q. Oh, okay. There's PY -- okay. Okay. From PY 67.

A. This is monitor --

MR. CHHATRE: Right.

MR. KAZMIRSKY: -- and the sensor is somewhere on this one.

MR. NICHOLSON: Oh, here it is here. Okay. That helps.

MR. KAZMIRSKY: So that pretty much what we just talked about, that we got the monitors protecting incoming lines.

MR. CHHATRE: I see.

BY MR. NICHOLSON:

Q. What's PY? Pressure --

A. Pressure controller. Y, I believe, stands for multi-functional. So it's a pressure controller and whatever else it's doing.

Q. That's a pneumatic?
A. I'm sorry?
Q. What is PY? Is that electronic?
A. No, it's a pneumatic controller, but --
Q. Oh, that's your pneumatic.
A. -- I believe Y stands for multi-functional device, something like that.
Q. Okay.
A. That's my, I say, definition.
Q. Yeah. Give me those. All right, I wanted to get Appendix D, just real quick and close this one out.
A. Which one?
Q. Appendix D, as in dog, David.
A. Find it. Yeah, it's all mixed up.
MR. CHHATRE: Right here is D. Here.
BY MR. NICHOLSON:
Q. So, yeah, it's the top left plot there. I just wanted to -- that AR. If we look at AR, it looks like it starts modulating at point 1646. It's when it first drops from 100 percent.
A. Okay. R --
Q. Yeah, top left.
A. Yeah.
Q. The black line there. And I'm just trying to figure out is any of this related to the work, these drops, because it looks

like it takes --

A. What's the time frame on that chart?

Q. Each of these is 20 minutes. So 4 -- the minor lines are 4 minutes apart.

A. I don't think it's modulating; it's closing.

Q. It's under its own control?

A. And it just goes --

Q. So the -- right there.

A. If it's a percent open, and it's just closing.

Q. So where it goes from like 95 --

A. Down to 0.

Q. -- whatever that is --

A. Well, down to negative, or --

Q. Well, I'm talking about those first drops here, you know, it's --

MR. HALL: It goes from whatever that is, 95 --

MR. CHHATRE: It goes 95, 94, and dropping --

MR. KAZMIRSKY: It's dropping here and then it goes way down to about four places.

BY MR. NICHOLSON:

Q. Well -- yeah. So I know at 1720 it's dying with everything else, I think, right? The position is. Everything prior to 1720 is normal operation, as far as you can tell?

A. I'm not even sure. I can't even say for sure that this is dying because, again, I don't know where that value comes from.

Q. Oh, okay.
A. If it's a position or it's a feedback through the controller.
Q. But it's such a sharp drop at 1720. It goes from 50 percent --
A. Well, that only means that it jumped into control. It comes to control. It's taking over the control. But the monitor valve is --
Q. We're talking regulating valve.
A. I mean, not the monitor, the trimmer valve. It's a relatively small valve so it doesn't take long --
Q. Oh, okay.
A. -- for that valve to travel from one end to the other.
Q. Okay.
A. So that's why I asked what's the time scale here.
Q. Yeah, 4 minutes, so --
A. So that's very realistic time for the valve to go closed.
MR. CHHATRE: What, 15 minutes?
MR. KAZMIRSKY: It needs to --
BY MR. NICHOLSON:
Q. Yeah, well, it was modulating for about 16 minutes and then it dropped to nothing, so -- modulates to --
A. So, maybe it has closed because pressure was high.
Q. Okay. So, we're not sure, is all you're saying?

A. No, if I knew the tag of that point, or if you look at the tag of that point that you used to build that, that chart, you can find that tag on that spreadsheet.

Q. Yes.

A. And you can see whether it's a real analog input that could have been affected AAB. Or it's a value coming through the controller, in which case it probably didn't get affected, or may/may not got affected.

Q. Through the controller would have been affected, through the comm would not have?

A. Yeah.

Q. Right.

A. The comm line wouldn't be affected.

Q. Okay.

MR. CHHATRE: So, Mark, you think at this point, which is like maybe pretty close to 5:00, or 4:55, until 5:15, that downward slope here, is that where it's starting to close?

MR. KAZMIRSKY: Yeah.

MR. CHHATRE: And it would take like 10, 15 minutes to close?

MR. KAZMIRSKY: Yeah, it's starting to close and maybe it was -- and from what I see on the chart, it appears like it's a normal operation that developed.

BY MR. NICHOLSON:

Q. Yeah, the only other thing I would offer is --

A. Did they drop the set point at that time? Did it show --

Q. No. See, I didn't have a set point change and I didn't see a pressure change at that time, so I didn't -- you were saying earlier that it's such a minor -- that the trimmer valve controls such a narrow range, I might not see it on the pressure?

A. The red line this one is the load valve.

Q. The red line is the -- yeah, is 8R.

A. Yeah, see, they are very consistent.

Q. I mean, 8, that's your load valve?

A. Yeah, this is the load valve.

Q. Right.

A. So the trimmer is closing. When the trimmer went down below 20 percent opening, which is about here --

Q. Right.

A. That's when the load valve started to close.

Q. Well, then all of the valves show closed at 1720. That's where you're at, basically, at 1720.

A. Yeah. But the point I'm making is that at this valve -- it doesn't look like a vertical drop. It has a bit of a slope, meaning that maybe it's a real --

Q. Right. It does actually.

A. And not only that, but we also see a bump here and a bump here.

Q. Now, I wanted to ask you about that. That's at 1806,

right?

A. Yes.

MR. CHHATRE: Yeah, close to, yeah.

BY MR. NICHOLSON:

Q. That's my 1806 bump that I see everywhere.

A. Yeah, that --

Q. You've attributed that to troubleshooting, I thought.

A. That's the only thing I can attribute it to. But then --

Q. Everybody pretty well bumps at 1806.

A. Yeah, I don't know what could have caused that bump.

Q. But are we saying those are real values?

A. I can't say for sure, but I doubt it and here is the reason I doubt it. For the load valve to start to open -- remember, the load valve works when the trimmer valve is outside 20 through 80 percent range.

Q. Okay.

A. Why would a trimmer valve is within 20 to 80 percent, the load valve does not move.

Q. Oh, does not move.

A. I said outside the range.

Q. Okay. Got you.

A. When the trimmer valve is between 20 and 80 percent, the load valve stays put.

Q. Okay.

A. Now, if you look at the chart, we can see a bump on the trimmer valve that is, I don't know, 3, 4%, maybe, on the upper chart?

Q. Right.

A. That doesn't seem to ever exceed 20 percent, right?

Q. No, right, (indiscernible) --

A. Or 80 percent for that matter.

Q. No.

A. The trimmer valve --

Q. Oh, okay.

A. -- should have opened 80 -- more than 80 percent before the load valve would start opening.

Q. Right.

MR. CHHATRE: Okay.

BY MR. NICHOLSON:

Q. Okay.

A. So the trimmer valve never got to 80 percent.

Q. Okay. Where is that -- is that in a PLC code or is that --

A. Twenty to 80 percent, that's probably in the controllers, in the UICs. The valves are controlled by the UICs.

Q. Right. So that UIC, what inputs does -- the UIC takes in two inputs, an analog pressure and an analog position?

A. Yeah.

Q. Okay.

A. And actually, it doesn't -- yeah, the second control -- the trimmer controller needs to know the position --

Q. Right.

A. -- or, I mean, the load controller --

Q. Right.

A. -- needs to know position of the trimmer.

Q. Right. But the trimmer only the pressure, right. Okay.

A. So --

Q. That's a good point.

A. So, I have my doubts about the validity of this number -- of these numbers.

Q. Okay. Well, this --

A. I don't see the trimmer valve opening greater than 80 percent, none of the trimmer valves.

Q. Well, some of these trimmers do hit -- I mean, if I go to the next one, Appendix E, I see 11R touches 20 percent at 1900.

A. Yes, but it's 80 percent for the load valve to start opening.

Q. True. Yes. Yes. Okay.

A. So, I --

Q. Well, I want to stay on these, just a second. Because if I go to the pressure trims --

MR. CHHATRE: I think that is my question was coming up, you know, the valves were checked for functionality after the accident. But you have trimmer valves and load valves designed to

do a certain place, but were they capable of doing that? Were you functional of doing that?

MR. KAZMIRSKY: Yeah, but, gentlemen, I want to -- I want you to remember that these valves that we are looking at, 7, 8, 9, have nothing to do with the outgoing pressures. These valves control pressure inside the terminal.

MR. NICHOLSON: Yes.

MR. KAZMIRSKY: Only 38, 40, 21, 29, and 17 are involved in the outgoing pressure control. So we can analyze these valves trying to figure out what happened with these valves, but they have no impact on the outgoing pressure.

BY MR. NICHOLSON:

Q. Now, that's good to know, and I'm not sure that was clear before. I was always confused why you had dual sets. So that's good to know. The first set controls internally and then --

A. It's internally. And the main reason for that was initially -- well, there are two reasons for that. The main reason initially was blending of different types of gas --

MR. CHHATRE: Which you no longer do? Which --

MR. KAZMIRSKY: Well, we don't blend different quality of gases. We just use different amount of gas coming from each line based on the operating requirements.

BY MR. NICHOLSON:

Q. Okay. So -- but we can have that same discussion on --

and here's AR17 on Appendix G. It does the same things, similar -- so the discussion's still valid because --

A. Yeah, I'm not saying it's not.

Q. -- it's the same spike here that they all show. It's still greater than other -- but again, if they don't hit that 80 percent, then it doesn't matter.

MR. CHHATRE: Where I was coming from is if the valve's not functional -- yes, it's designed to do divert -- could it malfunction and it did not do what it was supposed to do.

MR. HALL: I'm sorry?

MR. CHHATRE: Well, the question I was asking if any of these valves were checked after the accident was to make sure that they are functional. Because one possibility, if they are not functional, then they may or may not kick in like they're supposed to.

MR. KAZIMIRSKY: Yeah, but --

MR. HALL: But it shows on all the valves, so --

MR. CHHATRE: I'm not saying they are not functional, but I'm saying --

MR. KAZMIRSKY: Not all of them. If they have that bump on one of the valves or two of them, I'd agree with you.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: But we have it consistently on all valves, so that --

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: I can't imagine that all valves failed at the same time --

MR. CHHATRE: Failed at the same time.

MR. KAZIMIRSKY: -- and in the same way.

MR. CHHATRE: At the same time, same way, and the same station.

MR. KAZIMIRSKY: Yeah, that's --

BY MR. NICHOLSON:

Q. So, let's go back to, say, Appendix --

MR. HALL: That's not a common mode failure.

BY MR. NICHOLSON:

Q. Yeah, so let's go to Appendix P, as in -- the same plots, just (indiscernible).

A. Yeah, I was looking at G, which is the same, 1779.

Q. Yeah, the same amount of spikes, but (indiscernible) --

A. P, you said, right?

Q. P (indiscernible), yes. P might illustrate it.

It's a tighter plot. So, it's about the same time period that you see these dips.

A. P?

Q. Or do you have an answer?

MR. CHHATRE: Right here. You have it here.

MR. KAZIMIRSKY: Oh, there it is, charts. Yeah, it's just essentially --

BY MR. NICHOLSON:

Q. The same thing?
A. Same thing, except they have some, some explanations.
Q. Okay. Well, it says PT004 held momentary invalid pressures that were valid values between 0 and (indiscernible). And actually, this, this is (indiscernible) I was just talking about, sort of.
A. See, what I think would have happened is these spikes that we see --
Q. Uh-huh.
A. That perhaps our time frame is too small to see or too big -- too small to see the details. What could have happened is that we got that huge spike --
Q. This big spike, in the --
A. Right.
Q. -- outgoing pressure?
A. And the valves responded to that. Now, what happened is that the --
Q. You said a power spike.
A. I'm talking about what was interpreted by the controls as a pressure spike.
Q. Okay.
A. And I think this is what happened, that that may make sense here now.
Q. Okay.
A. The load valves respond to the output to the trimmer

valve, not the actual position of the valve, but the command to the valve.

Q. Yes, right. Okay.

A. So if the command to the valve is outside 20 to 80 percent, that's when the load valve moves.

Q. Okay.

A. Now, if they have a spike, a sudden spike in pressure, the output to the trimmer valve, the PIG controlling the trimmer valve, will see that huge error in -- in the error in the set point and it will trigger a high output right away. The valve may not catch with it right away. The valve will take time to move.

Q. Sure. Right.

A. However, the output is going to get high. When the load valve -- the trimmer started to move towards the open position. You follow me so far?

Q. Right. Yes. Right.

A. Since the error was so big, the output was probably greater than 80 percent.

Q. Okay.

A. So both valves started to move simultaneously.

MR. CHHATRE: Oh, load and trimmer are moving now?

MR. KAZMIRSKY: Simultaneously. Because the output to the trimmer was above 80 percent.

BY MR. NICHOLSON:

Q. It says I've got to catch up quick.

A. It started moving. The pressure settled down, both valves closed back down. That's the only explanation I can --

Q. Where do you say the pressure settled down -- because I'm looking at your plot here now, right?

MR. CHHATRE: Becoming negative.

BY MR. NICHOLSON:

Q. Oh, the pressure that the trimmer valve's looking at --

A. Yeah.

Q. -- not this pressure? Yes, right. Okay. Okay, so if you got a spike in pressure, the trimmer valve was looking at, and it may have jumped --

A. It never got there. It just started to move.

Q. It's just a command.

A. Both valves started moving.

Q. At least the command told it to move, right?

A. That -- to me, that explains these consistent spikes.

Q. Okay. Yeah, that's a good point to make.

BY MR. CHHATRE:

Q. Mark, on that same graph, you are saying monitor (indiscernible) what would illustration of partial power when you're troubleshooting? That's when your wiggling the wires, right?

A. Right. Yes.

Q. Created momentary and still invalid readings of the pressure now --

A. That's correct.
Q. Why you call it invalid if the power is restored?
A. Because you don't have -- when you don't have a consistent power, the signals are going to fluctuate with that power and they're -- you're going to have spikes and you're going to have dips and --
Q. And you said you were able to recreate this kind of stuff?
A. No, I was able to recreate that high pressure and the loss of power.
Q. Okay. Not, not this --
A. That's impossible, no.
Q. Okay.
A. I wanted -- besides just the physical impossibility of having higher pressure in the discharge that you have on the incoming pressure -- we never had pressure close to 700 come into the terminals, so it's impossible to get it on the outside. But we were also were able to recreate that.
Q. And do you have any kind of record, documentation on this study that --
A. I'm sorry?
Q. You have any kind of internal document or study or something that explains that?
A. I have some --
Q. Because that's something could helpful to us when we

write that stuff.

MR. NICHOLSON: Well, I talked about that earlier.

MR. KAZMIRSKY: Yeah, I have some SCADA reports for all the simulations that I did.

MR. CHHATRE: If you can just send that? That will be (indiscernible) not get too far away from --

MR. NICHOLSON: Well, okay. Yeah, we'd like that.

BY MR. NICHOLSON:

Q. My question on this plot here that I had was, so that's a -- and I think he's trying to answer it here. If the power is turned off to this pressure transducer in yellow, why wouldn't it drop to 0? Why did it hold --

A. It should have dropped to a negative number.

Q. Yeah. So why does it actually dip and rise?

A. I think it may be related to how the system is wired, that we have more than one device connected to some of the loops. We have a controller and a Genius block.

Q. Right, you were drawing --

A. So that's the only thing I -- I can't give you a definite answer, but I know that we were able to emulate -- or simulate.

Q. Oh, on this (indiscernible). Oh, okay. I'm sorry. So this you could emulate with your --

MR. CHHATRE: But not this portion here, only up here.

MR. KAZMIRSKY: Oh, this is -- like I said, that's a

terrible (indiscernible).

MR. CHHATRE: Right. Right.

MR. KAZMIRSKY: We don't even know what happened there.

MR. CHHATRE: Sure. Okay.

BY MR. NICHOLSON:

Q. Okay. You're saying you think this is because you've got both a UIC and a PIC reporting a similar point to SCADA?

A. That's my guess. But like I said, I really don't know what causes it. That's very unusual.

Q. But you were able to reproduce it?

A. I believe so, yes. I need to look at my records, but I believe we were able to reproduce that.

MR. CHHATRE: Can you make a note of sending that document to us? I still want to make --

MR. KAZIMIRSKY: Yes, I did.

BY MR. NICHOLSON:

Q. Is it only -- did you try reproducing it on all your pressure points or just those four?

A. I don't remember.

Q. Okay.

A. It's been -- well, I did it last September, so -- it's been a while.

MR. NICHOLSON: All right. Anything else, Ravi, on valves --

MR. CHHATRE: No.

MR. NICHOLSON: -- C through L?
MR. CHHATRE: No.
MR. KAZMIRSKY: We did have Appendices A and B?
MR. CHHATRE: You should have it. I think your papers got mixed up. They're not in sequence anymore.
MR. KAZMIRSKY: I was looking for that. I didn't see it.
MR. HALL: It starts with C.
MR. CHHATRE: Here. Here. No, no. That's A.
MR. KAZMIRSKY: No, no, that's a double --
MR. CHHATRE: That's a double A. That's --
MR. KAZMIRSKY: No, that's a double.
MR. CHHATRE: Yeah, that's --
MR. NICHOLSON: Yeah, it starts with C.
UNIDENTIFIED SPEAKER: A is the station drawing and B is the map.
MR. CHHATRE: Okay, here.
MR. NICHOLSON: It's the map and the pencil drawing.
MR. CHHATRE: This A and this is B. And this is A --
MR. KAZMIRSKY: I got it. This is B.
BY MR. NICHOLSON:
Q. I think we've cover this, but I'll ask it. R25, 22 -- this is Appendix L. If you look at 25, it's got just a different signature when you get to that 1806 period.
A. 25?

Q. Yeah, R -- Appendix L, R25 on page B. Somehow let's just take on --

A. Appendix what?

Q. This is Appendix L.

MR. CHHATRE: Oh, L. Okay, I'm sorry.

MR. NICHOLSON: There's actually two of them there.

MR. HALL: Page 12 of 30.

MR. CHHATRE: No, we got, we got L.

MR. NICHOLSON: Page 12 of 30.

MR. KAZMIRSKY: Okay.

BY MR. NICHOLSON:

Q. And you can also look at Appendix F, valve 67, page 6 of 30. And I just -- they seem to have a signature that's different than all the other valves.

A. What is -- oh, 19, that's the valve.

Q. Yes. I was looking at Kenmar (ph.) 67 on this one --

A. 67, I believe, is a monitor valve.

Q. Yes. If it's an MR, monitor valve.

A. Okay.

Q. And then R25 is just a position control valve at the station. Actually, it's a -- 25 is a -- well, it wouldn't be the bypass. Now, it's line 300B's position valve at header 3 is what it is.

A. 25. That's probably a monitor valve. Let's see -- where it is -- where in the system. Let me look at the PMID.

25. That's what I thought, but I want to find it on the PMID. Oh, here it is. I believe it's just a routing valve. It's a manually controlled valve.

Q. Okay.

MR. CHHATRE: Which one?

MR. KAZIMIRSKY: 25.

MR. NICHOLSON: 25 is --

MR. KAZIMIRSKY: 19. I believe these are manual valves.

BY MR. NICHOLSON:

Q. Yeah, that's how we've indicated them. Their position only.

A. Yeah, you can -- they'll be controlled by the hand switches on the panel.

Q. Right. So my question was really about the signature here that -- you see a dip at 1806, and then it rebounds. And then you see it drop again at like 1830.

A. I can only relate it to troubleshooting work.

Q. Yeah, okay.

A. Because nobody touch these valves. So that's just another example or another piece of unreliable data. And it could be troubleshooting. It could be the fact that these two power supplies were actually floating (ph.).

Q. Okay.

A. We saw the voltage going 3 to 7, then 17 volts.

Q. And several responds differently there and --

A. Well, actually, if I remember correct, the 17 volts is the minimum threshold for the transmitters to operate.

Q. Okay.

A. They are 24-volt transmitters, but they can tolerate something down to, I believe, close to 17 volts. So we were right at the threshold.

Q. Okay.

A. At some times.

Q. So whichever position sensor is getting the best of that voltage, it's going to show a little better trend and --

A. Well, they also have a spec. They say 17 volts plus/minus whatever that spec is. So that's really --

Q. So some are seeing it, maybe?

A. Some can work at 17. Some can work at 19. Some can work at 16, perhaps.

Q. All right. So we're going to chalk it up to troubleshooting. Okay. That's -- well, Ravi's not -- that's all I had for wherever were, Appendix M and D.

I want to go -- well, actually, we were valves. I got a general question. I wonder if you can -- in the interviews, Oscar had said that he placed the regulating valves in the manual control at 50 percent. But I don't see that on the trends. And I just wondered if he -- if he puts the valve in manual control at the -- (indiscernible) 33, would that show up on position trends? Because I think he controls position on that manual knob on the

front.

A. Correct.

Q. Okay. Does that get translated back to --

A. It's supposed to. It should. It should. Again, look --

Q. I'm not sure he says which valve it is. But now, I wonder if it's the 8R valve? Because that one does go down --

A. I think he did it -- well, not I think. I would assume that he did it probably for all valves.

Q. Oh, well, that's true. That's right. He does say all valves. The valves -- you're right. He does say he's going to put all of them in manual control. And in his interview he said 50 percent. Of course, I don't know why he would put them in at 50 percent. Especially, if they were closed to begin with.

My real question was, shouldn't I be able to verify that through the (indiscernible)?

A. You should be. And I can see the position transmitters are connected -- it appears that they are connected only to the controllers. So these values should be sent back to gas control through the comm link.

Q. Comm link.

A. Correct.

Q. Okay.

UNIDENTIFIED SPEAKER: You might want to check on that statement, too. That doesn't sound right, 50 percent.

BY MR. NICHOLSON:

Q. Yeah, it might be an accurate statement.

A. It may --

Q. I'm not saying it is or isn't, but I was just curious.

A. It may be because generally if they saw the incoming pressure relatively low compared to what they want the control at --

Q. Okay.

A. -- and they know that it's a short-time work that they need to do, 50 percent could be a safe, a safe position of the valve to not over-pressurize the line downstream.

Q. Okay.

A. So, they looked at the -- if the valves -- if the pressure upstream, say, I don't know, 400 coming to the terminal, and they set the valves to 50 percent, then they're not going to starve the customers downstream and yet they're fairly safe --

Q. Right.

A. -- at least for the short period of time. At the same time, by the way, if the valves are at 50 percent and pressure starts rising, it's not going to go up very quickly. So the monitors would have more time to catch up with it should the pressure go high.

Q. True. Yeah, you buy yourself time there. Now, when he says 50 percent, he means the trimmer valve only? Is that what he's saying?

A. That I can't answer. I don't know what he did. If gas control was doing that or were to do that, they would -- they could operate either valve.

Q. Yeah, you could put them both at 50 percent.

A. He could put both of them to 50 percent.

Q. But you almost would have to because you're taking them into manual control, which means they're not going to respond.

A. Right. So if you could close a trimmer valve and --

Q. And just open the load valve.

A. -- the load valve 50 percent, that would be enough, perhaps.

Q. Okay. So we'd really have to, maybe, go back Oscar. But it should have been reflected in these trends. So, he either did this work -- because I didn't put the time down. He did either did the work when the --

A. What time are you looking at in your chart?

Q. That's the problem. I didn't put this on my --

A. Because what --

Q. I thought this happened before he ever started the 1620 work.

A. That's exactly what --

Q. Yeah. And, see, that's where I don't see it.

A. -- what I'm leading to. So, he could have done that when they did the switch over.

Q. Oh.

A. And then put them back to normal.
Q. Oh, okay. So you think it's in this dips; it's hidden by the dip; is that what you're saying? Well, no, because they didn't respond actually. The regulator --
A. No, no. It wouldn't be hidden in the dips because --
Q. The regulator valves didn't show any changes. Well, actually, some were shut, right? So they wouldn't show --
A. Well --
Q. How was that?
A. -- the positions could be conveyed by the comm link.
Q. So I should have seen a 0 go --
A. Well, no, I can't --
Q. Well, that's a separate --
A. -- I can't say. Because even though the position of the valves would be transmitted through the comm link, the position transmitters were powered by a -- no.
Q. Yeah, because --
A. We powered down the Genius blocks during that --
Q. Yes. Right. Right. At 1630.
A. So -- yeah, the -- you should see the position of the valves.
Q. I thought that was the first thing he did. Okay. Well, I might have to check on -- but your statement is I should have seen it, so -- but it should be reflected over SCADA?
A. That's what I would expect, yes.

Q. Yeah, so -- about that time I got the call. So I think it was on the backside. So we -- well, not it was at the 1620 work. So we were at 50 percent and locked in at that volume. He wanted to know how much longer and I told him we're about ready to power back up.

A. What time was that?

Q. And I think that is at 1620 to 1632 or --

MR. CHHATRE: But that was not before the --

BY MR. NICHOLSON:

Q. Yeah, because he's talking about the Genius block work.

A. Um-hum.

Q. And we got -- and about that time, I got a call -- well, before we plugged into the UPS, I got a call from gas control.

A. I think --

Q. So two different --

A. If you didn't see the positions, the position of the valves at that time, the only thing I can think of that -- PMID is a very general (indiscernible) a very high, high view. So this position transmitters are also wired to the Genius blocks and that's how SCADA use them. Then shutting off power at Genius blocks during this 15, 12 minutes would kill the position of the valves as well.

Q. But I want to understand, did he -- we said he did it to all valves, right?

A. Um-hum.

Q. But now --
A. No, all -- I would think all valves that are controlled by the controllers. But I --
Q. Which is pretty much -- well, it's 24.
A. I think they have 26 controllers.
Q. Right. But I guess what I'm wondering is a lot of these regulating valves are actually at 0 percent open, right? So if he goes and takes them in manual and locks out control center and then turns it to 50 percent --
A. Well, he would --
Q. -- they're going to open at 50 percent?
A. -- he would only do it with gas control's permission. He wouldn't do it on his own.
Q. But he would have only done the valves that were currently open? He wouldn't have done them all?
A. Not necessarily. Gas control may want to ask him to open all of them so while they're doing the work, they're not going to lose the flow downstream.
Q. Okay. Even though you're only running with four valves open, you'd --
A. Yeah.
Q. -- put all at 50 percent? Okay.
A. Yeah. What's the worst case scenario? That they get more gas downstream? The worst case scenario --
Q. Yeah, right.

A. -- then they pack the line. They can send the gas -- more gas down than is needed. It's a lot better than losing it.

Q. I'm with you. Okay.

A. And it'll protect it from pressure standpoint, that it's still protected.

Q. Right.

A. Even if the valves are 50 percent open.

Q. Okay. That's what I was asking. You answered it perfectly.

All right. So, the first part's a little squirrely. We should have seen it, but it we don't. But the fact that he would have done it makes sense.

A. And even should have seen it (indiscernible) verification on the connection diagram.

Q. Can you -- can we make that a follow-up?

MR. CHHATRE: Can you check with the gas -- whoever the person may be, answer that? Now, I'm losing my pens.

MR. HALL: I don't have it, Ravi.

MR. CHHATRE: No, I know you don't. That's okay. Mark likes to write with pencil and I like to write with pen. I'm good. You got the valve follow-up request --

MR. NICHOLSON: I think I'm running out of questions here.

MR. CHHATRE: Okay.

(Discussion not pertaining to this matter.)

BY MR. NICHOLSON:

Q. So I'm on Appendix O and we talked about these two lines, PLS-7A and B.

MR. CHHATRE: Which --

MR. NICHOLSON: Appendix O. PLS-7A and B.

MR. CHHATRE: Okay. Appendix O, PLS-7A and B. Okay. PLS-7A, -7B.

MR. KAZIMIRSKY: Okay.

BY MR. NICHOLSON:

Q. So where it clears up at like 1944 -- where PLS-7B restores itself from 475 to --

A. All right. Before we get to that. PLS-7A and 7B is not pipelines. Are you referring to 300A and B or --

Q. Oh, these were presented to me as 7A and 7B.

A. 7A, 7B that's the facility.

Q. Right. Okay.

A. So this is --

Q. So it's sent from 300A and B, right.

A. So these probably are --

Q. It's the same plot as we were just looking at, essentially.

A. So this is probably 300A and 300B, I would think. But I can't --

MR. HALL: Yeah, it matches Appendix S.

MR. NICHOLSON: They are. Exactly. Yeah, it matches S.

I just -- the question's under my Appendix O. This is before we realized that they were the same.

BY MR. NICHOLSON:

Q. But we're saying then that he released at 1944, I guess, he opened up that monitor valve, MR6?

MR. HALL: And isolated 300B.

MR. NICHOLSON: Right.

BY MR. NICHOLSON:

Q. That's what I'm asking. That's our takeaway with it dropping back down to control.

A. That looks like it, yes.

Q. But you said you didn't have control back at the station, I thought, until 2040?

A. No, no. I said that they finished the troubleshooting completely. They walked away at 2040. That's the point where I know there was nobody inside the cabinet.

Q. Okay.

A. And that's when they called gas control and told them that that's -- I think that's when they called them, that they're back in business.

Q. Yeah, I see. Well, 1940 -- okay, and that's about the time they had isolated valves downstream, pressure was building back up, so they probably -- that's probably why the MR6 was -- okay.

A. I need to get organized.

Q. Let's go back to Appendix Q for a second.
A. Q?
MR. CHHATRE: Q.
MR. NICHOLSON: Q.
BY MR. NICHOLSON:
Q. Okay. So we talked about why it might have gone steady state at the 600, but I'm not sure I understood the drop at 1803. That's -- would we say that was troubleshooting, that causes those lines to drop, the pressure?
A. That's the only explanation I can give.
Q. Okay. We don't -- so we really don't know at this point. Because it looks like it responds to something at 1804, which must have been the valves because the valves open.
A. Yeah, but -- no. At 1804 that's troubleshooting and we could never get the pressure up to almost 700 pounds because we never had anything coming in at that pressure.
Q. No, I understand it's a false value, but it looks like it really responds, right?
A. To something they did in the cabinet.
Q. Okay.
A. What they did --
Q. Okay. So both the dip and the rise --
A. Yeah, are related to the work done in the panel. And like I said, from about 1522, 1530 when they started to -- 1722, 1730, we can't really -- a lot of things we cannot explain.

MR. CHHATRE: Now, is this reading valid up to 1805? Is this a valid data? Or they also could be --

MR. KAZIMIRSKY: No.

MR. CHHATRE: And if it is, why it is valid? Or if it's not, why is it not valid?

MR. KAZIMIRSKY: None of that is -- I wouldn't say invalid, but none of that is reliable.

BY MR. NICHOLSON:

Q. You're saying from 1722 forward?

A. Yeah, that's when they noticed the loss of the signal. From that point on, we cannot rely on the data.

Q. Because they're in a cabinet at that point.

A. Yeah.

MR. CHHATRE: Now, if all the small mini UPSs have conked out and (indiscernible) identify or tell what voltage they're supposed to be producing, how likely it is that maybe in earlier data we have maybe earlier --

MR. KAZIMIRSKY: It's not the UPS. The power supplies that failed were downstream from the UPS.

MR. CHHATRE: Okay. The power supplies. Maybe I used the wrong term. I guess my question is did -- what I'm driving at, recently or kind of a dying slowly, not producing enough and --

MR. KAZIMIRSKY: Well, nobody knows really. Nobody can say that.

MR. CHHATRE: Okay. No, I guess what I was --
MR. KAZIMIRSKY: It could have been fluctuating even before 1722.
MR. CHHATRE: That's what I was asking, yeah.
MR. KAZIMIRSKY: But if that fluctuation was within the tolerance of the instrumentation, we wouldn't notice it.
MR. CHHATRE: Would not know, okay. So that would not even --
MR. KAZIMIRSKY: At 1722 we know the voltage went so low that we lost the signals.
MR. CHHATRE: Yeah, okay. I mean, I would have (indiscernible) before that. I'm just kind of saying the question comes up how do we know if it's reliable or not? So really we are giving -- maybe reliable, maybe not reliable.
MR. KAZIMIRSKY: 1722 data from the instrumentation fed from other power supplies, PS. One, for example, is relatively reliable. And I'm saying relatively is that if they don't touch anything, it still works.
MR. CHHATRE: Right.
MR. KAZIMIRSKY: But if they pulled on the wires --
MR. CHHATRE: Then you wouldn't rely, yeah. Okay.
MR. NICHOLSON: It's a delicate system. Any more questions on P and Q?
MR. CHHATRE: No.
MR. NICHOLSON: Okay. Let's move to R. Well, wait, we

haven't really talked about this.

BY MR. NICHOLSON:

Q. And these are plots that I only had hourly data submitted to me on, so they're kind of choppy. I've asked for the 20-second. I don't know if that's in that spreadsheet.

A. I can't answer that. I think I saw it.

MR. CHHATRE: I saw a table in there. So that may be. I'm not sure.

MR. NICHOLSON: Of flows?

MR. CHHATRE: While you're transferring the files from tumbleweed to hard drive, I saw some table.

MR. KAZIMIRSKY: I think I sent you spreadsheets with 20 seconds. I believe I saw that.

MR. NICHOLSON: Okay. It would be nice to see that.

BY MR. NICHOLSON:

Q. But just working from these it -- I've got some questions. The first one I'll start with. At 1700 hours --

A. Okay.

Q. -- I see -- actually, I wrote down pressure. I'm just checking to make sure. Oh, it's -- yeah, you see at 1700 in the upper plot you see everything kind of knee up, all the lines go up?

A. Um-hum.

Q. I'm just -- do you have an explanation for this at 1700? It precedes our 1722 event.

A. Well, I would assume that -- no. I would assume that we have that jump between 17 and 1800 hours.

Q. Yeah.

A. Because -- and between 1722 we lost the signal, the valves started to open.

Q. That's my averaging there.

A. That's your averaging. You don't see that, but it's taken into account on that incline.

MR. HALL: That's the one-hour data.

MR. KAZIMIRSKY: Um-hum.

MR. HALL: You see the before and after at 1722.

BY MR. NICHOLSON:

Q. So then why does -- why is my overall -- it seems like they diverge then. If you go to the lower plot, that's supposed to be my total flow from Milpitas. And it's decreasing on 300B at 1700 hours. Maybe that's got something to do with the monitor valve being shut?

MR. HALL: Yeah, they isolated it, so it went 0 (indiscernible).

MR. NICHOLSON: So that's the reason I'm going 0 on 300B but I'm rising on all the others. Okay.

MR. KAZIMIRSKY: All right.

BY MR. NICHOLSON:

Q. Now, the other problem I have is --

A. Catch fast.

Q. -- we saw the pressure drop at -- okay, so the flow meters for L -- on the upper plot, the flow meters for those lines would not be impacted by the square --

A. By the loss of A and B (indiscernible).

Q. Or the pressure profiles we see that spike up to 600?

A. No, they wouldn't, because they're using different pressure measurements.

Q. Right.

A. They have their own pressure measurement.

Q. But they do drop out at -- the pressure drops off at 1620 to 1630 on those pressure supplies and I don't see a drop in flow, right?

A. Those pressure supplies are not necessarily connected to the Genius blocks. And even if they are --

Q. Wait, they dropped out. They must be, right?

A. Okay. So, they must be -- they may be connected to the Genius blocks. But what happened at 1722 didn't impact the Genius blocks.

Q. Well, I'm back -- I'm looking back here at 1630, right? And actually, maybe it is there slightly, because I do see a decline start at 1600. I see it dropping towards 1700, which maybe does take into account the dip between 16- --

A. No, between 16 and 17, that's the dip --

Q. That's the Genius -- because here are the -- you know, here are the pressures. So they saw the 1620.

A. Right.
Q. Okay.
A. And --
Q. And that's captured between here and here?
A. That's my guess.
Q. So we are consistent then.
A. That's my guess, yeah. And then blocking the line off dropped the flow on that line. It didn't drop the pressure, but it did drop the flow.
Q. Right. And then 300A and 131, though, were still flowing, right?
A. According to Andy, yes.
Q. But yet their throughput is only -- unless their meters are wrong -- they're shown on the right scale there. It only amounts like .36 and .47. And then that's CFH, so that's not enough --
A. No, that's not enough for anything.
Q. So they -- either those readings are wrong or --
A. What are these two scales here?
Q. They're the same units. It's just these are so -- the flows on 300A and 131 were so small I had to give them a separate scale to --
A. Oh, I see. I see.
Q. -- so you could see them. So you read them on the right, there.

A. I see. Again, I can't answer that. That's probably a better question for gas control.

Q. Okay. Because I don't have any information yet on these flow meters yet.

A. Hold on a second. What points did you -- these are SCADA points? You used SCADA points?

Q. Yeah, those points -- all those came from you guys. I just --

A. And which points --

Q. Unless you scaled them. Because one thing about that request is I didn't get units, right. I just assumed they're all in the same units.

A. They should be.

Q. Okay. They were off by a couple orders of magnitude. Yeah, whereas total flow on 315 was 15.6 -- oh, this is way back. Oh, you gave me 200, sorry. Go back closer to --

A. I have a suggestion, Matt.

Q. Well, see, they're showing 0 -- yeah, what's your suggestion?

A. Like I said, that spreadsheet that was sent to you --

Q. Let me go back to that.

A. -- is 20-second snapshots. I suggest that perhaps you want to look at that spreadsheet first and see if it answers any questions.

MR. CHHATRE: I just -- you want me to get that?

MR. NICHOLSON: No, I'll plot it.

MR. KAZIMIRSKY: I suggest take a look at that spreadsheet and if it doesn't answer your questions --

MR. CHHATRE: Oh, it's on here. Okay.

MR. NICHOLSON: Yeah, it's in there somewhere.

MR. KAZIMIRSKY: If it doesn't answer your question --

BY MR. NICHOLSON:

Q. Yeah, I'm good. Because I think you've answered the two biggest. The 300B decline was bugging me and the rising on the downstreams were --

A. 300B I think Andy gave us a perfect explanation for that.

Q. Yeah. No, that makes sense now.

MR. CHHATRE: Checking all the valves, is that what -- yeah.

BY MR. NICHOLSON:

Q. So that's all I had on R. Actually, I think we've covered -- since a lot of these are so interrelated, you know, we just didn't address them previous.

A. Yeah, they are. They are interrelated, very close.

Q. And you all are -- just to reiterate, you're saying these pressures are all reliable? On Appendix D. As best we can tell? These look like -- to me they look like good trends. But I think there was -- the way your response came back on it, I just wanted to be sure.

A. Yes.
Q. You're saying none --
A. These are meters.
Q. Right.
A. RM 32, 31, 38 are flow meters, and these are as reliable as it gets. This -- what are we on 32? See this little spike here or --
Q. Yeah, yeah, yeah, yeah. I did see that.
A. That's what I would think could have been caused by the troubleshooting.
Q. But it only affected this line. Okay.
A. Well, no, that's my point.
Q. Yeah.
A. That maybe they did something that caused that momentary dip.
Q. Right.
A. But everything else is very, very realistic. See, I -- in a pipeline it's very difficult to create an instantaneous change of that magnitude.
Q. Oh, yeah. Right. Right.
A. Up and down. So that's why I'm saying that these are the things that could have been caused by somebody working there.
Q. Right. Yeah, I've seen stuff like that in the past. It's not (indiscernible).
A. I just noticed something on my spreadsheet that I --

that we didn't send to you gentleman. You asked for all pressure points, locations of all pressure measurements.

Q. Um-hum.

A. We sent you everything except one sheet for the -- I think you wanted to see compressed air.

Q. I actually did ask for that too. Because you have alarms for compressed air at the station. Okay. Thank you.

MR. JACQUES: (indiscernible) what's the drawing number?

MR. KAZIMIRSKY: That's on my list. 227. 488 229.

MR. JACQUES: More slowly.

MR. KAZIMIRSKY: 488.

MR. JACQUES: Right.

MR. KAZIMIRSKY: 229.

MR. CHHATRE: Revision 5.

MR. JACQUES: Revision 5?

MR. CHHATRE: Revision 5, yeah.

MR. KAZIMIRSKY: And again, we sent the (indiscernible) last week and I believe I found one more sheet that I --

MR. JACQUES: I'm just trying to make my own list of everything we've turned over, so we --

MR. KAZIMIRSKY: And I'm doing the same thing, I believe. Yup. There is one pressure transmitter, but that will give you everything you asked for.

BY MR. NICHOLSON:

Q. Yeah. So, the alarms, those are false alarms that we

see on the compressed air?

A. Yeah, probably.

Q. So I have a note on here on Appendix AA to AD, AA through AD.

A. Yes. And what --

Q. And it kind of ties into what we were talking about on the spreadsheet. So you might not have it -- it's actually AB. It looks like an AB. It looks like it --

A. I'm looking AB.

Q. The tag numbers -- and I just copied the tags on my trend, were UIC 12R downstream pressure -- or just UIC downstream pressure. And I was just asking if you can kind of clarify what that is? Is that what the trimmer valves are using to build to --

A. No. The station is designed to control upstream and downstream pressures. In other words, if you look at --

Q. Well, okay.

A. -- if you look at these meter runs, 7 through 14?

Q. Yeah, back on 227?

A. You can see that it's looking at the pressure at both sides of the meter. And look at page 103.

Q. Yes. Okay.

A. Any controller, let's say, take -- at the bottom is UIC 7R.

Q. Um-hum.

A. And we're taking pressure from PT7B.

Q. All right.
A. To the right of that -- and header 6.
Q. Right.
A. But it also refers you to sheet 227 B1 or PT7.
Q. Oh, okay. Yeah.
A. So on that sheet, 227 B1, you'll see the pressure on line 300B.
Q. I don't have a 227 B1 either.
A. Yes. All right, yes -- you don't?
Q. Well, did we make a copy -- I didn't get any 227s, as far as I know.
A. That was sent to you. That I know for sure was submitted. If you don't have -- I think that's that sheet --
M
MR. CHHATRE: R. NICHOLSON: Oh, he just sent it?
MR. KAZIMIRSKY: No, no, that sheet -- no, down below. Yeah, that's the --
MR. NICHOLSON: Oh, is that the one you copied today?
UNIDENTIFIED SPEAKER: 48 227? Is that the one, revision 5?
MR. CHHATRE: 229 is what I copied right now, not 227.
UNIDENTIFIED SPEAKER: No, the first one he gave you, by my notes, 488 227 --
MR. NICHOLSON: Oh, this is said B1.
MR. KAZIMIRSKY: Yeah, correct. No, B1 is the

coordinates how the --

MR. NICHOLSON: Oh, I'm sorry.

MR. KAZIMIRSKY: -- the cross-references.

MR. NICHOLSON: Yeah, 227, coordinates B1. Got you.

MR. KAZIMIRSKY: Right.

MR. NICHOLSON: Sorry about that. Yes.

BY MR. NICHOLSON:

Q. That's where I'll see --

A. You'll see PT7.

Q. PT7, yes.

A. So what that controller does, it controls upstream and downstream pressure. And it control pressure before the regulators and after the regulators.

Q. So the UIC for inputs, then, it's got two analog pressure inputs?

A. Um-hum.

Q. And then if your load value got -- well, if your load value --

A. It's still 1.

Q. -- which is 1, you're only looking at position --

A. Output -- no, not the actual position, but output to the trimmer.

Q. Output trimmer, right. Between a position.

A. Right. Because looking at a position of the valve puts a huge lag on the response time.

Q. Right. Exactly. Yeah. That makes sense.
A. So the tags on SCADA are a little confusing because they're looking at different pressures coming from the transmitters as well as through the controller. And somewhere in one of the spreadsheets that was sent to you that I color-coded, I showed which ones coming directly and which ones are coming through the --
Q. Genius. Actually, this shows. So if I look at 7 again on page 228, sheet 1, UIC 7, which is the load valve -- he takes -- he gets an input from the UIC from 7R, but it does also take in pressure, it looks like.
A. Well, let's see.
Q. So he has two analogs.
A. UIC 7?
Q. Yeah. Is that -- am I reading that wrong? Actually, he's got three inputs. He's got position.
A. Well, it's got the position of its own valve.
Q. Yeah, it's got position. It's got a pressure.
A. That's not necessarily true. It's again, that's a schematic, so.
Q. Oh. Okay.
A. You see it may not be a position. It may not be PT that it's taking. It may be a connection to UIC. See, if you stay on that line past the transmitter, it's a U1000.
Q. Oh, up here, yeah.

A. Right. So --

Q. Oh, okay. You don't really know.

A. So that's not necessarily a connection to a transmitter. It's a connection to the PLC. That's why I'm saying that a PMID is not really -- it's not really intended for that level of details. It more -- it shows more a network connections than specific devices by themselves. And it's still an open debate whether you want to show more or less details, whether it makes it more confusing or more convenient.

Q. Okay. I wanted to go to -- next can we go to Appendix AC? So on AC what struck me as odd is that there's four different responses here. In fact, even the header 2 responses, the two left-hand plots, are remarkedly different. And I just wondered if there's any significance in these? I mean, you see that same 1806 spike on the lower left-hand plot, but you don't -- you see it just a flat line on the upper plot.

A. Yeah, without going to --

Q. Any take on this?

A. -- what those points are in SCADA, the only thing I can tell you is that most likely the upper point -- the upper chart is a transmitter that is not dependent on A and B power supplies. The lower is probably dependent (indiscernible) of --

Q. Okay.

A. -- A and B. So that's why the upper chart is so steady and the lower one is so jumpy. So, you see all this jumping

starts after 1722.

Q. Yeah. We talked about that before. You're right. Okay. Then the same thing on AD.

A. Probably the same explanation.

Q. That's all I got. The rest actually -- I got questions on the models for volume release submitted to us, but I --

A. I'm sorry?

Q. The models that were submitted to us for volumes of gas released.

A. Oh, that is --

Q. That wasn't --

A. -- probably Richard Jennings.

Q. Richard Jennings. Okay. So those questions will still be forthcoming (indiscernible).

A. Richard Jennings or --

UNIDENTIFIED SPEAKER: If you give them to Bill --

MR. KAZIMIRSKY: (indiscernible) Brown.

UNIDENTIFIED SPEAKER: -- figure out who needs to respond.

MR. NICHOLSON: Well, they were given but they might have been under "Explain this", which we were trying to write off because of this interview. But the thing was sent to (indiscernible) --

MR. CHHATRE: They may not be in your area of expertise.

MR. NICHOLSON: Right.

MR. CHHATRE: They were included in this data request, so --

MR. NICHOLSON: So we'll be still seeking answers for those. But just for clarification purposes --

MR. CHHATRE: If you can just make a note, maybe --

UNIDENTIFIED SPEAKER: Yeah, which ones are those, just so I can pass it on?

MR. NICHOLSON: It's just about -- the submittal that I was given had some negative values for the flows out of the pipe, which didn't make sense.

MR. CHHATRE: Give him the number, the item number.

MR. NICHOLSON: Oh, the item. It's on the original --

MR. CHHATRE: And please make a note -- I will take a look, but we also asked for the cost estimate of the damage from PG&E for the accident. It may be in the submittal that we got, but that is not the case.

MR. NICHOLSON: It would be -- my question -- the original question showed up under Appendix 21 and 22 at the bottom of that page.

UNIDENTIFIED SPEAKER: I will let them know to pull those for you.

MR. CHHATRE: Yeah, and the total damage estimate of the cost also was sent, but if it is -- if it came in this morning, we do not know, but --

MR. KAZIMIRSKY: If you don't mind, gentleman, I'd like

to compare notes, what I owe you.

MR. NICHOLSON: Yeah, that's probably a good idea. And I'm going to look at the alarm logs, because that's something else we didn't go through completely. We might spend a little time just -- go ahead.

MR. KAZIMIRSKY: So I need to send you test reports that we conducted.

MR. CHHATRE: Yeah.

MR. KAZIMIRSKY: To replicate the problems. I want to explain duplications in the spreadsheet, columns 168 through 71, 70 to 75, et cetera.

MR. CHHATRE: Correct.

MR. KAZIMIRSKY: We have a drawing that shows pretty much a pipeline (indiscernible) at Milpitas, the actual connections where the stations are and so forth, so that you wanted to see how the gas gets to Milpitas.

MR. NICHOLSON: Yes.

MR. KAZIMIRSKY: And what the MAOP is there.

MR. NICHOLSON: Upstream, right.

MR. KAZIMIRSKY: Upstream of Milpitas.

MR. NICHOLSON: Yes.

MR. KAZIMIRSKY: I said south of it.

MR. NICHOLSON: I'm sorry, yes. Right. I was thinking north.

MR. KAZIMIRSKY: I will get you that drawing.

MR. NICHOLSON: Yes.

MR. KAZIMIRSKY: And the last question was verify whether valve positions were showing 50 percent after Oscar set them to 50 percent.

MR. CHHATRE: In that drawing, Mark, I think all the different lines -- some lines comes in as one number and then becomes different.

MR. KAZIMIRSKY: Yeah, that's the norm.

MR. CHHATRE: Yeah.

MR. KAZIMIRSKY: In fact, I made a (indiscernible) of the drawing showing -- send the drawing showing how the line numbers change. That's --

MR. CHHATRE: I think we may have -- never mind. I just saw the line -- we have the current lines going in. Okay.

MR. KAZIMIRSKY: And would you, Mr. Chhatre have these --

MR. CHHATRE: I can see -- did have some north/south were taken for information, I guess.

UNIDENTIFIED SPEAKER: No, I wasn't focusing on that. All I was trying to capture was the things that were produced during this meeting.

MR. CHHATRE: Oh, okay.

MR. KAZIMIRSKY: And that's my notes as well.

UNIDENTIFIED SPEAKER: Right. Yeah, we can -- I show that drawing 488 and 227, route 1. I don't call it -- the SCADA

Milpitas ops diagram, your screen shot.

MR. KAZIMIRSKY: That's a PLS-7 screen.

UNIDENTIFIED SPEAKER: Right. I have that here. Then I have -- I just called it invalid SCADA screen. I don't know what you call that screen.

MR. KAZIMIRSKY: I called it valid/invalid screen.

UNIDENTIFIED SPEAKER: That sounds better. Let me add valid/invalid SCADA screen. Fourth, the time pressure chart that you had prepared.

MR. KAZIMIRSKY: Which (indiscernible).

UNIDENTIFIED SPEAKER: Three pages, yeah. The Milpitas terminal electrical connector to UDP panel.

MR. KAZIMIRSKY: That's panel schedule. That's this one.

MR. NICHOLSON: Yeah, we already --

UNIDENTIFIED SPEAKER: Panel schedule. And then drawing 488 229 rev 5.

MR. KAZIMIRSKY: Yeah.

UNIDENTIFIED SPEAKER: And that's all I show that you turned over to them today. Is there anything else that you?

MR. KAZIMIRSKY: Same thing.

UNIDENTIFIED SPEAKER: Okay. Good. I'll just make sure they reference that back to you guys --

MR. NICHOLSON: Okay. I got some other little odds and ends too.

MR. HALL: There was -- Andy was going to check on the setting of the monitors 3, 4, 5, 6, 71, 70, 67, and 66.

MR. CHHATRE: Right.

MR. KAZIMIRSKY: We clarified the functions of those monitors, but we still need to know the set --

MR. HALL: Oh, actually, he did give --

MR. KAZIMIRSKY: -- we still need to know the set points, the setting. He said 10 percent over MAOP.

MR. CHHATRE: No, I think he said he thinks, but he'll get back to us.

MR. HALL: Yeah, he said he'd get to us with the real number. He wasn't --

MR. NICHOLSON: Which numbers were those?

MR. HALL: 3, 4, 5, 6, 71, 70, 67, 66. And that's the only thing that I had written down that we didn't mention.

MR. NICHOLSON: I just have some PS questions.

MR. CHHATRE: Well, I guess we can --

MR. HALL: I will scan these, Ravi, and send them to you and Matt.

MR. CHHATRE: Absolutely.

MR. NICHOLSON: Actually, I think we could just -- is there a problem if we could continue?

(Discussion not pertaining to this matter.)

BY MR. NICHOLSON:

Q. Can you just tell me -- I noticed that the first

submittal we got from the Milpitas was change 53 and then the new one is change 55.

A. Oh, that was probably --

Q. What changed? Well, actually, I was more curious -- it says change valves normally closed on 54. Do you know which valves?

A. Normally closed, it's got to be normal case probably.

Q. So there's an alarm 53 or --

A. Some valves probably didn't show a fail mode. (indiscernible). If you have previous revision we can identify that.

Q. How would you -- how do they show fail position now?

A. It doesn't show -- oh, when they refer to normally closed here, what they mean is position of the valve during normal operations. The black --

Q. Oh, the manual valves?

A. -- shaded valves. Yeah. Not necessarily manual. They could be also controlled, but --

Q. Oh, okay.

A. -- under normal operations some valves are open, some are closed.

Q. Okay.

A. So they showed what the position of the valves are under normal station operations.

Q. Well, 54 was done just after the accident, November

15th. So it's just -- I was wondering was there a valve that was found out there to be --

A. No, no. It was nothing -- nothing was found wrong with the valves. What they did they just corrected the drawing.

Q. Because it was getting scrutinized --

A. Most likely, yes.

Q. -- and people found mistakes?

A. Um-hum.

Q. Okay.

A. It always like that. I'm sure if you go looking at it now, we'll find something else. But --

Q. And in 55, was 55 mentioned, just put it in place because of the accident?

A. I don't think it was brought to the -- I don't think it's because of the accident. I think it's probably more inaccuracies they found in the drawing, perhaps changed some of the operating -- some of the NLPs that that could have been dropped after the accident.

Q. Oh, okay.

A. So it's more of a reflection of as-built conditions than anything else.

Q. Do you know all the controllers -- which controllers initials show up in the alarm log?

A. Controller initials? What do you mean by that?

Q. Well, where it says user, BBMH, I know -- this is

probably Barry Mitchell.

A. May I take a look at it?

Q. Certainly. Yeah, if you could -- I wondered if -- because Oscar talks about clearing some alarms and I was trying to --

A. No, that's gas control operators. I can tell who they are by just looking at our phone directory.

Q. Yeah, okay.

A. That's corporate ID of the operator. Every operator --

Q. I'll (indiscernible) good enough. The other question I would have had to you, though, is can you tell from the location, do you know which of these locations are control room or Milpitas?

A. No. Everything is in control room.

Q. It's got to be --

A. Everything from SCADA.

Q. I thought Oscar said he was clearing alarms locally at one point. What does he mean by that? He called gas control, maybe? So there's not a terminal at -- there's not a console at the Milpitas station?

A. We can log onto SCADA from anyplace --

Q. Right.

A. -- but we do not have any access to make changes.

Q. Oh, okay.

A. So when he said he was clearling alarms locally, you said?

Q. Yes. I don't have the exact quote in front of me. I thought he said, I cleared the alarms. I'll rephrase it, maybe --

A. What he probably did, my guess, he probably cleared the alarm conditions. Whatever caused the alarm, he probably cleared that and then gas control was able to acknowledge and then clear off the screen.

Q. So if anything cleared, it had to be cleared through gas control?

A. Only from gas control.

Q. Okay. That solves that problem. Also, there's out of range alarms that appear at 1721.

A. That is something that we talked about earlier.

Q. Yes, you did mention it earlier and I just wanted -- so that was a loss of power that caused that out of range? It's not going to be pressure or --

A. No, out of range is most likely a loss of a signal.

Q. Line 100, that's the first line that alarmed.

A. That's the outgoing line.

Q. Yeah, what is line 100? Does that come off of that --

A. That's the line that comes out of the terminal and goes to Hollister (ph.), yeah.

Q. That's at Hollis. I thought I saw it on here. Yeah, line 100.

A. It's the one that goes back to PLS-7.

Q. (indiscernible) address. I don't know what this is.

A. I don't know either.
Q. Is that incorrect?
A. I don't think it's incorrect. That's maybe what that meant that we correctly dropped that MAOP lower to whatever that value is.
Q. Okay.
A. But I don't know -- I saw that, but I remember where I saw it. You can go ask somebody else --
Q. So did you pursue the -- the last time we talked to you, you weren't really sure if it was the power supplies or someone opened the breaker -- did you ever pursue the power supply venue with the manufacturer?
A. We did. I -- there's not much more we can find because as time goes by they remember less and less and they're getting more and more -- the more you ask them, the more confused they get as to --
Q. Now what (indiscernible).
A. -- to end line, yeah. But based on what we see on the chart, I would bet on a power supply failure. And the reason I am saying that is that on the loss -- they open the breaker -- well, a couple of things. If there was a mini UPS installed, opening the breaker wouldn't hurt anything.
Q. Right.
A. And we did test how long that UPS -- I did run a test on how long the UPS would last if you open the breaker. I thought if

the UPS wasn't charged, maybe they opened the breaker and then lost the -- the UPS lasted more than one hour.

Q. Okay.

A. So that's number one. Number two, even if they didn't have the UPS and had the power supply connected directly to the breaker, opening that breaker would have dropped the voltage to a 0, right?

Q. Um-hum.

A. But we read 3, 5 volts.

Q. Yeah, okay.

A. So it's -- to me it's very unlikely that they opened the breaker. And my only other guess is if the power supply was flaking, somebody opened and reclosed the breaker, and the UPS was flaking, maybe it didn't recover right away.

Q. Okay. But you haven't taken the power supplies, sent them back to manufacturer to see if --

A. No, we sent it back to NTSB, I believe.

MR. CHHATRE: No, I think you -- we don't have. I think maybe you are saving it for us.

MR. JACQUES: Yeah. I'm pretty sure it's being held for you guys.

MR. NICHOLSON: Quarantined for us?

MR. JACQUES: Yeah, you probably ought to let them know what you want.

MR. CHHATRE: We're still toying with the idea of what

to do with that stuff, so --

MR. KAZIMIRSKY: I think -- Dane is right. I think we have all the evidence in storage somewhere.

MR. JACQUES: It's well secured.

MR. CHHATRE: The (indiscernible) for this meeting was one of those reasons.

MR. KAZIMIRSKY: We did remove the UPS when we replaced it and we did bench test it. And -- not the UPS. I'm sorry. Power supplies. And we --

MR. NICHOLSON: Yeah, the bench tests we referred to.

MR. KAZIMIRSKY: And A failed on the bench as well -- I mean, completely failed. B was marginal.

MR. CHHATRE: I think like 3 to 6 volts, sometimes --

MR. KAZIMIRSKY: That's one of them we're still (indiscernible). But I think on the bench -- no, I think after being powered for a while, I think it went to 16 or 17. So it was marginal, but it also took it a long time to come to life. But I believe it is in storage. I think you're --

BY MR. NICHOLSON:

Q. Where is Los Esteros on the system, do you know off the top of your head?

A. No, I don't. When I get you that drawing that I was talking about, you can perhaps be able to see that.

Q. Because it's one of the earlier alarms that comes. It's probably on line 100. That's all I got.

MR. CHHATRE: Okay. I got a question. Is it -- the over-pressurization of 132, my question is all these three lines coming, three or four lines coming into Milpitas, what are the odds of any one of those lines on station bypass feeding directly into (indiscernible) one or two, on line 1?

MR. KAZIMIRSKY: It can't. All these three lines coming out of the same header. So if any of them gets --

MR. CHHATRE: No, I'm talking about station bypass. Coming -- not going to any of your mixtures or whatever, just directly --

MR. KAZIMIRSKY: The bypass goes to the header as well.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: So there is no way you can over-pressurize one without doing the same thing to the others.

MR. CHHATRE: Okay.

MR. KAZIMIRSKY: The three lines come out of the same header.

BY MR. NICHOLSON:

Q. Well, there is this 30-inch 300 bypass, right? It look like all these valves are closed.

MR. CHHATRE: That's why I was thinking.

BY MR. NICHOLSON:

Q. This thing, I think it's a manually operated bypass.

A. Yeah, that's a manual bypass. That's entirely different.

Q. That's the only one that's not monitored.
A. That's entirely different story.
MR. CHHATRE: And that is normally opened, normally closed, or --
MR. KAZIMIRSKY: They're always closed. If they were to use it, it's an emergency with the gauges installed and somebody monitoring the gauges continuously.
MR. CHHATRE: Okay.
MR. KAZIMIRSKY: I don't think it's ever been used. I think it's, like I said --
MR. CHHATRE: Oh, so it's manual. So it only -- yeah, it's only (indiscernible) because of the power supply conking out or --
MR. KAZIMIRSKY: No. No.
MR. CHHATRE: So there is no way any of these lines can feed directly outside of (indiscernible).
MR. KAZIMIRSKY: No.
MR. CHHATRE: Okay. That's what I was going to clarify.
MR. KAZIMIRSKY: No, absolutely not.
BY MR. NICHOLSON:
Q. Now, this line -- this PLS-7B is fed off this header here, right?
A. I'm sorry?
Q. So PLS-7A and B, the blue highlighted, right, comes off of header 2 down here or header 1? That's how it's typically fed?

A. That's how it would be fed back out.
Q. But then it also comes -- it looks like this is an open valve off of the bypass, right?
A. No, that's perhaps one of the valves that they corrected.
Q. Oh.
A. I wouldn't --
Q. You think that might be a normally closed valve?
A. Look at that. It's closed.
Q. Ah, here we go.
A. I wouldn't put much -- I wouldn't put much trust in the actual positions -- in the position of the manual valves as they're shown on this drawing.
Q. Well, is that a manual valve?
A. It is.
Q. Okay. Because it doesn't have the little actuator on.
A. Actually, if the valve has nothing on that, it's a manual valve.
MR. CHHATRE: So pressure, we didn't -- the station itself might have gone up to 500, but none of that thing was seen by --
MR. KAZIMIRSKY: No.
MR. NICHOLSON: He's saying it's controlled by these monitors.
MR. KAZIMIRSKY: By these monitors. These regs and

these monitors, so -- and once again I want to emphasize that regardless of what's been happening at Milpitas, we have absolutely 100 percent reliable data from the stations downstream. And all of them match, all of them follow the same pattern if you look at the charts. And all of them show pressure at 3, I believe, 95?

MR. NICHOLSON: 390s.

UNIDENTIFIED SPEAKER: Well, Sierra Vista cross-tie is 390, so --

MR. KAZIMIRSKY: Right.

MR. NICHOLSON: Is that data, exception data that you've given us downstream, that's not average?

MR. KAZIMIRSKY: No, that's real data.

MR. NICHOLSON: Okay.

MR. KAZIMIRSKY: We gave you real readings and we never at any time at any point exceeded 394, I believe, is the highest we saw. So we never not only exceed the MAOP, we never reached MAOP on any of the lines. And that's why I'm saying, whatever happened at Milpitas, right/wrong/indifferent, has no impact on the pipelines going out to Peninsula.

BY MR. NICHOLSON:

Q. Well, it does have an impact. They went up, they just didn't exceed MAOP.

A. Right.

Q. Okay.

A. Yeah, well, that's what I meant. It never exceeded pressure on any of the lines going out to Peninsula.

Q. No, we don't -- you're right. We haven't seen anything downstream that indicates it exceeded 400 pounds, but we definitely -- I wasn't understanding your operation at Milpitas very well either. This has been helpful.

A. Well, I hope what we did today helped.

Q. Helped through the trends.

MR. NICHOLSON: Anything else?

MR. CHHATRE: No, I'm good.

MR. HALL: I'm good.

MR. CHHATRE: Do you have any additional information that you think we should have before we start writing on this (indiscernible)? Because we did not ask you all the questions, I guess is what I'm saying, that you would like to see that -- to clarify and make it clear. I mean --

MR. KAZIMIRSKY: Are we still recording?

MR. NICHOLSON: Yes, we are still --

MR. KAZIMIRSKY: Regardless, honestly, I think the only information you need -- and that's what we did today -- is to better understand how the system works.

MR. CHHATRE: Right.

MR. KAZIMIRSKY: Other than that, you know as much as we do.

MR. CHHATRE: There again, you guys are more familiar

with it that we are. And if you feel that maybe something like this -- some other information should be (indiscernible), you know, factual --

MR. KAZIMIRSKY: Any information you asked, you received it. Any spreadsheets, SCADA alarms, anything you asked, it's at your disposal. You have as much as we do.

BY MR. NICHOLSON:

Q. So what are you going to do now with the -- if you know that the UI -- the points that come to the UIC and the PLC can cause issues, is that something that's being addressed or --

A. Well, first --

Q. Or is that not seen as a problem?

A. First of all, we split up the power supplies A and B to different breakers. So that was kind of an immediate quick fix. We have a project for upgrading Milpitas control and that's not relevant to anything that happened there. But one of the reasons Milpitas has been done the way it has been, and like I said, Milpitas was -- the controls at Milpitas was installed in 1989. Then it was upgraded in 2001. But since 2001, the PLCs made a huge progress. And the reason we had originally these 26 more controllers -- originally it was 28 controllers. It was a manned station. Gas control wanted the ability to operate just like Oscar did. Manual operate the valves, have the access to individual valves. Then even when gas control moved out and we upgraded the control 10 years ago, running so many PIGs and the

PLC was kind of a bit tricky.

Q. Right.

A. Plus, if we didn't have the controllers and they wanted to operate seven valves at the same time, it would be difficult with one (indiscernible) with one screen, it's kind of too much. Or two MPIDs do all that type of work. Now, the PLCs are turn faster and more capable of doing it than they were 10 years ago. So what I'm considering now is replacing a PLC with a current PLC model and get rid of more controllers. And instead, install maybe three, four screens so they can access several valves at the same time, to see several valves at the same time.

Q. Three or four screens?

A. OIGs.

Q. Oh, okay. There at Milpitas.

A. Three, four operator interfaces on that big --

Q. I got you.

A. -- console.

Q. Right.

A. Then we'll get rid of more controllers or series controllers. We'll have a PLC that is capable of running all the control and we will not have that -- that will reduce the size of that program from 1200 pages to maybe 800.

Q. That will be nice.

A. Maybe even 4-.

Q. Is that similar to what -- I've forgotten. That's a

353.

A. Yeah.

Q. Is that the same information you see at the mimic panel? You see a loop?

A. Yeah. Yeah.

Q. So there is my valve position down on the bottom bar?

A. (indiscernible) out to this is a set point, this is a process area --

Q. Oh, that's my set point. Oh, that's process --

A. This is -- P is process area.

Q. Oh, on that scale. Okay.

A. And that's a set point. That's the valve position on the output.

MR. CHHATRE: I wouldn't even attempt to read that.

BY MR. NICHOLSON:

Q. What's this? What was that up there? Is that pressure?

A. That can change.

Q. Okay.

A. You select what you want to see on the display.

Q. Okay. What do you guys have this selected?

A. No, it's selected here. I'm sorry. You can change that.

Q. Oh, you can change it. So you don't have it default to change?

A. No, you can change whatever you want.

Q. I was curious. Because Oscar says he looks over at the controllers and he sees his loss data.

A. He can see anything he wanted to. But if he was looking at the pressure and it was showing 0, he knew he lost data.

Q. That's what I was wondering. Okay. Okay.

A. That's likeable from (indiscernible), I believe. You can use that knob --

Q. See, that's what I'm thinking he used to control position.

A. Yes. Well, that's what you use to control position, but you also select what it is that you want to see and you can --

Q. Okay.

A. -- you can move it around.

Q. What are all these other buttons? They do not (indiscernible) --

A. They could be a number of other things.

MR. CHHATRE: You may be use my glasses.

MR. NICHOLSON: You want to borrow that?

MR. KAZIMIRSKY: No, it's not that bad.

You can select the loop number. You can have, I believe, now up to four loops, I think.

MR. NICHOLSON: Oh, wow.

MR. KAZIMIRSKY: This is D. That's how you change what shown in display.

BY MR. NICHOLSON:

Q. Okay.

A. Auto/manual, local console.

Q. Oh, so that's all -- that's what he hit to put it in, auto/manual. Just hit that one button?

A. Yeah. I think the models we have a little different display. It's also local -- it's called the local console.

Q. Yeah, that's that alarm we did.

A. Yeah. And the local console means whether the signal -- the, say, set point needs to be set at the controller itself or it can be set remotely.

Q. Yeah. Okay.

A. Any other questions? Anything else?

MR. NICHOLSON: I'm for dinner at this point. I've got --

MR. CHHATRE: Okay. One last thing I want to tell you and Mr. Hayes knows that I told him already earlier. Putting the various aspect of PG&E operations San Francisco, Milpitas, piping, valve, whatever, anything that has been as a result of the accident, are there lessons learned from the accident that you guys have done since September up to before it goes to the Board, you guys keep us informed as things because that way we'll give you credit. I won't have to ask you to do something that you already have done.

MR. KAZIMIRSKY: Okay.

MR. NICHOLSON: So splitting the -- splitting power

supplies on independent circuits would be --

MR. CHHATRE: See, that is -- not the plans, but -- plans don't count; the actions do. So anything you have done that -- keep us informed, like the continuous process. Because like I mentioned that -- maybe I mentioned to Mr. Hayes already, but that is one thing is easy to kind of -- we do want to make sure that we mention in the report and we don't want to duplicate something that you already have done, telling you guys to do. So and that only you guys can do. I mean, we can't keep on requesting because we do not know what you guys have done. So keep that in mind, and pass along to anybody and everybody in the system. So, I mean, even if come through Mr. Hayes, but (indiscernible) told you guys or not, but, you know, if you can keep feeding him that so it will save a lot of heartburn on everybody's part.

MR. JACQUES: We'll pass it on.

MR. KAZIMIRSKY: I'll pass it along.

MR. CHHATRE: Yeah, I mean, if you have done something, we want to give you credit that, you know, these are lessons learned and --

MR. KAZIMIRSKY: I'm sure, Don could -- quite a few things.

MR. CHHATRE: Yeah, got (indiscernible). But I haven't heard anything yet, to be honest with you. That's the reason I'm mentioning it.

MR. KAZIMIRSKY: I'll right. I'll right. I'll definitely let you know.

MR. CHHATRE: Okay.

MR. NICHOLSON: Okay.

MR. CHHATRE: 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
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PLACE:	Washington, D.C.
DATE:	April 20, 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.

_____

Kathryn A. Mirfin
Transcriber
(Parts 1 and 2)

_____

Kay Maurer
Transcriber
(Part 3)