UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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| Investigation of: | * | |
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| ENBRIDGE OIL SPILL, | * | |
| MARSHALL, MICHIGAN | * | Docket No.: DCA-10-MP-007 |
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Interview of: CURT GOESON

Crowne Plaza Hotel
Edmonton, Canada

Tuesday,
December 14, 2010

The above-captioned matter convened, pursuant to notice.

BEFORE: MATTHEW NICHOLSON
Investigator-in-Charge

APPEARANCES:

MATTHEW R. NICHOLSON, Investigator-in-Charge
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B

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# I N D E X

I N T E R V I E W

MR. NICHOLSON: Okay. I'll go ahead and open this up.

Good morning. Today is Tuesday, December 14th. My name is Matthew Nicholson and I'm an investigator with the National Transportation Safety Board in Washington, D.C. We are currently in Edmonton, Canada at the Crown Plaza Hotel. We are meeting in regards to the pipeline spill in Marshall, Michigan that occurred on July 25, 2010.

This is case number DCA-10-MP-007.

Before we begin I'd like you Curt to please state your name and whether we have permission to record this interview.

MR. GOESON: My name is Curt Goeson and you have my permission to record the interview.

MR. NICHOLSON: Also, if you'd like you know that you are permitted to have one other person present during the interviews. A person of your choice. Can you state whether Jay was your person of choice?

MR. GOESON: Jay will be my person of choice.

MR. NICHOLSON: Okay. At this time I think what we'll do is we'll go around the room. Let's have each person introduce themselves. We are having these transcribed when we get back to D.C. so bear that in mind.

We'll have each person introduce themselves. State your name, organization that you represent and maybe a business e-mail or contact phone number.

I'll start with myself and we'll go left around the table.

Again, my name is Matthew Nicholson. I'm with the NTSB. matthew.nicholson@ntsb.gov.

MR. CHHATRE: My name is Ravindra Chhatre. I'm also with the National Transportation Safety Board, Washington, D.C. Accident investigator here to assist Matt Nicholson.

MR. PIERZINA: I'm Brian Pierzina, P-i-e-r-z-i-n-a, with the [redacted] out of [redacted] E-mail is [redacted]

MR. JOHNSON: I'm Jay Johnson, a senior compliance specialist in the pipeline safety compliance group of Enbridge Energy. That's [redacted]

MR. GOESON: My name is Curt Goeson. I'm control center supervisor with Enbridge Pipelines. My contact information is [redacted]

MR. NICHOLSON: Okay. Oh, I'm sorry. Go ahead.

MS. BUTLER: I'm Karen Butler, Supervisor, Accident Investigation from the [redacted]. My e-mail address is [redacted]

MR. NICHOLSON: Okay. So I thought the format would be similar to last time where we'll -- I'll start and we'll just around the room. Take turns. And really these are follow-up interviews from the previous set so we're going to -- really what we're trying to do is fill in gaps in information. Maybe ask from

some clarifications from the first round of interviews. And I guess I'll start and then we'll go around the table from there.

And I wanted to start really by going through your first set of transcripts. And if you don't have a copy and would like to refer to one, I think Ravi's got a set you could look at.

MR. GOESON: I've got a copy.

MR. NICHOLSON: Oh, you do. Good. Okay.

INTERVIEW OF CURT GOESON

BY MR. NICHOLSON:

Q. So I thought I'd start -- just go through it chronologically starting on page 4, lines 20 and 21. You kind of talk about what it is you do there, some of your duties. And you mentioned that you are in charge of the control center engineering and training. And I just wondered if you could elaborate on the training. Who is it? You oversee the operators training?

A. Yes. Well I'll just clarify my role in the incident that was as acting manager. My role -- my full-time role is supervisor control center operations with direct reports are the shift leads.

Q. Just the shift leads?

A. Yes. And the operators report up through the shift leads to myself.

Q. So that the training you're responsible for --

A. Training and -- training falls under the technical side, under Blaine Reinbolt.

Q. I see. So then you say there's a technical side. So Blaine's got technical side and you are --

A. Technical and training and then I'm the shift leads and the control center staff.

Q. Okay so you're not responsible for setting up training profiles of the operators?

A. No.

Q. Okay. Who develops the procedures used by the control room, is that you?

A. Well they're developed -- currently developed, they exist today. I'm responsible -- today I'm responsible for the approval of any modifications to those. I sign off on them.

Q. So who writes them, who develops them?

A. Our training staff. Training and compliance group.

Q. That is also under Blaine?

A. Yep.

Q. Okay. And you have final sign-off. So you approve them, is that how that works?

A. Correct.

Q. Have you added any procedures since the 25th, 26th of July?

MR. JOHNSON: Do you mean added and or modified?

MR. GOESON: Yes, we have.

BY MR. NICHOLSON:

Q. Which procedures have you added or modified?

A. We've modified our column sep procedure. And what we did there was in the original procedure really left interpretation for what we thought was normal decision-making. We incorporated decision-making process into the procedure.

Q. And specifically which one? Which procedure are we talking about? The MBS alarm or is this the flow-chart that the MBS analyst uses?

A. It's not related to them. It's our operational procedure, emergency response procedure of column separation.

MR. PIERZINA: Curt, did you say added a decision process?

MR. GOESON: Yeah. Well that was the mind-set. You know, following 6-B, we always took for granted that those decisions would be made with respect to the procedure. And in our mind they weren't so we added those to the procedure. And really what it is, is a few steps. We said, in this situation, you need to look at this, this and this.

BY MR. NICHOLSON:

Q. I don't see a column separation procedure. Is that a new procedure or was that existing?

A. They're existing.

Q. Is that new?

A. It would be under -- I think it's called suspected column sep, Matt. Under emergency response.

Q. I've got MBS leak alarm, MBS leak alarm analysis,

temporary alarms. You're saying it's in suspected column separation? It's different then leak triggers though.

A. You'd be able to link through it in our data -- in our procedure database under leak triggers.

Q. Okay. So the change made was you added a decision making process to it, is that what you said?

A. Yes.

Q. And that decision making is done by whom? The operator?

A. The operator and shift lead.

Q. Work together?

A. Yes.

Q. And what is it they're to do now? What is it that changed? They're working together to do what, look at more than just the MBS data?

A. The intent -- yeah, the intent is that you have a reason for your column sep, prior to starting up.

Q. Whether it clears or not?

A. Yeah, regardless. It doesn't even matter if there's an alarm associated with it. If you have column separation from what -- from your data that you're looking at?

Q. Uh-huh.

A. You need to have a reason for the existence of that column sep. That's the purpose of the procedure.

Q. So then you can have a column sep without an alarm is what you're saying?

A. In varying degrees, yes.
Q. Okay. And that determination would be made by --
A. Control center staff.
Q. The operator can determine --
A. In conjunction with the shift lead. Yes.
Q. Okay.
A. I mean, he's looking at his data and what we say -- what we refer to as column sep, if it's, you know, 35 pounds or lower, it turns color. You need to be -- as a low pressure condition --
Q. Right. Okay.
A. You need to put some decision making regarding the reason of that condition.
Q. That's the first I've heard that. What turns color?
A. Pressure.
Q. The pressure reading?
A. The pressures. Yes. In SCADA they turn color.
Q. Okay. And that in cases that you've got column separation?
A. And it's a visual indication.
Q. See, I thought -- when we looked at the previous interviews, it seemed like the determination for column separation came from the MBS analysts. I thought it was that horizontal, liquid fraction line, essentially that told them.
A. Yeah, that's probably, you know, from a modeling perspective the most accurate interpretation of a column sep. But

we on our SCADA display --

Q. Okay.

A. -- we see low pressure conditions.

Q. Okay.

A. It's the first indication of potential column sep.

Q. Okay. So now there's a decision-making process worked into a column sep procedure would that -- I didn't even see that referred to like -- wouldn't that also be a leak trigger, a column sep?

A. Yes.

Q. Is a leak a definition of -- is that one possible cause of a column sep?

A. Yes, absolutely.

Q. Okay. I didn't hear that talked about either.

A. And you know included in that are you know calculations for expected time of recovery of column sep. There's you know -- there's all the decision-making factors associated with a column sep. Leak being the first one. You know, operational. Was it a poor shutdown? Did we drain into a delivery location? All of those things that we assumed before were part of the normal thought process.

Q. You talked about them. I wanted to explore that actually. You talked about in your previous interview you mentioned a poor shutdown and I wondered what constitutes a poor shutdown? What is it looking for?

A. Well, I guess in my mind, Matt, there's the -- you know theoretical. Anytime you have shutdown pressures that weren't expected or different then what you were targeting, that's a poor shutdown. I mean, looking at actual values, any time you have column separation when there was opportunity to avoid it, you know, there's always elevation challenges in certain locations. But any time that you have a column sep or a low pressure condition that was unavoidable, that's what I refer to as a poor shutdown.

Q. Having column sep is a poor shutdown? I thought that was --

A. When it's avoidable?

Q. When it's avoidable.

A. Absolutely. Yes.

Q. Well, how do you know? It seemed like from the previous interviews no one really knew when it was avoidable -- I mean no one questioned it, right? At shutdown they seem to expect a column sep condition on 6B?

A. Yeah, they did.

Q. Okay. So how would you determine -

A. I'm not saying that's correct.

Q. Okay. So did we have a problem then with operators or procedure or --

A. I think it was a recognition problem.

Q. It sounds like operator.

A. Yeah.
Q. Okay.
A. In my opinion, absolutely.
Q. What about where I was going with it, the shutdown was -- I didn't hear any talk about it but it seems that shutdowns and startups obviously are times of when you're going to generate transients?
A. Sure.
Q. Okay. And I didn't know if you meant by poor shutdown that, you know, looking at the timing of the shutdown to prevent the surges or spikes or suction.
A. So specifically for the 6B shutdown that --
Q. Yeah.
A. My reference to poor shutdown probably included a couple things. How he shut down.
Q. Okay.
A. It wasn't controlled. It was not a controlled shutdown. He didn't utilize his pressure-control valves. So --
Q. Oh? Okay.
A. So normally what we would expect on any pipeline is you utilize your pressure-control valves to pinch down and then you go through and select units as you hold back those pumps. When I say --
Q. Is -- I'm sorry. The pressure-valves that you're talking about --

A. At each station.
Q. Right. The suction and discharge. Okay.
MR. JOHNSON: No. No.
MR. GOESON: No, just on the discharge side.
BY MR. NICHOLSON:
Q. Only the discharge side.
A. So at each station you have a pressure-control valve --
Q. Right.
A. -- and that's what you'd use for your brakes on your system.
Q. Okay.
A. That's what you use to control the energy into the pipeline.
MR. JOHNSON: That more or less is the butterfly valve.
MR. NICHOLSON: Right. I got that.
MR. JOHNSON: And not the suctioner.
BY MR. NICHOLSON:
Q. I'll let you continue but I -- in the alarm logs I notice he makes suction set-point changes which I also thought was a modulating valve.
A. Right. So just to clarify, you can control your suction -- or you can control your pressure-control valve either through suction set-point changes or discharge pressure.
Q. Oh, okay.
A. So you can do it one two ways.

Q. They all drive the same thing?

A. They all drive the same equipment.

Q. Gotcha.

A. And so I guess my reference to a poor shutdown is the -- is based on the expectation that we use pressure control valves to slowly -- slowly slow the line down in a controlled fashion. And so you send set-point changes to your system --

Q. Uh-huh.

A. -- you pinch down your control valve, it throttles off units and as you slow down you shut off units in a controlled fashion.

Q. Right.

A. You go through again, you slow things down, you shut off units in a controlled fashion controlling your end-state.

Q. And what are you watching? How do you know you're doing that properly? You're watching pressure?

A. You're watching the case pressures.

Q. Okay.

A. It shows up as what we term throttle. And so my reference to the poor shutdown was this was a fast shutdown. It was start at the top and shut units off.

Q. And I see that I've plotted it here and it does look like we get some pretty large transiental suction, which you'd expect.

A. Right.

Q. When I compare that to -- that was my concern to the shutdown too quick. When you guys applied a typical shutdown, a typical shutdown -- now I didn't have the commands that went with the typical, but a typical shutdown looked actually more rapid then this shutdown. And I don't know if you can speak to -- actually the typical had -- almost looks like they're on top of each other.

A. It depends on the condition. You know there are some cases and I'm just for the record --

Q. And here's what you said is a typical at this trend, right? And those are your stations going off?

A. Uh-huh.

Q. And they're -- it seems like they're almost on top of each other?

A. Yeah. I don't know what the circumstances are.

Q. This is --

A. They're all within an operating parameters.

Q. Okay.

A. It's really about efficiency. It's really about, you know, your end target. If you're going to -- but the way Dave shut down --

Q. Uh-huh.

A. -- it didn't exceed any operating parameters.

Q. Right.

A. It's just not the best practice.

Q. Okay. So what you'd expect to see are these set-point-changes to let the pumps ramp down --

A. Followed by unit selection.

Q. And then you'd stop the unit?

A. Yeah, it's all based on you're watching the differential at each of the locations.

Q. Okay.

A. When it gets to a certain point, you de-select your units until your end-state is static. And so my reference to a poor shutdown is that.

Q. Okay.

A. And then secondly, you know, the recognition or the lack of recognition was what I was referencing.

Q. So is there training that they go through for a shutdown? Cause when I went through your procedures --

A. Absolutely.

Q. -- it seemed to lack any definition of a shutdown?

A. Yeah, no. You know, our procedures aren't designed to give step-by-step instructions --

Q. Okay.

A. -- specific to lines. The training program is all about shutting down, starting, starting up systems. It's all specific to those events.

Q. Okay. That's a simulator-based?

A. Well there's -- you know, again, it's not my area. I'm

familiar with it. It's simulator-based. It's mentor-based. It's module-based. We have a whole bunch of different components at the training program.

Q. I know, that's not your area.

MR. JOHNSON: That said, these are a couple of 30-year employees.

BY MR. NICHOLSON:

Q. Yeah. You had 60 years looking at this line of shutdown.

A. Yeah.

Q. Do you know the involvement? You've done internal interviews? You've been part of that?

A. No. We had Enbridge -- internal Enbridge investigation in which I was interviewed.

Q. Oh, yeah.

A. We had an Enbridge team --

MR. JOHNSON: He's not part of the interview process.

MR. NICHOLSON: He's not part of the --

MR. JOHNSON: Or he's not part of the interview team. He was interviewed.

MR. NICHOLSON: Okay.

BY MR. NICHOLSON:

Q. So you haven't really -- have you gone back and reviewed trends? It sounds like you have cause you --

A. To some extent. I mean, I put together the package. I

was involved in putting together the information package for the incident.

Q. The initial. Yeah, in that -- in your first interview that one of the things you talk about. In fact you're one of the only people that discusses pressure alarms, I think. So you seem to be aware that pressure alarms were coming into the console?

A. Yeah. At the time of the interview -- I don't know was that day two or three after. We hadn't even started our own analysis. We had just -- it was based on some information from the shift leads. We hadn't actually put together our information package and looked at that sequence of events.

Q. Okay.

A. I just knew of a few of the details.

Q. Okay. And having gone back now --

A. Yeah.

Q. -- you've reviewed the alarms?

A. Yeah, four months ago.

Q. Okay.

A. Yeah.

Q. So you're aware that there was, I think, an LPM alarm and a low-suction alarm?

A. Yeah.

Q. And I guess I was looking for some further explanation cause they're not talked about very much at all in the original interviews.

A. Right.

Q. Can you just tell me what an LPM alarm is and --

A. Yeah, so the pressure went to zero.

Q. Right. I saw that.

A. So there's two alarms associated with that. The LPM alarm, I believe, is -- it is an indication that your line pressure protection is now invalid. You can't calculate when things are zero. So that's just an indication that LPMs may not be functional so you're over pressure protection.

Q. So LPM in general is line protection? What is it? Line protection -- line protection management?

A. Line pressure.

Q. Line pressure management? What is it line protection -- line pressure management?

A. Line pressure. LPM is line pressure monitor.

Q. Monitor?

A. Same thing. Other acronyms are line pressure protection.

Q. All right.

A. It's an automated pressure protection system within the SCADA.

Q. And what does it do? What is it capable of doing?

A. It's capable of providing a dynamic operating limit that changes as your pressures change on your system.

Q. So when they receive an invalid alarm like that, that

displays on the consol?

A. It alarms to the operator.

Q. Okay. So he should have seen that?

A. Yes.

Q. Okay. And in response to that what is an operator to do? What -- is there a procedure for that?

A. I don't think there's a specific procedure for LPM.

Q. And if there's no specific procedure, then they are to follow the alarm priorities procedure?

A. That particular condition, I mean the more important alarm associated with that condition was the low-suction alarm.

Q. Okay.

A. That would initiate an investigation. That's a leak trigger.

Q. That is a leak trigger? That was one of my questions. So the LPM invalid --

A. It's more in relation to the automation, the system.

Q. It's a notification?

A. I'm not sure of there's --

Q. I mean it comes in as a priority six, right?

A. Yeah. Yeah. I'm not aware of the required follow-up for that.

Q. All right.

A. I'd have to look it up in the procedure database file.

Q. What if I pulled it up here and we talked about it?

A. Uh-huh.

MR. NICHOLSON: Oh, and Jay while I'm looking for this, can you please make a note. I don't have that procedure for column-set. I'm not sure if it was missed or if I missed it or it wasn't provided.

MR. JOHNSON: (indiscernible)

MR. NICHOLSON: So can I get the before and after -- please make that a request.

MR. JOHNSON: Sure.

MR. NICHOLSON: I'd like to see that.

MR. JOHNSON: I'll shoot Ian a note on that and then when you leave can you pull that together for us going back there?

UNIDENTIFIED SPEAKER: Sure.

MR. JOHNSON: Okay. You'll have a much better idea based on Matt's question of the procedure. I'll shoot Ian a note so he can get that.

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

MR. JOHNSON: Okay.

MR. NICHOLSON: So it could be my error, I don't know. But that's the first I've heard of that.

BY MR. NICHOLSON:

Q. So what I guess what I would be looking at, what I've been looking at was this it's a maneuver operating standard -- general operating standards, unknown alarm or non-defined procedure to alarm. Is this even a valid procedure that people

use? So S6 would be considered a severe alarm under this procedure?

A. Uh-huh.

Q. Okay. In which case you would notify a shift lead, advise on-site on-call personnel, create a Facman. Those are the required steps for that.

A. Okay.

Q. So going back to the LPM alarm that was received that is an S6, is any of that required for --

A. On its own?

Q. Yeah.

A. If it came in on is its own, yeah. It would be a flag to contact probably an on-call.

Q. Okay.

A. -- an IT on-call through your --

Q. Okay. So this procedure is a valid procedure for an LPM alarm?

A. Sure.

Q. Okay. There's not a specific procedure for LPM?

A. Not to my knowledge, Matt, but I'd be speculating. I don't know the procedures off the --

Q. I understand. I'm not putting you on the spot here, but I need clarification because I certainly don't understand.

So then the low-suction pressure alarm which you say is the more important one --

A. Sure.
Q. -- and is actually considered a leak trigger?
A. Yes.
Q. So that's one leak trigger for sure, right?
A. Absolutely.
Q. And an MBS alarm in conjunction with that would have been two leak triggers?
A. No. The leak triggers are really in reference to the operation. So --
Q. Okay.
A. You know, for example, you know, a condition like that would typically -- a leak condition would typically have a few factors like loss of pressure, increased flow, unit lock-out. Those are all triggers. So --
Q. Okay, unit lock-out. That's --
A. Upstream unit lock-out on a high flow.
Q. That's the same as a --
A. That's a trigger.
Q. -- station shutting down, right? Is that what you call a lock-out?
A. No. Units locking out on going off the curve --
Q. Oh, okay.
A. -- as a result of --
Q. Far right on the curve?
A. Yep. As a result of hot roll friction --

Q. Hot roll friction?
A. -- high horsepower.
Q. Okay.
A. No station lock-out, typically no. So I guess my point is the zero pressure is a trigger. You would then investigate for additional operational associated conditions. And that would include going through historicals and analyzing the shutdown looking for another trigger.
Q. So if you had gone through historicals and you'd seen this rate of change, that should have been an indication?
A. Yes.
Q. That's what you would have expected him to find --
A. Yes.
Q. -- to raise more flags?
A. Yes.
Q. So I just wanted to be sure. I thought actually under the leak-trigger procedure -- do you have to have two leak-triggers? So would one leak-trigger be enough to execute the leak-trigger --
MR. JOHNSON: No, I believe it's two, Matt.
MR. NICHOLSON: It is two.
MR. JOHNSON: There needs to be an additional.
BY MR. NICHOLSON:
Q. Okay. So in this event we did not have two. There was only one is what you're telling me?

A. Well no. I believe if they went in and analyzed they would have seen -- they would have seen the timing of the loss in pressure. I mean, you're not -- Matt, I guess your question is around -- they shut down so they're not going to see an increase in -- within those types of additional triggers? I guess what I'm saying is the initial trigger, they might not have found a second trigger but it would have found when the pressure went to zero?

Q. I guess what I'm trying to validate is your procedure here?

A. Yeah.

Q. Okay. So suspected leak pipeline from SCADA data, its leak is suspected as a result of one or two leak triggers from SCADA data, you follow this procedure. Have you looked at any of this or has the internal investigation looked at their actions and whether the procedures -- had they gone to the procedures? Were the procedures adequate to have prevented this or caught it earlier? I guess that's where I'm going.

A. Yes, they are.

Q. They are?

A. Yes.

Q. You believe so?

A. Yes, I do.

Q. So it was the lack of following the procedures or a lack of -- not recognizing the leak triggers?

A. Yes.

Q. Okay. So he should have gone back to SCADA data and looked further if he had at least one leak trigger and notified the shift leader. Okay. And no changes have been made to these procedures? Suspected leak?

A. I don't believe so.

Q. Okay. With the LPM alarm that came in on the 25th -- I mean I noticed two things on this trend. I see, you know, there's a sharp rise here just preceding what I believe is a rupture and it looks like maybe the pump is responding to a break. It's either the pump is responding to a break or SCADA commanded the pump at Marshall to ramp up cause I see throttle go up. I see discharge pressure go up. Did the LPM command take over the pump or --

A. No.

Q. -- cause it's responding to step one.

A. Neither, Matt. I believe -- what location is that? Is that at Marshall?

Q. These are all discharge pressures. This is Marshall, yes.

A. Oh. The rise in the Marshall pressure just prior to what we believe is the rupture?

Q. Uh-huh.

A. That's due to increase downstream at Stockbridge at the delivery location. So he just raised his holding. His initial command was downstream. He had raised the holding pressure. I

can't remember the values but he raised the holding pressure and then he proceeded to shut down. That rise that you see just prior to the rupture is that back pressure coming into Marshall.

Q. Oh, okay. So LPM -- the fact that LPM went invalid was the cause for LPM to take over?

A. No, LPM wasn't active. The only time LPM would be active is when you get near your high upper end limits.

Q. Okay.

A. The alarm is just an indication that it wasn't functioning.

Q. It's just a notification really, right?

A. Yes.

Q. So I'm going to stick to these while we're on the subject, it's your actions list.

A. Sure.

Q. I printed out everything that was supplied on 6B and I think there's some overlap with 6A as well at Griffin. So these are all the alarms and commands that were seen. And I notice -- the first thing I see is a whole lot of east Superior VFD, maximum RPM alarm cleared, hundreds of these?

A. Yes.

Q. Are these all coming into the console, everything I see? All these S-2s that are telling him that he's hitting action, maximum VFD speed at East Superior?

A. Probably, yeah.

Q. Okay. And he's to acknowledge every one of these, or --
A. Well --
Q. It says alarm cleared so I guess it's clearing itself?
A. I'm not sure what state that -- or just coming as information.
Q. It's an S2.
A. Yeah.
Q. Which I think is a notification.
A. For the most part they're acknowledging all of those.
Q. Well?
A. It's a --
Q. This is just 6B, right? He's got four -- or three in 17?
A. Three 17s, 6A and 6B.
Q. Okay.
A. Yeah.
Q. And all the alarms for every one of those lines, do they all come into one alarm display?
A. One environment, yeah.
Q. One environment. Okay. And are those alarms chronological? Are they displayed chronologically as they came in or by priority?
A. By line. They come in as events happen. They don't get mixed together.
Q. That's what I was --

A. Okay. No you can filter them permanently. So you can have an alarm box for 6, you can have an alarm box for 3.

Q. That's what I --

A. They're not all mixed together.

Q. I gotcha.

A. No.

Q. Okay. So they'll have four -- is it three or four alarm boxes?

A. Yeah, three now.

Q. And within that alarm box it's chronological?

A. Yes.

Q. As they came in?

A. As they came in, yeah.

Q. Okay. So let's get down to where he starts to stop the line. And a lot of this is just pretty straight forward. He stops the line we see at like 2:55, issues a stop. And 2:58, we get the invalid pressures. And one thing I notice is so when he gets the LPM invalid pressure, is he -- he acknowledges that? Is that what he has to do or does it have to be acknowledged?

A. Yes.

Q. Okay. It looks like it actually -- it clears itself, right?

A. Yeah, it would -- transient go through there. If it bumped up it would clear.

Q. Okay. Would it be -- I mean if he's seeing them come in

and then clear, come in and then clear, and then come in and not clear, would that have been -- that would be something to cause attention as well, right?

A. Even if it came in and cleared--

Q. I should have been?

A. -- it should have been a trigger.

Q. So the fact that he had one that sat there not clearing isn't any more of a trigger then just it being there. Okay. So the next alarm he gets is that MBS five-minute alarm which we've talked about in great detail. And I see that that comes in and it clears itself five minutes later. But then I see that it comes in two more times during this shift as a cleared. Can it -- what would be the reason? How can it come back in as a cleared?

A. It can't.

Q. I see it coming back in as late 3:16, almost 3:17 "five-minute MBS alarm cleared".

A. I don't believe you can get a cleared alarm without it being active.

Q. Without it having occurred?

A. Right.

Q. So --

A. I don't know. First I've heard of that. It doesn't make sense.

Q. Okay. If it were to appear that way -- if this were -- I mean, I pulled this out of your logs.

A. Yes.

Q. If this is valid, wouldn't that raise a question by an operator that --

A. Well if that's valid, yeah.

Q. If something cleared --

A. I think that's the question I just did. It doesn't make sense.

Q. Okay. Yeah, it would seem unusual and you'd want to question that further?

A. Yes.

Q. Okay. Now going farther into these logs. And the disparity alarms I think were pretty well explained. But I do see that at 9:45 p.m., I guess that would have been Tim Chubb's shift, right?

A. Uh-huh.

Q. He would have taken over?

A. Yes.

Q. I see that console 5 all the section set points are changed at LaPorte, Niles, Mendon, Marshall. Are those in preparation for startup?

A. Sounds like that.

Q. Okay. He would do that that early 9:45?

A. Well, that's quite a bit early. The startup was --

Q. Four -- or I'm sorry, 1:00.

A. That's quite early.

Q. Okay.

A. But it's a typical action prior to a start up. What he's doing is moving control out of the way so he doesn't get caught on the startup. That's all.

Q. Okay.

A. But it is quite a bit early.

Q. Now even at 9:13 I see there's a low suction pressure at LaPorte, that comes in.

A. Yeah.

Q. Would that have raised any flags on a static line?

A. Yeah. On a static line?

Q. Yeah.

A. For that duration? You may have been able to explain it that way. Would it cause an alarm -- it should cause concern, but you would look at the length of your shutdown and the elevation and you can explain it that way. At this point those kind of things can -- they can make sense.

Q. You can explain?

A. You can explain them away through operational activities or length of shutdown.

Q. Which it seemed like there was a lot of explaining?

A. Yes.

Q. The whole sequence, right?

A. Yeah, it's the initial one that you can't explain away.

Q. But they know the elevations, right? They should know.

You said in your interview that they should know their elevations to be a controller.

A. So -- if the question is, should they? Yes.

Q. They should be able to see that alarm really kind of reconcile it doesn't make sense, shouldn't they? It doesn't make sense?

A. I agree.

Q. That's a valid statement?

A. Yeah.

Q. All right. You say you're not part of the internal interviews but you are aware of the discussion that took place between Blaine, Darin and Jim -- between first and second startup?

A. Yeah, I heard it.

Q. Okay. And your background -- you've got some operator background -- I should say experience I think?

A. Operator.

Q. And I think you talk about in your previous interview you mention that you would expect if someone brought that to you, that you would want to know if the rationale made sense. You'd want to know some history of the shutdown, drain-down, elevations. So if you revisit the conversation between Blaine, Darin and Jim, in your opinion do you think there was sufficient rationale on that whole discussion to restart the line?

A. Blaine relied on the information he was receiving and the information he received was incorrect.

Q. Which part of it was incorrect? You had Jim on the phone, right?

A. Right.

Q. The MBS alarm was valid, right?

A. Yes, the MBS alarm was valid. The information -- the additional information provided was incorrect.

Q. That additional information being they didn't have enough pump to --

A. There was a bunch of it.

Q. Okay. I'm trying to nail you down.

A. I'm not sure how much of it was actually valid at all. You're making me stretch back here --

Q. Well I can fill you in if you can't.

A. Sure.

Q. I mean, the discussion that took place was about there wasn't enough pump to overcome friction and elevation.

A. Not true.

Q. Okay. The -- I believe Jim Knudsen made the statement that he had column sep and when you have column sep you can't rely on anything that the mass balance system is giving you.

A. True.

Q. That these volumes you're putting in -- the reason you put in three times the volume is it's going into line pack.

A. False.

Q. False?

A. Yeah.

Q. Okay.

A. Yes. And my point about the conversation -- what stands out to me about the conversation is how convincing. If you didn't have a technical background and you were listening to that information, it was very convincing that there was no -- no condition. You had a member of staff on the phone who were very convincing in what they were looking at. Even when -- you know, even when they said things like there's 1600 cubes going in and X going out. It's like -- that -- the nature of the discussion overshadowed the facts to a non-technical individual.

Q. Who's the non-technical individual?

A. Blaine. He doesn't have that background. He's --

Q. Oh.

A. He doesn't have a pipeline background.

Q. Oh, okay. But yet Blaine is head of technical services?

A. He's the leader. I mean Blaine's a people leader. He has people in positions to make those decisions and he relies on their information. I mean that's how we're structured. Even the shift-leads at the time, their direction was people leaders.

Q. So I want to go back to that conversation because it is kind of interesting and I think you've summed it up well. But the dynamics there, it doesn't seem -- I can't figure out who's role is what in that conversation --

A. Sure.

Q. -- because the way I read your procedures the shift-lead is sort of your -- he's got the final say, the shift-lead, as far as whether it's a valid alarm or we're going to shut the line down or --

A. Yeah.

Q. The MBS is just really kind of --

A. Right.

Q. -- an analyst.

A. So here's the rules. The operator's technical, operational. Operations, technical rule. The shift lead is just responsible for following procedure and policy, right?

Q. Okay.

A. So the information, the technical information is provided to the shift lead and he executes procedure. So if a shutdown is required or notification is required, etcetera.

Q. Okay.

A. MBS analyst role is to analyze MBS model, period. Blaine's role in that conversation was to provide the approval for a startup. So it was Blaine's -- what Blaine's doing in that conversation is relying on his experts, for policy and procedure for the model and for the operation to approve a startup.

Q. So if Blaine doesn't have technical background does that limit his ability to ask the correct questions of his technical experts?

A. Yes.

Q. Okay. I didn't get it. Well that's it?
A. Yes.
Q. Oh. Okay. The one other thing that confuses me in this -- the procedures is that -- and I've heard stated in the interview, the previous interviews that the operators are looking at least by procedure -- you're calling the MBS analyst and you're really looking for a call on whether the alarm is valid or invalid. And I think some of the MBS analysts said we just tell you if the model's working. That's how they sell their function, their role.
A. Well, today? Yes. We've clarified that.
Q. Okay.
A. That's how it should have worked. All you want from an MBS analyst is, is your model functional.
Q. Okay.
A. Is it a column sep.
Q. What is a column-sep though? Is that a valid?
A. It's a condition. It's a condition.
Q. What do I take that as, valid or invalid, by procedure?
A. By procedure it's valid.
Q. That's a valid? Okay.
A. So if you have a column-sep condition, that's all we want to know from that analyst.
Q. Okay.
A. And then you investigate why you have a column sep. In

this particular case, they got a condition appear and then it cleared and they interpreted that as it went away.

Q. And so by procedure if you're going through your procedure and you're analyzing things and (snaps fingers) it clears --

A. While on a shutdown pipeline?

Q. Yeah. Actually if you go to your procedures it says if it's a valid alarm you shut the pipeline down.

A. Yeah.

Q. And here you are in a shutdown.

A. We're shut down and it cleared and it was interpreted as it didn't -- as the condition didn't exist.

Q. So there's almost -- it seems like there's a hole in your procedures here almost?

A. Yeah, with respect to that.

Q. With the shutdown?

A. It's -- yeah, it's a -- because the alarm clears, it's only a function of the model. The condition can still exist.

Q. Sure.

A. It's just over -- you know it's a volume balance. It's just over -- if a five-minute alarm comes in and then you shut down, five minutes later the alarm will clear. It doesn't mean the condition has gone away and that's what we needed to clarify.

Q. Did you ever figure out why that alarm cleared? Is there any really valid explanation for that?

A. The alarm had cleared because of a function of the model. The model -- and they will always clear when the pipelines are shut down over a duration of time, over X amount of time because they --

Q. They'll clear themselves?

A. Yeah. Regardless of the condition when the pipeline is shut down the alarm will clear.

Q. I'm sorry I don't understand. They'll clear just to get rid of the alarm because the line is shut down or --

A. Because there's no in-balance.

Q. Oh, just because there's -- static?

A. Because you're in a static condition. Yeah.

Q. Okay.

A. So that was interpreted as there is no column sep.

Q. Okay. And now I've got questions for your MBS analysts. But is an MBS system even capable of detecting -- I mean it's really for a steady state operation, right? Is MBS even capable of shutdown, startup reliability?

A. I don't know. I don't believe so. It's a steady state model. I'm going to assume that it can't.

Q. Does it have any other built in -- You don't use pressure-related technology or that -- do you know?

A. I don't know.

Q. Okay.

MR. JOHNSON: Just, you know, because you're right on

that now, Matt. The questions or the procedures that Blaine was following when they brought him that information so he basically was following his procedures. They gave him in the information. I didn't -- You stated Blaine didn't have the technical background. He has to make sure procedures and policies are followed.

MR. NICHOLSON: Yes.

MR. JOHNSON: So the information they provided him, he would check his procedures and say, well, okay, you have this, you've done this, you've done this. He went through his steps which, you know, the information provided.

MR. GOESON: He went through the information provided and it made sense at the time.

MR. JOHNSON: Okay.

MR. GOESON: Blaine as a leader doesn't have a step criteria that he goes through to make sure he has this, this and this. He has three experts on the phone providing their approval and he bases his decision on that.

BY MR. NICHOLSON:

Q. Who were -- you said three experts?

A. Experts in their areas.

Q. That phone call was just Jim --

A. Well, it was just Jim and Darin.

Q. Yeah.

A. Darin, Darin is representing the operators. Three

individuals involved. Sorry. Two on the phone.

Q. You're right, Blaine followed procedure to a T. I mean he could just read right through it as did Chuck follow procedure. But going deeper, I think other questions probably could have been asked by Blaine.

MR. JOHNSON: And I just wasn't clear on that. That's why I why I wanted to ask that.

BY MR. NICHOLSON:

Q. Something just came up I wanted to ask you about that phone call. And I'm drawing a blank.

Oh, the question I had was does shift-lead interface with the operators? How does that work? You say the shift -- the operators are your technical experts, right? But in reading these transcripts it seems like there's little involvement of the -- it seems like the shift-leads kind of just take the information from the operator and then they try to make it -- that's the model, is that what you said?

A. Yes.

Q. Okay. But now in the case of when I get into Tim Chubb's shift and I think it's Aaron and Darin, if I'm right, they're analyzing this information but they're not necessarily the guys that operate line 6 all the time. So when they're looking at zero pressure on Marshall, they don't know if that's normal or not. In fact I think they say, we didn't know any better. Is there or should there be greater involvement between shift leads

and operators that design in place and problem-solving I guess?

A. Yes. So that assumption was that the operators are familiar with their elevation profiles and the associated pressure. You know we knew just through growth and recruiting that we may have gaps in our technical experience. And you know as a result in our workforce plan for 2011 we were going to hire some technical, on-shift technical support. Because the model was that the shift leads are just to execute policy and procedure. They're people leaders. And so, yeah, to answer your questions, somebody should have had greater technical support.

Q. Someone should have --

A. Not necessarily shift leads.

Q. Okay. But it seems like if they had simply involved Tim Chubb or you know Greg, some of these guys?

A. Sure.

Q. I mean, if there would have been more communication between your shift leads and your operators, then maybe this ought to have been caught sooner?

A. I'll use the case of Greg.

Q. All right. Okay.

A. Greg is the norm or what we thought was the norm in the control center. Greg sat down, looked at a condition, said this isn't right. He went to his people leader, shift lead, said, this condition is not right, it's not normal. And as a result of seeing that I went back and looked at historicals and I found

this. And then the shift leads execute --

Q. Well that's bottom up, what about top down.

A. Top down?

Q. Right. Aaron and Darin spent a lot of time running calcs and looking at pressures but the result was bad.

A. They shouldn't have. They shouldn't have.

Q. But it seems to me that maybe they had gone to Tim Chubb and said, hey can you pull trends or can you look at what we're seeing and tell me --

A. That's how it should have worked.

Q. -- that is how it's designed to work?

A. Absolutely. And if Tim didn't have the answer, they should have utilized other resources in the control center. There's 25 people on shift. Some 30-, 20-year guys.

Q. Is that a procedure?

A. No, that's leadership. That's something you learn in utilizing resources in an emergency condition. Our procedure to utilize your technical experts on shift.

Q. Okay. So again that was a failing of maybe the shift leads, not necessarily of procedure of training?

A. Correct.

Q. Okay. One other thing you talked about Curt, shifting gears here, was in your previous interview you talked about -- and this came up in a lot of interviews on page ten you were talking about shift changeover and you said -- your statement was --

realizing this was early on, you said, "well, I don't see any problems with shift changeover. I think it works pretty well." But it seems like on these interviews that there's a real lack of formality in the shift change and you relied on your memory over 12 hours is what it sounds like to communicate to the next guy on shift. Have you revisited that whole pass down?

A. Yes.

Q. Okay. And it remains verbal and unwritten?

A. No. Documented.

Q. It is documented?

A. In the direction of the control room management.

Q. Okay.

A. And was it informal? The formality of it? Yes, it was informal. Prior to, folks would just jot down notes throughout a shift and then communicate them verbally.

Q. Now what -- I don't know how much you've gone through any of these transcripts or not, but what I saw when you looked at Tim Chubb's interview was he said he didn't know anything about the mass balance alarm that occurred on shutdown. Is that accurate or not?

A. Yes, probably. It's probably accurate.

Q. Okay. So that didn't get passed down.

A. No. Because it was dismissed.

Q. Okay. So when I looked at the pass-down process it made me go to your procedures and there is actually a general operating

standard on shift change. Are you aware of this?

A. (No audible response.)

Q. Okay. But it does talk about during shift change the following information must be communicated. And it doesn't tell you, you have to write it down.

A. No.

Q. But it does talk about like abnormal operating conditions, active alarms, you know, things of that nature. I just didn't know from what I've heard in the interviews it sounds like either they're ignoring this or it's not enforced or you're not aware of it so it must not be --

A. It's not -- it wasn't enforced.

Q. Okay.

A. No. It's best practice. It's in anticipation of formal up-coming rulings. And it was assumed that abnormal operating conditions like that would get passed on then. This particular one, it was just dismissed at the time.

Q. Would -- so any MBS that cleared itself would just get--

A. Right.

Q. Okay. It's not -- it could have been any line, any MBS?

A. Uh-huh.

Q. Okay. That wouldn't have made the list. Because it cleared?

A. Because it cleared.

Q. Because it cleared.

A. There's just the understanding of what that meant.
Q. So with the CRF practices you're going to go back to this and there'll be a more --
A. No. We're doing that now.
Q. You're doing it now? But this procedure then will be --
A. Part of the changes.
Q. It's changed or revised?
A. Yeah to document -- we're documenting at shift change.
Q. Okay. So this procedure though, this general operating standard will become something else or this will be revised.
A. Well that's just an overview. We're a little bit more specific and detailed.
Q. Okay. So it'll be a new procedure for --
A. It is today.
Q. There is one today.
A. Documented.
MR. NICHOLSON: Can I get a copy of that, Jay, please? The new shift change ruling.
BY MR. NICHOLSON:
Q. Did you agree with that assessment that maybe things were dropped between the shift change that could have aided in a faster --
A. Yeah, but I just think that the root of that was that the condition cleared.
Q. Okay.

A. Had it actually -- and I'm assuming, had it still exist, had it been an active alarm, it would have been passed. I assume it would have been passed along.

Q. Okay. A real general question. You talk about controllers being paired, shift-leads being paired, can you tell me how are controllers paired. It think in reference you told us the shift leads it's no accident that two shift leads are together.

A. Yeah, I think it was in response to the question are they put together. The question was do you pair them randomly.

Q. Okay.

A. And my response was, no, we don't. We pair them based on their -- on what we believe is their strengths and weaknesses.

Q. Okay. And one is a -- what I gather, one is a terminal; he oversees the terminals, FF and CC or something. And one is pipelines. Is that how they're split?

A. From the department perspective, there is no split. They provide general oversight to the control center.

Q. Okay.

A. Within themselves, that's how they've chosen to split the responsibilities. F and CC and pipelines, it's just a term for different business units. They're not pipelines versus terminals. There's within Enbridge different assets, management assets. They've just split them up that way so you have your EPI facilities and then you have your non-EPI facilities.

Q. What's EPI?

A. Enbridge pipelines.

Q. Oh, gotcha.

A. Regulated versus unregulated, maybe. Is that a way to put it?

Q. But it's not -- it's not something that's recognized by upper management? It's something they agreed to?

A. Yes.

Q. So operators are free to talk to shift leads -- either shift lead to resolve issues?

A. Yes.

Q. Okay. And you expect that if you're pairing them and you pair them with one more technical than the other, you expect that the non-technical guy will seek the assistance of the --

A. So the direction of that shift lead group was not to be technical at all so it wasn't a consideration. It was the nature of their previous experience.

Q. Not just an accident?

A. Yeah.

Q. Okay.

A. I mean the last few hires in the shift lead role weren't hired for their technical backgrounds.

Q. Yeah, you mentioned that.

A. People, people skills.

Q. And based on recent -- the incident in Marshall that's

going to be a continued practice?

A. No, I doubt it.

Q. Okay. Because it sounded good in your transcripts but when I went through your procedures, it sure seemed like you're putting a lot of emphasis on the shift lead to be the expert.

A. He's only an expert -- the expectation is an expert in procedures.

Q. Okay.

A. An expert in policy. He's provided -- the expectation is he's provided with information, I have this condition on my system.

Q. Okay. So for example under MBS leak alarm you say shift lead assesses the alarm and then you give him some other conditions to monitor. When you say assess the alarm that's not burdening the shift lead with pulling up trends and -- that means go see somebody that can help you?

A. Somebody that can help you, yeah.

Q. Okay.

MR. NICHOLSON: I think I might pause here and just let Ravi ask some questions at this point.

Ravi, if you like.

MR. CHHATRE: Unless you want me to -- to you first?

MR. NICHOLSON: Go ahead, Ravi.

BY MR. CHHATRE:

Q. My name is Ravi Chhatre for transcribing the interview.

Give me some idea as to how many people are monitoring the console and stuff like that. My question is, what is the expectation of the operators in terms of running the control center. What are they expected to do in terms of duties besides monitoring alarm and things like that in their functions?

A. Response to abnormal conditions. Communication with, you know, various internal groups, shipper services for example. The majority of their duties are monitoring and controlling of facilities. Advising of emergency, possible emergency conditions and like I said, AOCs. Not -- there's not much expectation outside of their control facilities. Technical experts run the facility is the expectation.

Q. Are they supposed to know, I guess, your policy and procedure in terms of dealing with the emergency or are they supposed to pass it on to the lead?

A. No, they should be fully aware of emergency procedures regarding their facility.

Q. My question then is going to the lead, is that just a formal procedure or what is the advantage? A lead is not a technical person and if the lead is going to follow procedures --

A. More for notification. Notification associated with any emergency procedures, various notifications, internal and external.

Q. If the operator identifies something as an emergency procedure or does not identify an emergency, does he even know

immediate technical support from him or her, from the lead, when the lead is not a technical person?

A. That's correct, not a technical person. They're -- so just to clarify. The expectation is that they weren't. Their history for the most part came from a technical background.

Q. That is lead or the --

A. The lead. I mean most of the leads in their current state were operators in a previous.

Q. So on the day of the accident was the lead a technical person, a technical person or not a technical person?

A. The expectation is that they weren't -- that they were not technical. And -- can you repeat the question?

Q. Yes. I believe you said of the leads in the previous lead are technical people because they -- and I guess my question was, on the day of the accident, the lead, was he or she a technical background person or a non-technical or a people?

A. They had an operator background.

Q. Okay. I'm a little -- and I talked to Matt also trying to find out what a column separation would be. How -- I didn't see a lot of different in the column separation and the say leak in the pipeline? Are there similarities in what a display would look like to the operator or are they totally different?

A. No, they're the same.

Q. Okay. Can you give me an idea as to what a column separation and the leak would look like on the screen for the

operator?

A. Oh, as a low pressure value.

Q. Okay. It's a low pressure.

A. Yeah.

Q. And a non-operator person, how would an operator would know then that he has a potential leak or a potential column separation?

A. So he wouldn't sometimes know the difference. Column sep is just a condition on your system of which a leak could be the cause.

Q. Okay. The operator would not -- what then? The next step would be to kind of confirm there's a leak or a column separation?

A. So if that condition exists, it would be a trigger. He would go into his operational procedures and follow the next steps. He would try and look for another condition. You only have X amount of time, I believe, as stated in your procedure for that.

MR. NICHOLSON: Which procedure are you referring to?

MR. GOESON: I don't the specific procedure.

MR. NICHOLSON: Is it a leak-trigger procedure maybe?

MR. GOESON: Yeah.

MR. NICHOLSON: Okay.

MR. GOESON: Column sep, leak trigger. There's probably a variety of different emergency procedures related to it. And he

would go in and start his analysis. He only has X amount of time to do that at which point he has to take another step and that's the notification to the lead.

MR. NICHOLSON: To the lead?

MR. GOESON: Yes.

MR. NICHOLSON: Okay.

MR. GOESON: The unknown here is that I can't quote the specific procedures.

MR. NICHOLSON: I understand but you give me a kind of--

MR. GOESON: The steps he takes, I can refer to.

MR. NICHOLSON: Okay.

BY MR. CHHATRE:

Q. So is it up to the lead to ask the operator if he or she has taken these steps or not taken these steps? I mean, an operator goes to lead saying the last I saw an indication of the separation drop, is it up to lead to ask the operator if he or she has taken these following steps or it's up to the operator to report that to the lead?

A. It's for the operator to provide that information so that the shift lead can follow the right notification.

Q. But would the shift lead know what procedure needs to be followed before confirming of -- my question is if the shift lead is not a technical person but a people -- I guess that's a term you're using, people person --

A. Uh-huh.

Q. Would the lead know what steps need to be taken before when it comes to him or her?

A. Yes, he'd be familiar with the procedures.

Q. In this case on 25th of July, did the operator report to the lead saying I believe that a column separation or potential leak?

A. Which event was this? Was this the --

Q. The first indication --

A. While shut down?

Q. Yes.

A. I believe the shift lead was involved in the notification of the alarm.

Q. And did the shift lead ask the question as to did you follow these procedures?

A. I don't know that he did. I don't know, Ravi.

Q. Okay.

A. I don't know.

Q. The reason I asked is because I think you did conduct some internal -- I guess --

MR. JOHNSON: He was not involved with that.

MR. CHHATRE: Oh, so he hasn't even seen the results of that?

MR. JOHNSON: No.

MR. GOESON: No.

BY MR. CHHATRE:

Q. Who would that person be? Who might know that?
A. So who --
MR. JOHNSON: Well you'll be able to ask the people themselves during further interviews.
MR. CHHATRE: Okay. Good. Okay.
MR. JOHNSON: I think that's probably the most appropriate if you have questions of what they looked at is to ask them.
MR. CHHATRE: Sure. I need to know which people to --
MR. JOHNSON: We had people independent of the control room do it. Actually David Brison (ph.) headed up the interview. David Brison used to be the control center manager. Matt Faith who, Matt, you know, used to be a control center engineer. He was involved. So that's how they made it independent.
MR. CHHATRE: Okay.
BY MR. CHHATRE:
Q. This column separation, is it a common occurrence in the pipeline or is it an unusual event? I'm not sure how often the column separation occurs?
A. I don't know how often that occurs. It should be -- it shouldn't be often.
Q. Okay.
A. It shouldn't.
MR. JOHNSON: Would it be safe to say on this line with the conditions downstream of Stockbridge. I think Ravi was asking

the -- a general question. If I were an operator on line 6B would you say it's more likely on a line like 6B? Or is that something you can't?

MR. GOESON: So it's more likely in certain areas on any line.

MR. CHHATRE: Okay.

MR. GOESON: It's more likely. However -- I mean, just based on elevation, profile. Some elevations are more challenging then others. That's all. The appropriate shutdown, you can always -- you're always able to achieve positive static pressure.

MR. NICHOLSON: Through --?

MR. GOESON: Through section control shutdowns and sectionizing. The length, the duration -- the duration of the shutdowns and the subsequent elevation profile will make it more likely to get into column sep, but over time.

BY MR. CHHATRE:

Q. But you could actually go through the shutdown without developing the column separation?

A. Yes.

Q. But you say you should follow the procedure properly, is that --

A. Uh-huh.

Q. And that -- is a column separation on this ruptured line, is it a more frequent occurrence because of your voluntary MOP interaction? I mean do you have some kind of statistics to

compare before and after. I asked after the voluntary reduction in operating procedure on this particular line?

A. The most recent? Or --

MR. JOHNSON: Okay. I think what Ravi is addressing is we had placed a voluntary pressure restriction on this line due to the integrity issues.

MR. GOESON: Prior to.

MR. JOHNSON: Prior to the release at Marshall. Did this -- So you're asking if this made it more difficult to bring the line down?

BY MR. CHHATRE:

Q. Yeah, what I'm saying is the column separation became more prevalent after you voluntarily dropped the pressure as compared to before?

A. Not to my knowledge.

Q. Okay. So it really had no impact per se?

A. Not to my knowledge, no.

Q. You said something about -- answering Matt's question, that the low pressure -- column separation of the low pressure leads to column separation, something to that effect?

A. Say that again?

Q. Okay. I think you -- the notes I took, I made a note saying low pressure leads to column separation or something to that effect. What leads to column separation, the low pressure?

A. The low pressure is an indication of a column

separation.

Q. Of a column separation. Okay. And you said something about I believe 30 psi I have something like that --

A. Yeah, I referenced 35 is our typical low-suction condition.

MR. NICHOLSON: Low, 35?

MR. GOESON: Yes, 35 psi. It's out low suction-- low for our products and that's in that line.

MR. NICHOLSON: Not 25?

MR. GOESON: No, sorry -- 25 is when it turns color. When we were talking about the color indication, that's when it turns color. Thirty-five is our target.

BY MR. CHHATRE:

Q. And here from what I understand somebody else was a mentor to the operator that night, that day? On the day of the accident, there were two people --

A. Uh-huh. On the day, yeah.

Q. On the day of the accident somebody was mentoring the operator?

A. There was a trainee and a mentor.

Q. Okay.

A. And a trainer.

Q. Okay.

A. It's somewhat of a unique situation in that Dave Scott was a thirty-year employee but in the position of a trainee. He

was just returning from time off.

Q. So what was the, I guess, function of quote, unquote, a mentor in that capacity? What was the mentor supposed to be doing here?

A. The mentor was responsible for the operation of the pipeline. The mentor's responsible for ensuring the trainee operates it in the standard procedure.

Q. The reason I asked that is because I was going to ask what the mentor was doing in this whole process. I don't believe I saw any reference in some of the interviews I read.

A. She wasn't involved. She wasn't involved. She was doing some other activity, I believe.

Q. Was she quote, unquote mentoring then?

A. Yeah, she -- you know, the unique situation was that -- well, I'm speculating. You can ask Theresa.

Q. Okay.

A. But she assumed that Dave was fine. He's a thirty-year guy.

Q. Okay. And did the lead ask the operator the question that did you discuss this with your mentor, the situation about the column separation? From what I understand the operator went to the lead. And my question is did the lead ask the operator the question did you discuss this with your mentor, the situation, the column separation or the alarms appearing and --

A. No, not to my knowledge.

Q. And I guess maybe Matt and everybody else knows, but how many people the lead supervises at any given time?

A. So there's two with 23 people on shift.

Q. How many?

A. There's two leads.

Q. Like --

A. Twenty-three operators.

Q. Okay. So they have to have a --

A. From a people management perspective they have them divided in two, so 11 or 12.

Q. Okay.

A. Eleven or 12 people.

Q. So 12 to a lead.

A. From a people management perspective. They both have general oversight from shift to shift.

Q. And do they split the workload between then? Okay, I'll take care of this many lines and you'll take care of these other lines.

A. That's what they do amongst themselves, yeah. And they refer to those as -- well, Matt and I were talking about the two different kind of business units and you'll hear it referenced F and CC.

Q. Like?

A. Feeding and connecting carriers at EPI.

Q. Okay. Now you mentioned and I guess you made a comment

that they did not use the best practices in shutting down?

A. In my opinion.

Q. Right. And I guess my question is where does lead comes into the picture in this? Lead is supposed to be people person, monitoring, making sure all the procedures are being followed. What is lead's function in this whole process?

A. It's not a procedure, it's a best practice. There is no function.

Q. I guess what I'm saying is the best practice were not followed, per se, I mean in your opinion. Isn't this really the responsibility of the lead to make sure the procedures are followed?

A. Yes. But best practice isn't a procedure.

Q. Now I'm lost.

MR. NICHOLSON: I think he's saying there's no procedure for shutdown. There's only best practice.

MR. GOESON: It's training.

MR. NICHOLSON: So the shift leads would have nothing to review.

MR. JOHNSON: And I'm -- maybe I'm speculating here, but the shift lead is not going to oversee just because the numbers every single shutdown. And because Dave did shut the line down within the parameters, nothing would have alerted the shift lead to review the way he shut down. Is that safe -- good way to say that, Curt?

MR. GOESON: That's correct.

MR. JOHNSON: Okay. If he would have been outside the parameters, that would have alarmed something.

MR. GOESON: Correct.

MR. NICHOLSON: It would have alarmed something to a shift lead?

MR. GOESON: It would have been brought forward. It would have alarmed and then been brought forward to the shift lead. Only if he's operating outside of unsafe conditions would it make that information get to a shift lead.

BY MR. CHHATRE:

Q. I guess my question, how would your shift lead even know that the operator is operating outside the safe parameters? How would the lead would know that?

A. He would be advised of it.

Q. By whom?

A. Operator.

MR. JOHNSON: Would an alarm -- you say Dave shut down, maybe not the smoothest, but within operating parameters. If he had exceeded any of those parameters, would not an alarm of some sort form?

MR. GOESON: Absolutely.

MR. JOHNSON: And that's how it would have got to the shift lead.

BY MR. CHHATRE:

Q. That alarm goes to the shift lead through Dave?
A. Through Dave.
Q. Through Dave? Okay. So still everything still rests through the operator?
A. Yes.
Q. There is no, I guess, back door for people beyond him to know is something working smoothly or not working smoothly?
A. No. I mean, the only thing where we do that similar scenario is for our highest priority alarms whether it's a fire at a facility where it'll alarm at multiple consoles.
Q. Okay.
A. That's all.
Q. And I guess -- this is my last question for the time being is you mentioned something about in I guess the devised plan of new proposal is to add more technical support in the control?
A. It was proposed at a certain level. I'm sure that we'll look at an increased level of that support based 6B.
Q. And what technical support will be? I mean, is this something you can speculate or do you know, or --
A. So, it's an opinion, Ravi, in that years ago prior to consolidation at Enbridge when we had a number of different control centers, we had a model where your lead was a technical expert oversee.
Q. That's where I was actually going with it anyway.
A. That's how we functioned in the past in smaller units.

In my opinion I see us turning back to some sort of model like that. Smaller groups, more technical support.

Q. What I guess you kind of pre-empted my question a little bit, but I was heading for when you have a technical person, an operator and there is really no crosscheck on any thing else, any support for that person, your lead is a people person. So to take care of that situation you're adding more technical people but your lead is still. Do you see anything that lead is still going to be a non-technical person?

A. I don't know. We need a non-technical person in our department. We have 150 people. You need some type of people leadership role, I just don't know what that model will look like.

Q. Okay.

MR. JOHNSON: However, Curt had also mentioned that people leader may have not have the technical skills, but he's got multiple people on other screens that he can bring into it. So there's not a lack of technical people if the people leader wants to bring them in to assist. So there's enough technical skills in that control center if they're brought in to answer the questions.

MR. GOESON: It's just how you manage them as a leader.

MR. CHHATRE: I'm done for the time being, at least. Thanks.

MR. NICHOLSON: Okay.

MR. CHHATRE: Thanks.

MR. NICHOLSON: All right. We'll stop at this point and

take a break. A 10-minute break.

(Off the record.)

(On the record.)

MR. NICHOLSON: We might just ask if you could just speak up a little bit, Curt. We don't know -- we don't have a lot of faith in our recorders.

MR. GOESON: Oh, and I'm a soft talker.

MR. NICHOLSON: You are a soft talker.

MR. CHHATRE: You just carry a big stick, right.

MR. NICHOLSON: All right, we'll pick up where we left off.

MR. PIERZINA: And this is Brian Pierzina.

BY MR. PIERZINA:

Q. And Curt, just to back up and clarify a couple things. We had the discussion about the multiple VFD alarms on 6A and I just want to make sure. Can an operator acknowledge multiple alarms at one time or do they have to be acknowledged individually?

A. They have the capability to do both.

Q. Okay. So he could highlight 20 alarms and acknowledge them?

MR. JOHNSON: The question on 6A or B?

MR. PIERZINA: Well, this was on 6A because I think Matt was going through a list of, you know, oh, who knows, 50 VFD-type alarms.

MR. JOHNSON: I just wanted to clarify.

MR. GOESON: Sure. And just to clarify further, so, yes, Brian, he -- they do have that ability. Single acknowledgement or to highlight a page. With respect to the priorities, there are priority alarms that come in and don't require acknowledgment. I'm not sure those are -- those alarms. If those alarms require acknowledgement, I'd have to -- I'd leave that to Jim Johnston to answer.

BY MR. PIERZINA:

Q. Okay. And we discussed when Darin, Jim and Blaine were having their discussion, the calculated line drainage and the amount of time to put the column together. I think you said that was untrue or not true? Is that right? In our earlier discussion?

A. Yeah, I don't remember what the comment was.

MR. JOHNSON: Were we talking line tack?

MR. PIERZINA: Right.

MR. GOESON: Oh.

BY MR. PIERZINA:

Q. Right, when they were talking about how long it was going to take to put the column together, how much had drained out. I want to get back to the calculated line drainage, if you're aware of it? So the two shift leads independently came up with a calculation of approximately 600, 630 cubic meters that had been drained out. And as far as I understand, I think that was

determined from the CMT system? I guess I'm just wondering if you had said that what was not true was --

A. Yes.

Q. I was just wondering if it was the volume or the time to put the column back together or what?

A. My point was regarding the MBS analyst comments about what a certain volume going into line pack. That was --

MR. NICHOLSON: If we had two separate -- let me just clarify. My question to Curt was about the phone call between Darin, Jim and Blaine. You're referring to the first startup. Mine was after the first startup, I think. You're referring to during the first startup, the calculation whether to extend the time or not.

MR. GOESON: Right, those are two separate.

MR. NICHOLSON: Two different events.

MR. GOESON: Yes.

BY MR. PIERZINA:

Q. Right. And I was actually referring to the conversation because there's a series of things that were said and Curt had gone through and said, no true, true, true, not true.

A. Yes, with respect to the conversation. But the fact -- the comment about X amount of cubes going into the line pack isn't true. And I just say that from, again, my background. On a liquid system, you don't have 1600 cubes going to line pack. On a gas system, yes. Not on a liquid system. Was there calculations

done with respect to CMT, commodity movement tracking system? Yes there was prior to that conversation.

Q. Okay. All right. I'm kind of changing scope a little bit on the questions. Are there performance measures established for operators? Things that they're evaluated on?

A. Yes.

Q. Okay. Are they standard for each level of operator or are they tailored for individuals?

A. So yes to both comments. You know, I really -- from a performance perspective, Brian, the tasks they perform are the same. Whether you're an operator II or operator III. The expectation is you perform those tasks the same. The only additional expectation that we have is on our senior operators and that's really in their involvement outside of their area of expertise. We look to them to help out when, you know, other console areas in guidance and discussions and involvement. We look to them as our technical experts that we rely on in situations. That's the only difference. You know, we've got a room full of a variety of ages and experiences, experience levels, and in situations we look to them to provide that help.

Q. As far as performance measures for operators, can you -- are you familiar enough with them to say, you know, mention a few of the metrics that are used for an operator?

A. Only in general terms, Brian. There's no metrics associated with how efficient they are. There's only really

measures in the -- how often they report abnormal conditions, how often they interact, those types of things. Nothing specific to the efficiency of their tasks.

Q. Okay. Is there a -- in most of our jobs we have, you know, position descriptions and performance appraisals, is there a blank performance appraisal for an operator that we could get so it's non-specific to --

A. Sure.

Q. Okay.

MR. JOHNSON: Do you want a blank one and do you want some that are completed?

MR. PIERZINA: I think that may be helpful if that's a possibility if we could get a --

MR. NICHOLSON: What was the request?

MR. JOHNSON: He would like a, if you will, a --

MR. PIERZINA: A performance review.

MR. NICHOLSON: And we have performance reviews for all the controllers and agents.

MR. PIERZINA: Oh, we do? Okay. All right.

MR. NICHOLSON: Will that suffice? But I don't have blank.

MR. JOHNSON: I think the blank one -- I mean, it's going to be -- the blank one will be the same one I have so I don't know that that's going to help you?

MR. GOESON: They're standard throughout the company.

They're the same.

MR. JOHNSON: So the fact that you have a completed one, I think that probably gives you a better idea. And do you have them for an operator and a senior operator that might show the difference?

MR. NICHOLSON: Well, there's not a senior operator on the shift so. I've got, I think, all the players.

MR. PIERZINA: All five.

MR. NICHOLSON: So Greg might be a senior.

MR. JOHNSON: So you would have one of everything. You would have access to one of everything already.

MR. GOESON: No, he's one of our seniors. We look to Greg as a senior guy. Tim's not that senior.

MR. NICHOLSON: Oh, Tim's not that senior.

MR. GOESON: You've got the whole.

MR. PIERZINA: I apologize for that. I have a pretty good idea of what's coming through the FTP.

MR. JOHNSON: There's a lot.

BY MR. PIERZINA:

Q. All right. It sounds like it's standard no matter what position. I guess what I'm curious about -- all right, so then maybe broader from a control center perspective, is there -- you know are there standards to which the control center is measured? And maybe more specifically, you know, net through put or something like that? Is that something that -- or let's say, you

know, unplanned shutdowns or things that, say, affect the profitability of the company?

A. Sure. So overarching. Prior to our reorg so on the time of this event, we are part of an over-arching group called customer service. And we did have metrics, key performance indicators, exactly as you've stated. Throughput degradation, contamination, unplanned and planned maintenance, we have all of those over arching metrics. We just don't have them specific to the control center. Yet. That they're aware of. That the employees are aware of. We track planned maintenance as a leadership group and unplanned maintenance as a leadership group, but not specific to the individuals.

Q. Okay. So that gets more to that management level.

A. Yes.

Q. And in another interview there was discussion of a cause analysis for MBS alarms. I believe it was Ted Farquhar that does that. So that's something that sounds like the modeling group does?

A. Yes.

Q. Is that communicated with the control center, the results of these cause analyses for MBS alarms so that the control center?

A. It's on a smaller scale. Like I think Ted's cause analysis was unique to the fact that this was an event, a rupture. On a smaller scale, each of these alarms that are analyzed are

communicated on that shift at that time. They have that the interaction between the analyst and the control center happens on shift at the time with respect to each of the alarms. The cause analysis, I guess just to reiterate what Ted did, isn't the norm to alarms. That cause analysis, the detail of that was specific to the fact that it was an event.

Q. Okay. I think what -- and of course I wasn't in on the interview, I just read the transcript. But my interpretation of a response that he made was that they do a cause analysis for every MBS alarm. And so, you know, the question -- so that's --

MR. JOHNSON: Maybe it's best if we're going to have Ted coming in.

MR. PIERZINA: Right. Yeah, for sure.

BY MR. PIERZINA:

Q. But I guess my -- what I was wondering is, so he does that, I just wondered if that gets, you know, communicated to the control center management as far as okay, we've got X number of MBS alarms this month and --

A. So from a general statement like that, yes. It does get communicated on a monthly basis. The cause analysis I thought you were referring to was the write-up that Ted did with respect to the event.

Q. No, it was a more broader -- broader --

A. So on a broader scale, yes.

MR. NICHOLSON: I think I'll interject. Are you -- it

might have been out of Shane's interview that he talks about a material balance event?

MR. PIERZINA: No, it was Ted Farquhar's interview and it was -- I thought -- what I thought I read was that they do a cause analysis for each one and so that seemed prudent to everything else.

BY MR. PIERZINA:

Q. I just wondered if it was kept within pipeline modeling. Cause I think that, you know, they're always looking to tune -- tune their model, right?

A. Uh-huh.

Q. And so that's more an internal to modeling I think. But it seems like, you know, there's good information for the control center personnel as well as far as, you know, MBS alarms. Why they happen and that kind of thing.

A. And so I just clarify my response, Brian. The management and the department are aware of that statement about alarms per line. And we're also aware of the initiative for them to tune their models and try and reduce those. The analysis is what I'm referring to. I'm not aware of the analysis on the individual alarms.

Q. Oh, okay. So it's more of a --

A. That discussion may take place on a shift. I'm just aware from a control center perspective of the number of alarms per line.

Q. Okay.

MR. NICHOLSON: Was Brian looking for a performance review? Is that what you wanted?

MR. PIERZINA: Yes, and it sounds like we have them.

MR. NICHOLSON: I just want to be sure. That's what we've got, performance reviews.

MR. PIERZINA: Okay. All right.

MR. PIERZINA: Karen, go ahead. It sounded like you had more questions than I did.

MS. BUTLER: Okay. All right. Thanks very much.

I want to ask just a couple general questions to get started about the alarm log itself.

MR. NICHOLSON: Sure.

MS. BUTLER: If you're having trouble hearing me at all will you give me a tip-off because I'm trying to look at a computer screen and I can move the phone if I need to, okay?

MR. NICHOLSON: I think you're good, Karen.

MS. BUTLER: All right.

BY MS. BUTLER:

Q. So the first thing I wanted to ask you, if I look at the alarm in the command log that you guys sent to me, and -- or sent to all of us as a result of us having asked for some information.

A. Uh-huh.

Q. When I look through the alarm logs there'll be things like OPR, S4, L6, LaPorte, for example. And it'll say unit new -1

is in sequence off. Okay. So when I look at the L6, that would stand for line 6, correct?

A. Correct.

Q. Okay. And so if it's A or B, they're all going to say line 6, correct?

A. I believe so.

Q. Okay. So if it's line 17, which at some point in time I know someone indicated was treated like a lateral off of 6, does line 17 come up as L17?

A. I'm assuming so. I don't know for a fact.

Q. Okay. Would you think that's the same way on line 3?

A. Yes.

Q. Okay. All right. So when you guys put together the timing of events and you went through and pulled people out for us, did anybody try and match the actual alarm with the command that could have generated that or make sure they were coming in one for one?

A. Well, one for one, no. But when we did our analysis we -- the timeline included both commands and alarms received. We didn't actually physically go in and look one for one.

Q. Okay. Well it appears to me just from -- based on what I'm seeing that we may have some missing information. So -- and I'll clarify some things cause maybe it's just I don't understand how information is automatically handled. Maybe there's some automatic software that's going on. But I would encourage you

guys if at all possible to please do that. The other thing that bothers me a bit is have we verified at any point in time to your knowledge that when we have a time and date stamp in the alarm logger that it's actually displayed at that period of time. So for example, have we ever confirmed that if a pressure alarm or low suction pressure for example in Marshall's case, comes in the alarm log at say 2:58:42, that's actually being displayed to the controllers at that time interval?

A. Okay. I'm just stuck on -- I'm sorry, Karen, I've got to step back for a second. I'm stuck on your previous comment. You encouraged -- what are you encouraging?

Q. I just want you to go through the information that you sent us for the 25th, the day before, the day of and the day after and verify that everything in there that would be the result of a command actually shows a command in that log.

A. That shows a response?

Q. Yes.

MR. NICHOLSON: Are you referring to the log they submitted?

MS. BUTLER: I'm referring to what was submitted to us as the capture of all the alarm and commands for those three days.

MR. NICHOLSON: There appears to be missing information?

MS. BUTLER: Yes.

MR. NICHOLSON: Like where he commands -- for instance, I can tell you because I've done this. Where it says he commands

a pump off, there seems like in your data log you've eliminated the --

MR. GOESON: End sequence off.

MR. NICHOLSON: -- end sequence off command.

MS. BUTLER: Okay. To be more specific, if you review the interview you'll see that Theresa indicated previously that she and Dave were working on a problem associated with line 3. And on those shifts I've looked through those three days, I cannot find anything associated with line 3. And they specifically were talking, they having problem with the unit. So I'm worried about that. I can't find anything on line 17.

MR. NICHOLSON: Okay. So that's an information request, Jay, that I've put in the body that the original IR isn't complete.

MS. BUTLER: Or it may be truly that we've got an issue with our logger, not keeping everything captured.

MR. JOHNSON: Well maybe -- I guess I need some clarification. Is an investigation on 6B why we're concerned about line 3 and line 17?

MS. BUTLER: Because it speaks only to what the operator would have been doing at the moment and whether or not they could see this in the appropriate time window is critical.

MR. JOHNSON: All right.

MS. BUTLER: Okay. So that's why. I'm not just asking it to, you know, to look for problems on those lines. I'm asking

it to be able to understand exactly what all the operators were doing at that specific point in time. And then from that point, then if we make sure that everything's matching up, it's very important that we make sure that the things that are being put forth in this log are actually something that is reflecting at the same time that they can see them. Okay?

And the reason that I'm asking for you to do this in this process and interviewing around this is I want to make sure that when we see a system alarm, sometimes it'll take say close to midnight, the system's too busy.

BY MS. BUTLER:

Q. Have you ever seen that before to your knowledge, Curt?

A. No.

Q. Okay. So that's another example of sometimes when it says they're system -- I know that this is a specific system that you designed -- but a lot of times what happens as a result of that is you'll begin to get a lock-up or something's coming in and something else is not making it. And I just want to verify that is definitely in some of your logs in the middle so I want to make sure that is not influencing these three days. Okay?

A. (No audible response.)

Q. Okay. So another example that you can help me with --

MR. JOHNSON: Just one second, Karen, I just want to make sure I completely understand the request.

Matt, is this something that's been requested?

MR. NICHOLSON: I can't remember if I've asked -- But you could simplify it as information request 1.9 was not followed to its letter. You submitted all the alarms on line 6B but IR request 1.9 asked for all alarms.

MS. BUTLER: And we -- to be honest, we don't know that we got all the alarms. And we don't know that we got all the commands. Okay? Because there are things that definitely appear to be even not be in sync with line 6. So we'll talk through some of those.

MR. NICHOLSON: So IR 1.9 says all alarms from the console.

MR. JOHNSON: Okay.

MR. NICHOLSON: And what you supplied was only 6B.

MR. JOHNSON: Okay. That helps. Thank you.

BY MS. BUTLER:

Q. So the other question I had, Curt, is whether or not to your knowledge anyone had ever confirmed that when something comes in on the alarm logger at a specific time, that that's actually when it's displayed? And I just am curious if anybody's every confirmed that on a, you know, a pretty frequent basis to verify that we don't have some display time lag here?

A. Not to my knowledge from a control center perspective, Karen.

Q. Okay.

A. I'm making an assumption here that if that condition

existed, the operator would see it and let us know.

Q. Well I think what we're dealing with, you know, like 15 seconds and intervals that are pretty short from when units might have been stopped versus when there's alarm. I think it's really critical that we understand that about the system.

A. And if that were the case, if I received an alarm as an operator --

Q. Yes.

A. -- and I looked at my display and it didn't match. My first response, Karen, is to do a scan.

Q. Uh-huh.

A. To force a scan. And if it at that point it didn't match up, I would log that.

Q. Okay, but the beginning premise of that is we're assuming that the alarm -- we're assuming that the alarm came into the alarm queue at the time indicated in the time stamp.

A. Uh-huh.

Q. They can actually see that part of the display, right? That they can see the alarm lit at the time that it occurs?

A. Correct.

Q. Okay and so that's the point I'm asking. Okay. All right. So I'm going to take it that the answer for the record is we don't know. Is that correct?

A. Correct.

Q. All right.

A. Actually from a control center --

MR. JOHNSON: Curt doesn't know.

MS. BUTLER: Yes.

MR. JOHNSON: Okay.

MS. BUTLER: I only meant those of us connected with this interview. Like nobody else had any more information in the room either? Correct?

MR. JOHNSON: Correct.

MR. GOESON: That's for Les.

BY MS. BUTLER:

Q. Okay. All right. We keep responding to the statement "we had zero pressure at Marshall." And I just want to clarify something for my benefit. You know I see in the alarm queue for sure we've got "OPR, F4, L6, Marshall low suction pressure". Okay, my understanding is OPRs is basically come in from field equipment, is that correct?

A. I don't know. I don't know what the -- the OPR is in my mind it comes in for operator. It differentiates between operations driven and driven from the console.

Q. Okay. Well --

MR. JOHNSON: Karen, maybe I -- I don't know where else that information on the suction would come from except from a field device. I mean that --

MS. BUTLER: Okay. Well, let me clarify what -- where I'm headed with that and then maybe it'll be easier.

MR. GOESON: Sure.

BY MS. BUTLER:

Q. A lot of people will have in their alarm descriptors say "low section pressure" dash something. It'll have a value. Or some people will have it set up so that you -- almost all SCADA systems have it set up so that you can have a pressure indicator in your SCADA system but you can also have one in the RTU. So what I'm trying to get at or to understand is this low suction pressure entry, where is that value set at? Is it set in SCADA and what was it set to or is it set in the RTU and what was it set to?

A. I don't know the answer to that question.

MR. JOHNSON: You know, I think, Karen, we're going to have Bill Bock and Rob Kitchen tomorrow afternoon.

MS. BUTLER: I'll repeat these.

MR. JOHNSON: That'll be the group that can answer that question for you.

MS. BUTLER: That's fine. I'm just wanting to make sure I'm understanding some of the background before I get more specific.

BY MS. BUTLER:

Q. Then on low suction pressure being zero pressure, when you make that statement, Curt -- and I think you've made it several times -- what is that really based on?

A. I'm sorry, can you say that again, Karen?

Q. Yeah, when you say that "low suction pressure at Marshall being zero pressure" what is that really based on that it was at zero pressure, is my point?

A. I'm basing that on what I recall from historicals.

Q. Okay. So it's probably a historical print trend that you may have looked at?

A. Yeah.

MR. JOHNSON: Maybe what you looked at was -- well I mean I don't know, I mean you talk about zero pressure, but there was a read-back from the field device, the transmitter, which -- what did it say, 3 pounds?

MR. GOESON: I don't recall.

MR. JOHNSON: Okay. So you know I think maybe it's a maybe generalization that you had zero pressure.

MS. BUTLER: Okay. I just needed to understand that because --

MR. JOHNSON: And I'm speaking for Curt here so I don't want to do that. This is Jay. But is that a safe assumption, Curt, that when you say zero pressure, you know, what the field device was -- the pressure transmitter on the suction side or the two pressure transmitters were showing very low? And probably it's a generalization to say you had zero pressure.

MR. GOESON: Yeah, but to be fair, I thought I recalled a zero from historical information.

MR. JOHNSON: Okay.

MS. BUTLER: And I can -- that could easily happen.

MR. GOESON: If it wasn't zero, it was one or two.

BY MS. BUTLER:

Q. I just wanted to see what other information may have indicated and I don't doubt. I mean zero pressure I think was evident in more than one log but I didn't see it in this data. And I wanted to make sure I wasn't misunderstanding this data. You know like maybe you had some known set-point value that everybody else was aware of that was at zero pressure and it was not obvious to us.

A. Okay, if it wasn't zero it was close to that.

Q. Okay. All right. So in the SCADA data itself, do you know are there alarms set at low values that they can't change as a controller?

A. The only alarms they get they can't set.

Q. Okay.

A. The alarms that came in, they can't -- a controller can't modify those.

Q. Okay. All right. And regarding acknowledging or not acknowledging, do we document in the control room, to your knowledge, if a controller actually goes and acknowledges an alarm is that key stroke actually recorded anywhere?

A. I believe so, Karen.

Q. Okay. All right. Do you know if the controllers themselves can take a point off scan or not? Meaning that they

can, you know, something's chattering --

A. Uh-huh.

Q. -- they have the option to say don't pull that point any more?

A. I think -- so within industry I'm aware of that function, but within -- at Enbridge, I don't believe they can.

Q. Okay. I think in one of your previous comments to -- you were helping clarify actually, I think it was Allister's interview -- something like all he did in normal shutdown was close the PCV valve at Stockbridge. And so I was looking through the logs to see closing the PCV at Stockbridge. And one of the -- you know, I see that he loaded the set point. Is that what you meant by closing the PCV valve at Stockbridge?

A. I'm assuming, yes, Karen, that --

Q. Okay. All right.

A. That was -- was that the initial -- one of the initial commands on the shutdown?

Q. Yes.

A. Yes, that was the action that I was referencing with Matt earlier.

Q. Okay. And then the other thing that I saw in the log is the next thing that popped out at me after that event, after changing the set point at Stockbridge, which I thought matched what you were trying to tell us in previous interviews was we have this Griffith injection valve and it shows in travel closed, is

there an automatic event that would cause that to travel close as opposed to it being commanded to travel close from the control room, that you're aware of?

A. Not that I'm aware of so I'm going to speculate a little bit here, Karen. Is that --

Q. That's fine.

A. Could -- if you're referencing the fact that you don't see a command?

Q. Right.

A. It could be because it's coming from the terminal site.

Q. Okay. And so that could just be how the information is translated to the operator?

A. Correct.

Q. This console, right?

A. Yes.

Q. So this might be a case where the controller doesn't actually know that that was a commanded action, they just see it happening?

A. Correct. And typically in response to some sort of communication between the two. So, for example, I'm shut down now you can close-off or, you know, some direction like that is quite typical.

Q. Okay. So would it be -- if they had a communication, would that be in a telephone log or in a phone call that would be recorded?

A. No, they sit ten feet apart. It would be in this particular case a verbal.

MR. JOHNSON: Is it -- let me. Is it safe to say that a terminal is not going to be closing a valve --

MR. GOESON: Without direction.

MR. JOHNSON: -- without direction from the line operator.

MR. GOESON: Correct.

MS. BUTLER: Okay.

MR. JOHNSON: Okay.

MS. BUTLER: I didn't mean to imply that, I was just trying to -- thank you for clarifying that for the record. Just trying to understand what's in the log and what isn't. Thanks.

BY MS. BUTLER:

Q. When we hit low suction pressure, come in with Marshall's low suction pressure and we've had this LPM alarm and I think previously you indicated that the LPM -- the descriptors said "invalid pressure" but I think you indicated that it was only working on over-pressure conditions, is that correct, Curt, or did I misunderstand that?

A. So LPM is active in -- I mean the purpose of LPM is to prevent over-pressure situations.

Q. Okay. So --

A. The purpose of the alarm is to indicate that the LPM is not functional.

Q. Okay. And what can cause the LPM to not be functional?

A. That's the only thing I know of, Karen. That's probably a question for Les Reschny.

Q. Okay. That's fine. Thank you for pointing me to the right person. I do appreciate that sincerely.

So we know that these pressure alarms on the LPM are coming and going as previously mentioned, we have this low suction alarm cleared and we have that happening twice at Marshall, they're both date stamped 2:58:47, we don't show an event in between that meaning that it didn't go clear then into pressure alarm and then out on the log. So that may have just been a sequence of pulling that was confusing or it may be that we're missing some data. Did you guys happen to notice that in your previous alarm log reviews?

A. No, I did not notice that.

Q. Okay.

A. No.

Q. All right. We talked a little bit about the operator and shift lead requirements. That around the beginning of this discussion on column separation starting up, are you familiar with the liquid fraction display?

A. Only by name.

Q. Okay. And do you happen to know then if the operators and the analysts can see it both or shift leads can see it, or do -- are you familiar with who can see them?

A. My understanding, Karen, at the time of the event is that they both had the ability to see that.

Q. Okay.

A. And today, they do not both have the ability to see that.

Q. Okay. And if somebody -- if the Stockbridge delivery valve -- which I think this one may be a 17 interconnect so line 17 interconnect. I want to ask you about that. It says "OPR, F-4, L6 Stockbridge delivery valve, 650.63-6/17-XV is in travel close". Is that -- what does that valve 650.63-6/17-XV mean? I know it's a specific valve but what valve is it?

A. I don't know.

Q. Okay. All right. And then we have this particular S7 which I think is a high priority, is that correct? Alarm?

A. S7, yes. It would be our second highest priority, I believe.

Q. Okay. And so S8 is the highest then?

A. Correct.

Q. And what would be an example of an S8?

A. Oh, fire alarm.

Q. Okay. All right. So are there specifics somewhere on S8 handling one way, S7 another, S6 one way?

A. The procedure data base will guide you in that direction.

Q. Okay. I know we kind of hinted to that previously, but

I just wondered if there was a specific procedure that immediately jumped to mind?

A. No.

Q. Okay. All right. We talked about the shutdown and that pressure control valve would typically be adjusted and if it was a smoother start for the lack of attempting to paraphrase what I think you were saying.

A. Yes.

Q. We were talking about a smoother start. In your particular mindset would that mean that you are going to each one of the stations and commanding a pressure control valve or just some of the stations?

A. A smoother stop?

Q. Yes.

A. Is this for the shutdown?

Q. Yes.

A. So you could do it -- there's a number of different ways. You could do it within the SCADA system. You could do it independently at each location.

Q. Uh-huh.

A. Or depending on the situation, you have the ability to send multiple commands at once. So, for example --

Q. Okay.

A. -- and again it would depend on what's going on at the system and how your pressures are at the time. But you could

select, you know, station A to station F suction plus 15. So you could do it in one command.

Q. Okay. And so if we did that in one command, what -- does that look any different on the alarm log?

A. Uh-huh.

Q. That you're aware of?

A. Yes. I --

Q. And what does it look like?

A. I believe it looks like -- Matt, you had referenced a just prior to start up where -- it was four hours before start up and you said you had a block of alarms.

MR. NICHOLSON: Right.

MR. GOESON: I believe that's what it looks like.

MR. NICHOLSON: Oh, okay. So it's kind of -- it's a series. They all display one after the other, is that what you're saying? A block?

MR. GOESON: Yes, I believe that's how they display.

BY MS. BUTLER:

Q. Okay. So it's not something that indicates in the descriptor other than their proximity to another one that it's being done that way?

A. No, it -- again, I'm digging.

Q. If you don't remember?

A. I'm trying to remember the past, but it's very clear on the commands.

Q. Okay.

A. That that's -- it's a multi-station command.

Q. Okay. When I see something in the alarm log that I've changed Stockbridge set point, I'm now at 250. I've already seen the Marshall low suction pressures. But then I see two elements that say "system" and then it says "line 6, stop line from Griffith to Mendon". What commanded that to happen?

A. That's it. That's the differentiation. That's a system initiated action as opposed to an operator initiated action.

Q. Okay. And what would that be based on?

A. An unsafe condition. A high pressure condition.

Q. It is mainly high pressure? Can it be low pressure as well?

A. I'm only aware, Karen, of a few cases and that's high-holding shutdown --

Q. Okay.

A. -- or a high pressure condition.

Q. Okay.

A. And to be honest I'm not sure what you're referencing.

MR. NICHOLSON: Well, Karen, can you repeat? What line are you looking at?

MS. BUTLER: Yes. I'm looking at -- well, is Matt in the room there with page 36 available?

MR. NICHOLSON: Thirty-six from July 25th?

MS. BUTLER: Right.

MR. NICHOLSON: Yes.

MS. BUTLER: Okay. Can you see where if you look down and you'll see 1636 in the far left and 1637.

MR. NICHOLSON: Are you looking at my logs?

MS. BUTLER: I'm looking at what Matt provided me.

MR. NICHOLSON: Matt Nicholson or Matt Faith?

MS. BUTLER: Matt Nicholson. I'm sorry.

MR. NICHOLSON: My page number -- what event number are you looking at? I'm sorry. Sixteen --

MS. BUTLER: I'm looking at 1636.

MR. NICHOLSON: Okay.

MS. BUTLER: And 1637.

MR. NICHOLSON: Got it. Okay. So I'll hand that to -- if you look at the far left, event 1636 and 7, she's referring to those two.

MS. BUTLER: They show that we've had two system alarms at approximately the same time, 2:59:17. And they both say "line 6, stop line from Griffith to Mendon". And I'd like to know why that happened because this in comparison to say having been at Marshall, it almost looks like we had some pressure problems between there which maybe we did in fact lose a pressure transmitter or something that is not apparent on the log.

BY MS. BUTLER:

Q. In any event, to your knowledge you hadn't seen that before?

A. So I've seen these alarms before when associated with a sectionalizing valve closure.

Q. Okay. All right. And so there may have been a sectionalizing valve closure, is it possible that something like that could be triggered off of the injection valve closure at Griffith?

A. No. No. The key in this alarm is the downstream location, Mendon.

Q. Okay.

A. Something at Mendon has told the system to shut down upstream.

Q. Okay. And I don't see any priorities to that. Do those system-type alarms have a priority that you're aware of?

A. Yeah. So if you go down to 1650 and 1651 --

Q. Uh-huh.

A. -- so there's how I normally see that alarm displayed.

Q. Okay. And so -- but in this particular case if I go down to those two we are actually having an alarm associated with the sectionalizing valve? Right?

A. Yes.

Q. Cause it's telling us that it's been in travel state for a longer period of time --

A. Yes.

Q. -- then you would expect, right?

A. Yes.

Q. Okay. So along that same line, do we frequently have these sectionalizing valve problems for over 60 seconds in travel? Do you monitor that or have any history of that?

A. So that's not a problem.

Q. Okay.

A. That was a command that was issued. Is this on the shutdown?

MR. NICHOLSON: Yes, that's July 25th shutdown.

MR. GOESEN: These -- there're routine sectionalizing valves being closed as we would normally do.

BY MS. BUTLER:

Q. I would see a command that indicated that, correct Curt?

A. Correct. Yes. We should.

Q. Okay. All right. So that's an issue maybe. Okay. All right. So what I take it though is -- let me repeat my question. Assuming that you had commanded that to happen and it took longer then 60 seconds, is that typical? Is that something that you've trended or paid attention to in the past that some sectionalizing valves for Griffith to Mendon, for example, take longer then 60 seconds to occur?

A. So. Let me know if I'm not clear here, Karen.

Q. Okay.

A. When the command is issued to a valve?

Q. Yes.

A. You'll get multiple alarms associated with that action.

Q. Right.

A. That's just one of a few different alarms you'll get in response.

Q. But do you get that every time?

A. Yes.

Q. Okay. So you're saying every time I see a sectionalizing valve command, I should also see this over 60 seconds in travel?

A. Yes.

Q. Okay.

MR. JOHNSON: Maybe I'm not clear. The 60 seconds, maybe I don't understand that, Karen or Curt. You know, I -- and Brian's here also. I mean, we've been out on the line when and witnessed when the control center hits the command, basically that valve starts moving. I mean it's in travel, they're three to five minute valves to fully close.

MS. BUTLER: Right.

MR. JOHNSON: But I just didn't understand the 60-second comment.

MS. BUTLER: It's in the descriptor and that particular one -- these particular two events are different in the descriptor then others. When you look through the alarm logs you don't always see that. Sometimes you'll see that it's actually closed.

BY MS. BUTLER:

Q. I just wanted to make sure that this should be occurring at a 60-second interval on every sectionalizing valve?

A. Yes, so I'll just it answer two-fold --

Q. That helps me understand. So I can track that down.

MR. JOHNSON: Okay. Curt's going to answer maybe for my benefit here then.

MR. NICHOLSON: Yes, and for mine.

MR. GOESON: So the command that's issued to a valve, you're right. It automatically starts to travel. That's what you see in the field. What you see in the control center is multiple levels of checks. That's all that this is. You'll see an alarm saying it's going closed, you'll see a check at the 60-second mark. And you'll see a -- I think you'll see a final alarm saying it's closed. It's just a check.

MR. JOHNSON: All right. The check is to verifying that it is still traveling?

MR. GOESON: Yes.

MS. BUTLER: I think it's just making sure that the operator sees this in travel state.

MR. GOESON: Right.

MS. BUTLER: So I believe if you guys will flip to the next page, look at events 1671 and 1672.

MR. NICHOLSON: The next page.

MR. GOESON: Seven-one and seven-two. Yes.

BY MS. BUTLER:

Q. I believe that's what you're referring to, the final state is closed, correct?

A. Correct.

Q. Okay. All right. So do you know is this standard for this to be duplicated on a sectionalizing valve action?

A. No.

MR. NICHOLSON: Karen, that might have been -- I don't know if there were duplicates in some of the text files.

MS. BUTLER: Yeah, right.

MR. NICHOLSON: Some of that might have been when I imported it because I verified one of those duplicates --

MS. BUTLER: Yes.

MR. NICHOLSON: -- and I could not find it in --

MS. BUTLER: Okay. And that's fine. I just want to make sure that we know what we're looking at. If it would have been cut and paste, that's fine. Okay. That clears that up for me. Okay.

BY MS. BUTLER:

Q. I've also seen a couple things I don't quite understand on MBS alarms and maybe you can help me out with that. When you get to 1679 -- if you guys can find it.

A. Okay.

Q. Do you see where it's got MBS6, line 6, alarm five minutes --

A. Yes.

Q. -- section Griffith to -- what is it -- Marysville, occurred, maybe?

MR. NICHOLSON: It's Marshall.

MS. BUTLER: Yeah, Marshall. I should have got that right away.

BY MS. BUTLER:

Q. Okay. MV Marysville, isn't it. Okay. Then when it says 7 at the beginning of that. Do you see that 7 to the far left?

A. Yes.

Q. What -- sometimes those are different. What is the beginning information in that string, tell me?

A. I don't know.

Q. Okay.

A. The -- it looks odd to me.

Q. Okay. Got you.

A. It looks like part of the information is there.

Q. Okay. We talked a little bit about pressure control valves and watching face pressure I think on your startup -- or on your shutdown?

A. Yes.

Q. To do it in a controlled fashion?

A. Yes.

Q. Is that something that is training only or was that also in a procedure somewhere and we just missed it or haven't got the

right procedure yet.

A. That's more training.

Q. Okay.

A. Our procedures aren't designed to guide operators in efficiencies like that.

Q. Okay. All right. And I think we've clarified that the LPM alarm system is really only dealing with over-pressure events, correct?

A. Well the function of LPM is to protect the pipe, yes.

Q. Okay. So when it detects an over-pressure, is it looking at discharge and adjusting suction? Do you know how that works?

A. So it's not -- it doesn't detect over-pressure.

Q. Okay.

A. The purpose of the application is to prevent.

Q. Right.

A. My understanding is that it's doing dynamic calculations based on -- within each of the segments of a pipeline.

Q. Okay. And when it does those because there's software programming right -- connected to this?

A. Correct.

Q. Is that correct?

A. Correct.

Q. Okay. So when it does that, when it recognizes something is getting close to happening, what does it do? Does it

adjust set points automatically?

A. It recalculates and changes limits within the system.

Q. Okay. So it would change those limits but not by entering a new set point but changing the range upon which a set point could be entered or do you know?

A. It automatically changes the limits in the system, Karen.

Q. Does that automatically cause operational changes besides the limits, like does it automatically cause the pressure to go -- to function within that range of those limits?

A. No. Not -- I mean there's a number of different levels of pressure protection.

Q. Okay.

A. Your initial level is just a recalculation of your limits.

Q. Okay.

A. If you're operating within those limits, there's no action taken.

Q. Okay.

A. There's other levels though that if you are operating outside those calculated numbers, it can take action.

Q. Okay.

A. And that action can include shutting down upstream stations.

Q. All right. Things that can automatically shut down

stations that are software driven?

A. Uh-huh.

Q. Okay. And on an emergency shutdown, is that operator generated or software generated or can it be both?

A. Ideally it's not operator.

Q. Okay.

A. So -- Karen, can I get you to rephrase your question?

Q. Yeah, all I was after is because we know that there's different types of shutdowns that are available to the operator to use, right? And so sometimes I think in some of the examples that were sent regarding leak response, there's been a case where from Enbridge's control room where they actually initiated an emergency shutdown.

A. Correct.

Q. But what wasn't clear from those reviews is whether the operator did that by manual action or whether software did that?

A. So the -- if it's software, it'll be system. You'll see a system-driven alarm.

Q. Okay.

A. The operator emergency response shutdown is just -- it's a quicker version of instead of shutting down individual pumps and sending multiple commands --

Q. Uh-huh.

A. -- it's selecting location to location.

Q. Okay. All right. And so it is possible that there

could be an emergency shutdown though from software generated as well as a manual interface, isn't that correct?

A. Only in response to line pressure protection.

Q. Okay. And so would that only be an over-pressure situation and not say and under-pressure situation?

A. Correct.

Q. Okay. All right. I wanted -- I'm sorry, I'm having to go back to my notes here a little bit. You mentioned that low suction pressure is a leak trigger and that column separation should be like expected (indiscernible) 35 pounds or lower. If they are below 35 pounds, are they supposed to start thinking weak in your mind set or not? Or do they need something else to be --

A. My mind set is if you don't expect that, then you should be investigating it.

Q. Okay. All right. Would you consider an MBS analyst an expert on the system hydraulics?

A. I don't expect them to be. No.

Q. Okay. But do you consider them to be?

A. No.

Q. Okay. All right. So what role in your mind do they have?

A. They're model analysts. Their role in the control center is to analyze material balance system and to -- and to let us know if it's working -- if it's valid or not. Period.

Q. Okay. So in the control room if someone's having

trouble with procedures and they believe they're not either specific enough or they're difficult to follow or they don't have enough information, how is that supposed to be communicated up the chain?

A. So if somebody has a problem with procedures?

Q. Yes.

A. Regardless? It'd be initiated from the individual and there's a number of different paths that can go up through. Up through their leader, shift lead, and into the compliance group. Or it can go directly to the compliance group, Jim Johnston.

Q. Okay. So is there a specific path that you normally recommend or that would be traditionally documented?

A. It's just -- it's an issue that I'd recommend an individual talking to their leader and then I'd look to their leader to determine what path. It might be just an explanation of the procedure. It might be just direction to another group for more guidance.

Q. Okay. Back to the use of pressure control valve. On the PCV valve, you know there were several locations on the restart where we actually had some rather rapid behavior on behalf of the pressure control valve. Is it possible that one of the reasons those aren't used on a stop in this particular case is because they're were some pressure control valves behaving erratically?

A. Possibly.

MR. JOHNSON: That's on the restart when basically they were oscillating? Karen, is that what you're talking about?

MS. BUTLER: Yes.

MR. JOHNSON: And that had to do with the limits. I mean, we had very low limits in the stage -- the different stages of restart. And what was happening is at those lower pressures, I mean, the pressure control valve was oscillating, trying to find a spot where it could operate at those pressures. Once we got to the higher pressures, we didn't see that whatsoever.

MS. BUTLER: Well we actually also saw another recent example, right, of a pressure control valve problem. I mean, I'm just stating that, we don't have to get into that right now.

MR. GOESON: You're just saying, Karen, are you asking if the mind set?

MS. BUTLER: Yes.

MR. GOESON: That's possible.

BY MS. BUTLER:

Q. I'm asking if that's a possibility?

A. It is a possibility but it's a speculation.

Q. Okay. That's fine. I just wanted us to talk of that for a minute.

I'm getting closer. We'll change the subject here in a minute. Looking through just a few notes here.

It seemed to me in some of the procedures that column separation could be treated as either a temporary alarm or a

different type of alarm. Does that ring any bells for you?

A. Oh, barely.

Q. Okay. All right. That's enough.

MR. NICHOLSON: Wait. What do you mean? What do you mean? What are you asking, Karen?

MS. BUTLER: Well there was I believe a procedure that indicated that you went over to this particular element, if it met certain criteria as being a temporary alarm like it had cleared quickly. They had reviewed some other things and it didn't appear to be there. So I just wanted to make sure that we either did understand how that appeared to be worded or if that wasn't a common element, then we won't spend any time focusing on that.

MR. NICHOLSON: They can be temporary or valid alarms, right?

MR. GOESON: They can.

MR. NICHOLSON: For your procedure?

MR. GOESON: Correct.

MR. NICHOLSON: And you've stated already that a column separation is the equivalent of valid alarm.

BY MS. BUTLER:

Q. But apparently there are some MBS alarm that could be a temporary alarm, correct.

A. A column sep condition can be a temporary condition.

Q. Okay. So it could be valid or temporary?

A. Well it can be valid and not going away or it can be

valid and temporary.

Q. Okay.

A. And I guess what I'm saying is a temporary alarm is really a -- it's just an opportunity to prevent unnecessary shutdown. So my understanding is a condition exists, the alarm comes in, they analyze the condition. If it's -- if the column is coming back together, they won't shut down. That's the purpose of the temporary.

Q. Yes. Okay. So when we talked about the fact previously that the MBS cleared and went away, it might be that the controller thought that was a temporary alarm condition not in any way indicating what they had done to review that previously?

A. Correct.

Q. Okay. I just wanted to make sure that the temporary was something we were actually using. Okay.

A. On a running line.

Q. Okay. We talked about some pressures. We talked about the fact that the shift lead interfaced with the operators a little bit. We had some assumptions that the operators were familiar with the elevation profiles. That the shift leads in your opinion should have some greater more effective technical support. And then we kind of asked about communication to shift leads and operators. And I think that you used Greg as an example of how you thought the communication string should work, is that correct?

A. That's correct.

Q. Okay. So is it possible when you look at Greg's example, do you believe at that particular point in time in the control room other people were looking to explain the massive imbalance that had occurred?

A. Yeah, I assume so.

Q. Okay. So you think that could have at all influenced how he communicated it?

A. So I'm clear, Karen. They'd just spent the previous evening trying to figure that out.

Q. Right.

A. And my understanding is that, you know, that information was passed on to Greg. Of course they were still in problem solving mode. And he looked at that condition, recognized that it wasn't normal for the location and initiated an analysis into historical pressures.

Q. Okay. All right. So ideally we would want it to work that way whether we're all looking for a leak or not, is that what you were trying to point out with that?

A. Yes.

Q. Okay. We're getting closer. When they in the MBS system are forcing certain things to occur because they were running a pig and were in the bypass mode, is this something that the operator knows anything about to your knowledge? Or does that all happen kind of behind the scenes?

A. I don't know, Karen.

MR. JOHNSON: Maybe I didn't understand the question, Karen

MS. BUTLER: Okay. There are times when the MBS system analyst force certain things into their leak detection models. An example that occurred was they had to bypass and they had to force pressures in, in order to be able to accurately -- or attempt to simulate the circumstance associated with the bypass due to running the pig. So I was just wondering whether the communication between MBS analysts and the operator is of such a nature that they actually understand how that works. And I think Curt's answer was he didn't know.

BY MS. BUTLER:

Q. Is that correct, Curt?

A. Correct.

MR. JOHNSON: So I think we've got the MBS folks coming in, the operator. We can ask them that question.

MS. BUTLER: Right. I just was interested in his perspective on that. You know, that's great. Thanks for telling me.

BY MS. BUTLER:

Q. You've already mentioned your perspective on what a mentor's responsibility is. And so you talked about the fact we went from technical leads to people-oriented shift leads. Do you know who made that decision to go from non-technical shift leads

and what their position would have been at the time they made it?

A. No. I don't know specifically. There's been a number of generations and changes in management through the last ten years.

Q. Okay. And do you -- was it that way say when you became a supervisor?

A. Yeah, we were in that direction, I believe. It's only been a couple -- two or three years.

Q. Okay. So would you have had input into that decision?

A. I don't recall actually sitting down and having a discussion about the direction of those.

Q. Okay. Would that decision have been told to you that it was going to happen and thereby you implemented it?

A. My recollection over the last few years, Karen, is that it's something that I just resumed doing. It's not --

Q. Okay.

A. I don't recall being involved in the decision to change direction like that.

Q. Okay. Can shift leads see the alarm log?

A. Shift leads have access to all the SCADA information.

Q. Okay. And can they also see like some of the MBS information or just the alarms?

A. So at the time of the event, just like the operators, they could see -- and I think we referred to it this morning as a liquid fraction screen.

Q. Right.
A. I think they had access to it at that time. Today they don't.
Q. Okay. Is that a change you made as a result of this?
A. Yes.
Q. Okay. So is that to try and help clarify responsibilities or --
A. Correct.
Q. Okay. All right. On the leads themselves, we talked a little bit about the analysis by MBS and then the leads getting information from the operators passing that to the MBS alarm specialists. The MBS alarm specialists then kind of review that. And somebody enters -- MBS alarms into Facman. Is that actually the operator, the shift lead or the analyst or any combination or -- clarify that for me?
A. So you're asking me who enters the MBS alarms as an AOC?
Q. As into Facman, yeah.
A. I believe it's the operator.
Q. Okay. All right. And we're going to shift gears a little bit now more to your management responsibility. So we talked about the fact that the shift leads directly report to you. Does anybody else directly report to you? You may have clarified that already and I just missed it.
A. No.
Q. Okay. And did you have any involvement in identifying

who would be interviewed by the other group of people that are doing the internal accident investigation?

A. So my only involvement in selection of people was the first week when our first round of interviews.

Q. When you say your first round of interviews, you mean --

A. With you.

Q. -- us and the NTSB?

A. Yes.

Q. All right.

A. Just because we needed to put it together quick and I just grabbed everybody that was involved.

Q. All right. So could you clarify for me have any changes happened to controllers, specific controllers responsibility since the event?

A. Yes.

Q. Can you give me a summation of that?

A. We have suspended or reassigned five individuals.

Q. Can you tell me who they were?

A. They were the three operators, Dave Scott, Theresa MacDonald and Tim Chubb.

Q. Okay.

A. And two shift leads, Aaron Zimmel and Darin Parsons. And they've been --

Q. Aaron and -- I'm sorry, what was the other one?

A. Aaron Zimmel and Darin Parsons.

Q. Oh, Aaron. Okay.

A. And Darin Parsons.

Q. Aaron and Darin were too close for me to pick it up. Okay. And when you made that decision, why did you happen to pick only those two shift leads? What was the thought process there?

A. The thought process, Karen, was that they broke procedure.

Q. Okay. So you're saying that the other shift leads did not break procedure?

A. Not to my knowledge.

Q. Has that caused some difficulty in control room staffing?

A. Yes.

Q. And how are you addressing that?

A. We're doing the best we can through utilizing some former group one staff when possible, we're hiring. We're trying to make do with the staff we have.

Q. And are they just suspended until you take further action or what's your thought process in how that's -- without making you know the end of this, I'm sure you don't. But are you waiting on, say, our report to take further action? Are you waiting on some other internal action to take further action?

A. I think what's been communicated to me is that we're waiting for internal.

Q. Okay. And do you have any approximate timeframe?

A. No.

Q. Okay. Do you -- you help perform performance reviews, I think, as previously stated to one of the other guys, on the shift leads, is that correct?

A. That's correct.

Q. Do they have goals and objectives that mirror yours or how do you develop those separately or how does that work?

A. So well it's really two-fold, Karen. I'll try not to make it -- I'll try and be as direct as I can. It's both. They have objectives that are aligned with mine that are in turn aligned with the department. But I encourage them to come up with objectives on their own.

Q. Okay. So are the operators or your shift leads or you -- so you can answer for all three of those and they may be different answers. Do they all have bonus incentive opportunities?

A. Yes.

Q. And how are those bonus incentives structured? Is that documented anywhere?

A. It's documented. I mean, it's a combination of -- the bonus structure is linked to an individual performance, business unit performance and company performance. And a combination of those provides a multiplier which calculates incentive based on a person's salary.

Q. Okay. So what would have been some of the elements that

would be in your shift lead bonus incentives?

A. So it's strictly --just that. Personal performance.

Q. Yeah.

A. The success of the business unit and the success of the company.

Q. So, on their individual performance, what's (indiscernible) is there?

A. We have tried to link them to some of the metrics that I talked about earlier.

Q. So where can I find a copy of the documented evidence of their bonus incentive? What would I be asking for, what would you call it?

A. So, are you asking me for a copy of their objectives or are you asking me what their incentive was?

Q. I'm not asking about the bonus amount?

A. Okay.

Q. I am asking what leads into that bonus decision.

MR. JOHNSON: There is a standard formula which is defined fairly well in a generic sense. Karen, I think we could get you a copy of that.

MS. BUTLER: I would also like to know specifically what the difference is between the controllers and the shift leads elements and what it is for Curt.

MR. JOHNSON: Yeah, basically, and it would rule it out and it has to do with salary grade what percentages they are.

MR. GOESON: So the --

MS. BUTLER: Well, the individuals clearly have different responsibilities so there is clearly some individual elements that get rolled into that and we will follow up more formally in a request then so we can get some of that clarified.

MR. JOHNSON: So and with more responsibilities it becomes, that if you will, the higher pay grades.

MS. BUTLER: We understand.

MR. JOHNSON: So within that -- that would be a request to the H.R. department.

MS. BUTLER: Got you.

MR. JOHNSON: To define that within the salary grades of those positions.

MS. BUTLER: Okay.

MR. JOHNSON: That's the best way to put that request forward.

MS. BUTLER: Okay.

MR. NICHOLSON: Karen, I would refer you, though, if you want to IR 2.6.

MS. BUTLER: Right.

MR. NICHOLSON: Have you seen that?

MS. BUTLER: I believe I have seen pieces of that.

MR. NICHOLSON: Because I'm looking at like Brad Ashcroft's performance measure target; return on equity target; results.

MS. BUTLER: Right. Right.

MR. NICHOLSON: That kind of defines his.

MS. BUTLER: Right.

MR. NICHOLSON: Okay.

MS. BUTLER: So we'll look through some of that in more detail and then on appropriately.

BY MS. BUTLER:

Q. So who presents the capital or the maintenance budget request for the control room?

A. Capital?

Q. Yeah. If you were to do a whole scale change out I'm sure that would be a capital budget item. If you were going to do maybe just some software upgrade that might be treated as a maintenance budget item. Who does those budget elements?

A. So, with -- it's not ours. It's not in our budget.

Q. Okay.

A. Maintenance upgrades to, say, SCADA and IT?

Q. Yeah.

A. They come from their individual departments.

Q. Okay. So how do you influence that?

A. Only through our monthly meetings.

Q. Okay. So if you know that you need to, say, purchase a revision to software for a particular element or if you know you need to have some IT specific programming done to clean up an issue, and that is going to cost X dollars, when you put together

what it is you need, how do you pass that up the chain to make it happen?

A. So when we have ideas about potential upgrades?

Q. Right?

A. The way you phrased that Karen, is, I don't know what revisions are required for applications in the control center.

Q. Okay.

A. I don't. When there's a problem identified, I mean through a SCADA problem report we identify what can be resolved through support and what can't.

Q. Okay.

A. And then we influence it that way. As far as we put priority on it and then it's up to the SCADA department to budget it.

Q. Okay. So you don't have to do any of the money wrestling or do you? Meaning you don't have to look at what has been defined as a potential solution and put dollars to that and then pass it up as being a priority?

A. No. We sponsor it and we put the priority to it.

Q. Okay. What types of things have been requested to occur in your control room in the last several years that would say, be, an implemented change or an enhancement to what the operators have to contend with or shift leads?

A. I don't understand.

MR. JOHNSON: I think the way to request is it would

either be a capital budget item or an SCN, which is special cost number.

MS. BUTLER: Okay.

MR. JOHNSON: For the last three years we could request and that would give you the history of what's been requested, either capital or operating wise.

MR. NICHOLSON: That would be through the --

MS. BUTLER: Okay. And would I have to ask for a specific area or if I just want control room related could I say it in that fashion and that would only be control room related?

MR. JOHNSON: I think that's the best way to do it, Karen. Control room related, capital or SCN budget items.

MS. BUTLER: Okay. Thank you for that clarification.

MR. GOESON: But I'll add there, too, Karen that specific, are you talking about IT upgrades?

MS. BUTLER: It would be anything that can help the controller make better decisions.

MR. GOESON: I would just specify that in your request.

MS. BUTLER: Okay.

BY MS. BUTLER:

Q. Have you guys listened to individual work load? I know you said you looked at a couple things.

MR. GOESON: Sorry, Karen.

MR. JOHNSON: So, Karen, you are going to make that request or you want me to make that request?

MS. BUTLER: You can make that request.
MR. JOHNSON: All right. I'll make that request.
MS. BUTLER: So we said that it can influence the control room decision.
MR. JOHNSON: Sure. I can do that. Or I will do that.
MS. BUTLER: So it could be IT or control room.
MR. JOHNSON: No. Not a problem.
MS. BUTLER: Thank you, Curt.
BY MS. BUTLER:
Q. So, you have looked at some elements that relate to console work load, is that correct?
A. Correct.
Q. And can you name some of those elements for me?
A. Yeah. I mean we looked at alarm logs, both commands sent and alarms received. We've looked at CMT activities. CMT, again it's our commodity movement tracking. It's really an indication of the number of operational events. We've looked at the number of phone calls they receive.
Q. Okay.
A. Things of that nature.
Q. Is that available in a document?
A. I don't know.
Q. All right. Do you happen to know how many alarms this particular console was receiving per hour for those 3 days in question, 24, 25 and 26?

A. No, I don't.
Q. Can that information be obtained?
A. Yeah. Through the alarm logs. Absolutely.
Q. Yeah, so have you looked at it previously is how I should have asked that?
A. Not with that in mind. I've looked at the alarm logs but not per number per hour.
Q. Okay. All right. Have you made any console revisions since this event?
A. Console revisions?
Q. Yes. Besides people operating. Have you made any console changes?
A. Yes, we have.
Q. And what would that be?
A. In anticipation of what we expect to be increased integrity work, activity, you know work in the field, phone calls, etcetera.
Q. Uh-huh.
A. We've transitioned line three off of that particular console.
Q. So 17 is still there?
A. Yeah. Today they operate 6A, 6B and 17.
Q. Okay. When did we make that change?
A. I don't know the specific date, Karen. I know it was around the time of start up or just prior to.

Q. Okay. All right. Are your controllers part of a union?
A. No, they're not.
Q. All right. I think we're getting really close. I'm checking couple things. Do you happen to know if the leak detection system is considered to be API 1130 compliant or have you ever even had that conversation?
A. I don't know.
MR. JOHNSON: You can ask that question but that comes up in our integrity management. It is, but you can ask that question later on.
MS. BUTLER: Okay. Great.
BY MS. BUTLER:
Q. There was a conversation that was one of the recordings and it was involving Jim, I think, also in this conversation which I believe was the analyst. But it said something like report in Mendon, their pressure transmitters were inside the station valves and so they can't be counted on to give accurate measurements. Is that something you were aware of?
A. No.
Q. All right. I believe in one of the previous interviews you also were trying to explain to us how sectionalizing valves can be treated and I think you said they can be green and then could be highlighted as routine valves. Can you tell me what that highlighting looked like?
A. Uh-huh. It looks like a blue background on the valve

I.D.

Q. Okay. And is the purpose of that just to help them recognize that this is a valve that you can normally close or open?

A. For a routine -- on a routine shutdown. Yeah.

Q. Okay. And I take it that that back lighting is all software driven and pre-programmed, right? There's nothing they have to manually set up to make that happen every shift?

A. That's correct. No, it's done on their displays. It's permanent.

Q. When they say from -- they're looking at the CMT system and they're doing the numbers, so to speak. What does that really involve when they say doing the numbers?

A. Doing the numbers. What does it reference? Which part of the?

Q. All I know is they were talking about their CMT system, that it doesn't always line up, doesn't always match. Sometimes there's problems in it. We find out by doing the numbers. Does that make any sense to you?

MR. NICHOLSON: Is that a statement by the shift leads?

MS. BUTLER: I really can. I just made down the notation. So if that doesn't ring a bell, we'll just go on. I apologize for taking your time on that one.

MR. GOESON: That's okay.

BY MS. BUTLER:

Q. There was an indication, I believe from Dave Scott that they had had a tankage problem at Griffith, and they didn't want to pre-pump a batch. Tell me what pre-pumping a batch is? Does that make any sense?

A. No, I just -- it's -- pre-pumping a batch. It sounds like, Karen, again here I'm going to speculate a little bit. Sounds like they're just pumping -- they've got some tankage issues with respect to scheduling, and it's just about the arrangement of the batches as per the schedule.

Q. Okay. There was another note that this particular line had something unique in that they controlled Stockbridge terminal while on the others they are typically controlled by other individuals. Is that possibly just referring to like valve opening and closing and who would actually operate that or was there something more to that statement possibly?

A. So the Stockbridge terminal is operated on that console. So it's a two-tank terminal.

Q. Okay.

A. Whereas the other terminal facilities the larger ones are operated on their own consoles.

Q. Okay, so that's all they meant. It's still Enbridge personnel. It's just on a different console. Okay. Sorry about that. I found a notation that someone called something an MBS load display. Does that ring a bell? Is that something like the liquid fraction or is that an entirely different display?

A. I haven't heard of it.

Q. Okay. And I guess one last question, have you reviewed any of the data that was submitted like for pressures and flows during this same time interval at various locations?

A. So, I'm not responsible for that. Like the data that's been provided through IRs?

Q. Yeah.

A. No.

Q. Okay. All right. I just wanted to make a point that it appeared that some of those values that were submitted to us had locked up or were not updating both in the flow files and in the pressure files and so it might behoove someone to go back and take a look at that. It may be the result that we had from (indiscernible) communications errors at different times. But if it's possible, Jay, could you pass that on?

MR. JOHNSON: I will.

MS. BUTLER: It would just be good to have people identify where there's --

MR. JOHNSON: So I know the -- if you could just state your request I'll pass that on to Bonnie, how is that?

MS. BUTLER: I will be glad to. Okay. I will put that in a request.

MR. JOHNSON: Okay. Yeah, maybe that's better. You can shoot it to me and I'll put it through or you can send it right on to Bonnie.

MR. NICHOLSON: What are you referring to, Karen? What request?

MS. BUTLER: Actually, it was a combination. I'm not looking at my sheet. I will send that to you in an e-mail to both of you, all right?

MR. JOHNSON: Okay.

MS. BUTLER: Has to do with the flow pressures and then there were some pressure logs that were also submitted under a different request where we were looking through case pressure and discharge pressure and it was obvious if you go down through there that we've got the same value for a very extended time so we just want to make sure we understand what happened there as opposed to say somebody creating a file that didn't quite get it right. Okay.

And with that, Curt, I thank you very much for your indulgence. I'm done with my questions.

MR. GOESON: Okay. Thank you.

MR. NICHOLSON: Okay. Shall we take a break?

MR. JOHNSON: Are we done with Curt?

MR. NICHOLSON: No, we're not done with Curt.

MR. JOHNSON: Okay. Yeah and I just gave the folks downstairs a heads up that we're running late and they're okay with that.

MR. NICHOLSON: Okay. Why don't we shut down the recorders and we'll take a break.

MR. JOHNSON: Okay, shall we take 10.

MR. NICHOLSON: Yeah. Take 10.

(Off the record.)

(On the record.)

MR. NICHOLSON: Resuming our interview, part three, with Curt Goeson here. This is Matthew Nicholson. I guess I'll take the next round of questions. I do have some follow-ups for you, Curt. Going to be one more round, maybe.

BY MR. NICHOLSON:

Q. One thing I wanted to clarify is that when Karen was talking about the valve closure on the 25th. I didn't realize you were going to be able to provide all the detail you provided us.

So there was a system command, stop-line from Griffith to Mendon that Karen was asking about?

A. Uh-huh.

Q. And that typically follows a command to stop the line or shut a sectionalizing valve, I think. Is that correct?

A. System alarm or system command?

Q. This is a -- well it's a -- the console reading is "System: line 6, stop line from Griffith to Mendon."

A. Okay.

Q. So I think she was asking that seemed to appear without any sort of operator command?

MR. NICHOLSON: Is that right, Karen?

MS. BUTLER: Yes, I was -- first of all, I was asking

what generates that. He explained the system does that. That would be -- I think one of the examples he gave us was on an over-pressure or high-pressure. And then my next understanding was I was trying to understand if the stop based on that system would automatically do that, was actually executing the stop. So that's where I think I kind of left off with my questions.

BY MR. NICHOLSON:

Q. And that occurred at 2:59? So what I saw here is that if I look at the information you guys supplied I actually see a console 5, line 6, close sectionalizing valve at mile post 57693 occurring simultaneous with the system line 6 stop. So --

A. That makes sense.

Q. That makes sense, right. Okay. So he issues a command to close the sectionalizing valve --

A. In response.

Q. -- and the system issues this --

A. Correct.

Q. -- confirmation, I guess is what -- is that correct?

A. Correct.

Q. Okay. So I just wanted to clarify.

MR. NICHOLSON: Karen, I think for some reason when he issues stop commands or close commands they didn't appear in the text files that were submitted by Enbridge so I don't know where those were captured.

MS. BUTLER: Okay, gotcha.

MR. NICHOLSON: I don't know where they capture those at all.

MS. BUTLER: Okay.

MR. NICHOLSON: They didn't show up in the text files they supplied us.

MS. BUTLER: Okay. So basically what happened is the controller closed the sectionalizing valve and then that came in as the result of that action.

MR. NICHOLSON: Yes, that's how I took it.

MS. BUTLER: Okay. That'll be easier to understand. Thanks a lot.

MR. NICHOLSON: So if you back to their report you should see it.

BY MR. NICHOLSON:

Q. And then I wanted to be sure, Curt, because you were saying -- you guys were talking about the Stockbridge valve and changing the holding set point to 200. It was one of the first commands he gave it, right?

A. Right.

Q. And you're saying that was a wrong action?

A. No.

Q. You did not say that? Okay.

A. I said it was the first action. One of the first actions. It's typical of a shutdown, yes.

Q. Okay. And the other question, we were talking about

injection valves a little bit which like you said I think it comes from another console. Would you typically wait to have confirmation that the injection valve is shut before you turn off any pumps at Griffith or would it be appropriate to start shutting pumps off as that's in travel?

A. Based on my experience?

Q. Yes.

A. You'd normally wait until your units are off.

Q. Wait until the valve is shut?

A. No. You would shut your units off. This is at Griffith?

Q. Yes.

A. You would wait until your units, mainline units were off before shutting those valves. Those are upstream of your units.

Q. Right.

A. It wouldn't make sense to close your valves and potentially starve your units.

Q. Okay. The pump station shut down on low suction and now you're saying the operator should notice this. Why would -- and Dave Scott had entered a stop command following this alert?

A. I don't know.

Q. You don't know?

A. No. Other than I'll speculate that he didn't recognize -- that he didn't see it at the time.

Q. Okay.

A. Or that based on timing between when the alarm came in and the status that the status might have still showed green. Cause it was quite close.

Q. They were close.

A. It was quite close from the time the low pressure and the command was issued. It was fairly close. It was like he was going down in sequential order stopping units and not looking at what the actual pressure values were. Just stopping the units.

Q. So if you get a low suction pressure that shuts down a station, it won't restart itself --

A. No.

Q. -- automatically if the pressure came back?

A. No.

Q. I want -- I'm trying to tie the events back to procedures so I know some of this is gray, but I want to clarify. In your procedures there is such a thing as an unqualified individual, right?

A. Certainly.

Q. Okay. And that individual is typically a trainee?

A. Yes. Someone who hasn't been operator qualified.

Q. So was Dave Scott considered an unqualified person at the time he was operating?

A. He was considered to be not qualified, correct.

Q. Okay. Which means Theresa should have been doing things like shutting down a line?

A. No, Theresa was on supervision.
Q. Okay.
A. He can perform those tasks under the supervision.
Q. Okay.
MR. JOHNSON: Now, are we in a one-to-one? Do you understand that or is that a Jim Johnston?
MR. GOESON: I don't understand that.
MR. JOHNSON: Under the operator qualification rule, there's a span of control. And Jim Johnston will be able to tell us that, you know, could Theresa have been over two unqualified personnel or one. You know, I would speculate it's 1:1, but that's a question for Jim Johnston.
BY MR. NICHOLSON:
Q. Okay. You may or may not know, where was -- if it's a one-to-one, where does she sit? Is she just right there next to him?
MR. JOHNSON: She has to be in the vicinity.
BY MR. NICHOLSON:
Q. So she could have her back turned on that other console that's --
A. So she would be beside him at the same console.
Q. She would be beside him at the same console? Okay.
A. But the other consoles, those are other operators.
Q. Right. I just wasn't sure if (indiscernible).
You said the mass balance analyst is not intended to be

a hydraulics expert?

A. Not for operational input.

Q. But he has to have hydraulics background to operate?

A. Yeah, maybe.

Q. Okay. To understand head pressure and --

A. Yes. Maybe. I guess my answer was within regards to do I expect him to provide hydraulic information to the control center.

Q. Okay. And along those lines prior to the shutdown, Theresa mentions set point changes were made at Mendon, I think. And the reason for the set point changes I believe was to allow them to operate at higher pressures due to the bypass at Niles. Do you know anything about that?

A. No, I don't recall.

Q. Where I'm going with that is it sounds like someone's got hold of the big picture there on hydraulics. Someone might have looked at the system and said because Niles will be down, we need greater pressure from -- I guess it would be the upstream stations or downstream stations --

A. Sure.

Q. -- to get through Marshall. And they adjusted limits to allow for that. Is that accurate?

A. So. No. No.

Q. No?

A. The operators only change set points within limits. Is

your question about changing the off-limits?

Q. I want to know why -- it sounded to me like the off-limits were changed to allow the system to run with Niles down to maintain your flow rates knowing that Niles would be down?

A. So potentially I'm not aware of it.

Q. Okay.

A. But the process in relation to that is just that. If, you know, it's a planned outage --

Q. Okay.

A. -- if that planned outage let's say it can impact capacity, you can through your engineering and system optimization groups change your operating minutes. Still within safe parameters but make adjustments to them to achieve a higher rate.

Q. And who would do that?

A. That would be our engineering group in conjunction with system optimization out of Calgary.

MR. JOHNSON: Sounds more like they changed their set points.

MR. PIERZINA: Maybe if I can help clarify. Are we talking about the anomaly digs between or maybe a dig between Mendon and Marshall? There was one that was expedited to --

MR. NICHOLSON: No these are set point changes I think at Mendon.

MR. PIERZINA: So because of an anomaly between Mendon and Marshall there was a pressure restriction.

MR. NICHOLSON: These were actually pressure -- they opened the pressures up.

MR. PIERZINA: Right. So with the existence of an anomaly there's a pressure restriction. If they dig that anomaly and assess and repair it, then they can remove the pressure restriction which allows --

MR. NICHOLSON: That's right. That was it, you're right.

MR. PIERZINA: -- allows a higher pressure between Mendon and Marshall.

MR. NICHOLSON: But they seemed to do it at about the time the shutdown --

MR. JOHNSON: Well what would they have done when you bypass a station? Are they going to change --

MR. GOESON: Operators are only changing set points.

BY MR. NICHOLSON:

Q. So no one does a hydraulic review of the system when you're shutting down a station like Niles to say, well there's not enough pump pressure to get from LaPorte to --

A. Yes we do.

Q. You do?

A. On a bigger scale from our engineering group. And system optimization.

Q. Okay.

A. Around plan maintenance. Most frequently with respect

to. Yeah we only change -- 90% of the time, we're just changing our up limits with respect to digs and reduction in limits. There's always opportunity within a certain parameters to change them, increase them to increase your rates.

Q. So I guess where I'm going with that is then when you get to the first startup and you've got these guys going, oh my gosh, there's not enough pressure. We can't get out of LaPorte and up to Mendon. There's just no pressure. I mean that's really a fallacy because someone should have already done that analysis to say we're good, right? Or not?

A. So if you're basing this on the -- that conversation?

Q. Uh-huh.

A. Yeah, it's a fallacy.

Q. There's no need to go to that level of detail --

A. No.

Q. -- because it's already been factored into?

A. Correct.

Q. Okay. And that comes out of the engineering group in Calgary, not --

A. No, control center engineering and an engineering group in conjunction with an engineering group in Calgary.

Q. Would that have been Ted? Is it Ted Farquhar?

A. No, that's Richard Fulkema (ph.) is our engineering.

Q. Richard, okay.

A. You'll interview Richard later. I guess all I'm saying

is -- and Rich does that all the time. It's system optimization. We look at the big picture, our system. That discussion around whatever topic that was. I agree, it was a fallacy. It was incorrect.

Q. Okay. Because you account for that already.

A. Absolutely.

Q. And I'm guessing when the system was designed, they sort of designed some redundancy in it that says, hey, what if we lost a station. The station has to be oversized. Okay.

A. Absolutely.

Q. It didn't appear that there's any alarms on the suction side of the pump. Are there any suction alarms, low suction alarms other than it looked like it just -- in the event on the 25th, it looked like it went right into a shutdown, a low low. Is there high highs or like a warning and then a -- do they have to set the warning, the controllers. It just looks like the only alarm you get is boom, you're going into a station shutdown.

A. Yeah, but I believe it's triggered at -- like I said before at 25 pounds? I don't think it waits until it's zero.

Q. Yeah, 25 is shut down the station. But there's nothing above that that says --

A. No, it would have be -- you'd get operator initiated.

Q. They set the -- and there's no rate of change alarms that you use for discharge pressure or suction pressure?

A. No. We don't use rate of change on those read-backs. I

believe they've experimented with rate of change within LPM, but I couldn't comment on it.

Q. Do you think -- going back to Theresa and Dave -- do you think there was a hesitancy on Theresa's part to really mentor Dave because they had the same amount of experience?

A. Yes.

Q. I didn't catch it, maybe you said with Karen. What was the reason for removing a line from console 5? The pipeline, I'm sorry.

A. Oh, we just anticipated, you know, two things really. It was a budget increase integrity work. And with that there'd be an increase workload on the console. We had, you know, these new operating limits that people were going to have to work within. We just saw the workload increasing and decided to move it off there to accommodate that.

Q. I'm jumping around, I apologize.

A. That's okay.

Q. Karen mentioned, she hit on the alarms and the priorities and one that does show up as an S7 and you said, yes, that's one of the higher priorities.

A. One of the higher.

Q. But yet it doesn't show up in your procedures? It only discusses S2, S4, S6.

A. The even numbers, yes. I don't know. Jim Johnston's the guy to --

Q. I think we also hit a discrepancy in here with Karen's discussion on the procedures for MBS, weak alarms. So I'm going to revisit this one more time. Actually I was confused going through it too. She was asking you about the MBS alarms and whether there's a valid and a temporary. You're saying that they reviewed the alarm and shut down, called it col sep, but then determined it to be a temporary alarm is what you said the findings would have been.

A. Could you please repeat that? Sorry.

Q. Yeah, so on the 25th, during shutdown when they've got the five-minute MBS alarm --

A. Yes.

Q. -- you said that going through the procedure that would have been found to be a temporary alarm?

A. No. It may have been. So there's two paths --

Q. Right.

A. -- to the temporary. It's valid --

Q. Right. Which one? Because it seemed like when we talked earlier, you concurred it would have been a valid alarm. And if you follow a valid alarm it tells you to shut the line down, which they already were doing?

A. Yes.

Q. And if it's a temporary alarm, you just kind of ignore it --

A. Correct.

Q. -- and restart the line or do notifications. So I'm trying to figure out in this circumstance, which path were they following? Was this --

A. They followed the temporary not-valid.

Q. Temporary, not valid would have been their determination?

A. Correct.

Q. Because it cleared?

A. Right. However my comment was that it was a misunderstanding on the shutdown line. That was where my comment related to. Because on a shutdown line, even a valid alarm will clear.

Q. Okay. Okay. So this was really a kind of above, in a sense.

A. Right.

Q. They probably should have stuck with the valid alarm.

A. Yeah, you know the procedure only applies in hindsight to a running system.

Q. It does but it looks like if you follow a valid alarm procedure you get it to a point to where someone has to review pressure trends which might have --

A. Uh-huh.

Q. -- might have alerted you to something, I guess. Okay. I wanted to clarify that.

So fundamentally you say Greg exhibited what you would

say was typical of a controller -- I'm not sure I'm going to phrase this properly -- but have you looked into that deep enough to understand you know what caused Greg to question this more so then Dave or Tim? I mean what is it about Greg's actions make him so much different then your other two controllers? Where are your other two controllers lacking? Is it training? Or is it something you can build into your other controllers to be like Greg?

A. I have a few opinions on it.

Q. Well, let's hear them.

A. It's the recognition. One, recognition of what's normal and what's not regardless of the condition. Regardless rather of what the analysts and the others say. What can I build into? What would I want to build into? Probably a little more technical strength with respect to column separation, what is it? What leads to the column sep. The assumption that it's not a leak. The first assumption should be that it is a leak. Those kind of things. I mean, at the time four months ago, I said, Greg's the norm. I think that's the phrase I used.

Q. Something like that.

A. Yeah. Maybe not the norm in hindsight.

Q. How's that? Can years of experience work against you? Cause I think Greg had six years, he looked like he was pretty heavy on training. Some had thirty years.

A. Can it work against you? Sure. In my opinion, yes.

From a complacency perspective.

Q. How do you combat that? Is there a way to --

A. How do you combat that? I don't know.

Q. Just a couple more here. And I think you touched on this just now. But it seems like there was a real hesitancy in these transcripts for anyone to say -- to go forward with a leak. Right?

A. Yeah.

Q. They went out of their way to explain it as something else?

A. Yes.

Q. Even then it seemed like the analysis took a pretty long time. A couple hours in between shutdowns. Is it -- is the reason for that -- is there repercussions that they -- what is the risk of saying -- going into suspected leak mode first?

A. There is none.

Q. There is none? These guys are free to call out to the field and have someone inspect a line?

A. Yes.

Q. Okay. You're -- there's no repercussion from not starting a line right back up when it's --

A. No.

Q. Okay. And then I was curious, how did Aaron and Darin break procedure? Or you said they were suspended because they broke procedure, how so?

A. I mean, we suspended everybody prior to having knowledge of actual events. So my thought process there is they were advised at the ten-minute mark --

So there's only one decision based on our procedures and our protocol to make and that's to shut down.

Q. Okay. Even though it sounded like from Tim Chubb's take on things that there are sometimes exceptions made? There's to bring columns together or --

A. With approval.

Q. Aha.

A. Okay?

Q. Okay. So to extend beyond your ten minutes, you have to have approval from --

A. Management.

Q. -- management? Okay.

MR. NICHOLSON: That's all I have.

I'll pass it on to Brian.

BY MR. PIERZINA:

Q. And that's beyond shift lead, right?

A. Correct.

Q. Okay. Cause we're talking the control center supervisor or on-call?

A. Yes.

Q. Okay. Just real quickly, when an MBS alarm comes in, does that include a quantity, you know, how much -- how much --

A. As far as imbalance?
Q. Right.
A. Not to an operator. It's just -- the alarm that comes into the console is just a segment and a time.
Q. Okay.
A. That's all.
Q. How about to the analyst?
A. I don't know.
Q. Don't know? Okay. And as far as the severity of levels of the alarms, you might have said it and I might have not caught it, are there certain ones that have to be reported to a shift lead?
A. Absolutely.
Q. So what are the levels that had to be reported to a shift lead?
A. I don't know the specific levels. I just know that the ones requiring notification as outlined in our procedures.
Q. Okay. So that's specified in the procedures?
A. Yes.
Q. Do you know whether or not LPM alarms have to be acknowledged by the operator?
A. No, I don't. Or if they're just -- as opposed to just information?
Q. Right.
A. I'm not -- no, I couldn't answer that 100 percent.

Q. Okay.
A. Could sure find out.
Q. Could that be culled out in the procedure? Cause I think the LPM was a -- was that an S6?
MR. NICHOLSON: Yeah, we covered that a little bit earlier. And yes, the LPM an S6 and I believe Curt indicated that you would follow the unknown alarm, non-defined procedure.
MR. GOESON: Uh-huh.
MR. NICHOLSON: And it does say for S6 that's a severe and that would be a notify shift lead -- a notify shift lead, advise on-site on-call personnel and create a Facman.
BY MR. PIERZINA:
Q. Okay. So then in the explanation of the alarms so the -- I'm talking about while it was provided with the red text kind of explaining, they said "this alarm occurred due to one or more pressures at Marshall showing zero. Line protection monitor detects the zero pressure and assumes it is invalid."
A. Assumes that the software is invalid, not that the pressure is invalid.
Q. Oh, okay. So that basically is saying that the line pressure monitor is not working?
A. Correct.
Q. Okay.
A. Cause it uses those for its calculations. It uses those pressures.

Q. Okay. So that's -- that's an S6 alarm that requires involvement of the shift lead at a minimum?

A. Yes.

Q. Okay. Then the low suction pressure alarm is an S-4 level. I guess I'm wondering why, you know, why?

A. It seems like a low severity?

Q. Right. Why would that be a lower severity if it's below your base minimum, I guess?

A. Can't answer that, Brian.

Q. Can you think of who -- who would be the best person to answer that question?

A. I mean, you could try a number of -- Les Reschny from a severity perspective. But I'm pretty sure that in the past when these severities were set it was from direction of the control center. I just don't know the logic behind -- or the methodology related to that.

Q. Okay. Just based on what I've been able to see, is it fair to say that the LPM alarms were ignored?

A. I don't know.

Q. Okay.

A. Because to be honest, I'm just making an assumption here that they had to acknowledge an S6 alarm. I'd have to look into that. Acted on would probably be a safer comment.

Q. Yeah. That might have been a poor choice of terms. They seem like they show and they don't, yeah. They don't.

A. I guess my point to Matt was that in this particular case there was two alarms associated with that condition. One was the LPM one and one was the low suction. And had they acted on either one would have covered the condition.

Q. Would there also be a low discharge pressure alarm? Is there some point that your discharge pressure goes?

A. Only if it went to zero.

Q. Because I don't think we saw those.

A. I don't recall an alarm associated with it. That's an assumption, Brian that there would be an LPM related alarm with it because of line pressure protection, line pressure monitor. But I don't recall ever having seen a low discharge pressure one in my career. I don't recall ever seeing that.

MR. NICHOLSON: Why wouldn't you have a low discharge?

MR. JOHNSON: You're going to see the low suction first.

MR. GOESON: Typically the mind set is that you know on the discharge side you're worried about the high-end; on the suction side you're worried about the low end.

BY MR. PIERAZINA:

Q. Yeah, at some point you would think that you would get a low discharge pressure and just most often it might be a frozen transmitter or some transmitter malfunction, right?

A. Yeah. In that case you would get, if you're traveling your malfunction to zero you would get an LPM related alarm. I'm quite confident of that.

Q. So is there a way to tell on LPM alarms that are indicated here, and it is described as one or more, is there a way to tell exactly what the LPM was seeing and alarming for?

A. Yes. (indiscernible)

Q. Great. That's good for me.

MR. NICHOLSON: I think back to Ravi. He had a couple questions.

MR. CHHATRE: I only had two questions.

BY MR. CHHATRE:

Q. During your daily job function, not in your temporary, I guess, promotion position but your regular as a supervisor of lead?

A. Yeah.

Q. What is your day-to-day -- I mean what are your typical day looks like. What do you do?

A. So in the past, 50 percent of my job profile was shift leads.

Q. Okay.

A. And so with respect to them it's coaching and development of the shift leaders and the 140 people that reported through them. So the most of my day had to do with people issues. Policies, etcetera. But then I was also involved in, I referenced earlier kind of the broader business unit that we were a part of, customer service. I was also a representative on the customer service management team. And we really focused on cross-

functional processes between the business units and those are processes that impact things that we do every day whether it's scheduling, system optimization like I referred to earlier. That was the other 50 percent.

Q. So, at the time of the accident were you in your current position or a supervisor of leads?

A. Sorry. My current position is, today, I am supervisor of the leads.

Q. Right. And at the time of the accident?

A. That was my first morning as acting manager.

Q. Okay. So you were put in position?

A. For the EML (ph.) again was on vacation.

Q. And when you say people and policy and coaching, is that like a formal teaching, what do you mean by coaching?

A. Just leadership. Providing leadership to the shift leads. Mentoring, coaching, development.

Q. Will you be in your daily schedule will you be involved in looking at unusual issues involving the control center like mass balance of column separation that we consider routine, it will not reach your level?

A. So those would reach my level. Not necessarily myself in this particular case, it was an on-call individual.

Q. Okay, ultimately to your level?

A. At some point. So approval to proceed beyond the ten minute rule would come to on-call.

Q. And would that person, either you or would the person on call be, would they be looking at all the possibilities including a possible leak? (Indiscernible) in the information that comes through in the column separation and pressure drop and would that be discussed at your level or at least somehow investigated at your level, or should be investigated? Three-part question.

A. So.

Q. One at a time. Did it reach you that day that there was a column separation and pressure drop?

A. So it reached Blaine. My peer because he was on call.

Q. So it reached his level?

A. Our level, yeah.

Q. And then was -- did he consider leak as an option because of pressure drop and the column separation? Did you have a discussion with him or is there a document there someplace that it was discussed? I'm trying to understand the decision making process what that person would do when the information comes to him and her what is next, did it document someplace that yes, I looked at this information and this is what I did?

A. No. It was a conversation on the phone. What he's looking for, I'm going to speculate.

Q. No, what I'm saying is you cannot speak for somebody else?

A. No.

Q. In the procedure if something reaches that level is it

documented someplace that yes, we got a call or we had discussions, somebody else, something like that?

A. Yes. So the documentation is only through an incident form. Is there documentation of the decision making process? No. There's documentation of who is consulted and who was consulted. And who was involved.

Q. And is there --

A. In the company. Within the company.

Q. Did you see a document, my question was did you see a label, did you see a document, yes, I looked at it and notice it--

A. About the timing of that no. Today, yes.

Q. But at the time of accident, no documentation?

A. Right.

Q. When you say coaching, is it formal training or more informal training? In other words for the operators?

A. Shift leads.

Q. Oh, shift leads, okay?

A. It's informal.

Q. Informal.

A. Leadership training.

MR. CHHATRE: That's all I have. Thanks.

MR. GOESON: Okay.

MS. BUTLER: I just have one and that is it might be a two-fold question here

BY MS. BUTLER:

Q. But on the transmitter malfunction, if that should occur, is there any other type of alarm besides the LPM that would indicate that, that you're aware of?

A. On a like a pressure transmitter malfunction?

Q. Yeah, we can talk pressure and flow?

A. I'm only aware of the two and that's your LPM and low suction.

Q. Okay. So if a controller is having discharge pressure transmitter problems, the only way that they would be able to know that is they'll start seeing these LPM indicators and then if it's a (indiscernible) transmitter, meaning it's going in and out, it might -- those might come in and then clear. Is that correct?

A. That sounds correct, Karen.

MS. BUTLER: Okay. All right, that's all I needed, thanks.

MR. JOHNSON: Would, and I know in this case of 6B you have redundant transmitters so if you lost one transmitter would you know that as long as the other one kicked in?

MR. GOESON: Potentially not with redundant.

MR. NICHOLSON: So they don't have different tag names and you wouldn't see that it was (indiscernible).

MR. JOHNSON: They default to the lower or the higher of the settings.

MR. NICHOLSON: But you don't see two boxes on the screen?

MR. GOESON: Not on the screen. You're only looking at one piece of data.

MR. NICHOLSON: And you don't know which track.

MR. GOESON: In behind the scenes. You can go get that information.

MR. NICHOLSON: Okay.

MR. GOESON: I mean there's visual indication of what transmitter's overriding.

MR. NICHOLSON: I think Brian was hinting at this or maybe he was asking it directly, which -- so I was trying to figure out which transducer does LPM look at? Suction, case, discharge

MR. GOESON: LPM looks at both. So. In a segment. So you had to look at upstream discharge and your downstream section and it does its calculations in between there. So.

MR. NICHOLSON: So either one could be zero?

MR. GOESON: Correct.

MS. BUTLER: Does it look at holding pressure at all that you're aware of?

MR. GOESON: It'll look at the higher of the two. Yeah. And then there's shutdowns in addition to LPM associated with holding pressures to protect manifolds.

MR. JOHNSON: But the stations, general stations don't have holding pressures.

MS. BUTLER: Yeah, we understand that. I'm sorry I just

needed.

MR. NICHOLSON: What do you mean we don't have holding pressures?

MR. GOESON: The term holding pressure is only -- it's kind of synonymous with delivery locations.

MR. NICHOLSON: Oh, okay. Just like I see here for Stockbridge.

MR. GOESON: Correct.

MR. NICHOLSON: It does look like you've got procedures for startup like someone's done some.

MR. GOESON: Generic type.

MR. NICHOLSON: Risk assessment. Well, I mean it seems like it's a touchy -- you seem to recognize it's a time of transience and so you have special procedures for that but I don't see any for shutdown that there's be.

MR. GOESON: Of? Yeah. Very generic. You know. Closing off, contacting, who to contact, that type of stuff.

MR. NICHOLSON: I think we talked about it earlier. MBS doesn't seem very reliable and there's a lot of transients on the line. Or it seems like it's more likely to be dismissed by operators. So is there another method that you guys, do you have another system there like LPM that looks at, that you're supposed to look at during shutdown or startup as far as lead detective? I mean should MBS even be used during the startup and shutdown?

MR. GOESON: I don't know.

MR. NICHOLSON: You don't know. Okay.

MR. GOESON: Again, my understanding of MBS is it's a steady state system. To me that doesn't apply to startup/shutdown. Are there other systems that we use? Yes. We use other means of leak protection in the control center.

MR. NICHOLSON: Okay. Got any other questions?

MR. JOHNSON: Nope.

MR. NICHOLSON: I think we'll probably wrap it up from there. I appreciate your time. We went a little over the hour. Just a little and I apologize for that. I think it's Pierzina.

MR. PIERZINA: Very much so.

MR. NICHOLSON: He at least a good way to start actually. So with that I thank you and we'll wrap up this session and we'll go to our next interviewee.

(Whereupon, the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: ENBRIDGE OIL SPILL
MARSHALL, MICHIGAN
Interview of Curt Goeson

DOCKET NUMBER: DCA-10-MP-007

PLACE: Edmonton, Canada

DATE: December 14, 2010

was held according to the record, and that this is the original, complete, true and accurate transcript which has been prepared from the recording provided by the NTSB.

_____
Penny Drake
Transcriber