UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of:	*	
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ENBRIDGE OIL SPILL,	*	Docket No.: DCA-10-MP-007
MARSHALL, MICHIGAN	*	
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Interview of: TOM ZIMMERMAN

By Telephone: SCOTT IRONSIDE
SEAN KEANE
TREVOR PLACE
RYAN SPORNS

Conference Room
Holiday Inn Express
630 East Chicago Street
Coldwater, Michigan

Thursday,
July 29, 2010

The above-captioned matter convened, pursuant to notice, at 2:42 p.m.

BEFORE: KARL GUNTHER
Accident Investigator

APPEARANCES:

KARL GUNTHER, Accident Investigator
National Transportation Safety Board
[redacted]

MATTHEW NICHOLSON, Investigator-in-Charge
National Transportation Safety Board
Office of Railroad, Pipeline, &
Hazardous Materials Investigations
[redacted]

MATTHEW FOX, Senior Materials Engineer
National Transportation Safety Board
[redacted]

JAMES BUNN, General Engineer
BRIAN PIERZINA, General Engineer
U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration
[redacted]

JAY A. JOHNSON, Senior Compliance Specialist
Enbridge Energy Company, Inc.
[redacted]

TOM TIDWELL
U.S. Fish and Wildlife Service
[redacted]

I N D E X

I N T E R V I E W

(3:29 p.m.)

MR. GUNTHER: Yeah, I'm Karl Gunther, National Transportation Safety Board, and we are investigating an oil spill that occurred in Marshall, Michigan, on July 26th, 2010.

INTERVIEW OF TOM ZIMMERMAN, ET AL.

BY MR. GUNTHER:

Q. First thing, can you give your name, address and phone number for the record?

A. Tom Zimmerman, [redacted] What else? Phone number?

Q. Phone number.

A. My office phone number?

Q. That's fine.

A. [redacted]

Q. Could you give your job title and company affiliation?

A. My job title is -- what is my job title? Program manager, system integrity.

Q. Okay.

A. With Enbridge Pipelines.

Q. And what kind of formal training do you have?

A. I'm trained as a civil engineer.

Q. Do you have a PE or --

A. I'm a professional -- I have professional designation. I have a BSC in engineering and an MSC and a Ph.D.

Q. Right. And are you qualified under your company's OQ program?

A. Am I qualified under my company's OQ program? No.

Q. Could you discuss your materials expertise, including experience and qualifications?

A. I've worked on materials-related issues for the 4½ years I've been at Enbridge and for probably 15 of the 20 years that I spent with an engineering research company prior to that.

Q. Okay.

A. I'm not a metallurgist; I'm a civil engineer, so I'm not a materials expert, but I've been involved in a lot of material-type investigations.

Q. Can you give me the supplier of the accident pipe?

A. As far as we know, the supplier is Italsider, an Italian company that provided pipe. I'm not sure how it was purchased, but that's the company of record for the pipe in that area.

Q. And that is also the manufacturer?

A. Yep, they would be -- yep.

Q. Okay. Do you have any idea why that particular pipe was chosen for this application?

A. I don't. It was -- the designed pipe for that entire pipeline is X-52, grade X-52, quarter-inch wall, 30-inch diameter, API-designated, and this pipe fit those requirements, and it was purchased, presumably, because of its availability, but I don't know why that particular pipe was selected.

Q. Okay. And what type of coating was installed on the pipe?

A. I'm going to have to -- sorry. It's a polyethylene tape-coated pipe.

Q. Okay. And do you know how it was installed, whether it was hand- or machine-wrapped?

A. I don't. I guess I can ask if anyone in Edmonton knows that.

Q. Are there any mill test reports available?

MR. PIERZINA: Karl, I think that was --

MR. GUNTHER: Oh, okay.

MR. ZIMMERMAN: Yeah. Anybody in Edmonton know if it was hand-wrapped or machine-wrapped?

MR. IRONSIDE: Don't have that detail here.

MR. ZIMMERMAN: Yeah, so no.

MR. GUNTHER: All right.

MR. PIERZINA: Karl, can I just ask one quick question?

MR. GUNTHER: Go ahead.

BY MR. PIERZINA:

Q. The Italsider pipe, is that sometimes referred to as -- or is that synonymous with Siderius?

A. I think Siderius is what we had in our records, but when we've checked into it, the actual name is, I think, Italsider. I don't think there was a Siderius --

Q. Okay.

MR. GUNTHER: Okay. Well, could you spell that?
MR. PIERZINA: Both of them.
MR. ZIMMERMAN: Both of them? Siderius is what is in some of our records, and that's S-i-d-e-r-i-u-s. And the Italsider is I-t-a-l-s-i-d-e-r.
MR. GUNTHER: Okay.
MR. PIERZINA: Thank you.
MR. GUNTHER: Because I'm sure that she's going --
BY MR. GUNTHER:
Q. Are you aware of any internal corrosion that was observed on -- or that you got on the accident pipe?
A. We don't yet know the exact location, so we don't yet know actually which particular piece of pipe is the accident pipe, so we don't know if there, in fact, is corrosion at that location or not.
Q. Yeah. The internal -- are you prepared to discuss the internal inspection that was done on it?
A. We can discuss some aspects of it.
Q. Yeah. And when was that conducted?
A. There have been a number of internal inspections conducted on that pipeline. The most recent, there was a magnetic flux leakage inspection for metal loss in 2004 -- sorry, in 2007. There was an ultrasonic metal loss inspection in 2009. There was two geometric inspections in 2009, and there is currently a crack detection tool in the line upstream of that location. It hadn't

reached that point yet when the pipeline was shut down.

Q. Are you aware of any problems with external corrosion --

MR. PIERZINA: Can we back up one? Is there any prior crack detection tool run?

MR. ZIMMERMAN: Yes, there was another -- there was a crack detection tool run in either 2004 or 2005. Maybe somebody in Edmonton can confirm. I think it was 2005.

MR. IRONSIDE: 2005.

MR. ZIMMERMAN: Yeah.

MR. PIERZINA: 2005 --

MR. ZIMMERMAN: Was a prior crack detection run.

MR. PIERZINA: And what tool was that?

MR. ZIMMERMAN: The USCD.

BY MR. GUNTHER:

Q. Okay. Have you had any problems with external corrosion on that pipe?

A. Again, we don't know about the particular piece of pipe that failed. We'll have to determine that once we expose it.

MR. PIERZINA: Can I again interject? And I apologize. I think it would be good if we could discuss both line 6B, in general, and -- there's information that we'll want to get, you know, that you guys have for line 6B, in general, and let's not get caught up on --

MR. ZIMMERMAN: That pipe, yep.

MR. PIERZINA: -- exactly where it may have failed.

Let's talk about high line, in general, or line integrity --

MR. ZIMMERMAN: So, on line 6B, we have, in the past, detected some internal corrosion defects, some external corrosion defects, some cracking defects.

MR. GUNTHER: Okay.

MR. ZIMMERMAN: But, to our knowledge, the pipe of interest, we don't know what's there yet and won't until we actually expose it.

BY MR. GUNTHER:

Q. Okay. Have there been any incidents of stress corrosion cracking, either aerobic or anaerobic?

A. I'm going to have to defer to my colleagues in Edmonton to answer that one.

MR. IRONSIDE: There have been occurrences of stress corrosion cracking found during field investigations, yes.

MR. GUNTHER: Okay. Anything around where the failure is thought to be?

MR. IRONSIDE: Not that we're aware of, no.

MR. GUNTHER: Okay. And then why don't you discuss the implications of the internal inspection done in 2009, the pressure reduction rationale?

MR. IRONSIDE: Sorry, could you repeat that? I'm having trouble hearing.

MR. GUNTHER: I'd like you to discuss the implications of the internal inspection done in 2009. I know that there was a

pressure reduction, so, you know, work the process, how that came about.

MR. IRONSIDE: So part of our process for evaluating in-line inspection data includes assessing the predicted failure pressures of the features found in the in-line inspections. And our processes include implementing pressure restrictions for those features prior to going out and doing repairs.

MR. GUNTHER: Okay. And then what kind of pressure reduction was undertaken?

MR. IRONSIDE: The specific features get a point pressure restriction to 72 percent of their predicted failure pressure.

MR. GUNTHER: Okay. So the original MAOP was what, and what would have been the new -- the new MAOP would have been?

MR. IRONSIDE: I would have to look at the files to see, specifically, about each corrosion feature that may have existed. The MAOP varies along the pipeline.

MR. GUNTHER: Okay. The pipeline, when it failed, was it close to the new MAOP or was it still well below it?

MR. IRONSIDE: Below.

MR. ZIMMERMAN: Yeah, to the best of our knowledge, it was well below MAOP, likely in the 80 percent range or something like that.

BY MR. GUNTHER:

Q. Yeah, because I was going to say, if your new MAOP was

73, then if you're in 80, you're actually above it, so I'm, you know --

A. Sorry?

Q. In other words, you know, I'm talking about the percent of your new MAOP, which I understand is 73 percent of the original MAOP. Were you above that or below that?

A. I presume we were below that. I guess that we'll have to confirm those numbers for you.

Q. All right. And, again, what actions were taken by Enbridge after your inspection results?

A. Actions were to implement point pressures -- well, we got the inspection results, we analyzed the results, we determined the failure pressure at all locations where there is a feature noted, and anywhere where there is a pressure restriction required in order to return ourselves to a 72 percent -- or a 1.25 safety margin; 1.39 safety margin, we undertake to -- that's where we impose our pressure restriction, and then we plan a repair program and we execute that repair program.

MR. GUNTHER: Okay. You got any questions, Matt?

MR. NICHOLSON: Well, I came in late. I'm not quite sure what you've covered.

MR. PIERZINA: I've got a few, if you want me to jump in.

MR. GUNTHER: Yeah, we'll go ahead and give it --

BY MR. PIERZINA:

Q. All right. And just kind of backing up a little bit, have your Geo Tools identified any dents on the pipeline?

A. There are some dents on the pipeline.

Scott, can you elaborate on numbers and approximate locations? There's no dent, I think, in the vicinity of the failure.

Q. Okay, no -- that's good enough for me. Can you describe the nature of the defect anomalies from the CD tool run in 2005? And I guess I'm referring to, you know, seam defects, you know, just whatever you've seen from the CD tool.

A. Scott, do you have some information on the various kinds of defects that were noted by the USCD tool from 2005?

MR. IRONSIDE: So we had a little trouble hearing Brian's question.

MR. ZIMMERMAN: Brian wanted to know what kind of features were discovered by the USCD tool in 2005, just in general. Were they seam weld, were they cracked field, were they -- you know, what was there?

MR. IRONSIDE: Sure, sure. So there were reported crack-like features, notch-like features, some crack fields, as well as some metal loss features, which in the world of ultrasonic crack detection is effectively low-level SCC.

COURT REPORTER: I'm sorry, was what?

MR. ZIMMERMAN: Low-level SCC -- S -- all in capitals, SCC.

MR. IRONSIDE: Stress, corrosion, cracking.
MR. ZIMMERMAN: Yeah.
MR. PIERZINA: Can you provide us the most severe anomaly indications in the area of the failure? If you can, you know, focus on, let's say, the six joints, you know, most likely to be in the area of the failure? What are the most severe anomaly indications that you have from any ILI tool run that's been conducted?
MR. IRONSIDE: So, for any ILI?
MR. PIERZINA: Correct.
MR. IRONSIDE: I will start, then, with --
MR. PIERZINA: Let me -- excuse -- let me qualify that, Scott. Any that have not been assessed.
MR. IRONSIDE: Any that have not been assessed?
MR. PIERZINA: Right.
MR. IRONSIDE: Okay. On the crack tool side, then, there is a metal loss feature in a joint in that vicinity, so if we're talking within, for example, 10 joints, within the -- what we believe is the failed section --
MR. PIERZINA: Perfect.
MR. IRONSIDE: -- there is a metal loss feature approximately three inches long. There is a crack-like feature approximately nine inches long. The metal loss features -- we're just looking through the list here. Sorry. Is there a dent feature? Okay. So for the 2009 USWM, within this area, there is

an external metal loss approximately 6.8 inches long, with a predicted failure pressure of 1.005 times the specified minimum yield strength of the pipeline.

MR. PIERZINA: I'm sorry, Scott. I need to back up. You said the 2009, and that's going to be an ultrasonic?

MR. IRONSIDE: Ultrasonic WM tool, yeah.

MR. PIERZINA: USWM. Thank you. And what was that feature, again?

MR. IRONSIDE: That's an external metal loss.

MR. PIERZINA: Okay. And what were the characteristics?

MR. IRONSIDE: 6.8 inches in length, depth 47 percent, predicted failure pressure is 1.005 times the specified minimum yield strength of the pipeline.

COURT REPORTER: I'm sorry, I didn't get that last phrase.

MR. ZIMMERMAN: The specified minimum yield strength.

COURT REPORTER: Thank you.

MR. PIERZINA: It has an abbreviation, SMYS, and you can feel free to use that.

COURT REPORTER: Okay. Thank you.

MR. PIERZINA: Go ahead, Scott. Scott, can you hear me?

MR. IRONSIDE: Yes.

MR. PIERZINA: Okay. Go ahead.

MR. IRONSIDE: There are, I guess, a few other metal loss features of less severity. I don't know how much -- how far

down the list you'd like to go. None of them have a predicted failure pressure below the specified minimum yield strength of the pipeline.

MR. PIERZINA: All right. And, I'm sorry, maybe we need to back up, then, and I do think it's important. The three features that you mentioned from the 2005 CD tool run, do you have predicted failure pressures on those? Or if you have depth, predicted depth? Both --

MR. IRONSIDE: Sure. I think I spoke of two features from the CD run.

MR. PIERZINA: Okay.

MR. IRONSIDE: One is the metal loss feature, which I previously described as shallow SCC. That has no predicted depth associated with it from the in-line inspection tool. Our trending suggests that a maximum depth of that type of feature would be 25 percent through wall.

COURT REPORTER: Twenty-five percent what?

MR. PIERZINA: Through wall.

MR. ZIMMERMAN: Through wall. Through wall.

MR. IRONSIDE: The crack-like feature is 9 inches long, profiled to be maximum depth of 29 percent.

MR. PIERZINA: Twenty-nine percent?

MR. IRONSIDE: Two-nine.

MR. PIERZINA: Thank you. Predicted failure pressure on that?

MR. IRONSIDE: I don't have the exact number here, but it's above the hydrostatic test pressure at that location.

MR. PIERZINA: Okay.

MR. IRONSIDE: I'm looking at a chart now that has numerical numbers.

MR. PIERZINA: All right. Thanks, Scott. Can you also, for those two defects, for each defect, could you give us the joint number?

MR. IRONSIDE: The girth weld number for that feature, you mean, or for all of them?

MR. PIERZINA: For each of these features -- and we're talking upstream girth weld?

MR. IRONSIDE: Upstream girth weld number 4, the corrosion feature I described is 217640.

MR. PIERZINA: Okay.

MR. IRONSIDE: The crack-like feature is girth weld 217720. The metal loss feature is joint number 217780.

MR. PIERZINA: And just so I know, 217640 -- I'm trying to get an idea of, you know, the number of joints between 217640 and 217720. How many joints of pipe is that?

MR. IRONSIDE: So, Brian, just so you know, what we did was, after the failure occurred, we looked at joints in that vicinity. On the crack and dent side we looked approximately 10 joints. On the corrosion side, we looked approximately 20 joints, so that you're getting an analysis roughly 10 to 20 joints within

that vicinity, since we don't know exactly which joint it is.

MR. PIERZINA: All right. So, am I correct in assuming that 217640 and 217720 are 18 joints apart?

MR. IRONSIDE: That's correct.

MR. PIERZINA: No, I'm sorry. Eight joints apart, right?

MR. IRONSIDE: Eight joints, yes.

MR. PIERZINA: All right. And then 217780 is six joints downstream of that 720, correct? Is that correct, Scott?

MR. IRONSIDE: Pardon me?

MR. PIERZINA: Oh, I was asking if 217780 is six joints downstream of 217720?

MR. IRONSIDE: Yes, it would be. We're just trying to confirm that that's the exact right joint number here.

MR. PIERZINA: Okay. Thanks. And I appreciate that. And so, when we -- or when you, Enbridge, excavates the pipeline, we'll be able to tie into a specific joint number, and as we expose the failure, be able to fairly readily determine which joint of pipe we're talking about.

MR. ZIMMERMAN: Yeah, I understand they've located a small fitting just upstream which we can tie into, and it's been seen by the ILI and it's been found in the field, and that's how we'll tie in to know exactly which joint we're on.

MR. PIERZINA: All right. Thank you.

Also, can we -- in this same area that we're talking

about, what previous assessments and repairs have been performed on the pipeline?

MR. IRONSIDE: So, as far as what the area would be, if we're talking plus or minus a mile from this area, there is one repair upstream, about approximately .7 of a mile, which is a corrosion repair completed in 1995.

MR. PIERZINA: Is that -- which side of Marshall pumping station would that be on?

MR. IRONSIDE: That would be on the suction side of Marshall.

MR. PIERZINA: All right. So it's upstream of the station. Okay. Thank you. And is that the only repair upstream of the -- or the closest repair upstream of the failure?

MR. IRONSIDE: That's correct.

MR. PIERZINA: And how about --

MR. IRONSIDE: The closest downstream is a little bit over a mile away, and that is a sleeve dent -- a sleeve repair for a dent.

MR. PIERZINA: Do you know the assessment results of the dent as far, you know, the characteristics of the dent? You know, how big of a dent, you know, was there any metal loss, any cracking associated with the dent?

MR. IRONSIDE: The information I have is the dent depth was 1-1/16th inch deep. The record I have doesn't describe whether there was any additional secondary features or not.

MR. PIERZINA: When was that repair made?
MR. IRONSIDE: 1980.
MR. PIERZINA: 1980?
MR. IRONSIDE: '80, 8-0.
MR. PIERZINA: Thanks. And the repair upstream .7 miles, what was that feature?
MR. IRONSIDE: Corrosion.
MR. PIERZINA: Okay, you said that. And that was 1995?
MR. IRONSIDE: That's correct.
MR. PIERZINA: All right. Can we go -- the next repair downstream, please?
MR. IRONSIDE: That takes us another .7 of a mile -- oh, sorry, that's not a repair. The next repair downstream was a mile and a half, approximately --
MR. PIERZINA: A mile and a half from the failure side?
MR. IRONSIDE: -- that was in 2005. It was a corrosion excavation that required a recoat.
COURT REPORTER: Required a?
MR. PIERZINA: Recoat.
MR. ZIMMERMAN: Recoat.
COURT REPORTER: Thank you.
MR. PIERZINA: And I tried to over-talk you there, Scott. Was that a mile and a half downstream of the failure site area or a mile and a half downstream of that last sleeve repair?
MR. IRONSIDE: Downstream of the other repair we spoke

of.

MR. PIERZINA: Okay. And what year was that?

MR. IRONSIDE: 2005.

MR. PIERZINA: 2005. Would that have been an assessment done as a result of the CD tool run?

MR. IRONSIDE: This was a result of the 2004 USWM, which is a metal loss inspection tool.

MR. PIERZINA: Okay. I did not have that one -- so is that an ILI run that we didn't mention, or did I miss it in that first list?

MR. IRONSIDE: I think we only went back to the latest --

MR. PIERZINA: Okay. That's fair enough. And the 2009 tool run was a USWM, right?

MR. IRONSIDE: Correct.

MR. PIERZINA: All right. Thank you.

I think I'll defer to anyone else that might have some questions but reserve the right to come back, and Jay will tell you that --

MR. JOHNSON: No, no. Scott knows you well enough. He knows you're not done.

BY MR. BUNN:

Q. How do you account for tool tolerance in your analysis?

A. We normally look at -- once we've completed our excavation program, we bring that data back and we compare data

from our field investigation, you know, what we found in the field with what the ILI tool has told us, and we look to see if we're within a certain reasonable margin of error as we plot that information, and if we are, we simply leave it there. If there's an obvious bias in one direction or the other, we make adjustments for that bias.

Q. Okay, okay. And what method do you use to calculate remaining strength?

A. RSTRENG for corrosion features, and we --

MR. JOHNSON: That's RSTRENG.

MR. ZIMMERMAN: Yeah, R-S-T-R-E-N-G. And the crack features would be Corlas.

MR. BUNN: Corlas, okay.

MR. PIERZINA: C-o-r-l-a-s.

COURT REPORTER: Thank you.

BY MR. BUNN:

Q. Okay. And the impact property of this pipe, have you taken samples in the past to run an impact properties?

A. What did we use for impact properties for our crack analysis? That's a question to Scott.

MR. IRONSIDE: Twenty foot-pounds.

MR. PIERZINA: Scott, this is Brian Pierzina again. At the Marshall pumping station, you know, I visited there Tuesday morning, and the posting at the pump station was that the base max discharge pressure was 523 PSIG. Is that number derived at by

pipeline integrity folks or someone else?

MR. ZIMMERMAN: Can you ask that question again?

MR. PIERZINA: Yeah, I was at the Marshall pumping station Tuesday morning, and there was, you know, a printout for base max discharge pressure, you know, minimum -- the set points. And so the base max discharge pressure was 523 PSIG, and I believe the date of that printout was July 23rd, 2010. And so I want to know the -- I wanted to know how the base max discharge pressure at the Marshall station was determined and, you know, whether there was an anomaly indication, pressure restricting that. I haven't tried to calculate, you know, what MOP was or should be, and don't know. So if you could help fill us in?

MR. IRONSIDE: So, Brian, the base max discharge pressures are established through our control center, based on our facilities management assessment of the set points required to meet pressures and pressure restrictions as dictated by the design of the pipeline as well as any operating restrictions that may be required by pipeline integrity. The setting that you described, I'm not -- I don't have that information as far as why that number was selected.

MR. PIERZINA: We -- you understand that, right?

MR. ZIMMERMAN: Yep.

MR. PIERZINA: We might give them point pressure restrictions, and they'll come back and determine the base max discharge to accommodate that, and we don't necessarily know what

that setting is because all we're interested in is that we're protecting those points.

MR. JOHNSON: We could, Brian -- the control center -- I think James Martin -- did you talk to him?

MR. PIERZINA: We might need to tie that in.

MR. ZIMMERMAN: This -- we can find out.

MR. PIERZINA: Yeah. Can you answer, just in general, are there pressure restricting anomalies between Marshall pumping station and Stockbridge pumping station?

MR. IRONSIDE: Yes, there are.

MR. PIERZINA: Yes, there are. What and where are they? And if there are -- I guess, I don't know if there are a couple or if there's a hundred, you know --

MR. JOHNSON: Probably, what we could do, Brian -- and I know you looked at the MOP on Toledo. We pull that sheet out and it'll show on there from facilities management anywhere there's a point pressure restriction.

MR. PIERZINA: That sounds easier.

MR. JOHNSON: Basically, that's in a Sharepoint site that Dave Stafford, who is not here right now, but he could pull up and show the group and/or print off. Are you aware of what I'm talking about, Scott or Tom?

MR. IRONSIDE: Are you talking about the --

MR. JOHNSON: The line description where you put in your point pressure -- where they put in the point pressure

restrictions you've asked for?

MR. IRONSIDE: Yes.

MR. NICHOLSON: So you're saying there's a drawing that's --

MR. IRONSIDE: Yeah, we're aware of those, yeah.

MR. JOHNSON: Yeah, if you will, it's an electronic drawing that Dave Stafford can pull up on his computer. We can print it off, also.

MR. ZIMMERMAN: And it'll show where the point pressure restrictions were downstream.

MR. GUNTHER: Right.

MR. JOHNSON: So, I mean, if you want from here to here --

MR. ZIMMERMAN: And there were some there. I don't know if you want -- if there's a more general answer we can give for right now, but there were some downstream.

MR. PIERZINA: Can we maybe agree to get that for line 6B. It doesn't sound like it's hard to get, right? And it would be by segment, or would it -- I mean -- or is it, you know, just print-out from Griffith to Sarnia?

MR. JOHNSON: I think I -- let me call up Dave or I'll send Dave a note, ask him to go into his computer and do that, take a look at it and see if that's something we can do on site. Otherwise, I can have -- or they can have -- Leanne is the one who's been getting that for us. In fact, maybe that's a better

way to do it.

Scott, would that be possible for you to get with Leanne and have her send us the line description for line 6B and have her e-mail that to Dave Stafford, attach it to an e-mail?

MR. IRONSIDE: Yeah, we can take that as an action.

MR. JOHNSON: Thank you very much. And then I'll have Dave print that off.

MR. PIERZINA: And would it be possible to get that by tomorrow morning at 8:00?

MR. IRONSIDE: Presumably, yes.

MR. JOHNSON: I'm going to say yes, because, you know, they just gave us access to that last week, because, of course, that's one of the things that during our inspections is asked for. So I just don't know where Dave is right now. If he was hooked up to a computer here, I could pull it up for you.

MR. ZIMMERMAN: Somebody there can --

MR. JOHNSON: So I know they can. It's on their Sharepoint site. It's got probably something you wouldn't mind having anyway.

MR. PIERZINA: Okay. I think that's important information as far as this investigation, and probably a lot more expedient than what I'm -- you know, the question-and-answer type of thing, so I think that would be great. I'll back away from the mike.

MR. JOHNSON: Reserving the right.

MR. PIERZINA: Reserving the -- absolutely, reserving the right.

MR. ZIMMERMAN: I guess, I mean, all of this kind of information will be produced in a final investigation report, for sure, right? So we just need to focus on what do you need right now, because, obviously, everybody is dealing with different things in trying to handle the situation, so, you know, all of this can be provided. Whatever you need right away, we'll try and get right away, but whatever you don't need right away, just ask for it and it'll be provided, you know, in whatever time line is reasonable.

MR. NICHOLSON: Yeah, no, I agree. Yeah, I just want to be sure that we're going to get everything that's been discussed. I heard a 2004 run, a 2005 inspection run, 2009 inspection run. Did we discuss anything prior to that?

MR. PIERZINA: I guess the only additional thing we discussed was the 2004 USWM tool run. I think that's of value, also, and I guess, in my understanding, it sounds like the profile with the point pressure restrictions, you know, is a relatively easy request, and the ILI data is going to be a lot more --

BY MR. NICHOLSON:

Q. These are all easy requests, really, so I think we'd like to see the results of all those runs and --

A. Well, what do you mean by the results of all those runs? I mean, there's --

Q. Well, for the segment that we're talking about.
A. Sure. You know, the most reasonable thing -- we're going to have that pipe exposed fairly quickly.
Q. Right.
A. Once we expose it and we know which joint it is --
Q. What station numbers, right.
A. -- then, suddenly, all this -- you know, some of this stuff becomes academic because then you don't care about the features that are over there and over there, you care about what's in this vicinity, right, so --
MR. PIERZINA: Well, we do, we do. I think we care about the entire line from Griffith to Sarnia. Okay.
MR. ZIMMERMAN: Well, I mean, there's inspection runs --
MR. NICHOLSON: If it's all the same type of pipe, same tape coat, sure.
MR. PIERZINA: Yeah, I mean, we definitely want to know what failed and why it failed, but we also want to know, you know --
MR. ZIMMERMAN: What else is on the line, sure.
MR. PIERZINA: Exactly. And so --
MR. GUNTHER: Yeah, we don't want to know there's five others warming up in the bull pen, getting ready to --
MR. ZIMMERMAN: No, but, again, that depends on what the cause is, right? If this is a long seam failure, for instance, of course, you're going to focus on the crack tool stuff. If this is

a corrosion thing, you're going to focus on that. If it's a dent, you'll -- you know, so instead of just providing you with a whole bunch of stuff, let's -- we can see what it is fairly quickly, and then that will focus us on what we're looking for.

MR. PIERZINA: Right. We don't want to needlessly besiege you with information that we can't use and don't need.

MR. GUNTHER: Right.

MR. PIERZINA: But don't assume that we're not interested --

MR. NICHOLSON: Right. In other areas.

MR. ZIMMERMAN: Of course.

MR. PIERZINA: -- in all integrity issues from Griffith to Sarnia.

MR. ZIMMERMAN: Brian, you know our general procedure is, when we find out what this is, the very first thing we do is look at where else could there be something like that, right. That's a prime concern.

MR. JOHNSON: So my question is I understand completely where PHMSA is and Brian -- where he's going with his request. It's not Brian's first time. I don't know exactly where NTSB stands with this. I mean, you're investigating an accident to find the cause of the accident?

MR. NICHOLSON: Right.

MR. JOHNSON: Do you -- I mean, is the -- maybe you could explain that --

MR. GUNTHER: And, also, prevent it from happening again.

MR. JOHNSON: Well, and that's -- okay. But was it procedures or what -- so just maybe if you could explain that a little bit for me --

MR. NICHOLSON: We'll look at all of it, though.

MR. GUNTHER: We'll look at all of that.

MR. JOHNSON: -- because I don't know. I'm not fighting you whatsoever. I just don't totally understand what an accident investigation by NTSB does and where it goes beyond that.

MR. NICHOLSON: There'll be some overlap. We're concerned, as well, about areas outside the immediate rupture or fracture, as well, right. I mean, we want to -- we'll look at the whole thing. We might not go as far as maybe PHMSA will go, looking at the line, but we will definitely be interested in areas just outside the rupture zone, especially if, like I said, it's a similar tape coat, runs through similar soil --

MR. ZIMMERMAN: Yep.

MR. NICHOLSON: -- same material, so --

MR. JOHNSON: And that's what we do. I just didn't know how it would fit into your investigation.

MR. NICHOLSON: Well, how it fits in is we might be looking for procedural issues or patterns that, you know, maybe you had failures upstream five miles that were similar SCC, for instance, or something else that mimicked this. You know, how did

we miss it down here and you caught it up there? Things like that. So this will have --

MR. ZIMMERMAN: Yeah, the condition of the rest of the line is certainly relevant, so --

MR. NICHOLSON: It can be.

MR. JOHNSON: And I'm okay with that. I just didn't know how that fit it.

MR. NICHOLSON: Yeah.

MR. PIERZINA: So I think that the profile that we discussed, you know, to get e-mail to you, that just seems to me a very good short-term fulfillment of a need that we have, you know, right now --

MR. ZIMMERMAN: Sorry. Our profile?

MR. JOHNSON: That Leanne -- that facilities management --

MR. PIERZINA: The point pressure restriction --

MR. ZIMMERMAN: Oh, sure, sure, sure, yeah, yeah.

MR. PIERZINA: And, actually, Matt brought up a good point, which was going to be my next question when I felt rested. The prior leak history on line 6B, I -- can you please describe what we have for prior leak history on -- let me just say main line, line 6B?

MR. ZIMMERMAN: Have you got it sitting there in front of you, Scott?

MR. IRONSIDE: Yes, I do. I'll maybe start at the most

recent and then move backwards.

MR. PIERZINA: Great.

MR. IRONSIDE: Is that fine?

MR. PIERZINA: Yep.

MR. IRONSIDE: 2006, in July, a girth weld crack --

COURT REPORTER: I'm sorry?

MR. ZIMMERMAN: Girth weld crack.

MR. PIERZINA: And if you could, the location of the release or failure?

MR. IRONSIDE: What I have in front of me is mileposts, so I can give you a milepost.

MR. PIERZINA: Perfect.

MR. IRONSIDE: It's 647. That's the milepost from Superior, Wisconsin.

MR. PIERZINA: Oh, I was just concentrating on 6B, Scott.

MR. JOHNSON: No, but that's the milepost -- basically, mileposts start at Superior and come to here.

MR. PIERZINA: Oh, right, okay, all right.

MR. JOHNSON: Believe me, I've got to draw the line where it goes.

MR. IRONSIDE: To Griffith is -- I don't know, Jay, what's Griffith? Four-something?

MR. JOHNSON: Again, I don't know offhand.

MR. IRONSIDE: Okay.

MR. PIERZINA: Okay. Milepost 647 works for me. When you threw in Superior, that threw me for a little loop, but we're good.

MR. IRONSIDE: I apologize. That's just the format that I have it in here.

MR. PIERZINA: That's fine.

MR. IRONSIDE: So I'll give you date, milepost and type of failure. Is that acceptable?

MR. PIERZINA: I think that's great, Scott.

MR. IRONSIDE: Okay. The one prior to that was February 2002, milepost 489, also on a girth weld. June of 1995, milepost 672, external corrosion, a pinhole leak. June of 1988, milepost 722, this occurred in piping that crossed over to a loop, so it's not necessarily right on the main line, it's the looped pipe, and it was an external corrosion rupture.

MR. PIERZINA: I missed that milepost, Scott.

MR. IRONSIDE: 722.

MR. PIERZINA: What's the end-of-the-line milepost?

MR. ZIMMERMAN: 750, or something, 751, is that --

MR. PIERZINA: Okay.

MR. ZIMMERMAN: Is that the end milepost, 751?

MR. PIERZINA: All right. Thanks.

COURT REPORTER: Did he say the icing crossed over?

MR. PIERZINA: Piping.

MR. ZIMMERMAN: Piping.

COURT REPORTER: Okay. I'm sorry.

MR. IRONSIDE: Prior to that, in July of 1987, milepost 715, a rock dent leak.

MR. PIERZINA: I'm sorry, a what?

MR. JOHNSON: Rock dent leak.

MR. ZIMMERMAN: Rock dent.

MR. JOHNSON: And while you're doing this, from a reference standpoint, we're at milepost 607, 608 out here.

MR. ZIMMERMAN: Yep.

MR. JOHNSON: So as you're --

MR. NICHOLSON: Where we think the rupture is.

MR. JOHNSON: Yes.

MR. NICHOLSON: 6-0- --

MR. ZIMMERMAN: Yeah, 608.

MR. JOHNSON: 6-0-8. Yeah, 608. So, from a reference standpoint, as you hear 700, you're like, okay, we're this far away. I just thought that might be helpful.

MR. NICHOLSON: That's very helpful, yes, sir.

MR. IRONSIDE: And just so you know, there are seven more that take us back to 1970. Would you like me to continue right through that?

MR. PIERZINA: You know, let's do it.

MR. JOHNSON: Yeah, and then, plus, we're going to get a printout of this, but in the meantime you've got it, so why not, Scott? You're on a roll.

MR. IRONSIDE: All right. May 1987, milepost 750, external corrosion leak. October 1985, milepost 751, external corrosion leak. January 1984, milepost 512, external corrosion leak. November 1979, milepost 714, a dent leak.

MR. PIERZINA: Dent leak?

MR. IRONSIDE: January 1979, milepost 475, a buckle inside the casing, hairline crack in the buckle. In April 1978, milepost 681, a buckle, two small pinholes at the end of a casing. June 1970, milepost 467, a long seam leak.

MR. PIERZINA: What was that year again?

MR. IRONSIDE: 1970.

MR. ZIMMERMAN: And construction was '69, I think. That's it.

MR. PIERZINA: That's the bunch, huh?

MR. IRONSIDE: Excuse me?

MR. PIERZINA: Oh, sorry. I'm just thinking.

MR. ZIMMERMAN: Carry on.

MR. GUNTHER: Okay.

BY MR. BUNN:

Q. Tom, have you done fatigue analysis anomalies on this line?

A. Sean, have we done any fatigue analysis on this line? I mean, we do our normal pressure cycling analysis every quarter, and that would be done for this line, as well as the rest of our lines --

MR. KEANE: Yep.

MR. ZIMMERMAN: -- so it's an indication of the --

MR. KEANE: The pressure cycle monitoring?

MR. ZIMMERMAN: Yeah, it's done for this. I don't know if we've done any specific -- for any specific defect that we found, if we calculated fatigue life beyond the pressure cycling analysis, Sean?

MR. KEANE: Sure. So -- Sean Keane.

MR. BUNN: Yeah.

MR. ZIMMERMAN: This is Sean Keane.

MR. KEANE: What we do is we do a fatigue analysis type of assessment every quarter on the pipeline, and I'll explain. It includes calculating a fatigue life for a 20 percent deep starting flaw and growing it to failure, and determining the life of that, the time to go to failure. For this particular -- and then we compared back with (indiscernible) recognized, aggressiveness of the pressure cycling --

COURT REPORTER: I'm sorry, I didn't catch the last --

MR. KEANE: -- and so, for this particular pipeline, the pressure cycling is what we consider light --

MR. PIERZINA: Sean, hold -- hey, Sean, can you hold -- Sean, hold up one second. Our court reporter missed something that it might be hard to get back to.

COURT REPORTER: Could he just repeat that last sentence a little slowly --

MR. ZIMMERMAN: How far did you get?

COURT REPORTER: Oh, I've got it all, I'm just not clear on --

MR. ZIMMERMAN: Oh, okay.

COURT REPORTER: Maybe just that last sentence.

MR. ZIMMERMAN: Do you remember your last sentence, Sean?

COURT REPORTER: I'm sorry.

MR. ZIMMERMAN: That's okay.

MR. BUNN: Well, you mentioned that you grew the defects to failure, a 20 percent defect to failure. What --

MR. ZIMMERMAN: Yeah. It's not an actual defect --

MR. BUNN: Right.

MR. ZIMMERMAN: -- it's a standard defect size, 20 percent deep, 6 inches long, and we use the actual SCADA data --

MR. BUNN: Yes.

MR. ZIMMERMAN: -- and we see how long that will -- you know, what the life of that is, and then we plot that every quarter, and that gives us some indication of what the pressure cycling severity is on this line. And I don't think the pressure cycling severity at Marshall station is particularly severe. In fact, I think it's particularly not severe.

BY MR. BUNN:

Q. How about the C and N values that you used? Do you know what those would be?

A. The C and N values we're using now are 8.61, if that means something to you, for the C value and an N value of 3.

Q. Thank you.

MR. PIERZINA: Just to kind of wrap my arms around some of my thoughts, am I correct in looking at what, you know, we've gotten so far from you and thinking that the 9-inch long, 29 percent reported defect from the 2005 CD tool run is the most severe feature that is known in the area? Is that a fair statement?

MR. KEANE: Yep.

MR. PIERZINA: Okay. If, in your fatigue analysis, if you grow that defect for five years with your known pressure cycles at Marshall, what would you predict that -- I'll ask it. What would you predict that feature to look like today, or --

MR. IRONSIDE: Sean did that analysis. I'll let him describe that to you.

MR. PIERZINA: All right. Thanks.

MR. JOHNSON: Sean Keane will be speaking now.

MR. KEANE: So for that particular feature, what we would do is we would -- within our own processes, we have an -- pardon me -- uncertainty management process, which includes -- including a maximum depth of the depth in, plus the measured bias from the tools in the field ILI correlations. So, using that, starting defect size with a 47 percent deep, we would predict that it would grow to -- I don't have the exact value in front of me, I

just have a graph, but it's less than 50 percent. The cycling on the station is quite light.

MR. PIERZINA: So, if I heard you right, your fatigue analysis predicts that feature to be somewhat less than 50 percent depth now, right?

MR. KEANE: Correct. That's correct.

MR. ZIMMERMAN: On an upper side, right? What starting crack size were you using for that, Sean?

MR. KEANE: That's a 47 percent deep starting crack size.

MR. ZIMMERMAN: Which was their profile depth or their --

MR. KEANE: No.

MR. ZIMMERMAN: -- upper end of the bin --

MR. KEANE: So the profile depth is 29 percent deep --

MR. ZIMMERMAN: Yeah.

MR. KEANE: -- but, when we do a fatigue analysis of this type, what we do is we take the maximum depth from the depth reporting bin from the USCD ILI tool.

MR. ZIMMERMAN: Yeah, so, good. So I'm just pointing out that that wouldn't be our best guess at what the depth of that crack would be; that would be the upper end of what we think it could be, because we're using a crack size -- we're not using the crack size reported by the CD, we're putting a big error band on that and saying, well, it could be deeper than that. So, if it

was deeper than that, here's how much it would grow. So it's a little bit different than saying that's what we think that crack depth is.

MR. PIERZINA: Well, and that helps me because -- all right. So, essentially, what you're saying is that your fatigue analysis predicts very little growth of that defect in the five years since the last CD tool run?

MR. KEANE: That's correct.

MR. ZIMMERMAN: And that's consistent with the fact that our pressure cycling analysis doesn't show very severe pressure cycling at that station.

MR. PIERZINA: And your pressure cycle analysis is based on each station, or do you use representative --

MR. ZIMMERMAN: It's done for every station.

MR. PIERZINA: Okay.

MR. ZIMMERMAN: We pull pressure data for each station, and we do this calculation for each station.

MR. PIERZINA: Okay.

MR. ZIMMERMAN: And none of them are very severe, but Marshall is probably one of the least severe. I don't know if it's the least. It's not in the upper side of what's there, anyway.

MR. BUNN: Why don't we talk about the pipe specification. You did confirm it's double-submerged arc-welded?

MR. ZIMMERMAN: It is double-submerged arc-welded.

MR. GUNTHER: Let's see. We haven't discussed hydrostatic testing. Did you do any of that, and what were the results?

MR. ZIMMERMAN: My recollection is there was a hydrotest done during original construction, and not since. But is that correct, Scott?

MR. IRONSIDE: Yes.

MR. JOHNSON: And that's a request that we'll also give you, the test records.

MR. ZIMMERMAN: Yep.

MR. PIERZINA: Were there any failures as a result of the post-construction hydrostatic test?

MR. IRONSIDE: We don't have that information here, Brian.

MR. PIERZINA: Okay.

MR. JOHNSON: And I'm not sure, Brian, based on the time frame for that, that it would be recorded, but we'll certainly look.

MR. PIERZINA: Okay.

MR. GUNTHER: Okay. Do you have the metal certs for this pipe?

MR. JOHNSON: Yes, we do.

MR. GUNTHER: Okay. If we can get a copy of that?

MR. JOHNSON: That's on your request list.

MR. BUNN: Yeah. Do you have third-party inspection

reports?

MR. JOHNSON: I don't believe so. The folks back in Superior are working with our technical records person. That -- I want to say that's a gray area. Gray to black. How's that?

MR. GUNTHER: Okay. Anybody else have any more questions?

MR. JOHNSON: No.

MR. PIERZINA: Oh, somebody ask something. I'm thinking.

MR. JOHNSON: I'll give you a little window here, Brian. I'm going to help you, as much as I know better. You know, we've got Trevor on here. Trevor was the person -- you know, we talked about we would -- Tom, with help, would represent the external corrosion, the internal corrosion, the in-line inspection, and along with the metallurgical side of things we've done. So I just -- I mean, that -- those were the items that we've got this group together for. I just wanted to make sure that, when we've got them, we've covered your questions there.

MR. NICHOLSON: Well, I wasn't in on all the questions. So you guys covered SCC and --

MR. JOHNSON: Yes, we did.

MR. NICHOLSON: You mentioned there was SCC, but did you talk about how you -- when it's discovered, what do you do? Do you outer test or do you direct assess, do you --

MR. ZIMMERMAN: We measure -- we determine depths in the

field, and, normally, we buff it out and recoat.

BY MR. GUNTHER:

Q. And one thing I'll note, Matt, and the earlier guy who was here before you, the cathodic protection numbers looked good; however, that particular type of coating does what's called cathodic shielding. So just because the cathodic numbers are in the 2s, it doesn't mean that SCC hasn't been going on or is going on.

A. But, you know, hopefully, we find those things with our ILI, right?

Q. Yeah.

A. And that's why we run ILI more frequently on this line than other lines, because it is a tape-coated line, so we understand there can be shielding; and, therefore, we need to find defects and repair them.

MR. NICHOLSON: And you run ILI and you think it's a pretty good detection tool for SCC? You think you get pretty good resolution for something like that?

MR. ZIMMERMAN: That's all you got. I mean, you can do direct -- you know, there's a bit of magic there, as well, but we think it's the best way.

MR. PIERZINA: This is Brian, again, and thank you all very much. That 9-inch long feature, is that an externally connected defect or an ID-connected defect?

MR. IRONSIDE: External.

MR. PIERZINA: Externally. Are there indications of what's referred to as narrow axially oriented external corrosion associated with line 6B?

MR. IRONSIDE: There are low-level areas of it on line 6B, yes.

MR. PIERZINA: And what's low-level?

MR. IRONSIDE: Sorry. In the area that was analyzed in the last -- in the 20 joints around the feature, there's low-level in the order of 25 percent deep, that type of lower-level corrosion.

MR. ZIMMERMAN: That's NAEC?

MR. IRONSIDE: That could be considered narrow and axial external corrosion, yes.

MR. PIERZINA: Okay. And that's in the immediate area of the failure. How about the pipeline, in general, you know, from Griffith to Sarnia?

MR. IRONSIDE: Certainly, yes, there is narrow -- I mean, that's a common occurrence with Polyken tape-coated pipeline is to have narrow external corrosion. And because of that, we run both technologies, the ultrasonics, as well as the MFL, to manage that threat.

MR. PIERZINA: All right. Thanks. Sorry, just thinking again. I have to back up to what you just said. You said you used both technologies? You're talking ultrasonic wall measurement and --

MR. ZIMMERMAN: And MFL.

MR. PIERZINA: -- MFL and cracked -- you know, you integrate all --

MR. ZIMMERMAN: Yeah. He meant the two technologies for finding corrosion.

MR. PIERZINA: Okay.

MR. ZIMMERMAN: Right. We use the ultrasonic and the magnetic. One finds NAEC, the other's not so good at NAEC, the other one's better at -- you know, they find different things, right, so we run them both on tape-coated lines.

MR. PIERZINA: Sure, sure. In any of you guys' experience, does the NAEC have a propensity or could it fatigue or at what point might it, you know, begin, you know, started as a corrosion defect and turn into something that fatigues through the wall?

MR. ZIMMERMAN: I mean, I think we've seen -- not on 6B, in particular, but we have seen incidents on other lines where cracks grew from corrosion defects in the long seam, adjacent to the long seam. But, again, our protection is to find those cracks with our crack ILI tool before they grow to any severe depth, and we would expect that that's what could happen here, that's what would happen here.

MR. PIERZINA: Okay.

BY MR. FOX:

Q. Can you describe the ILI tool? I don't know if you

already did that or --

A. No. There are a number of different kinds of ILI tools that we've ran on this line.

Q. Okay.

A. There's an ultrasonic wall loss tool -- metal loss tool that we run and we ran in 2004 and again in 2009. And there's an MFL, magnetic flux leakage tool, that was run in 2007. And there's an ultrasonic crack detection tool that was run in 2005 and is in the line right now, although it hasn't passed that point.

Q. In '05?

A. In '05 and again in 2010, but not completed. It's in the line. And we've also --

Q. And when was the mag flux?

A. Magnetic flux leakage was in -- when was the MFL? In 2000 and --

Q. In '07?

A. '7, yeah.

MR. NICHOLSON: Is that a second generation?

MR. ZIMMERMAN: It's whatever -- I presume it is. It's GE's modern MFL tool.

MR. PIERZINA: We need your name for the record.

MR. FOX: Yeah. I'm Matt Fox. I'm materials engineer, senior materials engineer, with the National Transportation Safety Board.

COURT REPORTER: Thank you.

MR. GUNTHER: All right. Any more questions? All right, well --

MR. PIERZINA: Thank you, guys.

MR. GUNTHER: Thanks, yeah.

MR. ZIMMERMAN Yeah, I'm sure there'll be a bunch more once we dig it up and see what's there, right?

MR. NICHOLSON: Yes.

MR. BUNN: That'll change everything.

MR. ZIMMERMAN: That'll focus us all.

MR. PIERZINA: I'd like to say, oh, just one more, but that's not even funny, so --

MR. GUNTHER: Yeah, this is your guy, so --

MR. ZIMMERMAN: So is that all of the questions for this group?

MR. JOHNSON: That's what I wanted to clarify. I mean, you know, that's the external, that's the internal, it's the in-line inspection and the metallurgical questions.

MR. GUNTHER: Yeah, all right.

MR. PIERZINA: Okay. Thank you guys very much in Edmonton. We'll let you go.

MR. IRONSIDE: Okay. Good luck out there, guys.

MR. JOHNSON: All right. Thank you.

MR. PIERZINA: Thanks, guys.

(Whereupon, at 4:33 p.m., 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 Interviews of: Tom Zimmerman, et al.
DOCKET NUMBER:	DCA-10-MP-007
PLACE:	Coldwater, Michigan
DATE:	July 29, 2010

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

_____
Amy Shankleton-Novess
Official Reporter

_____
Cheri Grissom
Transcriber