UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF LOUISIANA

IN RE: OIL SPILL BY THE OIL RIG *DEEPWATER HORIZON* IN THE GULF OF MEXICO ON APRIL 20, 2010	*	Docket 10-MD-2179 Section J
Applies to:	*	New Orleans, Louisiana
Docket 10-CV-02771, *IN RE: THE COMPLAINT AND PETITION OF TRITON ASSET LEASING GmbH, et al*	*	April 16, 2013
Docket 10-CV-4536, *UNITED STATES OF AMERICA v. BP EXPLORATION & PRODUCTION, INC., et al*	*	

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DAY 28, MORNING SESSION
TRANSCRIPT OF NONJURY TRIAL
BEFORE THE HONORABLE CARL J. BARBIER
UNITED STATES DISTRICT JUDGE

Appearances:

For the Plaintiffs: Domengeaux Wright Roy & Edwards, LLC
BY: JAMES P. ROY, ESQ.
556 Jefferson Street, Suite 500
Post Office Box 3668
Lafayette, Louisiana 70502

For the Plaintiffs: Herman Herman & Katz, LLC
BY: STEPHEN J. HERMAN, ESQ.
820 O'Keefe Avenue
New Orleans, Louisiana 70113

Appearances:

For the Plaintiffs:	Cunningham Bounds, LLC BY: ROBERT T. CUNNINGHAM, ESQ. 1601 Dauphin Street Mobile, Alabama 36604
For the Plaintiffs:	Lewis Kullman Sterbcow & Abramson BY: PAUL M. STERBCOW, ESQ. 601 Poydras Street, Suite 2615 New Orleans, Louisiana 70130
For the Plaintiffs:	Breit Drescher Imprevento & Walker, PC BY: JEFFREY A. BREIT, ESQ. 600 22nd Street, Suite 402 Virginia Beach, Virginia 23451
For the Plaintiffs:	Leger & Shaw BY: WALTER J. LEGER JR., ESQ. 600 Carondelet Street, 9th Floor New Orleans, Louisiana 70130
For the Plaintiffs:	Williams Law Group, LLC BY: CONRAD "DUKE" WILLIAMS, ESQ. 435 Corporate Drive, Suite 101 Houma, Louisiana 70360
For the Plaintiffs:	Thornhill Law Firm BY: TOM THORNHILL, ESQ. 1308 Ninth Street Slidell, Louisiana 70458
For the Plaintiffs:	deGravelles Palmintier Holthaus & Frugé, LLP BY: JOHN W. DEGRAVELLES, ESQ. 618 Main Street Baton Rouge, Louisiana 70801

Appearances:

For the Plaintiffs:	Williamson & Rusnak BY: JIMMY WILLIAMSON, ESQ. 4310 Yoakum Boulevard Houston, Texas 77006
For the Plaintiffs:	Irpino Law Firm BY: ANTHONY IRPINO, ESQ. 2216 Magazine Street New Orleans, Louisiana 70130
For the United States of America:	U.S. Department of Justice Torts Branch, Civil Division BY: R. MICHAEL UNDERHILL, ESQ. 450 Golden Gate Avenue 7-5395 Federal Bldg., Box 36028 San Francisco, California 94102
For the United States of America:	U.S. Department of Justice Environment & Natural Resources Environmental Enforcement Section BY: STEVEN O'ROURKE, ESQ. SCOTT CERNICH, ESQ. DEANNA CHANG, ESQ. RACHEL HANKEY, ESQ. A. NATHANIEL CHAKERES, ESQ. Post Office Box 7611 Washington, D.C. 20044
For the United States of America:	U.S. Department of Justice Torts Branch, Civil Division BY: JESSICA McCLELLAN, ESQ. MICHELLE DELEMARRE, ESQ. JESSICA SULLIVAN, ESQ. SHARON SHUTLER, ESQ. MALINDA LAWRENCE, ESQ. Post Office Box 14271 Washington, D.C. 20004

Appearances:

For the United States of America:	U.S. Department of Justice Fraud Section Commercial Litigation Branch BY: DANIEL SPIRO, ESQ. KELLEY HAUSER, ESQ. ELIZABETH YOUNG, ESQ. Ben Franklin Station Washington, D.C. 20044
For the State of Alabama:	Attorney General of Alabama BY: LUTHER STRANGE, ESQ. COREY L. MAZE, ESQ. WINFIELD J. SINCLAIR, ESQ. 500 Dexter Avenue Montgomery, Alabama 36130
For the State of Louisiana:	Attorney General of Louisiana BY: JAMES D. CALDWELL, ESQ. 1885 North Third Street Post Office Box 94005 Baton Rouge, Louisiana 70804
For the State of Louisiana:	Kanner & Whiteley, LLC BY: ALLAN KANNER, ESQ. DOUGLAS R. KRAUS, ESQ. 701 Camp Street New Orleans, Louisiana 70130
For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Liskow & Lewis, APLC BY: DON K. HAYCRAFT, ESQ. 701 Poydras Street, Suite 5000 New Orleans, Louisiana 70139
For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Kirkland & Ellis, LLP BY: J. ANDREW LANGAN, ESQ. HARIKLIA "CARRIE" KARIS, ESQ. MATTHEW T. REGAN, ESQ. 300 N. Lasalle Chicago, Illinois 60654

Appearances:

For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Covington & Burling, LLP BY: ROBERT C. "MIKE" BROCK, ESQ. 1201 Pennsylvania Avenue, NW Washington, D.C. 20004
For Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc.:	Frilot, LLC BY: KERRY J. MILLER, ESQ. 1100 Poydras Street, Suite 3700 New Orleans, Louisiana 70163
For Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc.:	Sutherland Asbill & Brennan, LLP BY: STEVEN L. ROBERTS, ESQ. RACHEL G. CLINGMAN, ESQ. 1001 Fannin Street, Suite 3700 Houston, Texas 77002
For Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc.:	Munger Tolles & Olson, LLP BY: MICHAEL R. DOYEN, ESQ. BRAD D. BRIAN, ESQ. LUIS LI, ESQ. 355 S. Grand Avenue, 35th Floor Los Angeles, California 90071
For Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc.:	Mahtook & Lafleur BY: RICHARD J. HYMEL, ESQ. 600 Jefferson Street, Suite 1000 Post Office Box 3089 Lafayette, Louisiana 70501
For Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., Transocean Deepwater Inc.:	Hughes Arrell Kinchen, LLP BY: JOHN KINCHEN, ESQ. 2211 Norfolk, Suite 1110 Houston, Texas 77098

Appearances:

For Halliburton Energy Services, Inc.:	Godwin Lewis, PC BY: DONALD E. GODWIN, ESQ. BRUCE W. BOWMAN JR., ESQ. FLOYD R. HARTLEY JR., ESQ. GAVIN HILL, ESQ. 1201 Elm Street, Suite 1700 Dallas, Texas 75270
For Halliburton Energy: Services, Inc.:	Godwin Lewis, PC BY: JERRY C. VON STERNBERG, ESQ. 1331 Lamar, Suite 1665 Houston, Texas 77010
Official Court Reporter:	Jodi Simcox, RMR, FCRR 500 Poydras Street, Room HB-406 New Orleans, Louisiana 70130 (504) 589-7780 Jodi_Simcox@laed.uscourts.gov

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I N D E X

MORNING SESSION

(April 16, 2013)

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07:44 **THE DEPUTY CLERK:** All rise.

08:06 **THE COURT:** Good morning, everyone. You may be seated.

Do we have any preliminary matters?

08:06 **MR. DOYEN:** Yes, Your Honor. Good morning. Michael Doyen for Transocean.

I've got the exhibit we -- exhibit list we circulated for our examination of Arthur Zatarain with no objections. I would offer those now.

08:06 **THE COURT:** All right. Any objection to Transocean's exhibits?

Hearing none, those are admitted.

08:06 **MR. DOYEN:** Thank you, Your Honor.

08:06 **MR. IRPINO:** Good morning, Your Honor. Anthony Irpino for the PSC.

I have our list of exhibits, call-outs, and

demonstratives that we have used with Mr. Steve Lambert's examination. There are two objections that Transocean has raised regarding two of them. We can't work it out. We've been back and forth. They are two video -- not video, I'm sorry -- deposition excerpts that were put up on the screen. Like I said, they weren't objected to at the time. Now Transocean doesn't feel like they --

THE COURT: They were excerpts of whose deposition?

MR. IRPINO: Mr. Lambert's.

THE COURT: Mr. Lambert's deposition?

MR. IRPINO: Yes.

THE COURT: What's the objection?

MR. BRIAN: Your Honor, Brad Brian for Transocean.

We've had discussions about this throughout the trial. If deposition excerpts used to impeach are not themselves exhibits, they're offered for impeachment, they're usually read into the record so that there's a record of them.

Earlier in the trial I think a couple of them trickled in and then we had discussions and objected to them after that and the parties withdrew them. I don't feel strongly about these, but all the parties have used deposition transcripts to impeach, so we'd have to go back and kind of redo it, I think.

THE COURT: Yeah. Well, I mean, you're right, the usual practice is you ask a witness to confirm or deny that

that was his testimony -- or their testimony in the deposition and if they agree, then it's just read and there's no need to put the deposition in itself.

I thought that you-all were putting these in. I didn't have any big problem with it, though.

MR. BRIAN: Our view is, Your Honor, that we should be consistent. I think --

THE COURT: Oh, I agree with that.

MR. BRIAN: The first witness or two, I think there were a couple that went in --

THE COURT: That's what I seem to recall.

MR. BRIAN: After that, I think the parties did not offer them or there were objections. If Your Honor would prefer to have all of them, we can go back and do that.

THE COURT: No. I prefer less than more when it comes to exhibits. I can promise you that.

MR. IRPINO: Your Honor, just to be clear, they've been coming in based on that -- at least from our standpoint, based on that philosophy that they were --

THE COURT: Well, you're saying they've been coming in and Mr. Brian's shaking his head no back there. So why don't you-all see if they can -- I really don't have strong feelings one way or the other. Particularly since it's a bench trial, it doesn't make any great difference. But there ought to be consistency. They ought to either be all in or all be

out. And I would rather have them all out, frankly, unless you-all want them in for some reason.

MR. IRPINO: We're finally --

THE COURT: If you put it up on the screen and if the witness said, "Yes, that's what I said," and it's on the record, I don't know why you need the deposition itself.

MR. IRPINO: The only reason --

THE COURT: Now, if the witness denied it, then it should go in.

MR. IRPINO: Well, we'll do what the Court wants.

THE COURT: Or if the witness quibbled or equivocated or whatever.

Okay. Why don't you talk to all the parties and see if you can come to some -- again, I'm -- I don't know if they have been going in up until now or not, but we want to do it consistently.

MR. BRIAN: I agree that there should be a record, Your Honor.

THE COURT: So for now we'll admit all but those two. Okay?

MR. IRPINO: Okay, Your Honor.

THE COURT: All right.

MR. IRPINO: I'll provide copies.

THE COURT: Okay. Anything else?

Okay. Mr. Godwin.

MR. GODWIN: Thank you, Your Honor.

THE COURT: Mr. Guide, you're still under oath, sir.

THE WITNESS: Yes, Your Honor.

THE COURT: Okay.

MR. GODWIN: Good morning, Judge. May it please the Court?

THE COURT: Go ahead.

(WHEREUPON, **JOHN GUIDE**, having been duly previously sworn, testified as follows.)

CROSS-EXAMINATION

BY MR. GODWIN:

Q. Good morning, Mr. Guide. How are you, sir?

A. Very good. Thank you.

Q. We met about three years ago, I believe, during the Coast Guard or MBI hearings, did we not, sir?

A. Yes.

Q. As you know, I'm Don Godwin and I represent Halliburton. I'm going to be asking you some questions here today. And in the essence of trying to get you off the stand, because I know you've already been on for a whole day now, I'm going to try to go through a lot of things as quickly as I can. And a lot of the questions and areas that I was going to cover have already been covered quite well by other counsel.

But I would ask you that as I go through the questions here for you this morning, should I ask you a

question that you don't understand, please stop me and let me know. Because what I want to do is have you understand my questions and then you give complete answers.

Will you do that, sir?

A. Yes, sir.

Q. Thank you very much.

And I may touch back on a few things that we talked about yesterday, but it's only to get us back up to speed and move on to something quickly.

Yesterday, I understood you to say that you were the wells team leader for the *Deepwater Horizon* since September of 2007. Do you remember that?

A. Yes, sir.

Q. Okay, sir.

And I believe you said also that in that role as the wells team leader since September of 2007, that you were accountable for safety and operations on the *Deepwater Horizon*. Did I understand that correctly?

A. Yes, sir.

Q. Okay. Thank you.

And I understood you to say that the wells site leaders on the *Deepwater Horizon* reported to you all during that period of time from September of 2007 through the time of the incident on April 20th, 2010. Did I understand that correctly?

08:11 **A.** I think that we clarified sometime about the changes in the titles. So, actually, in the very middle of 2008, April of 2008 to April of 2009, they actually reported to somebody else. But April of 2009 to the time of the accident, yes, they did.

08:12 **Q.** At April of 2010, during that time period, say, certainly in March and April, you were the wells team leader and the well site leaders reported to you?

08:12 **A.** Yes, sir, that's correct.

08:12 **MR. GODWIN:** If we can, let's pull up D-4800, please. 4800.

08:12 **BY MR. GODWIN:**

08:12 **Q.** I just want to go back over a document that yesterday Ms. Karis showed to you, if we can, please. D-4800.

08:12 Okay. Here we have a document again. It appears to be somewhat of what we might refer to as an organizational chart. Is that a correct way of describing this?

08:12 **A.** Yes, sir.

08:12 **Q.** Okay. As it pertained to the Macondo drilling team as of April 20th, 2010. And it shows here Pat O'Bryan was the vice president for drilling and completions, and then he had people reporting to them. And it appears, at least on the chart, that you reported to David Sims.

08:13 And as I understand it, you reported to Mr. Sims as of April 20th, 2010. Is that correct?

08:13 **A.** Yes.

08:13 **Q.** Okay. And down below it shows that Mr. Cocales reported to you as the senior operations engineer. Now, I understood you to be in charge of operations but not in charge of engineering. Correct?
08:13 **A.** That's correct.
08:13 **Q.** And the drilling engineers that were there working on the well were mainly Mr. Mark Hafle, Mr. Cocales, Mr. Morel, and Mr. Greg Walz. Those were the drilling engineers?
08:13 **A.** Yes, sir. In April, yes, sir.
08:13 **Q.** I understand. I'm talking about that time frame just now.
08:13 **A.** Okay.
08:13 **Q.** And if you will, help me with this, if you will, please, and the Court, why was Mr. Cocales, as a senior operations engineer who was also a drilling engineer, why was he reporting to you as of April of 2010?
08:13 **A.** The structure that was set up was all the wells teams and operations teams had what was called a senior operations engineer. He or she was either a drilling engineer or a completion engineer, but he didn't actually write the drilling programs or the completion programs. He was there to help me with operational issues. Like the rig audit was a good example.
08:14 **Q.** Right.
08:14 **A.** He was also there to add continuity when the drilling team, i.e., like the Mark and the Brians, were actually putting

08:14 together the well plan to make sure that any of the
08:14 idiosyncrasies with the rig, in this particular case the
08:14 *Horizon*, were included into the well plan.
08:14 **Q.** Okay. Thank you.
08:14 And I believe you said yesterday that while you were
08:14 not -- not a member or involved with or over the drilling
08:14 engineers, that you gave them suggestions certainly during the
08:14 production casing interval on the well. Did I understand that
08:14 correctly?
08:14 **A.** Yes.
08:14 **Q.** Tell us, if you will, please, what suggestions or advice
08:15 were you giving to the drilling engineers there during that
08:15 March and April time frame of 2010?
08:15 **A.** Can you be more specific? March and April, we made a lot
08:15 of decisions in March and April.
08:15 **Q.** Okay. But in terms of your giving input to the drilling
08:15 engineers, you said you were giving them input, you were giving
08:15 them advice. Give us some examples of what you were giving to
08:15 the drilling engineers in the March and April 2010 time frame.
08:15 **A.** So when we were actually drilling the well?
08:15 **Q.** Yes, sir.
08:15 **A.** We would -- we would -- so the way this -- the way it
08:15 really worked is that we would have a morning meeting every
08:15 day.
08:15 **Q.** Yes, sir.

08:15 **A.** So you have everyone on the team and all the third-party contractors -- we would just discuss the daily operation and what was going forward. And in that there were both operational and engineering discussions.

08:16 And if we talked about, when we were drilling, what kind of PWD readings we were -- we wanted to -- wanted to live with, what kind of -- what mud properties when we were drilling. And then on the -- when we would stop and set a string of casing, just if they had any -- if they had any -- if they asked me any questions or asked me to give them any opinion about something, then I would offer it up.

08:16 **Q.** All right. Thank you, sir.

08:16 Now, if we can, let's go over here to the organizational chart again where it talks about those people reporting to you, the wells site leaders. And it shows there as of April 2010, and it lists Ronnie Sepulvado, who's testified here in court, Mr. Don Vidrine, who has not testified and has refused to testify.

08:16 You're aware of that, are you not?

08:16 **A.** Yes, I am.

08:16 **Q.** And Mr. Earl Lee, he has not testified, and Mr. Murry Sepulvado has not testified here live in court either as being people that reported to you.

08:16 It doesn't show Mr. Bob Kaluza there as one of the

08:17 well site leaders that was reporting to you. Is that an

omission from this organizational chart or an error?
A. Oh, I don't think it's an omission --
Q. I'm not saying intentional. I'm just saying he was obviously one of the well site leaders from April 16 through April 20. And to accurately have the organizational chart, was he reporting to you or was he reporting to someone else during that four-day period?
A. He was -- he was reporting to me. He was filling in for Mr. Sepulvado --
Q. Right.
A. -- for the four-day period.

His official boss, his permanent boss was Tony Emerson, but during that period of time, he was reporting to me.
Q. Okay. And so for the chart to be complete, as far as the well site leaders reporting to you as of April 2010, it would also include Mr. Bob Kaluza, would it not?
A. Yes, sir.
Q. Thank you, sir.

Now, in terms -- you said that you had worked with the Halliburton folks for a number of years?
A. Yes, sir.
Q. Generally, sir, from the cementing standpoint, had you had experience with the Halliburton folks for a number of years?
A. Yes, going back to 1980.

08:18 **Q.** What was your overall general perception of Halliburton as far as its knowledge in the cementing industry and how it was known, sir?
08:18 **A.** I enjoyed working with Halliburton.
08:18 **Q.** Okay, sir. Did you believe that it was one of the leaders in the industry in cementing?
08:18 **A.** Yes, sir.
08:18 **Q.** Worldwide? And a company that you trusted and liked to work with?
08:18 **A.** Yes, sir.
08:18 **Q.** When given the opportunity?
08:18 **A.** Yes.
08:18 **Q.** Okay, sir. And during the period that you were the wells team leader for that two-and-a-half-year period, did you have occasion to interface with Jesse Gagliano?
08:18 **A.** Yes, sir, I did.
08:18 **Q.** Okay. And was that there in the Houston office for BP?
08:18 **A.** Yes, sir.
08:18 **Q.** Okay. And did you find that Jesse tried to be accommodating and tried to perform his job in a manner that was consistent with the requests and the needs of BP?
08:19 **A.** Yes, sir.
08:19 **Q.** Okay. Did you trust Jesse during that two-and-a-half-year period to do what you expected him to do on behalf of BP insofar as the jobs that he was performing?

A. I did trust him, yes.
Q. Okay, sir. And I believe you said yesterday that there was some issue right at the end regarding maybe the timeliness in getting some reports back and things like that. You mentioned that in an e-mail that the TO -- that the Transocean lawyer brought out. Do you recall that?
A. I do, sir.
Q. But in terms of what you as the wells team leader were looking for, did you get from Jesse Gagliano what you, as the wells team leader, was looking for in connection with the job that he was doing for BP?
A. Yes, sir, I did.
Q. You got everything you asked for, did you not, sir, from Jesse?
A. He supplied the information that I needed.
Q. And gave it to you, and you believed -- you relied on that information?
A. Well, I definitely relied on it, yes.
Q. Was there -- if there was a time when you felt that you needed to talk to Jesse -- or strike that.

Was there a time at any time -- in the two-and-a-half-year period that you worked with Mr. Gagliano, with Jesse, was there a time that you felt like you needed to visit with him about any of the information he had provided you?

A. Yeah. We talked about it on a regular basis. We would talk about the cement jobs mainly as part of the morning call.

Q. And whenever you talked to Jesse about the work that he was providing to you as the wells team leader, did you find him receptive to your questions?

A. Yes.

Q. Did you find that he was willing to make whatever adjustments needed to be made in order to try to get you what you needed so you could make good, sound, solid decisions for BP?

A. Yes, that's correct.

Q. Okay, sir.

And isn't it true that -- other than right there at the end when there was some issue about getting information back on a timely basis, you didn't hear people, in the two-and-a-half-year period, complain about Jesse Gagliano, did you?

A. No, sir, not really.

Q. Okay. Thank you.

Now, was -- you, of course, worked also, I believe you said, around the TO folks and certainly around your BP people. Was it your perception, Mr. Guide, that in working around the BP folks that were involved in the Macondo well, the Transocean people and the Halliburton people, was it your perception that everybody was really trying to get it right?

08:21 **A.** Yes, not just those but the remainder of our contractors.
08:21 **Q.** And all the contractors, they were all trying to get it done. Nobody was intentionally trying to do anything that was designed to hurt anybody or bring harm to any property, were they?
08:21 **A.** No. I think that the whole team -- the way it worked together, I think the testament is that that's why -- that's why the operation was so successful, because everyone worked together so good, all the different contractors, and you've got to remember the Tiger Team. You know, it was just -- like I said, it was a well-run operation.
08:22 **Q.** And you -- in the two and a half years that you worked around Jesse, did you ever observe him doing a single thing that you thought was reckless in any way whatsoever?
08:22 **A.** No, I didn't.
08:22 **Q.** Did you -- in the two and a half years approximately that you worked around Jesse Gagliano, did you ever observe him doing anything that you thought was careless in the performance of his duties on behalf of BP?
08:22 **A.** No, I didn't.
08:22 **Q.** Did you -- in the two and a half years approximately that you worked around Jesse Gagliano, did you ever observe him doing anything that you thought was intentionally intended to bring harm to any of the men and women there on the *Deepwater Horizon*?

08:22 **A.** No. No, not at all.
08:22 **Q.** Did you interface -- other than with Jesse, did you interface with any of the other Halliburton folks during that time that you were the wells team leader, sir?
08:22 **A.** Yes. There were numerous different services that I interfaced with.
08:22 **Q.** And the mud logging people?
08:23 **A.** And the Sperry-Sun directional drilling people.
08:23 **Q.** Okay. What was your overall perception of those people as the wells team leader?
08:23 **A.** Well, I really liked working with the Sperry-Sun folks. In fact, the two directional drillers on the rig I had known for a long time and I requested that they actually be on the rig.
08:23 **Q.** Okay, sir. And did you -- without getting into the details, because of time, of each and every person for Halliburton that you knew that was working on the Macondo project on the *Deepwater Horizon*, did you ever observe any Halliburton employee do anything that you thought was reckless in nature?
08:23 **A.** No, I never did.
08:23 **Q.** Did you ever observe, while you were the wells team leader, any Halliburton employee do anything at any time that you thought was careless?
08:23 **A.** No, I didn't.

08:23 **Q.** Or that was designed to take advantage of BP in any way whatsoever?
08:23 **A.** No, I didn't.
08:23 **Q.** Or violate any of BP's mandates or policies?
08:24 **A.** No, sir, I didn't.
08:24 **Q.** Or procedures?
08:24 **A.** No.
08:24 **Q.** Okay, sir.

With regard -- let's, if we can, please -- you defined well control yesterday -- I wrote it down -- as "a risk of losing wellbore in an uncontrolled situation."

Do you recall that?

08:24 **A.** Yes, sir.
08:24 **Q.** And will you explain a little bit more what you mean by that, sir, "well control"?
08:24 **A.** Well control is maintaining a sufficient control over the well at all times.
08:24 **Q.** And why is that important?
08:24 **A.** Well, because -- I'm sorry, it's an easy question to answer. I'm just trying to figure out the right way to put it.
08:24 **Q.** I understand, sir.
08:25 **A.** It's the most -- it's the biggest risk that you have, and so it's something that everyone trains for and -- and that's why it's so important. It is a low consequence -- I'm sorry, a low probability, but the consequences can be very severe.

08:25 **Q.** And would you agree that the loss of well control can result to a risk that may not be controlled very well?
08:25 **A.** That's correct.
08:25 **Q.** Do you believe there was a loss of well control on the *Deepwater Horizon* prior to the blowout?
08:25 **A.** Prior to the blowout?
08:25 **Q.** Yes, sir. At the time of the blowout, leading up to the blowout, do you believe there had been a lack or a loss of well control?
08:25 **A.** Yes, sir, there was a loss of well control.
08:25 **Q.** And that that loss of well control was, in fact, what ultimately caused the gas to reach the surface and ignite, is it not?
08:25 **A.** That's correct.
08:25 **Q.** And the loss of well control is what ultimately led to the blowout of the Macondo well; isn't that correct?
08:25 **A.** That's correct.
08:25 **Q.** Thank you, sir.
08:26 Let's take a look, if we can -- and who was in charge of the well control there on the *Deepwater Horizon* on April 20th, 2010?
08:26 **A.** That's Transocean.
08:26 **Q.** Thank you, sir.
08:26 **MR. GODWIN:** Let's take a look here at exhibit -- Ms. Karis called it yesterday TREX-757. I'll ask that if you

will, Rob, pull that up, please.

BY MR. GODWIN:

Q. We have here a document on the front page -- and I'm just going to go through it very briefly with you, sir. The very front page up at the top there shows "Risk Register for Project." You'll see that up at the upper left-hand corner. You can see it on your screen. Do you see that, sir?

A. Yes, sir, I do.

Q. And this is for the Macondo well?

A. Yes, sir.

Q. Okay, sir. And I believe you told Ms. Karis yesterday that you had seen this document before?

A. Yes, sir, I have.

Q. Okay. And it was a document that was prepared by BP; correct?

A. Yes, sir.

Q. Okay. And when look here at the -- let's look at the very first one. We're talking about well control, the very first line there under "Risk/Opportunity" and the "Event Description/Impact," where it shows "Well Control." Do you see that, sir?

A. Yes, sir.

Q. And then it shows there the "Event Description/Impact."

Read to Judge Barbier, if you will, please, what it says there as the event description next to well control.

08:27 **A.** "Potential well control problem, risk of losing the wellbore in an uncontrolled situation."
08:27 **Q.** That's almost verbatim the definition you gave us yesterday -- gave Judge Barbier yesterday of well control when you said it was a risk of losing wellbore in an uncontrolled situation, wasn't it?
08:27 **A.** Yes, sir.
08:27 **Q.** And you go on over and it shows there that the owner of this is Mark Hafle. And what is that referring to? Mark Hafle, how would he be the owner of that?
08:27 **A.** It was just terminology that we used on the risk register that he would have been the person that identified this and then would have been the person that would have helped incorporate any of the mitigational steps into the well plan.
08:28 **Q.** Okay, sir.
08:28 "Potential well control problem, risk of losing the wellbore in an uncontrolled situation," that's exactly what resulted on the Macondo well, isn't it?
08:28 **A.** Yes, sir.
08:28 **Q.** Okay. Let's go over to the next page, which is the last page here. And let's go down to Item No. 19 under "Zonal Isolation." We have here zonal isolation --
08:28 **MR. GODWIN:** Pull that up, Rob, please. Thank you.
08:28 **BY MR. GODWIN:**
08:28 **Q.** If you will, here, Mr. Guide, follow long with me where it

says "Zonal Isolation." Read to Judge Barbier what it says there next to "Zonal Isolation."

A. "Risk of a good cement job on the 9 7/8 production string."

Q. Again, that shows Mr. Mark Hafle?

A. Yes, sir.

Q. What do you mean -- what do you believe that means there, "a risk of a good cement job on the 9 7/8 production casing"?

A. It's the risk of not achieving proper zonal isolation.

Q. When you don't achieve proper zonal isolation, there is a way of remedying that issue, is there not?

A. Yeah, there are several ways to remedy it. Yes.

Q. And is one of those a squeeze job?

A. Yes.

Q. We've heard about that here in court over the last couple of months.

And in order to determine if there has been an issue with zonal isolation, are there tests to determine that?

A. Yes, there's several -- there's several different tests.

Q. Okay, sir. Is one them a negative pressure test?

A. That -- well, no, the negative pressure test isn't going to necessarily tell you if you have zonal isolation. It's going to tell you you have wellbore integrity.

Q. Okay. Would that then be -- would that be the CBL? Would that be one that would tell you if you have proper zonal

isolation?
A. It would be one of the tools, yes, sir.
Q. Okay, sir. That CBL, we've already heard, was not run on this rig?
A. That's correct. It was not run at that time.
Q. On this well, excuse me.
And so would you agree with me that the lack of zonal isolation does not -- does not result in a blowout?
A. That's right, it doesn't.
Q. In other words, would you also agree with me that -- when you talked yesterday about the barriers in the well, you mentioned the mud column and you talked about when that was being removed during the displacement and replaced with the lighter seawater, that when you remove the mud barrier, you've removed the barrier from the well, have you not?
A. Yes.
Q. Okay. Would you agree with me, sir, that cement is not intended to be a barrier in the well until it is properly tested?
A. Well, I sort of -- well, the cement is intended to be a barrier.
Q. And you have to test it?
A. That's correct.
Q. In order to rely upon it as a barrier, it has to be tested to make sure that it is there and properly placed?

08:30 **A.** That's right. So it meets the criteria of what it's going to be placed in.
08:30 **Q.** You, as a wells team leader, would never rely upon cement as a barrier unless it had been properly tested, would you?
08:30 **A.** That's correct.
08:30 **Q.** Thank you, sir.
08:30 Yesterday, you told us that you'd had experience with centralizers for many, many years.
08:31 **A.** Yes, sir, I have.
08:31 **Q.** You said that in some wells you've been involved in, deepwater wells in the past, centralizers have not been used?
08:31 **A.** That's correct.
08:31 **Q.** And that, likewise, you've been in an equal number of wells -- maybe even more so -- where centralizers were used, some number of centralizers; correct?
08:32 **A.** The exact percentage, I'm not sure, but, yes, I've been in wells with centralizers.
08:32 **Q.** And centralizers are there in order to, really, centralize the pipe. You would agree with that, would you not?
08:32 **A.** Yes, yes, that's what they're for.
08:32 **Q.** And would you agree that even with the hole going down, a straight hole, that a pipe will not always stay straight without the aid of centralizers, without centralization?
08:32 **A.** Yeah. You can't tell, you're right.
08:32 **Q.** You can't tell?

08:32 **A.** Right.
08:32 **Q.** And generally, as a general rule, the further down you go, the longer the string, the more -- the more advisable it is to have some number of centralizers down there to try to centralize the pipe; isn't that correct? Would you agree with that as a general premise?
08:32 **A.** I don't know if I would agree with that or not.
08:32 **Q.** Okay. And is one of the reasons that you want to have a pipe centralized is to aid in allowing the cement to be placed where it should be?
08:33 **A.** Yes, that's correct.
08:33 **Q.** Because if you don't have cement placed where it should be, you could end up with some degree of channeling, could you not?
08:33 **A.** That's one of the things.
08:33 **Q.** One of the things that could result is channeling.
08:33 And channeling is not a good thing, is it?
08:33 **A.** It's not, depending on where it happens.
08:33 **Q.** Okay, sir. Even if BP had operational reasons for not running all recommended centralizers, would you, Mr. Guide, agree that a lack of adequate centralization can lead to channeling during the cement job?
08:33 **A.** It could, yes.
08:33 **Q.** And the only way to confirm that zonal isolation is to run a CBL. Would you agree with that as well?

08:33 **A.** The only way to confirm, I'm -- so let me think about that.
08:33 **Q.** The way to confirm that you have zonal isolation is to -- or one of the ways to do is with a CBL. Would you agree with that?
08:33 **A.** Yes, one of the ways is with a CBL.
08:33 **Q.** Yes, sir.
08:33 You said yesterday that without running a CBL, you're, in effect, estimating whether or not you have zonal isolation. As I understood it, you said you estimated it?
08:34 **A.** That's correct.
08:34 **Q.** Whereas, when you want to know for certain, you would run a CBL, which was not done here?
08:34 **A.** That's correct.
08:34 **Q.** You said also, as I recall, that full returns and lift pressure are indications that a cement job is executed as planned. Did I understand that correctly?
08:34 **A.** Yes, those are several of the indicators.
08:34 **Q.** Those are two of them, for sure, full returns and lift pressure. We've heard a lot about that here in the courtroom.
08:34 **A.** Okay. Yes, they're a good indicator.
08:34 **Q.** But those things do not confirm zonal isolation without a CBL being run, do they? The fact that they're indicators does not mean that you've got zonal isolation until you test it with a CBL. Would you agree with that?

08:34 **A.** Well, you don't test it with a CBL; a CBL gives you indicators.
08:34 **Q.** Okay. Right. Okay, sir.
08:34 I understood you to say yesterday that you had never been involved with a -- with a negative pressure test that was not successful. Do I remember that correctly?
08:35 **A.** I personally have -- none of the operations that I was involved with, but I -- I was familiar with a situation where one was not.
08:35 **Q.** Okay, sir. But in terms of what I wrote down was that you personally had never been involved in one that was not successful?
08:35 **A.** That is correct.
08:35 **Q.** Okay. As you just now said -- and I appreciate that, sir -- that you had heard about a situation, but it was not one that you were directly involved with?
08:35 **A.** That's correct.
08:35 **Q.** Okay, sir.
08:35 And the negative pressure test being misinterpreted, to you, is a very serious thing, is it not?
08:35 **A.** Yes. Yes, sir, it is.
08:35 **Q.** Because when you misinterpret a negative pressure test, that's some indication that somebody's not getting it right. Whether or not they're doing it intentionally or otherwise, they're not getting it right when they misinterpret the

negative pressure test. You would agree with that, wouldn't you?

A. Yes, sir, I agree with that.

Q. Thank you, sir.

Now, with regard to the negative pressure test that was performed here on the Macondo well, as I understood you to say in your deposition, you approved of the performance of one negative pressure test. Correct?

A. Of the performance -- oh, I'm sorry.

Q. Were you involved in the design of one negative pressure test?

A. I was involved -- well, I gave some input to it later, yes.

Q. Were you aware prior to the blowout that more than one negative pressure test had been attempted there on the Macondo well?

A. I wasn't aware prior to the blowout, no.

Q. Okay. That was my point, is that you thought there was going to be one negative pressure test. Is that correct?

A. That's correct.

Q. Okay. Were you called by anyone there on the well prior to -- after the first negative pressure test was attempted but before the second one was begun, were you called to have anybody discuss that with you?

A. No, but I wish they did.

08:37 **Q.** Okay, sir. I want to ask you about that.
When you say you wish they had called you to talk about it, why did you wish somebody there on the rig had called you to tell you that there had been an issue with the first negative pressure test and that a second one was going to be performed, if you will, please, sir?
A. Because maybe I could have given some input on how they should further investigate what the anomalies are.
Q. Had you been called, Mr. Guide, and told that there was 1400 pounds of pressure on the drill pipe and zero on the kill line, what, if anything, would you have done immediately upon hearing that?
A. Well, the first thing I would have said is -- I would have asked for more information, but I would tell them not to proceed; they need to figure out why that -- why that was actually being seen.
Q. "Stop and investigate," is that what you would have said?
A. Yes, sir, I would have.
Q. "Don't go any further."
You would not have allowed the displacement of the heavier mud to be displaced with seawater had you known there was an issue with the differentials in the pressure on the drill pipe and the kill line, would you?
A. I would have asked them to stop and investigate.
Q. You would not have allowed the displacement to go forward

until you had cleared up whatever that issue was, would you, sir?

A. Yes, sir.

Q. You would not, would you?

A. I would not.

Q. Thank you, sir.

Let me ask you this, fast-forwarding past the event, and then we'll go back briefly to some of the items.

After the event of the horrendous, horrific blowout on the 20th of April, did you speak with either Don Vidrine or Bob Kaluza, say, about anything pertaining to that negative pressure test?

A. I spoke with Bob Kaluza.

Q. And how about Mr. Vidrine? Did you talk to him after the event?

A. I did not.

Q. How long after the event did you talk -- and I don't mean to play it down when I say "event," the blowout.

How long after the blowout, the event, was it that you talked to Bob Kaluza?

A. It was about four or five days.

Q. Okay, sir. Where was that?

A. It was -- I was in West Lake 4 in Houston.

Q. Yes, sir.

A. Mr. Kaluza was at his home in Las Vegas.

08:39 **Q.** And did you call him or he call you?
08:39 **A.** We called him.
08:39 **Q.** Okay. And tell me, if you will, please, what it was Mr. Kaluza said to you during that call about four to five days after the event.
08:39 **A.** We -- I was with another gentleman -- his name is Keith Daigle -- and what we were trying to determine, really, is how -- how the actual negative test was configured. We had -- we had the data from the Sperry-Sun mud log.
08:40 **Q.** Yes, sir.
08:40 **A.** But we didn't know the exact configuration or how -- how it was lined up, you know, what was open, what wasn't open -- and we were trying to get from Bob, you know, how the configuration was so we could try to match up the data we had from the Sperry-Sun unit with the events.
08:40 **Q.** Right. And what did Mr. Kaluza say to you, if anything, about what had been done during the negative pressure test --
08:40 **A.** He --
08:40 **Q.** -- with specific reference to the differences in pressures?
08:40 **A.** He did mention the difference in the pressures.
08:40 **Q.** And what did he say in that regard, sir?
08:40 **A.** We asked him about it, and he said that it was explained to him as a bladder effect.
08:40 **Q.** And who did he say explained it to him?

A. The folks from Transocean.
Q. Okay, sir. Well, did you ask him if he had ever heard of the bladder effect before he mentioned it to you in that phone call?
A. No.
THE COURT: No, you didn't ask him? Or no, he didn't -- he'd never heard of it?
THE WITNESS: No, sir, I didn't ask him.
BY MR. GODWIN:
Q. Okay, sir. So --
MR. GODWIN: Judge, thank you.
BY MR. GODWIN:
Q. So during the call -- so we make sure we understand -- Mr. Kaluza's on the phone with you and it sounded like one or more other people --
A. Yes, Mr. Daigle.
Q. -- and they're -- who?
A. Mr. Keith Daigle.
Q. Mr. Keith Daigle.
And during that call, when you were talking about the differences in the pressure on the kill line and the drill pipe, he said that the -- regarding the differentials in the pressures that the bladder effect was brought up, and you said -- he told you that somebody from Transocean was the one that brought that up; is that correct?

08:41 **MR. BRIAN:** Objection, asked and answered.
08:41 **THE COURT:** Yeah, he's already answered that.
08:41 **MR. GODWIN:** Thank you, Your Honor.
08:41 **BY MR. GODWIN:**
08:41 **Q.** All right, sir.
08:42 Had you -- in your 30-plus years of being in the
08:42 petroleum industry, had you ever heard of the bladder effect
08:42 before?
08:42 **A.** Not in that context, no.
08:42 **Q.** Okay, sir.
08:42 Well, did Mr. Keith Daigle say to you whether or not
08:42 he had ever heard of the bladder effect in the context of what
08:42 Mr. Kaluza was talking about?
08:42 **A.** He had never heard of it either.
08:42 **Q.** Okay, sir.
08:42 **MR. GODWIN:** Let's take a look, if we can, please, at
08:43 TREX-21099.
08:43 **BY MR. GODWIN:**
08:43 **Q.** Sir, we have here an e-mail from Mr. David Sims to you,
08:43 and I want to ask you about just one part of it, if we can,
08:43 please. Go down to the last paragraph here. This was an
08:43 e-mail from Mr. Sims. And he was your boss on April 17th;
08:43 correct?
08:43 **A.** Yes, he was.
08:43 **Q.** And he sent you an e-mail, to you only, "Discussion, The

08:43 way we work with engineering." And when we go down to the
08:43 next-to-the-last paragraph where it says, "I don't think
08:43 anything has changed with respect to engineering and
08:43 operations" --
08:43 **A.** Yes, sir.
08:43 **Q.** -- what I'm really interested in is the sentence there,
08:43 the third sentence, that says: "If we had more time to plan
08:43 this casing job, I think all this would have been worked out
08:44 before it got to the rig."
08:44 What did you understand Mr. Sims to be talking about
08:44 there?
08:44 **A.** The original plan was for a long string, and we were --
08:44 all the equipment and all the people were mobilized for that.
08:44 The engineering folks wanted to have an option on the rig to
08:44 run a liner.
08:44 **Q.** Yes, sir.
08:44 **A.** And that wasn't a part of the original plan, and he was
08:44 referring to the fact that we had to get -- we had to mobilize
08:44 and get this additional equipment out. And so we sort of had
08:44 to get that done in a hurry.
08:44 **Q.** Okay. Get it done in a hurry. All right.
08:44 And did you get the sense that Mr. Sims thought that
08:45 having to make the decision regarding the casing was something
08:45 that he was being pressed for time on, as evidenced here by
08:45 his -- by his e-mail?

08:45 **A.** No.
08:45 **Q.** "If we had more time" --
08:45 **A.** No. I -- the way -- the way I understood it is that we -- we had one -- we had the option -- usually -- usually, we would have a plan and then we would have contingencies.
08:45 **Q.** Yes, sir.
08:45 **A.** In this particular case, we had two plans.
08:45 **Q.** All right.
08:45 **A.** And it was we could either run a long string or we could run the liner. And they wanted the option -- the engineers wanted the option to be able to make that decision after this conditioning trip.

So we had to mobilize all the additional equipment. And, as I mentioned before, the option to run the liner required different equipment, different people. And so that's what it was in reference to.

08:45 **Q.** Okay. All right. Thank you. I appreciate that.

I want to go back to something, if I can, please, and close out on a document that was -- the subject of it was discussed briefly.

MR. GODWIN: Let's look at TREX-01140.

BY MR. GODWIN:

08:46 **Q.** This is an e-mail from Mr. Brett Cocales, who reported to you. It was to Mr. Adam Salmi and a copy to you, as well as a number of others.

Do you see that up at the top, sir, dated March 11?

A. Yes.

Q. And down at the bottom, if you will --

MR. GODWIN: Let's go down and look at the very bottom of it first so we can identify the e-mail at the bottom of the page, if you will, please, Rob.

BY MR. GODWIN:

Q. It starts down here at the bottom where Adam Salmi is writing to Brett and -- "Brett, any update on the *Horizon* schedule?"

And then we go to the next e-mail, which is really the one I want to talk about very briefly, and it's dated March 11th.

This was some three days after a kick had been experienced on the Macondo well, isn't it, sir, which was on March 8 of '11 --

A. Yes, sir.

Q. -- of 2010?

A. Yes, sir.

Q. Okay. And it shows you getting a copy of this.

And what I'm really after here is a couple of things.

One, it says: "Guys, as requested, here is a quick update, for what it's worth."

And we're talking about the Macondo?

A. Yes, sir.

Q. And: "This information is confidential - please don't communicate any of these details except to the folks that need to know for Nile."

Was the Nile going to be the next well that the *Deepwater Horizon* was going to go to?

A. Yes. We were going to go and P & A the Nile well.

Q. Okay, sir. Did you understand Mr. Cocales to be saying, with regard to the details of what had happened there during the kick on March 8th, that he did not want any of those details being provided to anyone except those who needed to know for purposes of the Nile?

A. Yeah, that's correct.

Q. Okay. Well, you certainly would not have wanted anybody to have kept that information away from Jesse, though, would you?

A. Well, this is -- we had a -- a contract with the exploration folks.

Q. Yes, sir.

A. Intellectual property was a very large concern for the exploration people --

Q. Yes, sir.

A. -- and so we were always requested, if we were going to talk about any of the -- any of the exploration stuff outside of our team, that we needed to mention that it was confidential.

Q. Yes, sir.

And, of course, anything that would involve something as serious as a kick, you would think Jesse would need to have that information so that he could use it for purposes of planning the cement job in the future, would you not?

A. Yeah. And Jesse saw the information. He was in the morning call every day.

Q. Right.

A. He was involved in it.

Q. But in terms of you, as the wells team leader, had there been any question about including Jesse in everything to provide him with information, you personally would have wanted him to have had all of it, would you not?

A. Well, I don't think he would be required for every single piece of information, but he was definitely involved with all the information that he needed to do to successfully perform his job.

Q. And that is what you would have wanted, as the wells team leader, and you made certain everyone knew that?

A. We were one team and we were all in it together. And so we made sure that we kept everyone in communication.

Q. Thank you very much.

And you, of course, know also that there was talk back and forth among the team members, the drilling team, about recommendations that Jesse was making with regard to

centralizers and bottoms-up and pump rate. You knew those things.

A. Yeah. Yes, sir.

Q. Okay. And you, of course, know that Jesse had recommended 21 centralizers be used there on the casing string. You know that, do you not?

A. He ran a program with 21.

Q. With the OptiCem?

A. Yes, sir.

Q. Okay. And you also know that he ran a program with 10 centralizers. You know that, do you not, that he ran a number of programs with different numbers of centralizers, trying to get to where he felt comfortable, the centralizer number ought to be. You know that, don't you?

A. Yes, sir.

Q. And, of course, you know that at the end of the day, no matter what Jesse thought about the number of centralizers, the ultimate decision regarding the number to be used would be made by BP.

A. That -- that's correct.

Q. Okay. And in terms of bottoms-up, you're aware that Jesse had recommended that a full bottoms-up be performed just prior to the cement job. You remember that?

A. I don't remember that, but it was standard.

Q. Okay. All right. And you talked yesterday with Ms. Karis

about a bottoms-up being performed some days prior to the actual pumping of the cement job.

Are you aware that the last full bottoms-up was performed on April 16th, during the wiper trip?

A. Yes, sir.

Q. Okay, sir. And that was some, what, three days before the cement job was pumped, was it not?

A. Yes, sir.

Q. Okay. Would you agree with me that during those three days, mud in the wellbore could gel up?

A. The possibility exists, but I -- with the kind of mud that we used, we usually didn't see that.

Q. But we don't know that it didn't happen here, though.

In other words, where you have a full bottoms-up done some number of days -- three days prior to the pumping of the cement job, you leave open the possibility that mud left there in the wellbore could gel up.

A. Well, it wasn't consistent with the data that we got on the conditioning trip. The wellbore was left open five days with the -- during the logging run. Then we made the conditioning trip.

Q. Okay, sir.

A. And then when we got on the bottom with the conditioning -- during the conditioning trip, we got all the data. And the data that we got clearly indicated that the

08:51 well -- I'm sorry, that the mud had not gelled up after sitting for five days.
08:52 **Q.** All right, sir. And you, of course, know that one of the issues with cement setting up is contamination with such things as mud, are you not?
08:52 **A.** Yes, I am.
08:52 **Q.** As well -- and you can contaminate the cement so that it will not set up; correct?
08:52 **A.** That's correct.
08:52 **Q.** Likewise, you can contaminate cement with some synthetic oil-based mud.
08:52 **A.** Yes, you can.
08:52 **Q.** And, of course, synthetic oil-based mud was used here in this wellbore to -- at the bottom of the well, and that was done at the -- was a decision made by BP; correct?
08:52 **A.** Yes.
08:52 **Q.** Okay. After the event, did you participate -- and I'm not talking about lawyers, by no means, when I ask that. But did you participate in a discussion with anyone where there was a discussion that the cement job may have been contaminated there -- after it was pumped or during the pumping of it, there in the wellbore, that might have been one of the reasons for an issue with the cement job if, in fact, that was determined to be the case?
08:53 **A.** What we discussed -- the word -- we didn't use the word

"contamination" --
Q. Yes, sir.
A. -- but it was -- it was that the cement didn't fully set up.
Q. And contamination was one of the possibilities of that not occurring?
A. It is one of the possibilities.
Q. And that was discussed among you and members of your team?
A. It was -- we just said, "The cement obviously didn't set up." I don't remember "contamination."
Q. Thank you, sir.

And if the cement did not set up, the way to determine that, if that had been an issue, would have been with a negative pressure test; isn't that correct?
A. That's correct.
Q. And had there been -- you're aware that on this very Macondo well, there had been at least two squeeze jobs done previously, are you not, sir?
A. Yes.
Q. And that was an indication that on those two occasions, maybe others, that there was an issue determined with the cement job, resulting in remediation work in the form of a squeeze job; correct?
A. That is correct.
Q. And that and the fact that there was an issue with at

08:54 least two prior cement jobs on the Macondo well resulting in remediation, we obviously know that the well didn't blow out --
A. Right.
Q. -- because there had been a squeeze job.
A. Right.
Q. And we obviously know here that had the negative pressure test been correctly interpreted, it could have determined if an -- if there was an issue with the cement job and, if so, there could have then been a -- there could have been remediation work done in the form of a squeeze job; correct?
MS. KARIS: Your Honor, I'm going to object. I think this has been asked and answered several times now.
MR. GODWIN: I just have one question on that, Judge.
THE COURT: Yeah, this is ground we've plowed over and over again.
MR. GODWIN: I'll move on, Judge. Thank you.
Could I have him answer that question, Judge?
THE COURT: No. Let's just move on.
MR. GODWIN: Okay, sir. Thank you.
MS. KARIS: Thank you, Your Honor.
MR. GODWIN: Okay. Let's take a look, if we can, please, at -- take a look at TREX-01958.
BY MR. GODWIN:
Q. And we have here two e-mails, one at the bottom from David Sims to a number of folks, with you as a carbon copy, dated

March 11th, 2010, do we not, sir?
A. Yes, sir.
Q. And Mr. Sims is writing: "HSSE: Good week, no incidents."
Did I read that correctly?
A. Yes, sir.
Q. And were you in charge, as of April 20th, 2010, of HSSE on the -- *on the Deepwater Horizon*?
A. Yes, on the BP side.
Q. On the BP side. That's what I'm referring to, yes. Thank you.
A. Yes, sir.
Q. All right. And if you look -- go down to the next-to-the-last bullet point there under "Operations since last Thursday," where it says "Mobilized wireline tools and prepare procedures and equipment to kill the well."
Did I read that correctly?
A. Yes, you did.
Q. Why were they talking about -- why was Mr. Sims talking there about killing the well as of March 11th?
A. He's referencing the kick we took on the 8th.
Q. Okay, sir. And he wanted to kill it for what purpose?
A. So we could -- well, if -- so we could continue drilling the well.
Q. So that there could be an investigation conducted, stop

all the operations and figure out what happened before going forward? Would that be another way of looking at it? You want to kill the well so that it becomes static --

A. Oh, yes.

Q. -- and then you want to investigate to try to figure out what happened to result in the -- in the kick occurring.

A. That's fair.

Q. Is that a fair statement?

A. Yep.

Q. Thank you, sir.

You go down to the next part where it says "Plan Forward...Cement the open hole."

Did I read that correctly? Down to the third bullet point from the end --

A. Oh, okay.

Q. -- Mr. Guide.

A. Yes.

Q. Okay. And that was going to be done by Halliburton?

A. Yes.

Q. Okay. And then "Test BOPs."

Why were -- why do you believe Mr. Sims was suggesting here that the BOPs be tested as of March 11th?

A. Because the BOP test was due.

Q. Okay, sir. And then we go down to the last point, where it says: "Cost: Currently $10 million over AFE".

08:57 What is AFE?
A. Authority for expenditure.
Q. Okay. And "we will likely double that by the time we get back to this equivalent depth on the sidetrack"; correct?
A. Yes.
Q. Okay. And at the time of the event on April 20, about how much was the well over AFE, over budget?
A. I don't know.
Q. There's been talk of it being at least 30 million over budget.
Does that refresh your memory?
A. I really don't -- at that point in time, I really don't know, sir.
Q. Thank you, sir.
MR. GODWIN: If we can go to the top e-mail, if we can, please, very quickly on it, from Mr. Ian Little.
BY MR. GODWIN:
Q. And he wrote it to you and Mr. David -- to you and Mr. David Sims and it was March 14.
And here he was telling you: "I hope you are both hanging in there ok - this has turned" -- it says "tuned," but then it says -- "this has turned into a challenging well," and he used an exclamation point.
You certainly agreed with that -- Mr. Little's comment there, did you not?

A. All the wells are challenging. We had just taken a kick, so...
Q. And this was a serious kick in the sense of the effect of it, the number of barrels that had been lost?
A. All kicks are treated the same way. They're serious.
Q. Okay. All right, sir.
MR. GODWIN: Let's look -- thank you very much. Let's look at TREX-684, please.
BY MR. GODWIN:
Q. -684. Here is an e-mail from Mr. Paul Johnson.
A. Correct -- sir, it's not from Paul Johnson. He -- it's actually from a gentleman named Rod Ryan.
Q. Yes, sir.
A. He just was using Mr. Johnson's e-mail --
Q. Oh, okay.
A. -- address.
Q. And who is this gentleman, Mr. Rod -- who did you say it was?
A. He was the -- one of the OIMs on the *Deepwater Horizon*.
Q. Okay. Working for TO?
A. Yes, sir.
Q. Okay. Transocean.
So Mr. -- spell his last name.
A. I think it was R-Y-A-N, but I --
Q. Mr. Ryan?

A. Yeah.
Q. Okay.
A. You'll have to double check because --
Q. Mr. Ryan, an OIM for Transocean on the *Deepwater Horizon*, was writing to you on March 18, and he says here: "John, I thought about this a lot yesterday and asked for input from the rig, and none of us could come up with anything we are not already doing or have done in the past with little success."
Did I read that correctly?
A. Yes, you did.
Q. "There was a common theme from all, though. Nothing takes the place of supervisor involvement to ask that question of the hands, in the THINK plans, and to make them think for themselves and lead them in the right direction by mentoring them."
Did I read that correctly?
A. Yes, sir.
Q. And then we jump down to the last sentence, which is really what I want to ask you about. He says: "Maybe what we need is a new perspective on hazard recognition from someone outside the industry."
What did you understand Mr. Ryan to be saying there, "Maybe what we need is a new perspective on hazard recognition..." in the context of this e-mail?
MR. BRIAN: Objection. Calls for speculation, Your

Honor.

THE COURT: Overruled.

BY MR. GODWIN:

Q. Go ahead, sir.

A. Well, I asked Rod, Mr. Ryan, to give me some input from the rig --

Q. Yes, sir.

A. -- about how we could improve the overall awareness of hazard recognition.

Q. All right.

A. And the thought here is, if you don't know it's a hazard and if you don't recognize it's a hazard, then -- you know, then maybe you're missing something.

Q. Right.

A. Okay. So hazard recognition is a very, very important part of the overall safety.

And the procedures and the programs that we had in place were very effective, and so I was just soliciting his input and his thoughts.

Q. Did you know him prior to this e-mail?

A. Yes, sir, I did.

Q. Okay. And how long had you known Mr. Ryan prior to this e-mail?

A. I -- September of 2009 is when I met Mr. Ryan.

Q. Okay. And did you -- you called him or communicated with

him for him to give you input. Is that how this came about, this e-mail?
A. Yes, sir.
Q. Okay. Was there some reason you didn't go through your well site leader to have one of them visit with him?
A. He was filling in for Mr. Johnson --
Q. Okay.
A. -- and he was actually in the morning call one day.
Q. Okay.
A. He came into the -- he was in the office.
Q. Oh, in Houston.
A. Yes.
Q. Okay.
A. So we were just talking about different things, and I -- and it was a good opportunity, because the OIMs usually weren't in the office --
Q. Right.
A. -- they were on the rig.

But since he was filling in for Mr. Johnson and since I value his opinion, I said, "You know, Rod, while you're here, why don't you give it some thought, tell me" --
Q. Okay.
A. -- "what you think."
Q. Thank you.

And whenever he told you that -- or suggested to you

"maybe what we need is a new perspective on hazard recognition from someone outside the industry," did you respond to that?

A. No.

Q. Okay. Well, did you determine whether or not that perhaps you and he or others with Transocean and BP needed someone from outside the industry to give you a fresh perspective on hazard recognition?

A. I didn't.

Q. Thank you, sir.

MR. GODWIN: Let's take a look at TREX No. 01363, please.

BY MR. GODWIN:

Q. Here we have a couple of e-mails, and I want to look at the bottom one first.

You know a lady named Helen Bonsall, Ms. Bonsall?

A. I do.

Q. I may be mispronouncing her name. Is it pronounced Bonsall?

A. Yes.

Q. Okay. Ms. Bonsall.

And at March 17 of 2010, she was employed by Baker Hughes?

A. Yes.

Q. And she wrote you an e-mail on March 17 and says -- well, forget the lunch part of it where she's talking about a

business lunch, and then she goes on down and says: "What do you see as the biggest deepwater risks and challenges?"

MR. GODWIN: And if you will, if you go to the top part of the e-mail -- while we hold that one down here, Rob, let's go up to the e-mail up above that Mr. Guide sends back to Ms. Bonsall.

BY MR. GODWIN:

Q. And here on that same day -- excuse me. On the next day, on March 18th, Mr. Guide, you write back to Ms. Bonsall and you say: "Here you go."

A. Yeah.

Q. So it sounds like that you took her e-mail and you then answered her questions there on the e-mail?

A. Yes, I did.

MR. GODWIN: Let's go back to that e-mail, if we can, please.

BY MR. GODWIN:

Q. Here we go back to Ms. Bonsall's e-mail. And were you working with Ms. Bonsall in connection with the *Deepwater Horizon*?

A. No, I was not.

Q. You had been obviously discussing whether -- some of the issues that had been there on the well? Or not?

A. I had worked with Ms. Bonsall on the Mad Dog project, and she was the in-house mud person for Baker Hughes; and she had

got promoted, and now she was in a managerial position.

Q. Right.

A. And she wanted to ask some questions in relationship to her new role.

Q. Right. I understand.

So you were going back and forth with her, and I appreciate that. But let's go back here, if we can, to the e-mail where she writes you: "What do you see as the biggest deepwater risk and challenges?"

And did you write her back, "Inexperienced crews, APB, and lost circulation"?

A. Yes, I did.

Q. Those are your words?

A. Yes, they are.

Q. Okay. What crews are you talking about as being as the biggest deepwater risk and challenges as of March 17th?

A. Just the industry in general.

Q. Okay. You were not talking about the inexperienced crews there on the *Deepwater Horizon*?

A. No, sir.

Q. And when you said "APB," what were you talking about?

A. Annular pressure buildup.

Q. And then the lost circulation?

A. Yes, sir, lost circulation.

Q. Were you talking about lost circulation there on the

09:05 Macondo well?
09:05 **A.** No, sir.
09:05 **Q.** Because her question was, "What do you see as the biggest
09:05 deepwater risk and challenges?"
09:05 **A.** That's right.
09:05 **Q.** Did you not understand that she was talking to you about
09:05 the risk there connected with the *Deepwater Horizon*?
09:05 **A.** She was not.
09:05 **Q.** Okay, sir. Thank you.
09:05 And it goes on to say: "Are existing technologies
09:05 and services adequate to overcome these challenges and mitigate
09:06 these risks?"
09:06 And did you answer her question?
09:06 **A.** Yes.
09:06 **Q.** And what did you say?
09:06 **A.** "No."
09:06 **Q.** What were you referring to there, sir?
09:06 **A.** I --
09:06 **Q.** If you recall?
09:06 **A.** Yes, I do. As the industry -- the service industry really
09:06 provides a lot of research for the new products.
09:06 **Q.** Yes, sir.
09:06 **A.** And Halliburton is one of them. And so she was wanting to
09:06 know what -- what the service -- what the service companies
09:06 could possibly focus on --

09:06 **Q.** Yes, sir.
09:06 **A.** -- and really try to give them a competitive advantage.
09:06 **Q.** You, of course, knew that talking with Ms. Bonsall, as for Baker Hughes, she was a competitor of Halliburton, did you not?
09:06 **A.** That's correct.
09:06 **Q.** I understand. Okay. Thank you.
09:06 **MR. GODWIN:** Let's look at TREX No. 01126, 1126.
09:06 **BY MR. GODWIN:**
09:06 **Q.** I'm going to cover very briefly a line or two in this e-mail, but some of it's been covered with you. It was an e-mail that David Sims wrote to you on March 14th, 2010. Do you see that, sir?
09:07 **A.** Yes, sir.
09:07 **Q.** Okay. And the part that I'm going to be looking at is the third paragraph there with the second sentence where it says: "Bleeding with pipe off bottom and while underbalanced to a kick zone is wrong."
09:07 What did you understand Mr. Sims to be saying to you there in the context of that e-mail?
09:07 **A.** During the -- during the kick event of March 8th, we had got stuck and we had finally severed the pipe, which was above where the -- the zone that we took the kick in.
09:07 **Q.** Yes, sir.
09:07 **A.** And he was referencing that while you still have the well under control with pressure on it, that he was saying that if

you bleed the pressure off while underbalanced -- I'm sorry, "Bleeding the pressure off bottom to a kick zone is wrong."

Q. When you said that there was still pressure on it, what were you referring to there? You say you had it in balance with pressure on it. What were you referring to?

A. There was a little residual pressure on the drill pipe and casing at this point in time.

Q. And was there -- was there a mud column in place?

A. Oh, yes, full mud column.

Q. And full mud column. And that is what provides for the hydrostatic pressure in order to keep the well from being allowed to escape and blow out, is it not?

A. Yeah, the mud column is.

Q. Thank you, sir.

MR. GODWIN: Let's turn now, if we can, please, to -- let's turn over to TREX No. 00287, please.

BY MR. GODWIN:

Q. And to put it in context, if you can, there are two e-mails here, one at the bottom from Jesse Gagliano to Brian Morel, with the other drilling engineers there. You were not copied -- I recognize that on that e-mail. And that's an e-mail, then, that Mr. Morel is addressing with you in the upper e-mail that he sends to you.

So you see the one from Jesse to Brian there on April 17, do you not, sir?

09:09 **A.** Yes, sir.
09:09 **Q.** I'm not going to ask you about an e-mail that you're not included on, so that's the one down at the bottom. But we'll go up to the top e-mail where Brian writes to you and did not copy anyone, including Jesse, on April 17th.
09:09 And here he says: "I would prefer the extra pump time with the added risk of having issues with the nitrogen."
09:09 Did Brian Morel discuss with you that with regard to the retarder, whether it was 8 gallons or 9 gallons, that there was some issue over that that he was discussing with Jesse?
09:10 **A.** They were just getting two different tests done with different retarders to see what kind of pump time they could have.
09:10 **Q.** Okay, sir.
09:10 Let's go back, then, to the e-mail that's of interest to me. And when Brian says, "I would" --
09:10 **MR. GODWIN:** Just the top e-mail, if you can, Rob. Take out the bottom one. Thank you.
09:10 **BY MR. GODWIN:**
09:10 **Q.** "I would prefer the extra pump time with the added risk of having issues with the nitrogen."
09:10 What did you understand, if anything, Brian was saying there when he said "with the added risk of having issues with the nitrogen"?
09:10 **A.** Well, I called and talked to him, so --

09:10 **Q.** You did?
09:10 **A.** Yes.
09:10 **Q.** And will you tell us what he said.
09:10 **A.** Yes. He was making reference to the nitrogen equipment. So when you do a nitrogen cement job, you have to add several pieces of equipment to the rig that are not usually there. One of them is an actual nitrogen pumping unit, and the other one are nitrogen tanks.

And he expressed not a concern, but he said, "Well, you know, if we have an issue with the nitrogen equipment and we have to shut down for some reason" -- you know, he would prefer to have the extra pump time in case we had to stop and fix a problem.

09:11 **Q.** So what it sounds like you're saying is that by having the longer pump time that Mr. Morel wanted, he recognized there would be an issue of some kind with the nitrogen that was included there in the slurry; correct?
09:11 **A.** No, no, not at all. It was just about the equipment.
09:11 **Q.** About the equipment?
09:11 **A.** Just the equipment.
09:11 **Q.** All right. Thank you, sir.

09:11 **MR. GODWIN:** All right. Let's look over at TREX No. 00533, please. 533.

09:11 **BY MR. GODWIN:**
09:11 **Q.** You testified yesterday that you worked with and respected

Mr. Ronnie Sepulvado.

A. Yes, I do.

Q. He's a well site leader.

A. Yes, sir.

Q. He testified here in court, and he did seem like a very nice man.

Mr. Sepulvado wrote to you on April 13th, 2010, did he not? Wrote to Mr. Morel, Mr. Sepulvado, his brother, and a copy to you, did he not?

A. Yes, sir.

Q. And his subject was "Rev 1 Procedure." What's that referring to, if you know?

A. It was the first draft procedure that Mr. Morel sent to the guys on the rig.

Q. Okay. And on April 13th, was Mr. Ronnie Sepulvado one of the well site leaders there on the Macondo well?

A. Yes.

Q. And he wrote and says: "Brian, we need to do a negative test before displacing 14-pound mud to seawater."

Did I read that correctly?

A. You did.

Q. Did you have an understanding as to what he was referring to there as to why a negative test should have been done before displacing the No. 14 pound mud to seawater?

A. Yeah. You want to simulate -- you want to simulate the

condition that you're going to see after you do the final displacement.

Q. So Mr. Sepulvado, as early as April 13, was saying, "We definitely need -- we, BP, we need a negative test before this mud is displaced with lighter seawater"?

A. That's correct. We need to do a negative test prior to the final displacement.

Q. Okay, sir. And you certainly, without -- it's just logical common sense that when he says, "We need a negative test," he was saying, "We need a good negative test"?

A. Yes.

Q. That's common sense?

A. Yes, sir.

Q. Okay, sir. Thank you.

MR. GODWIN: Let's turn over to TREX No. 282, please.

BY MR. GODWIN:

Q. This is an e-mail from Mr. -- there are actually two e-mails, but the one -- the bottom one is from Brian Morel, dated April 20, at 2:52 a.m. And again, I'm not saying there's not an issue with the time but just whatever they're referring to as some time issues. But we do know that the cement job ended on the early morning hours of April 20, do we not?

A. Yes, sir.

Q. So at 2:52 a.m., Mr. Morel, according to the e-mail, writes to you as well as some of the other engineers regarding

the cement job, did he not?
A. Yes, sir.
Q. And he says: "Just wanted to let everyone know the cement job went well. Pressures stayed low, but we had full returns the entire job, saw 80 psi lift pressure and landed out right on the calculated volume."
Did I read that correctly?
A. Yes, sir.
Q. Did anybody tell you at any time after the cement job had been pumped that they had any issue with the execution by Halliburton of the cement -- pumping of the cement job there on the night of April 19 and the early morning hours of April 20th?
A. No.
Q. Thank you, sir.
Mr. Guide, you -- I want to thank you for your patience with me this morning.
Would you, as a wells team leader -- you're still with BP?
A. Yes, sir.
Q. Okay, sir. Would you be proud to once again work with the same Halliburton crew that was involved with the *Deepwater Horizon*. That is, Jesse Gagliano and the other gentlemen you've talked about, would you be proud to work with them on another deepwater well on behalf of BP?

A. I would work with them on another deepwater well, yes, sir.
Q. And you trusted them?
A. I did.
Q. And you enjoyed working with them?
A. I did.

MR. GODWIN: Thank you very much. I appreciate it. Thank you, sir.

Judge, I pass the witness.

THE COURT: Ms. Karis, are you ready?

MS. KARIS: I am, Your Honor.

May I proceed, Your Honor?

THE COURT: Yes.

MS. KARIS: Thank you. Hariklia Karis on behalf of BP, conducting the redirect examination of Mr. Guide.

REDIRECT EXAMINATION

BY MS. KARIS:

Q. Mr. Guide, I want to follow up on a couple things that you've been asked about over the last few days. And I want to start first by asking you about the -- some of the issues Mr. Godwin was just asking you in connection with Halliburton's cement job.

He asked you whether you trusted and relied on Jesse. Do you recall that, just a couple minutes ago?

A. Yes.

09:17 **Q.** Did you trust and rely on Jesse to let you know if his lab tests indicated that the cement slurry they were going to pump at Macondo was not stable?
09:17 **A.** Could you --
09:17 **Q.** Sure.
09:17 **A.** I'm sorry.
09:17 **Q.** Did you trust and rely on Jesse to let you know that if the slurry they were going to pump was not stable --
09:17 **A.** Yes.
09:17 **Q.** -- if his tests showed that?
09:17 How far was Jesse's desk from where you sat?
09:17 **A.** 25 feet.
09:17 **Q.** At any time did Jesse ever, either in the morning calls or in any of the meetings that you had with him or on any day, ever indicate to you that his lab tests had shown that there were stability problems with the foam cement?
09:18 **A.** No one ever told me there was any issues with the cement.
09:18 **Q.** And would you have expected Jesse to come and inform you of that, given where you sat from him and given that he knew you trusted him?
09:18 **A.** It would be his responsibility.
09:18 **Q.** Mr. Godwin asked you about whether you can achieve zonal isolation -- whether you rely on cement to achieve zonal isolation. Do you recall those questions, generally?
09:18 **A.** Yes.

09:18 **Q.** Now, is it accurate -- well, let me ask you this: Can you achieve zonal isolation without a cement that is capable of setting and forming as a bond?
09:18 **A.** No.
09:19 **Q.** If you don't achieve zonal isolation, is it accurate to say that that will allow your well to flow?
09:19 **A.** Well, it could.
09:19 **Q.** Mr. Godwin asked you about a cement bond log. Do you remember that?
09:19 **A.** Yes.
09:19 **Q.** And he asked you whether that cement bond log could tell you whether you've achieved zonal isolation.
09:19 **A.** Yes, it could.
09:19 **Q.** Now, in connection with the cement job at Macondo, given your understanding of that job, would a cement bond log have told you whether you had achieved zonal isolation?
09:19 **A.** No, in this particular case, it would not have told us.
09:19 **Q.** Why not?
09:19 **A.** The shoe track, which is where the -- the bottom of the -- the bottom place that the bond log could actually access was just right below the top of the formation. And in order to get the information that you need to -- for zonal isolation, you need to be able to run the log through the whole formation, which is from the bottom to the top. And by -- where the shoe track was placed, it precluded us from getting that

information.
Q. And so even if you had run a cement bond log at the Macondo well, would that have told you whether Halliburton's cement job was effective in achieving zonal isolation?
A. It would not have.
Q. Different subject. You were asked some questions yesterday about the March 8th kick and about whether you took any action to do a Lessons Learned. Do you recall that?
A. Yes, ma'am.
Q. And I believe you told Mr. Cunningham that you personally did not do a Lessons Learned investigation from that incident. Correct?
A. That's correct.
Q. Did BP undertake a Lessons Learned investigation?
A. Yes, they did.
MS. KARIS: And if we can pull up TREX-51.2.1, please.
BY MS. KARIS:
Q. Is this the Lessons Learned that BP conducted regarding the March 8th kick?
A. Yes.
Q. Is this one of the Lessons Learned that BP conducted?
A. Yes. We keep a -- we actually keep a running tab of Lessons Learned for every -- every event, not just -- not just problems, but also successes.

09:21 **Q.** Who conducted the Lessons Learned in connection with the March 8th kick here in TREX-51.2.1?
09:21 **A.** It was Brian Morel, Mark Hafle, and Brett Cocales.
09:21 **Q.** And were those the drilling engineers, plus Mr. Cocales, the ops engineer, who reported to you?
09:21 **A.** That's correct.
09:21 **Q.** So is it accurate to suggest that there was no LessonS learned from the March 8th kick?
09:22 **A.** No, that would not be accurate.
09:22 **MS. KARIS:** If we can look at TREX-51.7 -- I'm sorry, 51.8.1, please.
09:22 **BY MS. KARIS:**
09:22 **Q.** Is this one of the pages from this package and Lessons Learned presentation and specifically identifies the Lessons Learned here?
09:22 **A.** That's correct.
09:22 **Q.** Does BP have a practice for sharing Lessons Learned among its wells team leaders, well site leaders, and engineers that arise from kick events?
09:22 **A.** Yes. We actually have a -- several processes set out. We have a biweekly meeting where all the Lessons Learned from all the operations are shared and then, in turn, they are sent to the rig. And we even keep a database of this meeting so you can go back and access any of the Lessons Learned on any of the rigs.

09:23 **Q.** There was a suggestion --

09:23 **MS. KARIS:** You can take this down. Thank you.

09:23 **BY MS. KARIS:**

09:23 **Q.** There was a suggestion by Mr. Cunningham that by not -- do you recall he asked you whether you recorded the March 8th kick in Traction?

09:23 **A.** Yes, I remember that.

09:23 **Q.** And I believe you indicated you did not and you weren't aware it needed to be placed in Traction?

09:23 **A.** That's correct.

09:23 **Q.** Is there a database in which events like kicks and losses are tracked -- identified and tracked?

09:23 **A.** Yes, there is.

09:23 **Q.** Tell us what that is.

09:23 **A.** It's called -- and I don't know why it's called this, but it's called 18 Wells, and it is our database that keeps track of all of -- really, the end of well reports and all the Lessons Learned for all the different wells. And everyone has access to this. And so when you want to look at the lessons learned from various wells and to get a recap of all the events, you go into this database.

09:24 **Q.** And is it expected that for each and every well, at the end of the well, you look at what has occurred and that you have identified losses and kicks, you document them in this database and keep track of them?

09:24 **A.** It's really even more than that.
09:24 **Q.** Please explain.
09:24 **A.** Mr. Rainey was our vice president of exploration, and he personally attended every end-of-well debriefing. These were -- these were meetings that lasted four, five, six hours sometimes, and he was -- because he was very interested.
09:24 And so it was a very formal presentation where it went through every aspect of the well, the geology, the drilling, I mean, anything. And this is the kind of document that would be placed in the database.
09:24 **Q.** Okay. So to the extent it was suggested that by you not entering the March 8th kick into Traction, somehow you weren't accurately reflecting the safety record of your team on the *Deepwater Horizon*, is that accurate?
09:25 **A.** That is not accurate.
09:25 **Q.** Why not?
09:25 **A.** Because all -- we document these -- all these events in various places, and everyone has full access to all the documentation.
09:25 **Q.** Different subject. You were also asked some questions about Mr. Kaluza's ranking. Do you recall that?
09:25 **A.** I do.
09:25 **Q.** Okay. Does BP have a matrix by which it ranks well site leaders?
09:25 **A.** Yes.

09:25 **MS. KARIS:** Okay. And if we could pull up 45259.8.1.
BY MS. KARIS:
Q. Do you recall Mr.-- actually, I'm not sure -- one of the attorneys showed you that ranking list that showed Mr. Kaluza, at the time of the incident, had a meets-expectations ranking; correct?
A. Yes.
Q. Is this the rating model or matrix by which various individuals are ranked?
A. Yes, it is.
Q. And is this the matrix by which the well site leaders are ranked?
A. Yes.
Q. And by having a meets-expectations ranking -- first of all, what percentage of BP's well site leaders have a "meets expectations"?
A. 60 percent.
Q. And what does that mean?
A. Well, the definition is -- it speaks for itself: "Meets expectations and delivers effectively against all critical objectives, and the delivery is acceptable for all others."
Q. And you were asked whether you knew where Mr. Kaluza ranked when you sent him to the *Deepwater Horizon*. By having a meets-expectations ranking, does that indicate to you in any way that Mr. Kaluza, because he had a lower ranking than Ronnie

09:27 Sepulvado or Murry Sepulvado, was not an appropriate candidate to send to the *Deepwater Horizon*?
A. Not at all. Look at the overall performance for meets expectations: "Performance fully meets expectations for the role. Employee is valued."
Q. And what was your ranking at the time of this incident?
A. EE, "exceeds expectations."
Q. And what does that say about how your overall performance has been assessed according to this?
A. "Exceeds expectations in most areas and delivers effectively against all objectives, performance, and is consistently strong; performance is measurably ahead of what is expected for the role."
Q. A different subject. You were asked about Mr. Hafle and whether he told the Bly investigators, based on some notes that were taken, that he wanted to plug and abandon the well. Do you recall those questions?
A. Yes, ma'am, I do.
Q. I believe you testified Mr. Hafle never told you that was his preferred option. Is that accurate?
A. That is accurate.
Q. We talked yesterday about a PowerPoint presentation in connection with the choice for long string versus liner. Do you recall that?
A. Yes.

09:28 **MS. KARIS:** If we can put that up, 8146.3, please. If we can go to 8146.8.1.
BY MS. KARIS:
Q. Who prepared this PowerPoint presentation?
A. Mark Hafle.
Q. And was it Mark Hafle, then, who wrote that the long-string casing is again the primary option?
A. Yes.
Q. And is -- was there a reference in this presentation regarding the possibility of plugging and abandoning the hole?
A. Yes, there was.
MS.KARIS: Okay. And if we can go to 8146.10, please.
BY MS.KARIS:
Q. This is Mr. Hafle's presentation?
A. Yes, it is.
Q. What does Mr. Hafle's presentation say regarding plugging the hole, or "P & A" as it's been called?
A. "Plug the open hole and TA well, least preferred but still an option if hole conditions go south."
Q. And so did Mr. Hafle communicate that, as he indicated in his presentation, the least preferred approach was to plug and abandon the hole?
A. That's correct.
Q. That was his least preferred approach, as presented in

this presentation; correct?
A. That is correct.
Q. And was that the collective view of the team, including the engineering authority, the drilling engineers, the senior drilling engineer for the Macondo well, yourself, and others?
A. Yes.
Q. Now, this says that if the hole conditions go south, that was an option. And was BP prepared to follow the plug-and-abandon approach if the hole conditions went south?
A. Absolutely.
Q. You were asked -- a different subject. You were asked numerous questions by Mr. Brian about the rig audit. Do you recall that?
A. Yes.
Q. First of all, can you tell us, is the rig -- how is the rig audit conducted in connection with review of maintenance records?
A. They go into the system and take a sampling of various records.
Q. Is the rig audit intended to look at every maintenance record that Transocean has?
A. No, it's not.
Q. To your knowledge -- first of all, did you ever go into Transocean's system and look at every maintenance record they have?

09:30 **A.** No. I wouldn't even know how to get in it.
09:31 **Q.** And are you aware of anyone at BP that looked at Transocean's maintenance record by looking at every record they had?
09:31 **A.** Not to my knowledge.
09:31 **Q.** By conducting your rig audit, was BP -- to your knowledge, was BP in any way saying that Transocean was properly handling the maintenance items that they had identified in their own system?
09:31 **A.** No. It was just a sampling.
09:31 **Q.** Did you rely on Transocean to adequately maintain the *Deepwater Horizon* rig?
09:31 **A.** Yes, I trusted them to.
09:31 **Q.** You were asked about the September 2009 audit, and I believe Mr. Brian asked you, quote, the decision to put the rig back in service was exclusively a BP decision?
09:31 Do you recall that question?
09:31 **A.** I do.
09:31 **Q.** If you will look at TREX-44024.1.2, please, this is an e-mail from Mr. Johnson to you, dated September 21st. Was this before BP agreed for the rig to go back into service?
09:32 **A.** That is correct.
09:32 **Q.** And it attaches there BP's audit findings. What does Mr. Johnson tell you about the condition of the *Deepwater Horizon*, based on the service, that maintenance that Transocean

09:32 has performed?
09:32 **A.** He indicated that Transocean was satisfied that they could start the operations safely.
09:32 **Q.** Did you rely on Mr. Johnson's representation that Transocean was satisfied that they could start up the operations safely?
09:32 **A.** Yes.
09:32 **Q.** In agreeing for the rig to start back into service?
09:32 **A.** It's their rig.
09:32 **Q.** Were you making any independent assessment as to the adequacy of Transocean's maintenance and repairs following the findings?
09:32 **A.** No. I trusted Mr. Johnson.
09:33 **Q.** Mr. Brian also asked you some questions about the ISM safety management certificate in connection with this audit.
09:33 **MS. KARIS:** If we can pull up 44046.14.1, please.
09:33 **BY MS. KARIS:**
09:33 **Q.** You were shown this document, do you recall? This is part of the audit: "Does the MODU have an ISM safety management certificate?"
09:33 **A.** Yes.
09:33 **Q.** And what is the answer to that?
09:33 **A.** "Yes."
09:33 **Q.** Okay. Now, if we can go to -- and is that based on representation from Transocean to BP regarding their ISM

09:33 certificate?
09:33 **A.** That's correct.
09:33 **Q.** Do you have any special training in what the ISM code
09:33 requires?
09:33 **A.** No, not me.
09:33 **Q.** Do you know what the ISM requires in terms of command
09:33 structure between the captain and the master?
09:33 **A.** I do not.
09:33 **MS. KARIS:** Now, if we can turn to 44046.14.2,
09:33 please.
09:33 **BY MS. KARIS:**
09:33 **Q.** And following the section where it says, "Does the MODU
09:34 have an ISM safety management certificate?" where Transocean
09:34 said "Yes," let's see what it says here.
09:34 It says: "The auditor shall assess the adequacy of
09:34 the safety management system applicable to marine activities
09:34 where no ISM safety management certificate is in place."
09:34 And then it lists there what should be assessed if no
09:34 safety management certificate is in place.
09:34 **A.** That's correct.
09:34 **Q.** Given Transocean's representation that they did have an
09:34 ISM safety management certificate, would BP's auditors have
09:34 looked at the OIM master's or barge master's responsibility and
09:34 authority as part of that audit?
09:35 **MR. BRIAN:** Objection, no foundation.

09:35 **MS. KARIS:** I believe Mr. Brian asked him this precise question, Your Honor.

THE COURT: I don't recall that.

Did you ask about that, Mr. Brian?

MR. BRIAN: I asked about this document, but I think he's just testified that he didn't do it himself.

MS. KARIS: Well, Your Honor, I believe Mr. Brian asked him, "This means BP's auditors looked at" --

THE COURT: I'll let him answer it, if he can.

THE WITNESS: I'm going to ask her to rephrase it.

THE COURT: Okay.

THE WITNESS: Thank you, Your Honor.

BY MS. KARIS:

Q. Let me see if I can repeat this.

Given that Transocean represented that they had an ISM safety management certificate, pursuant to this audit and these guidelines, would BP have looked at the OIM master or barge master's responsibility and authority?

A. No.

Q. Why not?

A. Because it says "Auditor shall assess the adequacy of the safety management system applicable to the marine activities where no ISM safety management certificate is in place."

Q. And so is it accurate to suggest that as part of the audit, BP would have looked at the barge and -- barge master

09:36 and OIM master's authority and division of responsibility?
09:36 **A.** No.
09:36 **Q.** Now, you had dealt with Transocean and the *Deepwater Horizon* for a number of years; is that correct?
09:36 **A.** Yes.
09:36 **Q.** What was your understanding of who was in charge?
09:36 **A.** The OIM was in charge.
09:36 **Q.** And I believe you testified yesterday, when Mr. Brian showed you the station bill, that you were surprised to see that the master actually had the senior position.
09:36 **MR. BRIAN:** Objection. Form. Leading.
09:36 **MS. KARIS:** Let me rephrase it.
09:36 **BY MS. KARIS:**
09:36 **Q.** Do you recall Mr. Brian asked you -- showed you the station bill yesterday?
09:36 **A.** Yes, I do.
09:36 **Q.** Do you recall who it indicated was in charge?
09:36 **A.** Yes. The master.
09:36 **Q.** You indicated you were -- what was your reaction to that?
09:36 **MR. BRIAN:** Objection. Asked and answered, cumulative.
09:36 We did this yesterday, Your Honor.
09:36 **THE COURT:** Yeah, we did.
09:37 **MS. KARIS:** Your Honor, I thought it was redirect to clean up the impression that Mr. Brian left. I'm happy to move

on.

THE COURT: Okay.

BY MS. KARIS:

Q. A couple more items, Mr. Guide, and then we'll be finished.

You were asked yesterday about your OMS training. Do you recall that?

A. Yes.

Q. And you were explaining -- or attempting to explain what, if any, training you had had at the time of the incident?

A. Yes.

Q. Had you had training in OMS prior to the time of the incident?

A. Yes, I did.

Q. And you were shown your deposition where you referenced that you hadn't had some computer on training on OMS?

A. That's correct.

Q. Could you explain what you meant there?

A. The OMS system -- I'm sorry, the OMS handbook, when it came out, we were all trained in the actual book itself, the paper -- the paper version. And it was a broad, all-encompassing book that was -- covered every region and every aspect of BP, you know, refining, marketing, all-encompassing -- exploration, production.

And then the decision was made to personalize this,

and it was -- so a computer program was developed called "My OMS." And I had not -- I had not received the training on the computerized version of My OMS that made it more specific for actual wells -- or as it was called at the time, D&C. That was still in development. Of course, I have it now.

But -- so my training -- my original training was over the basic OMS system in a paper fashion.

Q. So had you been trained in OMS as of the time of the incident?

A. Yes, I was.

Q. Different subject. You were asked about some calls that you made to the rig on the evening of April 20th. Do you recall that?

A. Yes.

Q. First of all, Mr. Cunningham asked you where you were about 5:39 in the evening when some calls were being made. Do you recall those questions generally?

A. Yes.

Q. Where were you when those calls were made?

A. I was home.

Q. What time do you generally get to work?

A. I get to work at 5:30 in the morning.

Q. So by 5:30 in the evening, 12 hours later, you were generally home?

A. Yeah. I tried to leave by 5:00 in the evening. I figured

11 hours a day was enough.
Q. Now, are you still accessible to the well site leaders, even if you've left the office after an 11- to 12-hour day?
A. 24/7. I have my cell phone with me all the time.
Q. In your experience, do the well site leaders reach out to you if they have a question, even if it's after 5:00 p.m.?
A. I've been called every day at every time possible.
Q. Last subject. You were asked numerous questions about the April 17th e-mail that you drafted and sent to Mr. Sims regarding the "flying by the seat our pants" reference. Do you recall those questions generally?
A. I do.
Q. Okay. When Mr. Sims responded to you, was it your understanding that -- I believe you testified it was your understanding he was talking about logistics?
A. That's correct.
Q. And Mr. Cunningham asked you, "It doesn't say 'logistics' anywhere, does it?"
A. That's correct.
Q. How long had you worked with David at that point?
A. Three years.
MS. KARIS: If we can pull up deposition testimony 341.200.1 from Mr. Sims' testimony.
BY MS. KARIS:
Q. Based on your experience, I want to ask you if you agree

with the following:

"ANSWER: I've worked with John a lot, and when I read this e-mail, the title of it, the way we work with engineering, the discussion of logistics, frustration, the words, some of the these in there, I've heard John refer to them -- refer to a water fountain as [verbatim] working as chaos. He's used, you know, colorful type words like that before since I've known him.

"I did not see that as a safety issue and I certainly felt like that if that was one, John wouldn't be sending me an e-mail. He would be calling me or, you know, the well site leaders, or he would be shutting things down if there was a serious safety concern."

Is it accurate that if you believed the operations that you were referencing in your April 17th e-mail related to safety, you would have done what Mr. Sims suggests?

A. Absolutely. You know, they -- they were my guys, they were part of the team. I would in no way, shape, or form let an operation continue if I thought in any way that something was not safe.

Q. Mr. Cunningham suggested that Mr. Sims doesn't say it was about logistics.

Based on your working with Mr. Sims, does it state right there that he viewed the discussion as being about logistics?

09:43 **A.** Yes, ma'am.
09:43 **Q.** And is that exactly what you were talking to him about?
09:43 **A.** Yes, ma'am.
09:43 **Q.** And so were you and he on the same page as to what you were talking about, even if the rest of us read it differently?
09:43 **A.** That's correct.
09:43 **Q.** Mr. Cunningham began by asking you whether you've thought about this event numerous times and whether you've identified anything that you did incorrectly. And I want to follow up on that.
09:44 He said: "So you know of nothing, as you sit here today, that you should have done different to avoid this disaster?"
09:44 Do you recall that question?
09:44 **A.** I do.
09:44 **Q.** And is it accurate that you've reflected back on this incident?
09:44 **A.** I've thought about this every day for the last three years. After -- after this accident happened, I mean, I sat -- I sat and I went through every decision that we made. I looked at everything. I looked at all the data. I looked at all the information.
09:44 And, you know, it was all done like we had done it before, in the past. It was well thought out. It was careful. We made decisions based on sound engineering judgment. We did

just like we did before when we drilled all these successful wells.

And I did go back and look because, you know, this was -- this was -- you know, I was part of the team and this was my team, you know. And to think, you know, that it didn't affect me is, you know, crazy.

So, I mean, I did go back and I looked at everything we did because I wanted to know what happened. I've cooperated with every investigation -- the MBI, the United States Department of Justice, the Presidential Commission, the Chemical Safety Board -- because I want to know what happened.

So, yes, I went back and reflected, and I still reflect about it today.

Q. Did you believe, as you said in an e-mail, that everyone wanted to do the right thing in connection with the drilling of the Macondo well?

A. Absolutely. We were one team, we were successful, and I -- like I said in my evaluation, I was lucky to be a part of this team.

MS. KARIS: I have nothing further. Thank you.

THE COURT: All right, sir, you're finished. You can step down.

THE WITNESS: Thank you, Your Honor.

THE COURT: Okay. All right. Let's take about a 15-minute recess.

09:46 Your next witness is going to be whom?
09:46 **MR. BROCK:** Mr. Earl Shanks, Your Honor.
09:46 **THE COURT:** Okay.
09:46 **THE DEPUTY CLERK:** All rise.
09:46 (WHEREUPON, the Court took a recess.)
09:48 **THE DEPUTY CLERK:** All rise.
10:10 **THE COURT:** Please be seated, everyone.
10:10 **MR. COLLIER:** Good morning, Your Honor. May I proceed?
10:10 **THE COURT:** Yes.
10:10 **MR. COLLIER:** Good morning. Mr. Shanks, I have you on direct examination.
10:10 (WHEREUPON, **FORREST EARL SHANKS, II**, having been duly sworn, testified as follows.)
10:10 **THE DEPUTY CLERK:** Please state your full name and correct spelling for the record.
10:10 **THE WITNESS:** Forrest Earl Shanks, II.

DIRECT EXAMINATION

BY MR. COLLIER:

10:11 **Q.** Good morning, Mr. Shanks. Paul Collier on behalf of BP. I have you on direct examination.
10:11 **A.** Wonderful.
10:11 **Q.** Could you please introduce yourself to the Court.
10:11 **A.** Forrest Earl Shanks, II.
10:11 **Q.** Who is your current employer?

10:11 **A.** Oceaneering.
10:11 **Q.** What title do you have with Oceaneering?
10:11 **A.** Chief technologist.
10:11 **Q.** What were you asked to evaluate as it related to the *Deepwater Horizon* matter?
10:11 **A.** The failure of the well, of the BOP to seal the well, and also the suitability of the BOP for the conditions of the Macondo well.
10:11 **Q.** And to be clear, you were not asked to evaluate the BOP control pods and their ability to activate the AMF/deadman?
10:11 **A.** No, I was not.
10:11 **Q.** And you're not providing any of those opinions today; correct?
10:11 **A.** No, sir.
10:11 **Q.** Now, before discussing the work that you did related to this matter, I'd like to talk about your professional background. What has been the focus of your professional career?
10:12 **A.** Throughout my whole career, I primarily have supported the technical operations and support of floating -- offshore float and drill.
10:12 **Q.** Have you prepared any demonstratives that describe in more detail your professional background?
10:12 **A.** Yes, I have.
10:12 **MR. COLLIER:** If we can bring up D-4801.1, please.

10:12 **BY MR. COLLIER:**
10:12 **Q.** If you can first describe your educational background, please.
10:12 **A.** Yes. After graduating high school, I went two years to junior college -- which I enlisted in the Marine Corps, served 12 months in Vietnam, combat infantry specialist.
10:12 Upon immediately getting out, I joined the University of Houston where I earned my Bachelor of Science in mechanical engineering. The next semester I went to Oklahoma State where I earned my -- I'm sorry, Houston was a Bachelor of Science and Oklahoma State, Master of Science in mechanical engineering, 1973.
10:13 **Q.** How many years have you worked in the offshore drilling industry?
10:13 **A.** 38 years.
10:13 **Q.** For what type of entities have you worked for in the offshore drilling industry?
10:13 **A.** I've worked for drilling contractors for 14 years, operators for 20 years, and subsea equipment, original equipment manufacturers for four years.
10:13 **Q.** I'd like to walk through now the various companies that you've worked for during your 38 years of working in the offshore drilling industry.
10:13 **MR. COLLIER:** If I can bring up D-4802.1, please.

10:13 **BY MR. COLLIER:**
10:13 **Q.** Starting with the Baylor Company, can you explain what type of work you did for Baylor Company.
10:13 **A.** Yes. This is right out of graduate school. I was a detail design engineer working on rig deck equipment and rig subsea equipment.
10:14 **Q.** And in 1975 you went to work for Vetco Offshore?
10:14 **A.** Right. Again, as a design engineer working on subsea marine systems, where I designed and evaluated subsea equipment.
10:14 **Q.** And next you went to work for Sedco. Can you please describe the type of work that you did with Sedco.
10:14 **A.** Yes. When I joined Sedco, I was an assistant engineer primarily supporting offshore operations for the subsea equipment. In 1980, I was promoted to the manager of the group of systems engineering where I managed the subsea equipment and related equipment throughout Sedco's fleet worldwide.
10:14 **Q.** And you also identified that you supervised subsea equipment associated with eight new-build offshore drilling rigs.
10:15 **A.** Right.
10:15 **Q.** Can you describe what type of work that was.
10:15 **A.** Yes. During the four years in the early 1980s, Sedco contracted and built eight new offshore floating drilling rigs. My group managed the complete subsea equipment: BOP, riser,

10:15 riser tensioners, drill string compensator in the derrick, choke kill manifolds, and anything related or associated with subsea equipment.

Q. Can you explain, with respect to the supervision of the subsea equipment associated with these new-build offshore drilling rigs, what type of work you were doing related to BOPs?

A. Yes. We actually worked with the oil company during the negotiations of the contract. Typically, as far as the BOP, for example, we would take our preferred designs or our preferred arrangement of the BOP components and BOP stack; we would go to our preferred OEM supplier, get a quote; and then I would sit down with the oil company representatives to begin a negotiation of what would meet their drilling and well control needs.

But it gave us something to start with.

Q. And during your work with Sedco, did you have experience with Cameron BOPs?

A. Yes. At Sedco, at the time, Cameron BOPs was the BOP of choice, and half of those new-build rigs had Cameron BOP systems.

Q. Now, during the developing of the design and configuration of the BOP, was that a collaborative process amongst multiple entities?

A. Very much. We would start with an arrangement of the BOP

that kind of met Sedco's company policies. As we sat down with the engineer, the engineers from the various oil companies that we were negotiating with. We would -- they would reflect upon the arrangement and make changes according to their company policies or perhaps make some different changes, depending on where they knew the rig was going to be drilling and what they would be encountering.

If there was a difference from what we recommended, then we would negotiate and come up with a final solution that would meet both companies' internal policies.

Q. Now, Mr. Shanks, in the work that you've conducted for this case, did you review the rig files that were associated with the design and development of the *Deepwater Horizon* BOP?

A. Yes. I read the meeting minutes for the -- in the early phases where they determined what the orientation and configuration of the BOP to be.

Q. Was the interaction between the entities that you saw on the rig files similar to the collaborative effort that you saw with respect to your work at Sedco?

A. Oh, very, very similar, yes.

Q. And you also identified, with respect to your work for Sedco, that you performed failure analyses and evaluations of subsea equipment, including BOPs. Can you explain what that work entailed.

A. Yes. As a systems engineer, I routinely went out on the

10:18 rigs any time there was a problem and helped investigate cause
10:18 and implement solutions. Even after I was a manager, if there
10:18 was a significant problem with, say, a BOP that the rig crew
10:18 couldn't identify and correct immediately, if it had, you know,
10:19 further extenuating circumstances, then I would go to the rig.
10:19 A lot of times, I would grab the equipment --
10:19 original equipment engineering and technical -- top technical
10:19 people to go to the rig with me if it were a severe problem.
10:19 **Q.** And at Sedco did you perform any shear tests associated
10:19 with BOP equipment?
10:19 **A.** Yes. Sedco at the time was the largest drilling
10:19 contractor in the world offshore. So we had a lot of equipment
10:19 and inventory. So the operators, when they would want to see
10:19 shear tests for their particular type of BOP and configuration,
10:19 very often they would come to us, and we would supply the
10:19 equipment and supervise the test.
10:19 **Q.** And have you witnessed shear tests of BOP equipment
10:19 outside your employment with Sedco?
10:19 **A.** Yes.
10:19 **Q.** Does your work with Sedco relate to the work that you've
10:20 been asked to conduct relating to this matter?
10:20 **A.** Yes. It fits very well. I mean, we went through
10:20 essentially the same process of coming up with the BOP
10:20 configuration and getting all the data work -- data and
10:20 documentation in place.

10:20 **MR. COLLIER:** If we can pull up D-4802.2.
10:20 **BY MR. COLLIER:**
10:20 **Q.** And then turn to your employment with Mobil Oil. If you can describe the positions and roles that you had with Mobil Oil, please.
10:20 **A.** Yes, sir. When I first joined Mobil Oil, I was in the research and development center as a subsea engineer. I spent most of my two years there working on subsea tree installations over in the North Sea on the NACE (phonetic) project. After two years, I was transferred over to drilling technology where I was a drilling technology group leader.

I had several responsibilities on special drilling technologies, and also all senior group leaders had responsibilities to perform research projects, and so I took my share of projects. And for what I was brought over to do is form a deepwater drilling team.

10:21 **Q.** And I understand that during your employment with Mobil Oil, you worked with some of the experts who have testified in this case. Is that right?
10:21 **A.** Yes, I have. Mr. Willingham (phonetic) formed quite a group in the drilling technology center.

Glen Benge, the cementer; Gerry Calvert, the cementer that's testified; also David Lewis, who testified on casing. We were all part of the same group at Mobil.

10:22 **Q.** During your time at Mobil, did you work with BOPs?

10:22 **A.** Yes.
10:22 **Q.** Can you describe the type of work that you were doing with BOPs for Mobil?
10:22 **A.** Well, as part of my responsibilities as the team lead for the deepwater drilling group, any time Mobil Worldwide would pick up a new contract on a new rig that they hadn't used before, the letter of intents formed with the -- signed with the drilling contractor was contingent upon an inspection by my group. So we would go out as soon as the letter of intent was signed and do an audit on each of the rigs that Mobil wanted to contract.
10:22 **Q.** During your work with Mobil, did you do any assessment of shearing capacity for BOPs?
10:22 **A.** Yes. That was always part of the review. Our audit covered all drilling equipment, including the subsea riser and BOP stacks. And to ensure that the proper documentation was there, we would look at shear test data and other documentation that would be required from a company-policy standpoint.
10:23 **Q.** Now, during your time with Mobil, did you work on the behavior of drill pipe as it relates to a drilling operation?
10:23 **A.** Yes, I did. Actually, for several years, that was the focus of my drilling research projects. I had three engineers that were working for me that were dedicated to drill-string buckling and drill-string helical buckling phenomena. Specifically, we were looking at horizontal well drilling.

10:23 But the technology applies whether it's vertical or horizontal. We would develop the analytical tools to analyze drill string and try to understand under what conditions it would go into buckling and then helical buckling.

We had simulations that were developed and we also did full-scale testing.

Q. While at Mobil, did you teach any classes?

A. Yes. Right after I joined MEPTEC, the drilling -- as group leader for the deepwater group, my boss asked me to attend their floating drilling course.

I attended and found that the -- a lot of the technology was pretty old, from back in the '70s. So he asked me to rewrite the course manual and start teaching the course. So I taught the floating drilling course for Mobil pretty much worldwide for about eight years.

Q. And did those classes involve BOPs at all?

A. Oh, yes, it -- definitely BOPs. It covered all aspects of floating drilling: stability, weather effects, operations, vessel stability motions, and then all of the key equipment.

And I did a lot of focus on the BOP because that's an area that a lot of the drilling engineers weren't very familiar with.

Q. Now, from 1998 to 2003, you worked for Transocean?

A. Yes.

Q. Can you explain what role that you had with Transocean

during that time.
A. There was a newly formed position of director of technology development. That was my title and my department.
Q. And what type of work did you do in that role?
A. Basically, I evaluated new technologies that -- both within the oil industry and out with the oil industry, aviation, any other technology areas where technology could be looked at to see if it could be brought into a drilling situation, into our fleet for -- so I primarily focused on emerging technologies, as opposed to existing technology.
Q. In this role, did you have any operational responsibilities relating to rigs?
A. No, I did not.
Q. And during your time with Transocean, did you work with BOPs?
A. Only looking at the emerging technologies. If it was already being marketed, been prototyped and proven, there was another group in Transocean, in the engineering department, that looked at application of technologies into the fleet.
Q. Why did you leave Transocean in 2003?
A. October 2003, both my group and my position was eliminated.
Q. Did you leave on good terms with Transocean?
A. Very well. Very good.
MR. COLLIER: And if we can go to the next slide,

please, D-4802.3.

BY MR. COLLIER:

Q. And then we have from 2004 to 2011, you were with DTC.

And can you explain what work you performed while working with DTC?

A. Yes. I didn't actually work for DTC within the DTC company; I signed a contract with DTC to do consulting. They had a consulting arm of their company. This allowed me to use their master service agreement with BP to do consulting for BP.

Q. And what group with BP were you working with?

A. When I first went into consulting with BP, there was a new group that was being formed that was addressing high pressure high temperature equipment for some of the upcoming potential developments on new discoveries that BP had. So primarily I looked at well control equipment for pressures greater than 15,000 psi and up to 350 degrees Fahrenheit working temperatures.

And during that process, I went through a detailed engineering project where we used Hydril to detail-design a 20,000 psi 18 3/4 BOP.

And then after the detail-design project was over, I moved over into BP's drilling excellence group, where I supported drilling operations from a technologist's perspective.

Q. Now, you left consulting with BP in 2011. Why did you

leave the consulting relationship?
A. Early in 2011, Oceaneering had approached me to come to work with them, to work with a very dear friend of mine who was in the BOP controls area.

And I made the decision to join Oceaneering in March 2011, and I reported there in April 2011.
Q. What type of work do you do for Oceaneering?
A. I'm the chief technologist, and basically I'm responsible for all new product development within the OIE group. And OIE is the Oceaneering Intervention Engineering Group. It's one of many groups within Oceaneering.

But one of the product groups within the OIE group is BOP controls, and so I -- the first year and a half I was there, I spent a lot of time supporting that group.
Q. Now, very briefly I'd like to talk about your professional committees and affiliations.

MR. COLLIER: And if we can go to D-4801.2, please.
BY MR. COLLIER:
Q. And if you can briefly describe what role you had with the American Petroleum Institute, API.
A. Right. I mentioned, when I started consulting at BP, I was working on the HP/HT project.

One thing that quickly came up that was a little concern to BP management -- they said, "Mr. Shanks, you know, we have confidence that you can work with an OEM and you-all

10:31 can design a 20K BOP, but will the rest of the industry accept
10:31 it?" which was a valid question.
10:31 So I approached the API in late 2004 and by early
10:31 2005 API formed a kind of exploratory committee to determine if
10:31 they wanted to form a new committee which will address the
10:31 design protocols for equipment greater than 15,000 psi. The
10:31 committee came to an affirmative decision.
10:31 And so during the June API summer conference, it was
10:31 formalized and so I became the chair of the API HP/HT committee
10:31 for about the next four years.
10:31 **Q.** And I'd like to jump ahead to the publications and
10:32 presentations that you have given.
10:32 Do any of the publications or presentations that you
10:32 have given relate to BOPs?
10:32 **A.** Yes. Several directly. Most all reference well control
10:32 equipment.
10:32 **Q.** And for how many years have you worked on or around BOPs
10:32 or blowout preventers?
10:32 **A.** Essentially, I've been exposed to being around BOPs my
10:32 whole career.
10:32 **Q.** And how does your professional experience support the work
10:32 that you've been asked to perform on this matter as it relates
10:32 to BOPs?
10:32 **A.** I think quite adequately, yes, sir.
10:32 **Q.** And has your professional experience with analyzing drill

10:32 pipe behavior related to the work that you've been asked to perform relating to this matter?

A. Yes, it has.

MR. COLLIER: At this time, Your Honor, BP tenders Mr. Shanks as a qualified expert with respect to blowout preventers.

THE COURT: All right. I don't believe there are any pending Daubert motions. Correct?

MR. COLLIER: I believe that's right, Your Honor. I believe there was one at one time, based on Cameron --

THE COURT: Right, and they're out of the case.

All right. We'll accept him.

MR. COLLIER: Thank you, Your Honor.

BY MR. COLLIER:

Q. Now, Mr. Shanks, what were you asked to evaluate as it relates to the *Deepwater Horizon* case?

A. I was asked to evaluate why the BOP failed to close in the well and about the adequacy of the BOP for the Macondo conditions.

Q. Can you briefly explain what analyses and work that you did in order to form your opinions in this matter.

A. Right. Of course, I spent a lot of time doing shearing calculations, did some modeling, directed some modeling on drill pipe in and around the blind shear closing aspects.

I've read all of the findings from the forensic

examinations. I've read all of the expert reports and testimony through -- that I -- I did whatever I could, to get as much knowledge as I could, in preparation for this.

Q. Did you ever visit Port Michoud?

A. Yes, I did. Four times.

Q. What was the reason for visiting Port Michoud?

A. To review the BOP, the components of the BOP that was disassembled and the drill pipe pieces that were recovered when the BOP was recovered.

Q. And did you prepare any reports relating to the work that you did for this matter? Did you prepare any reports?

A. Oh, yes, I did. I prepared the original expert report, revised, and the rebuttal report and revised.

MR. COLLIER: And if we can bring up TREX-40008, please.

BY MR. COLLIER:

Q. And do you recognize this, Mr. Shanks, as the opening page of your amended initial expert report?

A. Yes, I do.

MR. COLLIER: And if we can bring up TREX-40020.

BY MR. COLLIER:

Q. And do you recognize that as the opening page of your amended rebuttal report?

A. Yes, I do.

Q. And these reports contain your opinions relating to this

matter?

A. Yes, they do.

MR. COLLIER: Your Honor, at this time BP offers TREX-40008 and 40020, Mr. Shanks' amended expert report and rebuttal report.

THE COURT: Well, wait. Let me get the numbers again.

MR. COLLIER: Sure. It's --

THE COURT: 4008 is the report?

MR. COLLIER: It's actually 40008.

THE COURT: 40008?

MR. COLLIER: Yeah, that's right.

THE COURT: And the amended report is what? What's it called, supplemental --

MR. COLLIER: It's called a rebuttal --

THE COURT: Rebuttal.

MR. COLLIER: -- report.

THE COURT: Rebuttal.

MR. COLLIER: And that's 40020, Your Honor.

THE COURT: Okay.

MR. WILLIAMSON: There's no objection, Judge, but I need a clarification.

The amended report, the two numbers he just gave you do not reflect that they're amended. His original reports were 8122 and 8123, and they were not withdrawn in total; they

were withdrawn in part.

And these reports -- I just want the record to be clear that these reports were not prepared on October 17th and November 17th. They were prepared later, and they've redacted some stuff. And I think that should be clear in the record because under your previous order, to the extent an expert withdraws part of a report, then those portions that are withdrawn are subject to examination under your order of -- Document 8173, an order you signed and admitted, Pretrial Order 54, on January 4, 2013.

THE COURT: What was amended in this report?

MR. WILLIAMSON: Your Honor --

THE COURT: Let me ask Mr. Collier, since it's his witness.

MR. WILLIAMSON: Yes, Your Honor.

MR. COLLIER: Your Honor, from the original reports -- or in the original reports, Mr. Shanks had offered opinions relating to certain components of the Cameron design, and it was those opinions that were withdrawn.

THE COURT: Okay. You're not trying to get that in, are you?

MR. WILLIAMSON: No, it's not so much that, but it is the issue -- he withdrew more than that. He withdrew several other things that are relevant to the BOP.

THE COURT: Well, you can ask him about that if

10:37 you -- I assume you're going to be cross-examining him.
10:37 **MR. WILLIAMSON:** Yes, Your Honor.
10:37 **THE COURT:** Okay. All right. We'll admit these
10:37 exhibits.
10:37 **MR. COLLIER:** Thank you, Your Honor.
10:37 **THE COURT:** Sure.
10:37 **BY MR. COLLIER:**
10:37 **Q.** Now, Mr. Shanks, I'd like to talk about your opinions in
10:38 this case.
10:38 Have you prepared a slide that summarizes the
10:38 opinions that you offer?
10:38 **A.** Yes, I have.
10:38 **MR. COLLIER:** If we can go to D-4803.1, please.
10:38 **BY MR. COLLIER:**
10:38 **Q.** And as your first opinion there, you say -- you have the
10:38 question: "Why the *Deepwater Horizon* BP did not seal the
10:38 well."
10:38 Do you see that?
10:38 **A.** That's right.
10:38 **Q.** And is it correct that in response to that you have
10:38 opinions that focus on the blind shear rams of the *Deepwater*
10:38 *Horizon* BOP? Correct?
10:38 **A.** Correct.
10:38 **Q.** And you then have that identified for two events relating
10:38 to this case, autoshear and AMF/deadman?

10:38 **A.** Correct.
10:38 **Q.** And is it correct that you are offering an opinion, then, as to whether the blind shear rams could have sealed the well during the autoshear event?
10:38 **A.** Correct.
10:38 **Q.** If you can provide what your opinion was with respect to the blind shear rams and the autoshear event.
10:38 **A.** Okay. "On the autoshear, the blind shear rams failed to secure the well when first closed on April 22nd, 2010, because the drill pipe was forcibly held partially outside the blind shear rams' blades, therefore preventing it to be able to seal."
10:39 **Q.** And the next event you have there is the AMF/deadman?
10:39 **A.** Correct.
10:39 **Q.** And with respect to the blind shear rams and the *Deepwater Horizon* BOP, can you explain what opinion you reached with respect to the blind shear rams for the AMF/deadman event?
10:39 **A.** Yes. The blind shear rams would have sealed the well if the AMF/deadman had worked as intended.
10:39 **Q.** And then can you describe the last opinion that you offer on that slide.
10:39 **A.** Yes. "Was the *Deepwater Horizon* BOP suitable?

"The *Deepwater Horizon*'s BOP was appropriately configured for the deepwater drilling and suitable for the Macondo well."

10:40 **Q.** Now, Mr. Shanks, in this case we've heard a lot about the BOP and the various components that make up the BOP, but I'd just like to talk about it very briefly before we start to talk about your opinions.

Have you prepared any slides to help you provide a very brief overview of the BOP?

A. Yes, I have.

MR. COLLIER: And if we can bring up D-4327-B, please.

BY MR. COLLIER:

Q. And, Mr. Shanks, is this a representation of the *Deepwater Horizon* BOP and its components?

A. Yes, it is.

Q. And just as a brief refresher, can you identify what would be the lower marine riser package of the BOP.

A. Yes. The lower marine riser package is the upper half of the BOP that can be disconnected and retrieved to the surface without the lower BOP stack. It contains the annular BOPs, flex joint, and connector to connect to the lower stack.

The lower stack is where the ram BOPs are packaged, beginning at the top, blind shear, casing shear, upper variable bore rams, middle variable bore rams, and test rams.

At the bottom of the lower stack is a hydraulic connector which latches the BOP to the wellhead.

Q. Now, we aren't going to talk about the control pods today,

10:41 but can you just identify where those are on the BOP stack?
10:41 **A.** Right. They're located in the lower marine riser package.
10:41 You can see the blue box there. A little obscured on the other
10:41 side, but directly opposite from the blue pod is the yellow
10:41 pod.
10:41 **Q.** Now, starting at the top of the *Deepwater Horizon*'s BOP,
10:41 there's the upper annular preventer. What was the pressure
10:41 rating for the upper annular preventer?
10:41 **A.** 10,000 psi.
10:41 **Q.** What does it mean for the upper annular preventer to have
10:42 a pressure rating of 10,000 psi?
10:42 **A.** It means that the body and the annular element are rated
10:42 for 10,000 psi should the well be shut in and 10,000 psi be
10:42 captured below the annular.
10:42 **Q.** Now, there's been a suggestion in this case that the
10:42 *Deepwater Horizon* had a pressure rating of 7500 psi for -- when
10:42 sealed against 5 1/2-inch drill pipe; is that correct?
10:42 **A.** No. That number was associated with the *Marianas* rig that
10:42 started the Macondo well prior to the arrival of the *Horizon* on
10:42 location.
10:42 **Q.** Now, what pressure rating does the lower annular preventer
10:42 have?
10:42 **A.** The lower annular BOP is a stripping ram, and its pressure
10:42 is rated at 5000 psi.
10:42 **Q.** And why does the lower annular preventer have a lower

10:43 pressure rating?
10:43 **A.** The -- on a stripping ram, the element has to be modified, and some of the fingers that help make up and keep the rubber from extruding as the annular takes various shapes have to be trimmed back. That trimming back reduces the element capability pressure rating, so it's down-rated to 5000 psi.
10:43 **Q.** Why would you want a stripping annular as part of your drilling operation?
10:43 **A.** It's very much a safety reason, to be capable of stripping in a well control situation.
10:43 **Q.** Now, there's been a suggestion in this case that converting the lower annular preventer to a stripping element with a 5000 psi rating would be driven only by a desire to save time and money. Do you agree with that?
10:44 **A.** No, I do not. Actually, it's really a -- it's a safety reason for having the stripping element. If you can imagine that the drill pipe has been tripped out of the hole and for some reason took an influx in the well, you have no way of circulating from bottoms-up with a higher density fluid to kill the well.

So with a stripping rubber, you can bring your drill pipe down, get the bit underneath the upper annular, then close the upper annular -- close the upper annular, then strip a short distance through the upper annular until you get the pipe inside the lower annular. Then you close the lower annular,

10:45 open the upper annular, and you can strip the bottom safely to be able to circulate out the kick.

The only alternative to a stripping annular would be, if your pipe was out of the hole and you took a kick and you had to kill the well, you'd have to deadhead down your choke and kill lines into the wellbore at the BOP, which means you would have to displace, by deadheading, all that fluid into the formation. And you run the risk of breaking down the formation in that case and causing an underground blowout.

So it's a very environmental safety issue.

Q. Was MMS aware that the *Deepwater Horizon* BOP had a stripping element for the lower annular preventer that was rated to 5000 psi?

A. Yes, it did. It was stated in the application permit to drill, and it's really a very common part of BOPs.

Q. Next, we go into the ram preventers that are part of the lower BOP stack. And the first ram preventer is the blind shear rams. Very briefly, what function does the blind shear ram perform?

A. The blind ram has the capability of shearing the pipe and sealing the well.

Q. What pressure rating do the blind shear rams for the *Deepwater Horizon* BOP have?

A. 15,000 psi.

Q. As of April 2010, what was the highest pressure rating

10:46 that was available in the industry for a blind shear ram?
10:46 **A.** 15,000 psi for 18 3/4 BOPs, which is necessary for use in
10:46 deepwater drilling.
10:46 **Q.** Now, the model of blind shear ram on the *Deepwater Horizon*
10:46 BOP was the Cameron SBR model blind shear ram?
10:46 **A.** Yes.
10:46 **Q.** And are you familiar with the Cameron SBR model?
10:46 **A.** Yes.
10:46 **Q.** Before the incident were you familiar with subsea BOP
10:47 stacks used in deepwater drilling operations that used
10:47 Cameron's SBR model blind shear ram?
10:47 **A.** For any Cameron stack, it was a very common shear ram to
10:47 be used.
10:47 **Q.** And are you aware of whether Cameron's SBR model blind
10:47 shear ram is still being used today?
10:47 **A.** Yes.
10:47 **Q.** Below that we have the casing shear rams. And briefly can
10:47 you explain what the function is of the casing shear rams?
10:47 **A.** Yes. A casing shear ram is a non-sealing ram that is used
10:47 to cut higher, thicker walls, larger diameter, higher grade
10:47 tubulars.
10:47 **Q.** And below that we have two variable bore rams. Can you
10:47 briefly explain what the function of the variable bore rams is?
10:47 **A.** Yes. These variable bore rams had a range of between
10:47 3 1/2 and 6 5/8 and, I believe, 7 inches. The advantage of a

10:48 variable bore ram is that it has the capability of closing around various sizes within its range so that it allows for one ram to cover several pipe sizes.

Q. And are there advantages for having a test ram on a BOP during a deepwater drilling operation?

A. Is it --

Q. Are there advantages in having a test ram for a deepwater drilling operation?

A. On the test ram, yes.

Q. What are some of those advantages?

A. Well, again, safety. The test ram allows you to close the test ram around the drill pipe. It contains pressure from above that a normal variable bore ram does from below.

So it allows you to test your BOP stack during your biweekly test without having to trip pipe out of the hole, which has the potential of bringing it -- a surge or swab kick during the pulling or tripping back in the hole of the BOP. It's a safety measure. It does save time, but it's a safety measure.

Q. Was MMS aware that the *Deepwater Horizon* BOP had a test ram?

A. Yes. Yes. Many rigs have test rams.

Q. Now, the *Deepwater Horizon* BOP was also equipped with certain emergency systems?

A. Yes.

10:49 **Q.** And you're familiar with the emergency systems that the *Deepwater Horizon* BOP had?
10:49 **A.** Yes, I am.
10:49 **Q.** And we won't go through all of those, Mr. Shanks, but there's a couple of them that are important as far as your opinions in this case that I just wanted to briefly introduce.
10:49 One of the emergency systems is the AMF/deadman system?
10:49 **A.** Correct.
10:50 **Q.** Can you explain what the AMF/deadman system is.
10:50 **A.** Yes. The -- Cameron's designated automatic mode function is more commonly called in the industry as a "deadman system." Upon loss of rig-supplied electrical power and communication and the loss of hydraulics to the BOP, the AMF, or deadman system, is -- triggers -- conditions are met, and it will close in the well -- the blind shear rams will close in the well.
10:50 **Q.** One of the other emergency systems that we'll talk about today during the discussion of your opinions is the autoshear system.
10:50 **A.** Correct.
10:50 **Q.** Can you explain what the autoshear system is.
10:50 **A.** Right. The autoshear is, again, an emergency system that shuts in and closes the blind shear rams. Its trigger conditions are a little different. For the autoshear there's a hydraulic plunger valve that senses whether or not the lower

10:51 marine riser package is where it's supposed to be, and that's connected to the lower BOP.

If for any reason the LMRP becomes disconnected and the autoshear system is armed, the lifting of the lower marine riser package will release the plunger on the hydraulic valve, and it will fire the high pressure shear function to close the blind shear rams.

Q. Now, I'd like to move on to a new topic, Mr. Shanks.

A. Yes.

Q. Based on your forensic examination, have you developed a timeline of events as it related to the *Deepwater Horizon* BOP during the Macondo incident?

A. Yes, I have.

Q. And have you prepared slides to walk through those events?

A. Yes, I have.

MR. COLLIER: And if we can bring up D-4328-B, please.

BY MR. COLLIER:

Q. Can you explain what D-4328-B shows?

A. Yes. At about 2140, mud was coming out of the well onto the rig floor, out of the rotary table. So sometime immediately after the mud would have been observed, the driller would have closed the upper annular. And we see evidence of that upper annular close at about 2142.

But unfortunately, when the annular closed, it closed

10:52 on the shoulder of a tool joint. So it was not sealing on a
10:52 concentric symmetrical surface, and it leaked almost
10:53 immediately.
10:53 **Q.** Why do you believe the upper annular closed at 2142?
10:53 **A.** We have evidence in the -- from the Sperry-Sun drill pipe
10:53 pressure curve that shows an increase in pressure beginning at
10:53 2142, which would be consistent with the annular closing and
10:53 trying to obtain a seal. Even though it is leaking, it would
10:53 still be increasing the pressure below the annular, which was
10:53 being detected by the drill pipe.
10:53 **MR. COLLIER:** If we can bring up D-4806, please.
10:53 **BY MR. COLLIER:**
10:53 **Q.** Does this provide the Sperry-Sun data that you were just
10:53 discussing?
10:53 **A.** Yes. As you can see, at about 2142, the slope of the
10:53 curve begins to change and it starts showing a trend of
10:54 increasing pressure that would be consistent with the annular
10:54 closing and pressure building.
10:54 **Q.** And to be clear, Mr. Shanks, you're referring to the red
10:54 line that's shown on D-4806; correct?
10:54 **A.** Right. That is the Sperry-Sun drill pipe data.
10:54 **Q.** Did the upper annular seal the well at this time?
10:54 **A.** It did not fully seal. It continued to leak because of
10:54 that tool joint in the annular element.
10:54 **Q.** To your knowledge, is there any dispute that the upper

annular closed but did not form a seal?
A. No. I believe all experts agree that it closed but did not form a seal.
Q. Is there a dispute as to when the upper annular closed?
A. Yes, there is. Mr. Childs, in his testimony, said he believed the upper annular closed at 2143 and 40 seconds.
Q. Do you agree with Mr. Childs?
A. No, I don't.
Q. Does Mr. Childs' opinion as to when the upper annular closed match the Sperry-Sun data that you've analyzed?
A. No. The pressure trend had started at 2142, and as you can see from the curve, it continued its upward trend, higher-pressure trend, all the way up to 2147.
Q. Has Mr. Childs offered any alternative explanations as to why the drill pipe pressure began to increase at 2142?
A. He put a graph up and had a reference to a kill line monitoring pressure. And he saw a little blip in the kill line, and he said that would indicate the annular closing. But I could not understand that curve. I don't know where that came from.
Q. I'm sorry, Mr. Shanks.
A. I don't have a clue where that came from.
Q. What's the significance of whether the upper annular closed at 2142 or whether it closed at 2143 and 40 seconds?
A. Is there a difference?

10:56 **Q.** Yeah. What's the significance of that?
10:56 **A.** The significance is, until 2143, the "force from below" theory that Childs was testifying to would not generate enough flow velocity, by their own calculations, until 2143:40.
10:56 **Q.** We'll discuss that in a little bit more detail later on.
10:57 At the time that the upper annular closed, where were the hydrocarbons in relation to the BOP?
10:57 **A.** They were above the BOP, into the riser.
10:57 **Q.** And how were you aware of that?
10:57 **A.** By the modeling that was done for the well flow conditions at that time.
10:57 **Q.** Now, after the upper annular closed, what was the next BOP-related event that happened?
10:57 **A.** At 2147, the variable bore rams closed.
10:57 **MR. COLLIER:** If we can go to D-4329-D, please.
10:57 **BY MR. COLLIER:**
10:57 **Q.** Can you explain what D-4329-D shows.
10:57 **A.** Yes. In the -- in the figure you can see the two red items. The lower red was the middle variable bore ram, and the upper red item is the upper variable bore ram in the BOP.
10:58 **Q.** Why do you -- or how do you conclude that the upper and middle variable bore rams closed and sealed the annulus at 2147?
10:58 **A.** You can see in the Sperry-Sun drill pipe data curve that the pressure shot up, again to shoot up consistent with a

closing, and shutting off the well flow at 2147.

MR. COLLIER: If we can go to D-4809, please.

BY MR. COLLIER:

Q. Is this the Sperry-Sun data that you were just discussing?

A. Yes. You can see at 2147, a very large increase in pressure was initiated and continued all the way up to just before the explosion, where the -- about where the -- from modeling, the full pressure would have existed on the drill pipe at that time.

Q. And to be clear, Mr. Shanks, you're making reference to the red line on D-4809; correct?

A. Correct.

Q. And what's the next BOP-related event after the VBRs closed and sealed the well or the annulus?

A. The rig explosion.

Q. Okay.

MR. COLLIER: If we can go to D-4336-B.

BY MR. COLLIER:

Q. Can you explain what D-4336-B shows.

A. Yes. At 2149, there's a loss of Sperry-Sun data, and that's consistent with -- with witnesses that the -- the first explosion occurred at about 2149.

Q. And what would have happened after the rig explosions as it relates to the BOP?

A. The deadman conditions would have been met.

11:00 **Q.** And what are the AMF/deadman conditions?
11:00 **A.** That's the electrical supply and the electrical communication to the pods and the hydraulic supply from the surface to the manifold -- pod manifold on the pods on the lower marine riser package.

Once electrical and com signals are lost, consistent with a loss of hydraulics, is the trigger for the deadman -- AMF/deadman system. And upon those trigger conditions, the SEMs are booted. They're computers. They would be booted to run the sequence for the deadman operation.

11:00 **Q.** When did you believe the AMF/deadman conditions would have been met?
11:00 **A.** Oh, if not immediately upon explosion, within a minute or so after.
11:01 **Q.** And is there any evidence that supports that the AMF/deadman conditions were met shortly after the explosion?
11:01 **A.** Yes. Shortly -- well, within minutes of --
11:01 **Q.** Let me ask a better question. Is there any evidence that hydraulics were lost --
11:01 **A.** Yes.
11:01 **Q.** -- to the BOP?
11:01 **A.** Right. Just a few minutes after the explosion, the subsea engineer, Mr. Pleasant, arrived at the bridge, where the remote toolpusher BOP control panel is. Upon hitting EDS to try to shut in the well, he noticed that there was no hydraulics. And

when he pushed the button, the EDS light was flashing, and it continued to flash and everyone saw it, which meant the signals never got to subsea and he observed he had no hydraulics.

MR. COLLIER: If we can go to D-4336-C, please.

BY MR. COLLIER:

Q. Is that -- does that slide discuss what you just mentioned?

A. Yes. He activated EDS from the bridge several minutes after the explosion and he could not close the BCR because communications to the BOP was lost. And he stated, "No hydraulics, I have no hydraulics."

Q. Was the EDS attempt at this time successful?

A. No.

Q. And the blind shear rams were not closed at that time?

A. No.

Q. What would have happened if the EDS had been attempted before the explosions?

A. The conditions were ideal to have sheared the pipe and sealed the well.

Q. Was there a tool joint across the blind shear rams during the Macondo incident?

A. There was a tool joint across the blind shear rams, but it should have been centered, hanging vertically at the time.

Q. Was the -- where was the tool joint located?

A. Oh, the tool joint?

11:03 **Q.** The tool joint located.
11:03 **A.** Okay. I'm sorry. The tool joint should have been spaced out, outside the BOPs, because during the displacement of the well, the driller knew he was going to be in one place for a long period of time, and it's common practice to space out the tool joint to not be across any critical BOP element.

So well practice in the industry, drillers are trained on that.

11:03 **Q.** During the Macondo incident, was the tool joint across any of the ram preventers, including the blind shear rams?
11:04 **A.** Not that I'm aware of.
11:04 **Q.** Now, after the EDS attempt, what was the next BOP-related event?
11:04 **A.** After EDS was the blocks falling.

MR. COLLIER: And if we can go to D-4338-C, please.

BY MR. COLLIER:

11:04 **Q.** And can you explain what D-4338-C shows.
11:04 **A.** Yes. This is a schematic of the -- in the center of the page it says "Schematic of the Derrick on the *Horizon*."

And you can see the red equipment in the middle of the derrick is the traveling assembly, and you can see the dark hanging down below the traveling assembly and attached to the traveling assembly is the drill pipe.

The traveling assembly is suspended from the crown by a series of wire ropes, about 7 reefs probably at this time;

and the traveling assembly weighs about 190,000 pounds, and the drill pipe being suspended is about 160,000 pounds.

Q. What function does the traveling block perform?

A. The traveling block allows the drill pipe to be raised and lowered in the derrick. When you're drilling away, it will slowly move the pipe forward; but at times when you're tripping pipe, it can go up and down the derrick very quickly to build stands and lower pipe -- or pull pipe.

Q. How do you know that the traveling block fell after the explosion?

A. Right towards the end of the evacuation, one of the employees turned around and looked at the derrick, and he saw the blocks -- he saw the traveling assembly fall.

Q. And approximately how long after the explosions did the traveling block fall?

A. Approximately 22, 25 -- between 25 and 30 minutes after the explosion.

Q. And how far would the traveling block fall?

A. 27 feet approximately.

Q. And do you have a demonstrative that shows what would have happened when the traveling block fell?

A. Yes.

MR. COLLIER: If we can go to D-4813.

BY MR. COLLIER:

Q. And does this identify what would have happened when the

traveling block would have fallen?
A. Right. In -- the fire that was in the derrick would have at some point weakened the cables that were suspending it. They would have broke and the traveling assembly would fall, pushing the drill pipe down into the riser.
Q. We'll discuss a little bit more at length the impact that the traveling block falling would have had on the drill pipe within the BOP.

After the traveling block fell, what was the next BOP-related event?
A. The ROV intervention to cut the autoshear arm to trigger autoshear.

MR. COLLIER: If we can go to D-4340-A, please.
BY MR. COLLIER:
Q. And if you can explain what D-4340-A shows.
A. Yes. On April 22nd, at about 7:48 in the morning, an ROV was used to cut the autoshear lever arm, the little plunger I was talking about before. Essentially, that gets to the valve by a mechanism that has a little linkage on it.

The ROV had a saw to cut that link, which simulated loss of the lower marine riser package, which would have fired the high-pressure shear and closed the blind shear rams.
Q. And have you watched the ROV footage of when the autoshear pin was cut?
A. Yes, I have.

11:08 **Q.** And what, if anything, can you identify from that ROV footage?

11:08 **A.** Upon the cutting of the linkage, there was a shaking of the BOP, which is consistent with what I've seen in lab testing of BOPs on the release of a -- you know, 4000 psi and a very large cylinder creates a lot of force, and there is a jolting of the BOP when that happens.

11:08 And I will also add that I talked to the guys in the room watching the ROV action the next morning, and they all said they saw the BOP move.

11:09 **Q.** And by the BOP moving, would that be an indication that the blind shear rams closed?

11:09 **A.** It means the pressure was released to close the rams.

11:09 **Q.** Now, if the blind shear rams closed with the autoshear on the morning of April 22nd, why did the blind shear rams not seal the well?

11:09 **A.** The drill pipe had been buckled and forced against the side of the wall of the BOP and held there with a very large force. So as the shear rams closed and came in contact with the pipe, the rams were unable to center the pipe, and so the rams essentially just crushed the pipe at the side of the wall.

11:09 And the piece of the pipe that was outside the shearing blades of the blind shear ram became lodged between the -- between the two rams, which prevented the blind shear ram from fully closing, which would initiate the seal to seal

11:10 the well.
11:10 **Q.** Now, Mr. Shanks, I'd like to turn back to your Summary of Opinions slide, which is D-4803.1.
11:10 And you just talked about the autoshear operation and the inability to seal the well at that point in time because the drill pipe was forcibly held partially outside the blind shear rams' blades.
11:10 And during your forensic examination, did you see evidence of the drill pipe being -- evidence suggesting the drill pipe was forcibly held partially outside the blades?
11:10 **A.** Yes, I did.
11:10 **MR. COLLIER:** And if we can bring up D-4824, please.
11:10 **BY MR. COLLIER:**
11:11 **Q.** And can you explain what D-4824 shows?
11:11 **A.** Right. These are -- the upper and lower left are scanned pictures of the evidence at Michoud. The lower right is actually a picture of the piece of pipe that was below the blind shear rams.
11:11 And you can see the indentation that got lodged between the ram faces that prevented the shear ram from fully closing and engaging its seals.
11:11 **Q.** And can you explain how you were able to match the physical evidence with respect to the drill pipe ends and the blind shear ram blocks.
11:11 **A.** Yeah. You can physically pick up the piece and match it

11:12 to the ram block. It's a perfect fit.
11:12 **Q.** And based on this fit, were you able to draw a conclusion
11:12 as to whether or not the drill pipe was centered?
11:12 **A.** Yeah. This drill pipe was not centered. And from the
11:12 marks, it's obvious that a portion of the pipe extended outside
11:12 the shear ram blades, which caused the rams not to be capable
11:12 of sealing because there was not a clean shear to allow the
11:12 faces to come completely together.
11:12 There's a standoff between the collapsed drill pipe,
11:12 so twice the wall thickness of the pipe was keeping the faces
11:12 from coming together.
11:12 **Q.** Now, in your experience, had you seen a situation where
11:12 blind shear rams had been unable to shear and seal a well
11:12 because the drill pipe was held outside the blades' shear zone?
11:13 **A.** Except for this incident, I have never seen an incident
11:13 where drill pipe could not be centered and sheared by the
11:13 variable bore ram. This is the first time I've ever seen
11:13 evidence that a piece of pipe was forcibly held outside the
11:13 shearing area of a shear ram.
11:13 **Q.** Now, you understand that there is a dispute as to when the
11:13 blind shear rams closed?
11:13 **A.** Correct.
11:13 **Q.** And we've talked before that one theory is that the blind
11:13 shear rams closed with the AMF/deadman; is that right?
11:13 **A.** That's Childs' theory, yes.

11:13 **Q.** And the other theory is that the blind shear rams closed with the autoshear activation?
11:13 **A.** That's correct.
11:13 **Q.** And it's my understanding it's your opinion, Mr. Shanks, that the blind shear rams closed with the autoshear activation?
11:13 **A.** That's correct.
11:13 **MR. COLLIER:** And, Dawn, if I can have the ELMO, please.
11:14 **BY MR. COLLIER:**
11:14 **Q.** What I'd like to do, Mr. Shanks, is to walk through various scenarios during the Macondo incident and discuss the positioning of the BOP and the positioning of the drill pipe in the riser and the BOP.
11:14 **A.** All right.
11:14 **Q.** And I'd like to start with the event of the autoshear activation. And I'll use the frame all the way to the right of this demonstrative, which will be D-4953, and I'll denote that as "Autoshear."
11:14 And, Mr. Shanks, can you identify, what was the timing of the autoshear activation?
11:14 **A.** April 22nd, at approximately 7:48 in the morning.
11:15 **Q.** Okay. And at that point in time, what was the condition of the annular preventers?
11:15 **A.** The upper annular was closed.
11:15 **Q.** And what was the condition of the VBRs at that point in

time?
A. Both the middle and upper VBR were closed.
Q. Okay. And at that point in time, what was the condition of the drill pipe across the BOP?
A. The drill pipe inside the BOP was buckled and held firmly against the side of the bore.
Q. Something like that? Is that a fair representation?
A. Yes, sir.
Q. And the image here is slightly misleading because that drill pipe would have actually been against the side of the BOP bore.
A. Right.
Q. And so I'll just draw a line here to more closely identify what the side of the BOP bore would be.
A. Okay.
Q. Now, above the BOP at that point in time, what would have been the condition of the drill pipe?
A. The buckle would continue upward and quickly go helically buckled.
Q. Something of that type of shape, Mr. Shanks?
A. Yes, sir.
Q. Now, there's been some discussion as to whether or not, at this point in time, the drill pipe above the BOP was communicating with the drill pipe that was in the BOP.
A. That's correct.

11:17 **Q.** And do you have an opinion on that?
11:17 **A.** Yes, I do.
11:17 **Q.** And what is your opinion as to whether or not the drill pipe above the BOP was communicating with the drill pipe within the BOP?
11:17 **A.** The upper drill pipe above the annular was in communication with the pipe within the BOP stack, maintaining the buckle.
11:17 **Q.** Let me just denote that the upper annular was closed and that the VBRs were closed.

Now, at that point in time, the blind shear ram is closed; is that correct?

11:17 **A.** Yes.
11:18 **Q.** And what happened when the blind shear rams closed?
11:18 **A.** Failed to seal the well because of the -- the off-center pipe held forcibly against the wall of the BOP and -- would put it partially outside the shearing face of the blind shear rams.
11:18 **Q.** So BSRs closed, but not sealed?
11:18 **A.** Correct.
11:18 **Q.** Except for Mr. Childs, do the experts that have looked at this issue agree that when the blind shear rams closed at autoshear time, the drill pipe was buckled?
11:18 **A.** Correct.
11:18 **Q.** Okay. If we can go back to your -- we'll come back to this demonstrative later, but I'd like to now go to your

Summary of Opinions slide.

MR. COLLIER: That's D-4803.1.

BY MR. COLLIER:

Q. And I'd like to talk about your opinion relating to the blind shear rams as it relates to the AMF/deadman timing.

A. All right.

Q. And it's your opinion that the conditions at the AMF/deadman were such that the blind shear rams would have sealed the well if the AMF/deadman had worked?

A. That's correct.

Q. And have you prepared a slide that provides the bases for that opinion?

A. Yes, I have.

MR. COLLIER: If we can bring up D-4803.3.

BY MR. COLLIER:

Q. Can you identity the bases that you have for concluding that the blind shear rams would have sealed the well if the AMF/deadman had worked.

A. Yes.

Q. If you can go ahead and explain those.

A. All right. Favorable shearing conditions existed when the AMF/deadman should have been activated. Also, the drill pipe buckled after the AMF/deadman conditions were met when the traveling block fell.

Q. And have you prepared a slide that helps explain why the

favorable shearing -- why the -- why there was favorable shearing conditions at the time the AMF/deadman activated?

A. Yes, I have.

MR. COLLIER: If we can bring up D-4811.

BY MR. COLLIER:

Q. And can you explain what the favorable shearing conditions were at the time that the AMF/deadman should have activated.

A. Yes. At the time the deadman conditions were met, the upper annular was closed, the lower VBRs were closed and sealed, which meant there was no flow in the annulus. Pressure had been trapped below the variable bore rams, and so there was low wellbore pressure across the variable bore rams, since the pressure was contained below the VBRs.

And by low wellbore pressure, it was caused by -- since the pressure -- the main pressure from the well was contained by the VBRs, the pressure that existed across the blind shear ram was due to density in the BOP and in the annulus of the riser, which by modeling shows it was about 3 pounds per gallon, much less than even seawater. That density would have caused a pressure of about 1000 psi to exist across the blind shear rams, which is very favorable.

Q. And why would no flow in the annulus create a favorable shearing condition?

A. No flow means there's no velocity, erosion issues to deal with, that essentially the fluid is static in the annulus,

11:22 which is the ideal for -- after cutting, to be able to seal the well.

Q. And why would low wellbore pressure at the blind shear rams create a favorable shearing condition?

A. The lower the pressure inside the BOP means lower pressure to activate the blind shear rams to shear the pipe. There's a relationship there, and we'll talk about it later.

Q. And then on the last bullet point there, you have: "The drill pipe would have been centered."

And I don't think you provide an explanation of that, but can you explain why the drill pipe would have been centered at that time.

A. Yes. Well, conditions -- just before the AMF conditions were met, the drill pipe was hanging vertically, so when the annular was closed, that centered the pipe at the annular.

When the variable bore rams were closed that centered the pipe at the VBRs, the pipe's hanging straight and center of the VBR shearing blades.

Q. And in your opinion, when -- when would the drill pipe within the BOP have been buckled so that it was no longer centered?

A. At the time the blocks fell.

Q. And did the traveling blocks fall before or after the AMF/deadman conditions would have been met?

A. After.

11:23 **Q.** And is it correct that your traveling block theory has been referred to as the "force from above" theory?
11:23 **A.** That's correct.
11:23 **Q.** And you're aware that Mr. Childs, on behalf of Transocean, has offered a different theory of pipe buckling based on buckling based on upward force from the well?
11:23 **A.** That's correct.
11:23 **Q.** Can you briefly explain what your understanding of that theory is.
11:24 **A.** Yes. The force from below the BOP is called "force from below," as opposed to "force from above." The pressure from below is generated by flow in the annulus of the open well. The flow across the OD of the drill pipe would create fluid friction against the pipe. And at some velocity, according to Childs, the velocity would be sufficient to lift the pipe in this area and buckle it.
11:24 **Q.** Do you agree with Mr. Childs' "force from below" theory?
11:24 **A.** The theory is valid; the phenomenon of friction from flow across an object is well known. But I don't agree that there was sufficient velocity during this incident to produce the forces he needed to lift and buckle the pipe.
11:25 **Q.** We'll talk more about Mr. Childs' theory shortly, but first I'd like to go back and discuss your theory in a little more detail.
11:25 **A.** Sure.

11:25 **MR. COLLIER:** Dawn, if you can bring up the ELMO, please.

BY MR. COLLIER:

Q. And, Mr. Shanks, getting back to our demonstrative, D-4953, I'd like to start with the first BOP-related event that you discussed, the closing of the upper annular.

A. Yes.

Q. Can you explain, at that point in time, what was the conditions within the BOP?

A. At 2142?

Q. Correct. What blowout preventers are closing?

A. The upper annular closed.

Q. Had any other blowout preventer closed at that point in time?

A. No. That was the first action taken by the drill crew.

Q. And what would have been the condition of the drill pipe within the BOP at that point in time?

A. It would have been hanging straight and centered.

Q. And what would have been the condition of the drill pipe above the upper annular?

A. It would have been hanging straight, up to the traveling assembly.

Q. Now, the next event was the VBRs closing; correct?

A. That's correct.

Q. And at what time did the VBRs close?

11:26 **A.** 2147.
11:26 **Q.** And at that time, would the upper annular have been closed?
11:26 **A.** Yes.
11:27 **Q.** And what would have been the condition of the drill pipe across the BOP at that point in time?
11:27 **A.** It would have been hanging straight and centered.
11:27 **Q.** And what would have been the condition of the drill pipe above the VBRs at the time?
11:27 **A.** It would have been hanging from the traveling assembly and it would have been straight.
11:27 **Q.** And the next event -- BOP-related event after that was the rig explosions. And what time did the rig explosions occur?
11:27 **A.** 2149.
11:27 **Q.** And what would have been the condition of the blowout preventers in the BOP at that time?
11:27 **A.** Upper annular closed, variable bore rams closed.
11:28 **Q.** What would have been the condition of the drill pipe across the BOP at that time?
11:28 **A.** It would have been vertical and straight and centered.
11:28 **Q.** And what would have been the condition of the drill pipe above the BOP at that point?
11:28 **A.** It was hanging from the traveling assembly, and it would have been hanging vertical.
11:28 **Q.** Now, the next BOP-related event that you have is the

AMF/deadman conditions being met; is that right?
A. That's correct.
Q. And at what time did that occur?
A. 2149, sometime -- a very close proximity after.
Q. I'll just put a dash line here for "AMF conditions met."
Now, the next BOP-related event was the traveling block falling; is that right?
A. That's correct.
Q. And approximately what time did the traveling block fall?
A. 2225.
Q. And at that point in time, what was the condition of the blowout preventers in the BOP?
A. Upper annulars closed and the middle and upper variable bore rams closed.
Q. Now, just before the traveling block fell, what would have been the condition of the BOP -- or I'm sorry. What would have been the condition of the drill pipe across the BOP?
A. The drill pipe would have been hanging -- would be vertical and centered.
Q. Now, I think you mentioned that the traveling block was 27 feet above the derrick floor -- is that correct -- or the rig floor?
A. That's correct.
Q. And approximately how much does the traveling block weigh?
A. The traveling block weighs approximately 190,000 pounds.

11:30 **Q.** And would there have been any other weight that would have contributed to the weight that would have been --

11:30 **A.** Yes. The drill pipe hanging from the traveling assembly was approximately 160,000 pounds.

11:30 **Q.** And so at the height of the rig, you had approximately 350,000 pounds of downward force?

11:30 **A.** Correct.

11:30 **Q.** Okay. Now, can you explain what would have been the resistance to that weight that was coming down?

11:31 **A.** Right. When the blocks first released and they were falling towards the drill floor, they would have been, of course, releasing tension from the drill pipe. So the drill pipe weight was being shifted downhole, plus the block weight was helping push the drill pipe down into the riser.

The resistance to that force would be picked up quickly by the variable bore rams, which, as the load increased, would cause the pipe to buckle.

11:31 **Q.** And before we talk about the buckling of the drill pipe, would the VBRs at that point in time have been carrying the full 350,000 pounds of weight?

11:32 **A.** No. The full 350 had not been transferred to the variable bores at that time. It's -- as the fall occurs, the initial force on the VBRs would be kind of an impact momentum, which would be a pretty large force, but it's certainly not the full weight of the 350,000 pounds.

11:32 **Q.** So what would have been happening to the drill pipe within the BOP at that time?
11:32 **A.** As soon as the loads got up in the 50- to 60,000-pound range being transferred, the pipe would begin to buckle and continue buckling until it hits the side of the wall of the BOP.
11:32 **Q.** Okay.
11:32 **A.** Yes.
11:32 **Q.** And what would occur then to the drill pipe above the BOP at that time?
11:32 **A.** The buckle would continue up on top of the annular BOP and quickly start forming a helical buckling as more and more pipe was moved downward.
11:33 The reason I say it formed a helical buckle, pipe, when you push on it, once you exceed a certain value, it will start to bow; and as you put more force on it, it wants to continue to bow. It's found its least resistance now and it wants to continue in that direction.
11:33 Well, once you get inside the riser, it's constrained to 19 1/2 inches. So that force that's going into causing the bow now is being reactive at the riser and forcing the pipe to take a different shape -- which it doesn't want to, but it's got to because it doesn't have anyplace else to go. So it will naturally start forming a helix. And as more and more weight comes down, that helix pitch point will start to get smaller

and smaller. As that happens, the radial forces get larger and larger.

At some point before the load is fully transferred down where the VBRs would see it, because of the increase in friction of the pipe against the wall, and it's still trying to slide down, we get what's called, in buckling, "lock-up." The helical buckling will actually -- the forces will become so great -- friction becomes so great inside the riser, it will literally lock itself up.

And the other aspect is that with the blocks falling 27 feet, the force of the traveling assembly will only be present during that 27 feet. Once it hits the main deck, or the drill floor in this case, that force is no longer transferred into the drill pipe.

It hasn't completely gone away, because some of that force is still contained in elastic -- in elastic energy in the pipe. But a lot of it has gone into pushing the stress and the highly stressed helical portion of the pipe beyond its yield limit and into a plastic zone, which means it will not come back to its original shape. So it's permanently deformed in many places of that helical buckle.

Q. Now, based on that explanation, Mr. Shanks, at any point in time did the full 350,000 pounds of downward force that would have been generated from the traveling block falling have been transferred to the VBRs, in your opinion?

11:35 **A.** In my opinion, no. Once the pipe started buckling and then quickly helical buckling in the riser, by the time more load could have been transferred, the traveling assembly would have hit the drill floor.

And then the weight shifts to just the drill pipe weight of 160,000 pounds plus what residual energy was left in the traveling assembly falling and plastically buckling the pipe. So it would be more than 160 but nowhere close to the 350.

Q. And just to be clear, the buckling that occurred within the riser, that was helical buckling?

A. Yes.

Q. And the buckling within the BOP, would that be helical buckling?

A. Probably not. It -- there -- there's -- the pitch between helix points going up the drill pipe -- probably there wasn't enough room to begin the helical buckling process in the lower BOP. So it probably just Euler-buckled and retained its elastic state.

Q. So the drill pipe within the BOP, that would have been the classic, or Euler?

A. Classic Euler buckling, yes.

Q. Now, with respect to -- just to finish out the demonstrative, with respect to drill pipe below the BOP, what condition would that be in?

11:37 **A.** I'm sorry?
11:37 **Q.** With respect to the drill pipe below the BOP, what condition would that be in?
11:37 **A.** Below the VBRs or --
11:37 **Q.** Correct.
11:37 **A.** It should still be hanging straight.
11:37 **Q.** And that would have been the case at the time of the autoshear on the 22nd occurred?
11:37 **A.** Yes.
11:37 **Q.** And I'll label this "force from above."
11:38 Now, is there a dispute, Mr. Shanks, as to whether or not the force that would have been generated from the traveling block falling would have been transmitted from above the BOP to the drill pipe within the BOP at the time the traveling block fell?
11:38 **A.** Yes.
11:38 **Q.** And are you aware that Mr. Childs has opined that that force would not be transferred?
11:38 **A.** Yes. That was his testimony.
11:38 **Q.** And do you agree with Mr. Childs on that?
11:38 **A.** No, I do not.
11:38 **Q.** And can you explain why you disagree with Mr. Childs.
11:39 **A.** Well, one, we see physical evidence that a force was transmitted into the BOP, from the physical evidence.
11:39 **Q.** And the physical evidence you're talking about is drill

11:39 pipe that you've seen that's been recovered?
11:39 **A.** Yes.
11:39 **Q.** And have you prepared a demonstrative that shows the drill
11:39 pipe pieces that you've reviewed and analyzed?
11:39 **A.** Yes, I have.
11:39 **MR. COLLIER:** If we can look at D-4815, please.
11:39 **BY MR. COLLIER:**
11:39 **Q.** If you can explain what D-4815 shows.
11:39 **A.** Right. In the middle of the slide is a photograph of a
11:39 portion of the pipe that was actually recovered during -- at
11:39 Michoud during the forensic. It was a contiguous piece of pipe
11:39 that was found inside the middle variable bore and the upper
11:39 variable bore. And what we're seeing in the center picture is
11:40 the section that was across the middle variable bore ram.
11:40 And what we have is two sets of erosion marks, these
11:40 being the first, and then there's an overlap with this set of
11:40 erosion marks and a second set of erosion marks.
11:40 The two sets of erosion marks were caused by -- when
11:40 the variable bore ram was originally closed, it closed on the
11:40 lower set of the erosion marks. At the time the traveling
11:40 block fell, sufficient force did get down into the variable
11:40 bore rams to shift the pipe approximately 4 inches further
11:40 downward.
11:40 And this piece of pipe was found with this portion in
11:40 the variable bore ram, which means a force from above pushed it

down; a large force, too, by the way.
Q. Did you see this same set of erosion marks on the drill pipe that was across the upper variable bore ram?
A. Yes, I did.
MR. COLLIER: If we can bring up D-4912 please.
BY MR. COLLIER:
Q. Can you explain what D-4912 shows?
A. Yes. This section of the drill pipe was found in the upper variable bore ram. And again, consistent with the middle VBR, there are two sets of erosion marks. And the upper set overlaps the top of the lower half, but two sets of erosion marks.
The upper VBR, consistent with the lower VBR, which means the complete section of pipe was pushed down approximately 4 inches or so from the large load from above.
Q. Are you aware of any other explanations for the dual sets of erosion marks that you've seen on these drill pipe pieces?
A. I don't -- I haven't seen any evidence of any other large force sufficient to shift that piece of drill -- that drill pipe from -- a force from above other than the blocks.
Q. And have you seen -- could the "force from below" theory have explained these dual sets of erosion marks?
A. No. The force is going the wrong way for the force from below.
Q. Now, if we can just momentarily return to the ELMO.

11:42 Mr. Shanks, have you studied the drill pipe pieces that were above and below the upper annular?
A. Yes, I have.
Q. And do those drill pipe pieces provide any support that the force from above was transferred to the drill pipe within the BOP?
A. Yes.
Q. And have you prepared a slide that shows that?
A. Yes, I have.
MR. COLLIER: If we can go to D-4874, please.
BY MR. COLLIER:
Q. If you can explain what D-4874 shows.
A. Right. The schematic in the middle uses scanned pieces of the drill pipe that were scanned at Michoud. This blown-up picture is located actually right around the upper annular. So the piece below the upper annular is Segment Pipe 1-B-1. The pipe above the annular is Segment 39.
And what is shown in the center blowup with the scanned pieces of pipe is that both pieces of pipe are deformed into a curvature.
When you line up some of the erosion marks that are still visible, they tend to line up very well -- this lineup has been used by others -- you see that the curvature is in the same plane so that when these pieces of pipe were connected, they both saw a buckling force in the same plane,

11:44 which caused plastic deformation.
11:44 **Q.** And what does it mean that the drill pipe was plastically deformed?
11:44 **A.** It was bent and stressed beyond its -- its yield limit, which is its elastic limit, and it went plastic, which means it will not go back to its original shape.
11:44 **Q.** We've heard talk in this case about elastic buckling. Can you explain how plastic deformation is different from elastic buckling.
11:45 **A.** Yes. If it were elastically buckled, it would come back to its original shape, which would be a straight piece of pipe. Once it's bent and goes beyond its elastic limit, which is the yield, it goes into a plastic state which retains -- that plastic state is retained when the load is relaxed.

It will come back -- some of the energy will still be elastic, but there will be enough plastic deformation and plastic strain to prevent the piece from coming back to its original shape.

11:45 **Q.** Now, Mr. Shanks, how did you conclude that these pieces of drill pipe, drill pipe Segment 39 and 1-B-1, were buckled by forces generated by the traveling block falling?
11:45 **A.** Well, certainly, there's no other forces that would have been available to cause deformation of these pieces of pipe except a force from above.
11:46 **Q.** Could the "force from below" theory have caused this

11:46 plastic buckling of the drill pipe pieces above and below the upper annular?
A. No.
Q. Now, at the time of recovery, Segment 39 and Segment 1-B-1 were separated; correct?
A. Yes.
Q. And can you explain how you were able to determine that these two pieces were once connected and in that curve pattern that we show on demonstrative D-4874.
A. Right. During the forensic at Michoud, they gathered all the pieces that were recovered and fit them into their -- how they were originally located when it was an intact tubular throughout this section. So they were able to match up these two pieces as -- as being attached at one time.
Q. Now, Mr. Childs has contended that Segment 39 and 1-B-1 were separated very shortly after the explosions. Do you understand that?
A. Yes.
Q. And what is Mr. Childs' theory as to how those segments, 39 and 1-B-1, were separated?
A. He testified that he believed the rig drift parted the two pieces in a classic tensile failure.
Q. Do you agree with Mr. Childs?
A. I do not.
Q. Can you explain why you disagree with Mr. Childs.

11:47 **A.** Yes. One, the conditions, the weather conditions at the
11:47 time of the -- at the explosion was very calm. So very little
11:47 rig drift would be taking place.
11:47 Second, the -- attached to the riser at the surface
11:48 was 1.8 million pounds of tension to keep the -- keep the
11:48 raiser straight. And it acts on the outer barrels of a slip
11:48 joint, which is a barrel that goes in and out of the riser, to
11:48 keep the mud in the riser, to seal; and the outer barrel is
11:48 tensioned to the rig so that the rig can heave and maintain
11:48 constant tension in the pipe.
11:48 That 1.8 million pounds would result in a force to
11:48 help keep the rig on station. When it's directly over the well
11:48 and zero riser angle, 180 million pounds is going vertical, as
11:48 the rig tries to move off of location, the horizontal component
11:48 of that 1.8 million pounds is actually restoring force on the
11:48 rig.
11:49 So as long as the tensioners stayed intact -- and
11:49 they should have stayed intact for at least an hour because of
11:49 the fire rating of the hoses -- tension should have remained on
11:49 the riser and kept it in a reasonable proximity to the
11:49 location.
11:49 I'll also mention, from some of the other testimony,
11:49 they're talking about huge rig drift distances of, I think,
11:49 105 -- 1500 feet or so. When the rig sets the drilling riser,
11:49 they space out the slip joint. The slip joint has 50-foot of

stroke. So they will space it out at midstroke at 25 -- approximately 25 feet, which means the rig can only move off station enough to extend the riser length by 25 feet. Maximum excursion is 250 feet because of the limitation of the riser.

And we know the riser was intact because it was vertical up to the time of the rig sinking. So that meant the riser was preventing the rig from making large excursions away from the well until the rig sank.

Q. Now, do you understand that Mr. Childs has pointed to the ends of drill pipe, Segment 39 and 1-B-1, as evidence to support his rig drift theory?

A. That's correct.

Q. And do you agree with Mr. Childs' theory?

A. No.

Q. Have you brought any physical samples with you today to help explain why you disagree with Mr. Childs' theory that the Segments 39 and Segments 1-B-1 separated by rig drift?

A. Yes, I have.

MR. COLLIER: Your Honor, if I may approach the witness?

BY MR. COLLIER:

Q. Mr. Shanks, I'm handing you what's previously been marked as D-4927, Pipe Segment 1-B-1, Separation E, and also D-4926, Pipe Segment 39, Separation E.

A. Thank you.

11:51 **Q.** Using those demonstratives, Mr. Shanks, can you explain why you disagree with Mr. Childs' theory that Segments 39 and 1-B-1 would have separated shortly after the explosions due to rig drift.

11:51 **A.** Yes.

11:51 **THE WITNESS:** Your Honor, when you look at the two pieces that were recovered, they're obviously pretty badly mangled and eroded. But if you -- if you look at 1-B-1, this appears that it probably was one of the original fractures when the drill pipe parted. And Mr. Childs called it a classical tensile failure.

11:52 Well, in a classical tensile failure, as the pipe is stretched and when it goes -- when it starts going past yield, you start getting a "necking" of the -- of the pipe where it's going to fracture. And that necking would be, as an exaggerated example, but take a bar of candy and pull it; you would see the middle shrink before it tore apart.

11:52 The same thing happens in metal. It's not quite as exaggerated. So you would see a necking down, or a reduction of the wall, both on the outside and on the inside, and it would be an obvious necking. Because under his theory, the rig drift would be a very slow process, and so the load would be applied over some length of time, which is consistent with classical tensile testing. You don't jerk it apart; you slowly pull it over a few seconds.

11:53 So if it were classical tensile, you would see necking. But then you would also see that while -- during a tensile failure, the fracture would start at a 45 degree -- and you can see this one is pretty close to a 45 degree. It would start as a 45 degree on the outside, but it would also start as a 45 degree on the inside.

Because in pure tension, that whole section's being overstressed, and so there would be simultaneous cracks start on the inside and the outside. And as the fracture would move up to 45 on the outside, it would also be doing it on the inside.

Very shortly after the neck- -- you know, the fracture initiation starts, you start getting reduction of wall thickness that's holding and resisting the forces. And then at some point the load totally overloads what the remainder of the wall is, and you would get a spontaneous fracture, and that would be flat in nature.

So you would have two 45s and then a flat. That's classical tensile failure.

The shape of this failure is more from a large bending moment that was applied very quickly and caused a shear failure in the 45-degree plane. If we could see the other side -- if the other side of the fracture would have been there, you would see that this fracture would have started on the inside, going out, which would be a classic bending

failure. But we don't have the other side.

THE COURT: There are pieces missing between those two pipes?

THE WITNESS: Yes, sir. And that's going to be my next point.

Mr. Childs said these pipes fit here. There's no way this tongue can get inside this groove. So we know at a minimum, the -- you know, the relative position of the pipe had to be somewhere out here. So we have a lot of metal missing both on 1-B-1 and Segment 39.

And without knowing what those fracture faces look like, it is almost impossible to tell what the mode of failure is and when they actually broke.

MR. COLLIER: Now, if we can go back to the ELMO.

BY MR. COLLIER:

Q. Now, if we accept Mr. Childs' theory that the drill pipe had separated very shortly after the explosions, Mr. Shanks, would there still have been a way for the drill pipe to have transferred force above the BOP to the drill pipe within the BOP?

A. Yes. When the blocks fell, if any portion of Pipe Segment 39 was in communication with 1-B-1, the buckle would already have been formed -- well, did you say before?

Q. Before.

A. Before. As Segment 39 came into contact with the stub

sticking above the annular on 1-B-1, if it made contact and stayed in communication, it would buckle the pipe below.

Q. And have you seen any evidence of that with the drill pipe ends of Segments 39 or 1-B-1?

A. Yes. There's -- when Mr. Childs explained that during the traveling block falling, that the Segment -- excuse me -- 39 hit outside the center of the annular where Pipe Segment 1-B-1 was, he said it just hit on top of the annular fingers, which are flat, and he says this shape is consistent with that happening.

But if you look actually at the bottom of Segment 39, it is not flat, which it would be if it hit outside the Segment 1-B-1 sticking up through the annular. As a matter of fact, it's more consistent, if you look at this portion of the -- of the knurl piece being flat and this piece sticking inside the annular, which means there's strong evidence that it made contact with 1-B-1 when it came down. If it were broken before.

If it were broken during the traveling block falling and it happened to snap at that point, then it stayed in contact because this piece hit the outer fingers, this piece remained in overlap with 1-B-1.

Q. And based on the missing metal that you've identified, Mr. Shanks, between Segment 39 and 1-B-1, is it possible to determine how or when these drill pipe pieces separated?

11:58 **A.** No, not without seeing the original fracture marks and -- so that you could determine the actual failure of the pipe.
11:58 **Q.** Now, Mr. Childs has also criticized the "force from above" theory because he claims the drill pipe would have been centered at the time of autoshear activation when you claim the blind shear rams closed because the VBRs would have drifted open. Do you recall that?
11:58 **A.** Yes.
11:58 **Q.** And do you agree with Mr. Childs that the VBRs would have drifted open at the time of the autoshear activation?
11:59 **A.** No, I do not.
11:59 **Q.** And have you seen any physical evidence that indicates that the VBRs did not drift open at the time of autoshear activation?
11:59 **A.** Yes, physical evidence and also just understanding the procedure of closing those VBRs.

One, at the -- both out on the Macondo site photographs -- radiographic photographs were taken that showed that the ST locks were locked and, when the BOPs were recovered at Michoud, confirmed that the ST locks were locked. But also the --

MR. DOYEN: Your Honor, I object to this from the demonstrative. This is clearly going beyond the scope of the expert's report.

He just talked about the procedures that were

11:59 used to shut in the well. He not only said nothing in his
11:59 report about when the ST locks were closed; he said at his
11:59 deposition, when asked, that he had no opinion as to when the
11:59 ST locks were closed. And I object to going into the locks.
11:59 **MR. COLLIER:** Your Honor, if I may respond to that?
12:00 Mr. Shanks did include calculations with his
12:00 expert report that did identify the frictional force that would
12:00 have been across the VBRs at the time the traveling block fell,
12:00 and one of the assumptions that he made in that VBR frictional
12:00 force calculation was that the ST locks were locked at that
12:00 point in time.
12:00 **MR. DOYEN:** Your Honor, he was specifically asked,
12:00 Your Honor, whether he had an opinion as to when the ST locks
12:00 closed. Everyone understands they could be closed by the crew
12:00 or not, depending on whether they chose to do that.
12:00 He was asked, "Do you have any opinion on when
12:00 they were closed" at his deposition, and he said, "No"; and
12:00 there was, therefore, not follow-up on that. He didn't express
12:00 such an opinion in his report.
12:00 **MR. COLLIER:** Your Honor, if I may respond to that
12:00 particular issue?
12:00 And I think there might be some misunderstanding
12:00 with respect to the operation of the ST locks that may be -- if
12:00 I asked a couple of questions of Mr. Shanks, I could probably
12:00 clear that issue up.

12:00 **THE COURT:** Go ahead.

BY MR. COLLIER:

Q. Mr. Shanks, with respect to the operation of ST locks, is that a two-step process before the ST locks would actually be locked and holding the VBRs in place?

A. That's correct. When -- you know, according to procedure, once the pipe rams are closed, the procedure should be to close the ST locks, which does not lock the ST locks when you push the button on the panel. The panel says "ST lock," but essentially all that does is say, "I'm going to close the ST locks."

The ST locks will not lock until the ram is fully closed, which triggers a poppet valve on the valve operator that then supplies hydraulic power to the ST locks.

So pushing the button is just a stand-by position, and that was how I understood his question. When did they push the buttons to be prepared to lock the ST locks? That could have happened at any time before the explosion.

MR. DOYEN: Your Honor --

THE COURT: Wait a minute.

MR. DOYEN: I'm sorry.

THE COURT: I thought you said something about there was physical evidence of the locks being closed?

THE WITNESS: Yes, sir.

THE COURT: Tell me about that.

12:02 **THE WITNESS:** During the ROV interventions and whatnot during the blowout, people were wondering, trying to figure out, what's the configuration of the BOP? What's closed, what's not closed?

So they took some radiographic equipment out there and essentially x-rayed the area where the ST locks are. And it's pretty sophisticated stuff, and they had, you know, people interpret it.

But the interpretation was that the ST locks on both the middle and upper were locked and that on the variable bore ram, one ST lock was locked, one was not, but that was because one of the rams never got into its fully closed position to trigger the ST locks.

MR. DOYEN: Your Honor, I'm sorry, just for clarification --

THE COURT: I'm overruling the objection.

MR. DOYEN: Thank you, Your Honor.

THE COURT: Go ahead, Mr. Collier.

BY MR. COLLIER:

Q. Mr. Shanks, is it correct that you don't have an opinion as to when the ST locks were closed?

A. Oh, that's correct. And by that I'm interpreting when was the button pushed. I mean, the button could have been pushed before or after he closed the variable bore rams. It really doesn't matter. As long as the button was pushed before the

explosion, that when the rams closed, they would set the locks.
Q. And do you have an opinion as to when the ST locks would have been set and then would have held the VBRs in position?
A. Yes. As soon as the variable bore rams closed and sealed around the pipe, met the trigger conditions to fire the ST locks closed.
Q. And would that have been before the explosions on the rig at 2149?
A. Yes. It should have been almost immediately after -- at the seal of the VBRs. It's a relatively small volume of hydraulic fluid necessary to turn the mechanism that locks the rams.
Q. And would those ST locks continue to be in place during the full duration of the events in the Macondo incident?
A. Yes.
Q. And if I go back to our demonstrative, I'll mark on here at the time the VBRs closed, "ST locks locked." Is that right, Mr. Shanks?
A. Yes, at VBR closing.
Q. And that would have continued, then, through the rig explosion, the traveling block falling, and the autoshear; is that correct?
A. Correct.
Q. And once the ST locks are locked, is there any reason for the VBRs to drift open?

12:05 **A.** No.

12:05 **Q.** Now, Mr. Shanks, we've discussed your "theory of force from above." I'd like to now talk about Mr. Childs' "force from below" theory.

12:05 **A.** All right.

12:05 **Q.** And how does Mr. Childs contend that the drill pipe was buckled, according to his "force from below" theory?

12:05 **THE COURT:** Wait. Before you go there, is this going to take a while?

12:05 **MR. COLLIER:** Probably 30 minutes, Your Honor.

12:05 **THE COURT:** All right. Well, let's just go ahead and break for lunch. Okay? Let's come back at about 1:15.

12:05 **THE DEPUTY CLERK:** All rise.

12:05 **(LUNCHEON RECESS)**

12:05 * * * * *

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CERTIFICATE

I, Jodi Simcox, RMR, FCRR, Official Court Reporter for the United States District Court, Eastern District of Louisiana, do hereby certify that the foregoing is a true and correct transcript, to the best of my ability and understanding, from the record of the proceedings in the above-entitled and numbered matter.

s/Jodi Simcox, RMR, FCRR
Jodi Simcox, RMR, FCRR
Official Court Reporter