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
	*	October 2, 2013
Docket 10-CV-02771, *IN RE: THE COMPLAINT AND PETITION OF TRITON ASSET LEASING GmbH, et al.*	*	
Docket 10-CV-4536, *UNITED STATES OF AMERICA v. BP EXPLORATION & PRODUCTION, INC., et al.*	*	

* * * * * * * * * * * * * * * * * * *

DAY 3, AFTERNOON SESSION
TRANSCRIPT OF NONJURY TRIAL BEFORE
THE HONORABLE CARL J. BARBIER
UNITED STATES DISTRICT JUDGE

Appearances:

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

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

Appearances:

For the Plaintiffs:	Levin Papantonio Thomas Mitchell Rafferty & Proctor, PA BY: BRIAN H. BARR, ESQ. 316 South Baylen Street, Suite 600 Post Office Box 12308 Pensacola, Florida 32591
For the Plaintiffs:	Irpino Law Firm BY: ANTHONY IRPINO, ESQ. 2216 Magazine Street New Orleans, Louisiana 70130
For the Plaintiffs:	Weitz & Luxenberg, PC BY: ROBIN L. GREENWALD, ESQ. 700 Broadway New York, New York 10003
For the Plaintiffs:	Lundy Lundy Soileau & South, LLP BY: MATTHEW E. LUNDY, ESQ. 501 Broad Street Lake Charles, Louisiana 70601
For the Plaintiffs:	Morgan & Morgan BY: FRANK M. PETOSA, ESQ. 188 East Capital Street, Suite 777 Jackson, Mississippi 39201
For the States' Interests:	Attorney General's Office BY: COREY L. MAZE, ESQ. WINFIELD J. SINCLAIR, ESQ. 500 Dexter Avenue Montgomery, Alabama 36130
For the State of Louisiana:	Attorney General's Office BY: JAMES D. CALDWELL, ESQ. 1885 North Third Street Post Office Box 94005 Baton Rouge, Louisiana 70804

Appearances:

For the State of Louisiana:	Kanner & Whiteley, LLC BY: ALLAN KANNER, ESQ. DOUGLAS R. KRAUS, ESQ. 701 Camp Street New Orleans, Louisiana 70130
For the United States of America:	U.S. Department of Justice Torts Branch, Civil Division BY: STEPHEN G. FLYNN, ESQ. Post Office Box 14271 Washington, D.C. 20044
For the United States of America:	U.S. Department of Justice Environment & Natural Resources Environmental Enforcement Section BY: THOMAS BENSON, ESQ. STEVEN O'ROURKE, ESQ. SCOTT CERNICH, ESQ. A. NATHANIEL CHAKERES, ESQ. ANNA CROSS, ESQ. BETHANY ENGEL, ESQ. RICHARD GLADSTEIN, ESQ. JUDY HARVEY, ESQ. SARAH HIMMELHOCH, ESQ. Post Office Box 7611 Washington, D.C. 20044
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. PAUL D. COLLIER, ESQ. BARRY E. FIELDS, ESQ. 300 N. Lasalle Chicago, Illinois 60654

Appearances:

For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Kirkland & Ellis, LLP BY: MARTIN BOLES, ESQ. 333 South Hope Street Los Angeles, California 90071
For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Kirkland & Ellis, LLP BY: ROBERT R. GASAWAY, ESQ. JOSEPH A. EISERT, ESQ. 655 Fifteenth Street, N.W. Washington, D.C. 20005
For BP Exploration & Production Inc., BP America Production Company, BP PLC:	Covington & Burling, LLP BY: ROBERT C. "MIKE" BROCK, ESQ. BRIDGET K. O'CONNOR, ESQ. 1201 Pennsylvania Avenue, N.W. 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. 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. GRANT A. DAVIS-DENNY, ESQ. ALLEN M. KATZ, ESQ. 355 S. Grand Avenue, 35th Floor Los Angeles, California 90071

Appearances:

For Halliburton Energy Services, Inc.:	Godwin Lewis, PC BY: DONALD E. GODWIN, ESQ. JENNY L. MARTINEZ, ESQ. BRUCE W. BOWMAN JR., ESQ. PRESCOTT W. SMITH, ESQ. SEAN W. FLEMING, ESQ. 1201 Elm Street, Suite 1700 Dallas, Texas 75270
For Halliburton Energy: Services, Inc.:	Godwin Lewis, PC BY: R. ALAN YORK, ESQ. GWENDOLYN E. RICHARD, ESQ. 1331 Lamar, Suite 1665 Houston, Texas 77010
For Anadarko Petroleum Corporation, Anadarko E&P Company LP:	Kuchler Polk Schell Weiner & Richeson, LLC BY: DEBORAH D. KUCHLER, ESQ. 1615 Poydras Street, Suite 1300 New Orleans, Louisiana 70112
For Anadarko Petroleum Corporation, Anadarko E&P Company LP:	Bingham McCutchen, LLP BY: WARREN A. FITCH, ESQ. KY E. KIRBY, ESQ. 2020 K Street, N.W. Washington, D.C. 20006
Official Court Reporter:	Toni Doyle Tusa, CCR, FCRR 500 Poydras Street, Room HB-406 New Orleans, Louisiana 70130 (504) 589-7778 Toni_Tusa@laed.uscourts.gov

Proceedings recorded by mechanical stenography using computer-aided transcription software.

INDEX

AFTERNOON SESSION

(October 2, 2013)

13:00 13:02 13:02 13:02 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03 13:03

THE COURT: Please be seated, everyone.

Any preliminary matters?

MR. IRPINO: Yes, one for the aligned parties. We have our list of demonstrative exhibits used and offered in connection with Robert Bea yesterday, October 1. We have sent that around to all the parties. There are no objections, so we would like to offer, file, and introduce that into evidence.

THE COURT: Without objection, those are admitted.

MARK MAZZELLA,

having been duly sworn, testified as follows:

CROSS-EXAMINATION

BY MR. PETOSA:

Q. Mr. Mazzella, I would like to call your attention to a document you spoke with --

THE COURT: Since we have a new reporter, we need to tell her this is cross-examination.

MR. PETOSA: This is cross-examination. I apologize.

BY MR. PETOSA:

Q. Mr. Mazzella, I would like to call your attention to an exhibit that you discussed with Mr. Brock on direct. It's TREX-2386.

MR. PETOSA: If you could please call it up, Carl.

13:03 **BY MR. PETOSA:**
13:03 **Q.** This is the January of 2010 BP Gulf of Mexico deepwater SPU that you spoke about with Mr. Brock.
13:04 You joined BP in 2005, sir?
13:04 **A.** Yes, sir.
13:04 **Q.** Did you join it as the well control SETA?
13:04 **A.** No, sir.
13:04 **Q.** How long did it take you to progress until you became the well control SETA?
13:04 **A.** I became well control SETA about three years after I joined the team.
13:04 **Q.** So it took you two years to work on this Well Control Response Guide?
13:04 **A.** No, sir. This Well Control Response Guide, in part, is what I have written and developed and provided for operators over the previous 28 years.
13:04 **Q.** That's the first time that BP published its own internal Well Control Response Guide was in January of 2010, sir?
13:04 **A.** No, sir. They had a document standing prior to me getting there.
13:04 **Q.** Then you took the document and revised it into the document that we discussed this morning as TREX-2386?
13:04 **A.** No, sir. That document still exists. This one took its place. It's two completely different formats.
13:05 **Q.** Let's talk about the document that's been marked as

13:05 TREX-2386 --

THE COURT: Mr. Petosa, do you have a lapel mic on?

MR. PETOSA: Let me put it on. Sorry about that.

Carl, if you could go to page 9 of Exhibit 2386. Carl, I would like to have you blow up, if you could, please, the first two paragraphs under Section 5.1.

BY MR. PETOSA:

Q. Mr. Mazzella, I know with Mr. Brock you talked about the first sentence: "This manual is applicable for the BP Gulf of Mexico deepwater business unit. It's a guide to ensure that an organized source control response to a well control event is brought swiftly and efficiently into action."

You did not talk about the second part. Would you agree, sir, that the manual you talked about earlier this morning, the January 2010 Deepwater SPU Well Control Response Guide, is a manual that provides a working methodology to safely and effectively manage initial response to a well control incident which would normally cover the first 48 hours?

A. That's what it says.

Q. Would you agree, sir, that this document is not a how-to-fix-it manual?

A. I would agree it's not a how-to.

Q. You would agree, sir, it's not going to tell you what the remediation tools are for source control?

A. It provides the organizational infrastructure to begin

development of those tools.
Q. Would you agree, sir, that the only actual source control measure identified in this document, this 127-page document, are relief wells?
A. No, sir, that's not accurate.
Q. Sir, I would like to refer you to the deposition that you attended on May of 2011, May 24.
MR. PETOSA: Carl, if you could please pull up TREX-100231.
BY MR. PETOSA:
Q. And I would like to refer you, sir, to page 163 starting at line 23.
MR. PETOSA: If you could pull that up for me, please, Carl.
BY MR. PETOSA:
Q. And pull out the question, sir, at line 23 to 25.
MR. PETOSA: Pull that up, please, Carl. And then to the top, we are going to page 164 through line 7.
BY MR. PETOSA:
Q. The question, sir:
"QUESTION: All right, I've read through this document, Exhibit 2386, and the only well source control option that I see in it is relief wells; is that right?
"ANSWER: Again, this is not how to fix it. This is the organizational infrastructure. It's not going to tell

you what the remediation tools are."
A. That's what it says, yes, sir.
Q. So the bottom line is: This is a document that gives organizational guidance to BP, as you have talked about with Mr. Brock?
A. Yes, sir.
Q. It's not a source control manual that identifies the different options of source control to move forward with in the event of a deepwater blowout in the Gulf of Mexico, correct?
A. No, sir. This is, in part, a source control document. It establishes setting up the teams and providing the infrastructure to begin work on the details of a remediation program. It's the blueprint for every source control-type operation there is in well control that I have ever been associated with.
Q. That blueprint is to attempt to activate the BOP through ROV intervention or through other means, correct, sir?
A. This document doesn't speak to that.
Q. The other blueprint, as set forth by BP, sir, is to begin or commence drilling relief wells, correct?
A. This document prepares us for assembly of the teams to start designing relief wells and implementing them. Yes, sir.
Q. But this document doesn't set up the plans on how to actually go forward and shut in a blown-out deepwater well. Correct, sir?

13:09 **A.** No, sir. As I mentioned previously, this is not a how-to-fix-it. This is to get the structure together and the blueprint that gives the teams the tools to develop those procedures. Now, those procedures are going to be very specific to the unique conditions of that well. So it's impossible to put all those pieces and tools into a complete document because there's just so many variables.

13:09 **Q.** And then you call in your well control experts. You mentioned some of them, Wild Well Control, Boots & Coots, Cudd, correct, sir?

13:09 **A.** Yes, sir. They are part of the team.

13:09 **Q.** You have, in fact, said that Wild Well Control is one of the best offshore marine well divisions?

13:09 **A.** Yes, sir, they have one of the most comprehensive marine divisions.

13:09 **Q.** And that's why, on April 21, 2010, when you were alerted about the *Deepwater Horizon* blowout, you called Wild Well Control, Pat Campbell, David Barnett, to assist you and BP in responding to this event, correct?

13:10 **A.** Yes, sir. I called Wild Well Control, Cudd, and Boots & Coots.

13:10 **Q.** Sir, I would like to switch gears a little bit. I would like to talk about the Junk Shot and the Momentum Kill that you spent some time talking about with Mr. Brock today, okay, sir?

13:10 **A.** Yes, sir.

13:10 **Q.** You mentioned, sir, that the Junk Shot peer assist, that
13:10 occurred on May 6. But prior to that, you had to create the
13:10 terms of reference for the actual peer assist, and I believe
13:10 you talked about that a little bit with Mr. Brock earlier at
13:10 TREX-142916.
13:10 You put those terms of reference together, didn't
13:10 you?
13:10 **A.** I don't recall if I did 100 percent myself or whether it
13:10 was a collaborative with some of the other team members, but I
13:10 would have been a part of it, yes, sir.
13:10 **Q.** You sent this document, sir, 142346, to Mr. James Dupree,
13:10 right? That's on May 5, 2010.
13:11 **A.** That's what this e-mail says, yes, sir.
13:11 **Q.** He was the head of source control with respect to the
13:11 *Deepwater Horizon* blowout, correct, for BP?
13:11 **A.** Yes, sir.
13:11 **Q.** You also copied Mark Patteson. Mark Patteson headed up
13:11 the Top Kill Team that was formed following Exhibit 2386, the
13:11 deepwater well control guide; one of the teams you have
13:11 discussed, correct?
13:11 **A.** Yes, sir. Mark Patteson led our efforts in pulling
13:11 together the planning and procedures and all the diligence that
13:11 we did for the Top Kill procedure.
13:11 **Q.** Okay. And, sir, you asked Mr. Dupree: "As requested,
13:11 please find the attached subject TOR" -- terms of reference.

"Once agreed upon, please forward your approval for the communication to the relevant team participants."

A. That's correct.

Q. Mr. Dupree reviewed the terms of reference that you provided to him on May 5, 2010, and gave you his approval?

A. This isn't representative of his approval, but we would have received it before we proceeded.

Q. You would not have held a peer assist if Mr. Dupree didn't approve the terms of reference that you provided to him as set forth in the two pages following, Exhibit 142916, which is page 2 and page 3.

MR. PETOSA: Carl, if you can pull up page 2, please.

BY MR. PETOSA:

Q. I know you talked a little bit about this with Mr. Brock, but --

MR. PETOSA: Let's highlight, if we can, the "Purpose" up top, please, Carl, under the terms of reference.

BY MR. PETOSA:

Q. You would agree, sir, that the purpose of the document was to "briefly describe the proposed Assistance Team to peer review program(s) in support of the above titled objectives" -- that would be the Junk Shot, the Bullhead, and the Momentum Kill correct, sir?

A. That's correct.

Q. And it goes on to say: "Which will provide synergy

13:12 between energy expertise and operational teams and reduce
13:13 reactive risks."
13:13 Correct?
13:13 **A.** Yes, sir.
13:13 **Q.** Now, sir, the "industry expertise" you have talked about a
13:13 little bit with Mr. Brock, correct?
13:13 **A.** Yes, sir.
13:13 **Q.** I would like to highlight who those people are.
13:13 **MR. PETOSA:** Carl, if you could bring up Exhibit 3917
13:13 at page 1. If you could highlight Section C, please, here
13:13 under "Peer Assist Team."
13:13 **BY MR. PETOSA:**
13:13 **Q.** These are all the outside experts that you invited to join
13:13 BP in the peer assist of the Junk Shot, sir, correct?
13:13 **A.** I don't know where this list came from. Is this off of
13:13 the TOR?
13:13 **Q.** No, sir. This is actually the Junk Shot peer assist
13:13 agenda, which is Exhibit 3917.
13:13 **A.** Again, I would like to look at the agenda so I make sure
13:13 I'm speaking correctly to it.
13:13 **Q.** This is the agenda, sir, Exhibit 3917.
13:14 **MR. PETOSA:** Carl, do you want to flare that down.
13:14 Let's go up to the top and highlight it.
13:14 **BY MR. PETOSA:**
13:14 **Q.** See that, sir, "MC 252 Junk Shot peer assist: May 6,

13:14 2010"?
13:14 **A.** (No audible response.)
13:14 **Q.** You don't dispute that that's the Peer Assist agenda, do you, sir?
13:14 **A.** I don't know that I have seen this. I may have, but it's not recognizable to me right now.
13:14 **MR. PETOSA:** Carl, if we could, could we go to page 2 of Exhibit 3917. If you could highlight the "Agenda" box down to Number 4, Carl, under D, please.
13:14 **BY MR. PETOSA:**
13:14 **Q.** You see that the "Welcome Remarks and Introductions" were led by Mr. Dupree, the head of BP source control, correct?
13:14 **A.** Yes, I do. Thank you.
13:14 **Q.** You attended this Junk Shot peer assist, correct?
13:14 **A.** Yes, sir, I did.
13:14 **Q.** You, in fact, set forth for all of those industry experts that you called in BP's plan and procedure for the Junk Shot, correct?
13:15 **A.** Yes, sir. I presented the methodology behind our program.
13:15 **Q.** And at that time, you would have been the one that developed the methodology for BP that was presented to the peer assist, correct?
13:15 **A.** No, sir. It would have been a collaborative between the teams that had been stood up.
13:15 **Q.** But those were all BP teams at that time, correct?

13:15 **A.** No, sir. They were industry experts and contractors, well control specialists. It was a group of people.
13:15 **Q.** But you're the one who presented that over 45 minutes, correct?
13:15 **A.** Yes, sir.
13:15 **MR. PETOSA:** Carl, if we can go back to page 1 of Exhibit 3917, please, and again highlight the bottom C, "Participants."
13:15 **BY MR. PETOSA:**
13:15 **Q.** Sir, you would agree that you brought in some of the preeminent petroleum engineer professors in the country to assist BP in this May 6, 2010 peer assist, correct?
13:15 **A.** Again, this looks like a list of people that were invited.
13:16 **Q.** You had members of Boots & Coots present, correct?
13:16 **A.** Yes, sir. As best as I can recall.
13:16 **Q.** Cudd, Wild Well, the teams -- or well control specialists you have indicated on direct, sir, that you would normally call in with BP and that you have, in fact, reviewed the contracts for for BP?
13:16 **A.** Yes, sir.
13:16 **Q.** It even has industry experts, Shell, ConocoPhillips, Chevron, ExxonMobil, correct?
13:16 **A.** That's correct, sir.
13:16 **Q.** And that was --
13:16 **MR. PETOSA:** If we go back, Carl, to page 2 of

Exhibit 3917.

BY MR. PETOSA:

Q. Sir, go down to the agenda, how long did this event last? It looks like --

MR. PETOSA: If you look at the top, Carl, at Box 1 flare.

BY MR. PETOSA:

Q. It looks like it started at 11:00 a.m. and, sir, it looks like it finished at 5:00 p.m. So did you spend about six hours that day going through the peer assist?

A. I'm not sure what the duration of this peer assist was. If this is an agenda, it wouldn't be representative of the actual time we spent discussing it.

Q. Let's go to page 3 of the document -- page 2 of the document, sir.

MR. PETOSA: Carl, at the top, at A under "BP."

BY MR. PETOSA:

Q. Now, Mr. Mazzella, were all these individuals from BP present during the Junk Shot peer assist?

A. I can't be a hundred percent sure if they were all there. That was several years ago, but I think the majority of them were there.

Q. Let's start off here. James Dupree, who was the head of the BP source control effort, he was present, correct?

A. I don't remember if James was there or not.

13:17 **Q.** He at least gave the welcome and introductory remarks, correct?
13:17 **A.** Like I said, I'm not sure if he was there. So he may not have.
13:17 **Q.** I'm just relying on the document, sir.
13:18 Mark Patteson, the Top Kill lead, he was present in the peer assist, wasn't he?
13:18 **A.** I believe Mark was.
13:18 **Q.** You were clearly present during the peer assist?
13:18 **A.** Yes, sir.
13:18 **Q.** And Kurt Mix, who is Kurt Mix?
13:18 **A.** Kurt was one of the team members that were working with the engineering team.
13:18 **Q.** Was he present?
13:18 **A.** I don't recall if all these people were present. Like I said, this has been some time ago. Whether or not those guys were there, you know, the best of recollection, a lot of them were, but I can't definitively say yes, they were all there.
13:18 **Q.** Sir, would you agree that --
13:18 **MR. PETOSA:** Carl, if we can go back to Exhibit 142916 at page 2. If we can go to the top under "Project Description," Carl, please. If we can highlight the "Project Description" box, please, Carl.
13:18 **BY MR. PETOSA:**
13:19 **Q.** I think you talked a little bit about this with Mr. Brock,

13:19 but I want to make sure we are clear. The purpose of this
13:19 project says it was to: "Participate in an overview of
13:19 presented information and resources required for successful
13:19 implementation of titled objectives and to assist with
13:19 identification of risks associated with prescribed program."
13:19 Sir, the prescribed program was the Junk Shot,
13:19 Bullhead, and Momentum Kill, correct?
13:19 **A.** Yes, sir. That's what the peer review was to take part
13:19 of.
13:19 **Q.** It goes on to say: "Additionally, identify any support or
13:19 considerations which may be required."
13:19 That's one of the things that you did with the
13:19 industry individuals you invited to the peer assist, correct,
13:19 sir?
13:19 **A.** Yes, sir, in part.
13:19 **Q.** And then the last part, sir, it says: "Provide
13:19 constructive feedback to BP through an engaged participation
13:19 with industry experts assembled from various well control
13:19 points of view."
13:19 Those are all those individuals we saw on the agenda
13:19 that were at least invited to attend the peer assist, correct?
13:20 **A.** There were others as well.
13:20 **Q.** Who else was there from the industry, sir?
13:20 **A.** There were various professors from some of the
13:20 universities that had petroleum engineering curriculums.

13:20 **Q.** Dr. Tad Patzek? He was invited, correct?
13:20 **A.** Yes.
13:20 **Q.** Did he attend?
13:20 **A.** I believe he was.
13:20 **Q.** Dr. John Smith?
13:20 **A.** Yes, sir. I remember John Smith.
13:20 **Q.** Ted Bourgoyne?
13:20 **A.** He was there.
13:20 **Q.** Okay, sir.
13:20 Now, let's talk a little bit about the actual
13:20 Junk Shot peer assist report of findings you talked about with
13:20 Mr. Brock.
13:20 **MR. PETOSA:** Carl, if we could pull up TREX-140342 at
13:20 page 1, please. Now, if you can highlight this box right here,
13:20 please, Carl.
13:20 **BY MR. PETOSA:**
13:20 **Q.** You see, sir, this is an e-mail from a Gary Wulf to Bill
13:20 Kirton, May 7, 2010. The attachment says: "May 6, 2010 Peer
13:20 Assist Executive Summary." We are going to go to page 2 now of
13:21 this document, sir.
13:21 **MR. PETOSA:** Carl, if we can please move to page 2 of
13:21 Exhibit 140342. Highlight the box right here, Carl, please.
13:21 **BY MR. PETOSA:**
13:21 **Q.** You see, sir, this is the MC 252 Junk Shot peer assist
13:21 May 6, 2010 Report of Findings that you discussed with

13:21 Mr. Brock. You remember talking about that with him?
13:21 **A.** Well, I haven't seen this e-mail.
13:21 **Q.** You haven't seen the May 7 report of the May 6, 2010 Junk Shot peer assist Report of Findings? That's the same document you talked about with Mr. Brock on direct.
13:21 **A.** Well, I don't know this. This is a cover sheet to a report. Frankly, I haven't seen that e-mail or -- if this was an attachment to it. I'm not saying I haven't seen a report. I'm not sure if this one is.
13:21 **Q.** Why don't we actually go to the exact exhibit Mr. Brock used with you and maybe that will make it easier since you seem to recall reviewing that document.
13:22 **MR. PETOSA:** Carl, can you pull up TREX-10506, please. We can highlight the same box, Carl.
13:22 **BY MR. PETOSA:**
13:22 **Q.** You recall seeing this document, don't you, sir?
13:22 **A.** Yes, sir, this one is familiar.
13:22 **MR. PETOSA:** If we can go to page 4, Carl, of Exhibit 10506 -- actually if we can go back to page 3. I'm sorry, Carl. If we can highlight right there.
13:22 **BY MR. PETOSA:**
13:22 **Q.** Sir, you see it says "Top 10 Findings." Now, you would agree that, out of the peer assist -- you talked with Mr. Brock a little bit about this document -- that there were 10 key findings of the Junk Shot Peer Assist Group when you brought

13:22 together industry experts for BP along with BP employees to
13:22 discuss the plan procedure for the Junk Shot and, in turn,
13:23 Momentum Kill and the Bullhead?
13:23 **A.** Yes, sir.
13:23 **Q.** Now, you see, sir, Bullet 1: "These key findings are
13:23 nearly unanimous messages delivered from the three groups of
13:23 the Peer Assist Team."
13:23 That was the purpose of this document, to deliver the
13:23 key findings that were nearly unanimous messages delivered from
13:23 the three groups of the Peer Assist Team, correct?
13:23 **A.** Well, the purpose of this peer review is to help us
13:23 understand the risks and help us prepare for the mitigations.
13:23 **Q.** They were nearly unanimous messages, correct, sir?
13:23 **A.** According to this report, the consensus of the group was
13:23 that -- of the three groups were that these findings were
13:23 unanimous.
13:23 **Q.** This is BP's report, correct, sir?
13:23 **A.** Yes, sir.
13:23 **MR. PETOSA:** Carl, if we can go to page 5 of
13:23 Exhibit 10506 and highlight -- actually, go back to 4. I
13:23 apologize, Carl. That's my bad. Sorry about that.
13:24 If we can highlight Number 2, please, Carl. I'm
13:24 sorry, Number 3. Right here. Just the first entry.
13:24 **BY MR. PETOSA:**
13:24 **Q.** You see, sir, that one of the nearly unanimous top 10

13:24 findings of the Junk Shot peer assist was that Junk Shots are often not successful? That was something that the group of industry experts that you brought in for BP and your own BP employees with you agreed on, that Junk Shots are often not successful, correct?

A. That's what this says, yes, sir.

Q. Those are individuals that had experience -- in your case hundreds of wells that you participated in -- where Junk Shots were attempted, correct?

A. Yes, sir.

Q. You brought in other individuals that you invited that attended this peer assist that had that same experience, correct?

A. Yes, sir.

Q. In your words, you said, in your experience in surface wells and offshore that was not deepwater, you had a 60 or 70 percent success rate, correct?

A. Yes, sir.

Q. Yet in this peer assist the conclusion was Junk Shots are often not successful?

A. It also lays out some mitigations for that, as listed underneath it, for devices for reloading, to add more barrels to shoot with and consider more testing and optional Junk Shot material. These were all pieces of the mitigations to help us be more successful.

13:25 **Q.** But the industry experts you brought in for BP that
13:25 attended the May 6, 2010 peer assist didn't just tell you, BP,
13:25 that Junk Shots are often not successful, did they, sir?
13:25 **A.** No, sir. They also said that there was no technical
13:25 showstoppers. There was no reason not to do it.
13:25 **Q.** That wasn't my question, sir. My question is a little
13:25 more specific, and I guess I'll try to direct it to you.
13:26 They didn't just tell you that Junk Shots are often
13:26 not successful. Industry experts also told you, in that May 6,
13:26 2010 peer assist, that Junk Shot in this case, in this
13:26 deepwater well at 5,000 feet down, had a very low likelihood of
13:26 success.
13:26 Didn't they tell you that, sir?
13:26 **A.** No, sir, that's not what they said.
13:26 **Q.** You called in Wild Well Control, right, within hours of
13:26 learning of the event, correct?
13:26 **A.** That's correct.
13:26 **Q.** Pat Campbell and Dave Barnett were the individuals you
13:26 spoke with, correct?
13:26 **A.** Yes, sir, that's correct.
13:26 **Q.** And representatives of Wild Well were at BP's Westlake
13:26 offices at 6:00 a.m. on April 21, 2010?
13:26 **A.** That's correct.
13:26 **Q.** You recognize Pat Campbell as a well control expert?
13:26 **A.** Yes, sir.

13:26 **Q.** And, in fact, probably, as was said earlier, for Wild Well Control, I would imagine, sir, that you would agree that Pat Campbell, in your experience, is one of the foremost offshore marine well control experts?

13:26 **A.** Yes, sir. Pat Campbell was quite accomplished in his discipline.

13:27 **Q.** Would you say the same about David Barnett, sir?

13:27 **A.** Yes, sir, I would.

13:27 **Q.** And, sir, I just want to make sure I'm clear. It's your testimony that Pat Campbell, David Barnett, and other outside experts that were brought in by BP did not tell you that the Junk Shot in this case, in this operation, had a very low likelihood of success?

13:27 **A.** No, sir, they did not tell me that.

13:27 **Q.** Okay, sir. I would like to refer to the deposition of Pat Campbell, TREX-100203, page 11, line 18, to page 12 at line 12.

13:27 **MR. BROCK:** Your Honor, I'm going to object on foundation. This is not something -- well, he can ask if Mr. Mazzella has seen this, but I think the foundation needs to be laid to ask questions about this.

13:27 **MR. PETOSA:** Your Honor, Mr. Mazzella put together the terms of reference for the Junk Shot peer assist. He invited the attendees -- after receiving approval by Mr. Dupree, he presented the Top Kill plan on behalf of BP to receive feedback from industry experts. One of the top 10

findings of the Junk Shot was that they are often not successful.

And in this scenario there's been testimony by both Mr. Campbell and Mr. Barnett, on behalf of Wild Well, about what was communicated to BP and Mr. Mazzella during this peer assist, about the chances of success.

MR. BROCK: My objection is a foundation objection. If this is an argument they want to advance or present in a post-trial brief, we will respond to it. But to ask a witness who hasn't seen the testimony is a problem.

THE COURT: I guess he can ask him if he is familiar with it.

MR. PETOSA: More importantly, sir, Mr. Campbell's deposition is already in evidence.

THE COURT: Then what's your question for this witness?

MR. PETOSA: My question for Mr. Mazzella is, was he told by Pat Campbell, Dave Barnett, or other industry experts in attendance that the Junk Shot in this case for this well had a very low likelihood of success.

THE WITNESS: I don't recall that.

BY MR. PETOSA:

Q. You were not told, sir, that this procedure that you have set forth, that was approved by Mr. Dupree, that you presented in a peer assist on May 6, 2010, was not a good idea?

13:29 **A.** No, sir. To the contrary, I thought it was a good idea.
13:29 **Q.** Wild Well Control was operating under contract for BP to assist you in this response, correct?
13:29 **A.** That's correct.
13:29 **Q.** You're telling me, sir, that Wild Well never expressed to you any concern about proceeding with the Top Kill Junk Shot procedure that you discussed during this peer assist and ultimately commenced beginning on May 26, 2010?
13:29 **A.** There was conversations going on back and forth trying to understand the risks. You know, the reality is the forward team had Wild Well people on it. The majority of the people were Wild Well specialists, including Mr. Barnett.
13:29 **Q.** Were you ever told by Wild Well that they had a lack of confidence in the ability of the Junk Shot procedure that was planned, that you were involved in shaping -- that they had a lack of confidence in it?
13:30 **A.** I don't remember any conversations "lacking confidence."
13:30 **Q.** Did Mr. Barnett, Mr. Campbell, or any other outside industry experts ever tell you, sir, that the reason that the Junk Shot had a very low likelihood of success was due to the size of the flow path and due to the technical limitations on the operation?
13:30 **A.** Well, at that time we didn't know what the flow path looked like. You know, there had never been a deepwater Junk Shot-type operation completed before. There was a lot of

13:30 concern whether or not we could be successful.
13:30 The only thing we could measure it against was the
13:30 success we had with surface operations. We looked at all the
13:30 risks. We tried to understand the risks, plan the mitigation,
13:30 and make sure that we had a very clear, concise plan going
13:31 forward with boundary conditions where we wouldn't make matters
13:31 worse.
13:31 **Q.** Did Mr. Campbell tell you during the Junk Shot peer assist
13:31 or at any time prior to BP commencing the Junk Shot that you
13:31 executed on behalf of BP that the Momentum Kill in this process
13:31 required injection very near the surface, not via long string
13:31 or something of that nature, creating technical limitations in
13:31 the ability of the procedure to succeed?
13:31 **A.** I'm sorry. That was a really long question, sir. Can you
13:31 repeat it?
13:31 **Q.** Did Mr. Campbell, sir, ever tell you in the peer assist on
13:31 May 6, 2010, or at any time prior to executing the Junk Shot
13:31 Top Kill procedure, that the Momentum Kill part of that process
13:31 had a very low likelihood of success because it required
13:31 injection near the surface, not via a long drill string or
13:31 something of that nature?
13:32 **A.** I'm not saying that he didn't. I just don't recall it.
13:32 **Q.** You would agree that that would have been one of the
13:32 technical limitations of the procedure, correct, sir?
13:32 **A.** Well, not necessarily. We placed a manifold on the seabed

very close to the well to inject material to bridge. That's why we did it. We wanted it as close as we could.

Q. Did any of the industry experts in attendance on May 6, 2010, for the Junk Shot peer review tell you that they thought it was a good idea?

A. You know, to the contrary, everyone there couldn't provide any technical showstoppers. Most, if not all, were in agreement that this was a good step forward.

Q. Yet all those individuals, both from the industry and from BP, had never attempted a Junk Shot in deep water, correct, sir?

A. Some of them had not. Well, none of them had. There hadn't been a Junk Shot done in deep water.

Q. At that same May 6, 2010 Junk Shot, you identified certain high-level risks to the well integrity that you have already talked about with Mr. Brock, correct?

A. Yes, sir, that's correct.

We developed the mitigations, the boundary conditions that were procedural and mechanical to prevent those overpressurizations. We had devices on deck where we were pumping, that if we got near those pressures, it just diverted the pumps. You couldn't put the pressure on the well.

Q. And you, in fact, were the lead in designing the Junk Shot procedure that went forward beginning on May 26, 2010, correct, sir?

13:33 **A.** No, sir. Mark Patteson was the lead. I was technical
13:33 contributor and one of the guys that implemented the
13:33 procedures.
13:33 **Q.** Did you design the program or did Mr. Patteson?
13:33 **A.** Mr. Patteson was the lead, and it was a collaborative of
13:33 many team members that developed the procedures.
13:34 **Q.** You would agree with me, sir, that the plan for the
13:34 Top Kill, as you have described it, both the Momentum Kill and
13:34 the Junk Shot, was to pump mud at 50 barrels per minute,
13:34 correct?
13:34 **A.** There was an opportunity to pump at least that, yes, sir.
13:34 **Q.** In fact, on the last day you exceeded that and went up to
13:34 78 barrels per minute of mud, correct?
13:34 **A.** That's correct, sir.
13:34 **Q.** In your words, to give it one last hard shot to see if you
13:34 could kill the well, correct?
13:34 **A.** We had established some parameters. By performing the
13:34 previous attempts, we knew what the pressures were. Our
13:34 engineers had plotted that. We didn't come anywhere near the
13:34 boundary conditions, so there was not any reason not to go
13:34 ahead and try and ramp up and see if we could move the bridging
13:34 material around where we could effect a kill.
13:34 **Q.** Sir, on May 14, 2010, there was a Top Kill analysis and
13:34 Junk Shot review that you attended for BP, correct?
13:34 **A.** No, sir, I didn't attend any review.

13:34 **Q.** You didn't attend any Junk Shot review, Top Kill analysis for BP on May 14, 2010?
13:35 **A.** No, sir, not that I recall.
13:35 When I got back from completing the Top Kill procedures, I went straight into a mode of helping the teams that were progressing other options and seeing what I could do to further our efforts.
13:35 **Q.** Sir, around that time -- May 14, May 15, May 16 -- were you advised that you were supposed to be doing additional work on kill rate estimates with Bob Grace, a well control expert that was brought in by BP to assist in the response, and Dr. Ole Rygg?
13:35 **A.** No, sir, I was not part of that analysis. I had nothing to do with any flow rate calculations.
13:35 **MR. PETOSA:** Carl, if we can refer to TREX-5363, page 10. Actually, let's go to page 1 first, please, Carl.
13:35 **BY MR. PETOSA:**
13:35 **Q.** You can see, sir --
13:35 **MR. PETOSA:** If we can blow up the top box, please.
13:35 **BY MR. PETOSA:**
13:35 **Q.** -- it's an e-mail sent May 14, 2010, from Jonathan Sprague to Andy Frazelle, and it says "Attachments: Top Kill analysis."
13:36 You never received or reviewed any Top Kill analysis for a Junk Shot review that was performed by BP on or about May 14, 2010, before you commenced the Top Kill operation?

13:36 **A.** Can you ask that again.
13:36 **Q.** Did you ever receive the May 14, 2010 Top Kill analysis and Junk Shot review and review it before you commenced the Top Kill procedure, sir?
13:36 **A.** There was an analysis done on the boundary conditions where we would understand what pressures not to exceed. If that's the analysis you're speaking to, then, yes, I did.
13:36 **MR. PETOSA:** Carl, if we could go to page 2 of Exhibit TREX-5363. If we can just blow that box up, Carl.
13:37 **BY MR. PETOSA:**
13:37 **Q.** Do you see it says "Junk Shot review"?
13:37 **A.** That's what it says, yes, sir.
13:37 **Q.** Did you ever receive that document, sir?
13:37 **A.** I don't know what this document is in this context.
13:37 **MR. PETOSA:** Carl, let's go to page 3, please.
13:37 **BY MR. PETOSA:**
13:37 **Q.** You see it says "Context," sir, "Final assurance checks being made for Junk Shot operations. Focus is on well system integrity. Range of flow" -- and this word you've been talking about today -- "Don't make situation worse"?
13:37 **A.** That's what it says, sir. Yes, sir.
13:37 **Q.** Did you receive any of this information on this slide here?
13:37 **A.** I'm not familiar with this information.
13:37 **MR. PETOSA:** Carl, let's go to page 10 of TREX-5363,

please.
BY MR. PETOSA:
Q. See how this says "Next Steps," sir? Let's talk about the first box.
"More work to be done on kill rate estimates - Mark M." Was there any other Mark M. involved in the Junk Shot Top Kill procedure besides you for BP?
A. Not that I'm aware of.
Q. We can go back and look at the agenda, but I don't recall seeing any other Mark M. You agree with me on that, correct, sir?
A. Fair enough. Fair enough.
Q. Bob G., that was Bob Grace, correct?
A. I believe that it is, sir.
Q. You would also consider him to be one of the foremost, preeminent well control experts in the field?
A. Yes, sir.
Q. He has even written books on the subject, hasn't he?
A. Yes, sir, he has.
Q. It says "Ole"?
A. Yes, sir.
Q. That's Dr. Ole Rygg, you would agree?
A. Yes, sir. He is the only Ole I know.
Q. He was brought in by BP, with Add Energy, to assist on certain modeling of flow and other items like that, correct?

13:38 **A.** In this context we are talking about kill rate estimates, which is different than flow rate estimates.

When we designed this thing, we didn't know how much the well was flowing, so we had to design it a different way. We had to look at our conduit going down to the well and look at what's the maximum we can put down that line, because we didn't know what the well was doing, we didn't know what we had to beat. But we knew that there were mechanical restrictions that we had to go through and that some of it we couldn't do anything about.

For instance, the *Horizon* BOP, it had 3-inch lines on it. How much can you actually hook up with ROVs? There were limitations to that.

So understanding what those limitations are, that's where Bob Grace and Dr. Rygg provided us input, was just how much mud, how fast can we get it down those lines.

Q. So you were interacting with Dr. Ole Rygg in the middle of May in 2010 about the Junk Shot, correct, sir?

A. No, sir. It would have been about the kill rates. Mr. Rygg is not a Junk Shot expert.

Q. Sir, you would agree that prior to the Momentum Kill going forward, that portion of the Top Kill, that there was a limitation on its ability to succeed at -- it could not succeed at 15,000 barrels per day at the planned 50 barrels per minute pump rate?

13:40 **A.** I don't know that to be true, sir.
13:40 **Q.** No one ever told you that?
13:40 **A.** No, sir. I mean, it depends on what your inputs are to the program. If your inputs are wrong, your outputs are wrong. In this instance we didn't know what the inputs were.
13:40 **MR. PETOSA:** Carl, if we can pull up TREX-8537, please. Highlight the box right here, Carl.
13:40 **BY MR. PETOSA:**
13:40 **Q.** "Kurt, look at the presentation. Interesting results. Looks like with 15,000 bopd you cannot kill it with 50 bpm.
13:40 "Let's discuss and QC these before distributing."
13:40 That's sent by Mr. Ole Rygg, correct, May 16, 2010?
13:40 **A.** Looks like his e-mail to Kurt, yes.
13:40 **Q.** Kurt Mix attended the Junk Shot peer assist with you, correct?
13:40 **A.** I don't recall if he was there. I think he was. But, you know, memory fails me.
13:40 **Q.** Did Kurt ever tell you that there was a limitation on the
13:41 ability of the Momentum Kill portion of the Top Kill to succeed
13:41 if the flow was in excess of 15,000 barrels of oil per day with
13:41 a planned 50-barrel-per-minute pump rate?
13:41 **A.** I don't recall if he did or not.
13:41 The Top Kill wasn't predicated as a procedure on flow
13:41 rate. Flow rate was a part of the Momentum Kill, not a part of
13:41 Top Kill. Top Kill is placement of the bridging material,

which slows the flow, stems the flow, and enables you to do a Momentum Kill.

Q. Did Dr. Rygg ever tell you, in your discussions with him about kill rates, that in his modeling of the Momentum Kill, if the flow rate was in excess of 15,000 barrels of oil per day, that the Momentum Kill would not work at the planned pump rate of 50 barrels per minute?

A. Again, I can't comment on the flow rates. Whether there was a conversation to that effect, I don't recall. There may have been.

Q. You would agree, sir, it was your opinion, leading up to the commencement of the Top Kill operation, that the Momentum Kill itself was not considered likely to be successful?

A. There was definitely an opinion to that effect.

Q. Meaning you agree that prior to proceeding with the Top Kill, it was your opinion, as BP's well control SETA, that the Momentum Kill was not likely to be successful?

A. Well, look, I had opinions just like everyone else, and I could no more support those opinions with definitive data than anyone that had definitive data that said we could do it, could prove it.

Q. You would agree, sir, that the planned procedure -- I know you talked a little bit with Mr. Brock about the Unified Command signing off on some procedures. The planned procedure that was signed off by the Unified Command set forth that when

13:42 the Top Kill commenced, it was supposed to go forward with the
13:43 Momentum Kill first, without bridging material?
13:43 **A.** That's correct.
13:43 **Q.** And only if the Momentum Kill failed were you to proceed
13:43 with bridging material, correct?
13:43 **A.** That's correct.
13:43 **MR. PETOSA:** Carl, if you can pull up TREX-9148,
13:43 please.
13:43 **BY MR. PETOSA:**
13:43 **Q.** I think Mr. Brock highlighted for you the signatures of
13:43 Unified Command here.
13:43 **MR. PETOSA:** If we can go down to the bottom, Carl,
13:43 and just highlight now the box at the bottom. Just the date.
13:43 **BY MR. PETOSA:**
13:43 **Q.** So this is the May 22, 2010 Momentum Kill procedure with
13:43 the contingent alternative LCM pills added in, correct?
13:43 **A.** Yes, sir.
13:43 **Q.** That's the Junk Shot portion of the Top Kill, correct?
13:43 **A.** In part, yes, sir.
13:43 **MR. PETOSA:** Carl, if we can go to page 4 of
13:43 TREX-9148, please, and highlight Number 1 under well status,
13:43 please.
13:43 **BY MR. PETOSA:**
13:43 **Q.** You see, sir, under well status, "This approved procedure
13:44 by the Unified Command says well is under blowout conditions."

13:44 I think we can all agree with that, right, the well was blowing out?
13:44 **A.** Yes, sir, that's pretty obvious, unfortunately.
13:44 **Q.** Let's talk about the second bullet point. We just talked about this.
13:44 Sir, do you agree that the approved procedure said that the Top Kill plan is to pump a Momentum Kill with only mud followed by cement. That was the plan, correct, sir?
13:44 **A.** If the well was successfully killed.
13:44 **Q.** Again, sir, "No attempt will be made to bridge or seal the flow upwards in the BOP," correct?
13:44 **A.** That's what this says.
13:44 **Q.** You knew all along that that was not going to work?
13:44 **A.** No, sir, I did not.
13:44 **Q.** You didn't think it was going to succeed, or did you?
13:44 **A.** Well, I wouldn't have put 300 people offshore, all these vessels, spent all this time away from my family if I didn't think it was going to work.
13:44 **Q.** You didn't hear my question right, sir, and I apologize for that if I misstated.
13:44 **A.** Okay. I --
13:44 **Q.** You knew all along that the Momentum Kill portion of the Top Kill was not going to work?
13:45 **A.** No, sir, I didn't know that. I didn't have definitive data that said that Momentum Kill wouldn't work.

13:45 **Q.** And no one provided you the modeling by Dr. Rygg that said if the flow rate was above 15,000 barrels of oil per day, the Momentum Kill would not succeed?

13:45 **A.** Nobody had definitive data that could provide any flow rate estimates to me.

13:45 **Q.** No one from BP provided you with all the internal flow rate modeling data they did, did they?

13:45 **A.** No, sir.

13:45 **Q.** You see this chart over here, "BP Flow Rate Modeling, April 21 to May 31, 2010"?

13:45 **MR. PETOSA:** Your Honor, can I approach?

13:45 **THE COURT:** Sure.

13:45 **BY MR. PETOSA:**

13:45 **Q.** It's labeled here, sir, D-25015C.

13:45 **MR. BROCK:** I object on foundation, Your Honor, on that. People have given explanations, but there's no way someone could look at that and tell what that means.

13:45 **MR. PETOSA:** If I could ask my question, maybe I could --

13:45 **THE COURT:** Let's see what the question is.

13:45 **MR. PETOSA:** Thank you, Your Honor.

13:45 **BY MR. PETOSA:**

13:46 **Q.** Sir, you are aware that BP was doing some modeling of ranges of flow from the Macondo well from the time it blew out and oil started leaking up through the time you commenced the

13:46 Top Kill, correct, sir?
13:46 **A.** Well, you know, there was a lot of people working a lot of
13:46 different work fronts, and I'm sure there were some people
13:46 trying to take a look at it and doing their best to understand
13:46 it. What those inputs and outputs looked like, I don't have
13:46 any knowledge of.
13:46 **Q.** But my question, simply, sir, you are aware that BP was
13:46 modeling ranges of flow from the Macondo well from when the
13:46 blowout occurred until the Top Kill commenced, correct?
13:46 **A.** I don't have any detailed knowledge of that, no, sir.
13:46 **Q.** Are you aware at all, sir, if they were doing that?
13:46 **A.** As I mentioned previously, you know, there were a lot of
13:46 people working a lot of different work fronts. My focus was
13:46 getting these procedures and people and plans in place where we
13:46 could go out there and try and kill this well.
13:46 **Q.** I want to understand this. You are the person that was
13:47 involved in executing the Top Kill, correct?
13:47 **A.** Yes, sir.
13:47 **Q.** And BP was doing some modeling of flow rate ranges. You
13:47 just don't know what, how, or who was doing it, correct?
13:47 **A.** That's correct.
13:47 **Q.** You know that Dr. Rygg was doing some modeling of the
13:47 Momentum Kill, not the Junk Shot, correct?
13:47 **A.** I assume he was. He was helping us try and understand
13:47 what we could pump, the maximum rates we could pump.

13:47 **Q.** Yet nobody told you, the individual for BP that was going to execute the Top Kill, that BP through Dr. Rygg had concluded as of May 16, 2010, that the Momentum Kill could not succeed if the well was flowing at 15,000 barrels of oil per day?

13:47 **A.** I don't recall those conversations. Like I said, there may have been some. But there were lots of conversations, lots of information that was being shared that was and was not definitive. Whether it was or not, I don't have any knowledge.

13:48 **Q.** You would agree, sir, that the procedure we discussed at TREX-9148, the approved procedure for the Top Kill, as you have defined it today, set forth the actual specified bridging material that BP was allowed to use during the procedure?

13:48 **A.** I don't recall it speaking specifically to what types of bridging material we were going to use.

13:48 **MR. PETOSA:** Carl, if you can please pull up TREX-9148 at page 4, please, and highlight the box we just previously had up under well status.

13:48 **BY MR. PETOSA:**

13:48 **Q.** Let's go to the third bullet point, sir.

13:48 "If Momentum Kill operation does not kill the well, then Bridging Platelets may be pumped to bridge BOP flow and allow well kill/cementing operations to proceed."

13:48 Bridging Platelets are trademarked, aren't they?

13:48 **A.** According to this, it is.

13:49 **Q.** There's a specific material that's actually called

13:49 Bridging Platelets, correct?
13:49 **A.** Yes, sir.
13:49 **Q.** The next bullet point: "Frac balls are also a contingency
13:49 bridging option. The frac ball procedure is a part of the
13:49 Top Kill procedure."
13:49 What are frac balls?
13:49 **A.** Frac balls are used in stimulation operations.
13:49 **Q.** You would agree this doesn't talk about putting rope knots
13:49 down the well, does it?
13:49 **A.** No, sir. It doesn't prohibit it either.
13:49 **Q.** It doesn't talk about putting portions of chewed-up tires
13:49 down the well?
13:49 **A.** This information you have pulled up here, no, sir, it does
13:49 not.
13:49 **MR. PETOSA:** Let's go down to the bottom of the same
13:49 page -- actually, on page 6, Carl, if we go down to Table 1.
13:49 Let's highlight Table 1 all the way down to that bottom
13:49 paragraph.
13:49 **BY MR. PETOSA:**
13:49 **Q.** You see it says, sir: "Calculated Hole Diameters for
13:49 Platelets and Frac Balls - refer to Figure 1 below."
13:49 This is information that the Unified Command approved
13:49 about the type of bridging material that you were authorized to
13:50 attempt to shoot down the Macondo well, correct?
13:50 **A.** In part, yes, sir. We had procedures that allowed us to

pump everything that we pumped into that well.
Q. Then you see at Bullet Point 1: "Adding more frac balls will not significantly reduce the flow."
Do you agree with that?
A. No, sir.
Q. But that was a procedure that BP sent to Unified Command that was approved, correct?
A. Yes, sir. But this doesn't forbid you to pump --
Q. It doesn't authorize you to do it either, does it, sir?
A. No, sir.
We have procedures for everything we pump. As a matter of fact, we went out and did simulations with this stuff with people like Stress Engineering, a firm we hired, well control specialists that went out, took all the material we had, and tried to pump it. We tried to plug up with it. All of this stuff was under the review of all of our leadership, all of the Unified Command. We were completely transparent with this material.
Q. Bottom line, though, sir, there was no modeling done of the Junk Shot to determine whether or not it would succeed or if it would in fact increase the chances of success of the Momentum Kill, correct?
A. Well, there's not any modeling available for Junk Shot-type scenarios in the industry. It doesn't exist. I don't know how you would do that. There's just not any tool

like that.
Q. BP had no basis to conclude prior to the commencement of the Top Kill that the Top Kill had a 60 or 70 percent chance to succeed, did they, sir?
A. Well, they had the experience of our well control specialists and myself. I'm the one that had the 60 to 70 percent success rate of the wells that I have done on- and offshore.
Q. Not deepwater though, correct, sir?
A. No, sir. As we testified earlier, there has never been a deepwater Junk Shot pumped until Macondo.
Q. Not with the technical limitations of trying to commence a Junk Shot procedure on a deepwater well, correct, sir?
A. Again, this has never been attempted before.
Q. Sir, you would agree that BP had no basis to conclude prior to the Top Kill commencement on May 26, 2010, that the Top Kill procedure had an 80 percent chance to succeed?
A. Well, I can't comment to the percentages that you have mentioned because I personally have not had that kind of success rate. But we did have the basis for success. We had the experience and recommendations from our well control specialists and guys like me that have done it our whole career.
Q. You would agree, sir, that prior to commencing the Top Kill on May 26, 2010, BP had no basis to conclude that the

13:52 Top Kill was a slam dunk?
13:52 **A.** I don't like the term "slam dunk." In our business
13:52 nothing is ever a slam dunk until a well is dead and we are
13:52 headed home.
13:52 **Q.** You executed the Top Kill, you told us, correct, sir?
13:52 **A.** Yes, sir, that's correct.
13:53 **Q.** Wild Well Control, Mr. Barnett and Mr. Campbell and their
13:53 group, worked under your direction or collaboratively with you
13:53 to execute the Top Kill, correct?
13:53 **A.** That's correct, sir.
13:53 **Q.** But it was actually under your direction, wasn't it?
13:53 **A.** Well, yes, sir. I was charged with implementing and
13:53 performing the procedures.
13:53 **Q.** Wild Well Control proceeded with commencing the pumping of
13:53 the Top Kill and executing it and getting the materials under
13:53 your direction, correct?
13:53 **A.** No, sir. BJ Services pumped -- Halliburton Services
13:53 pumped the jobs for us.
13:53 **Q.** How about obtaining bridging material? Who did that?
13:53 **A.** We had several areas. Wild Well Control engineered some
13:53 and had some made for us and shipped to us. The Brinker
13:53 platelets that you are speaking to were shipped in from the UK.
13:53 There was various other materials. Frac balls, things like
13:53 that were provided from companies like BJ and Halliburton.
13:53 There was unconventional equipment that we procured by

purchase. There was lots of different ways we brought it in, but it was a collaborative that brought it together.
Q. And you would have conversations with Mr. Barnett, Mr. Campbell, and other representatives of Wild Well as the planning was going up to the Top Kill and during the actual Top Kill about the procedure, correct?
A. Yes, sir. We were always collaborating about this whole process, you know. One of the things that we have learned in well control is collectively we are a lot smarter than we are individually and by surrounding ourselves with those kind of experienced people, it just helps us with overall knowledge and reducing the opportunity for failure.
Q. Sir, during the Top Kill, did you tell Mr. Barnett during -- or his representatives from Wild Well during the process to get a whole bunch of big junk, as big as they could pump through the lines?
A. I probably did. I don't remember specifically that conversation, but I probably would have.
Q. Did Mr. Barnett continue to inquire of you as the process continued forward for the Top Kill and try to get more information from you as to exactly what you, on behalf of BP, wanted Wild Well to get to have pumped for the Junk Shot?
A. Well, as I mentioned previously, this was a collaborative. Wild Well and I, Cudd, Boots & Coots, everyone that was involved in this thing would have conversations. We would try

13:55 and understand what can we get down a 3-inch line. Sometimes we got some material to pump where we went out and tested over at Stress and it wouldn't go through the line, so that one didn't get pumped. We based what we could pump on what we could get through the simulations.

Q. During that process did you ever get any feedback from Wild Well Control, sir, that told you it wasn't their deal, that was your deal and BP's deal?

A. No, sir.

Q. At any time, sir, did Wild Well Control tell you that they did not recommend proceeding with the Junk Shot during the actual process, during those days that it went forward, and that they were against it, but they were doing so at your direction?

A. I don't remember any specific conversations telling me that Wild Well doesn't want to do this. I'm not saying there wasn't. As I sit here right now, I don't remember any conversation like that.

Q. Would it help if I refreshed your recollection, sir?

A. Sure.

MR. PETOSA: Carl, if we can pull up the deposition of Dave Barnett, which is at TREX-100008 at page 105, lines 4 to 12.

MR. BROCK: Objection, proper refreshing of recollection would be to show his testimony.

13:57 **THE COURT:** I sustain that.
13:57 **BY MR. PETOSA:**
13:57 **Q.** Sir, I would also like to pull up Exhibit 120216. It's an
13:57 e-mail string.
13:57 **MR. PETOSA:** Carl, if we can go to page 5 to 6.
13:57 **BY MR. PETOSA:**
13:57 **Q.** You see at the bottom, sir, on May 28 of 2010, it says:
13:57 "I sent Dave Moody an e-mail just a few minutes ago passing on
13:57 a request from Mark Mazzella for Wild Well Control to get a
13:57 whole bunch of big junk, big as we can pump through the lines."
13:57 Those were certain requests that you would make of
13:57 Wild Well during the commencement and the operations of the
13:57 Top Kill?
13:57 **A.** This would have been -- as I testified earlier, would have
13:57 been the conversation between Barnett and I where we asked
13:57 Wild Well to procure as big of material as we thought we could
13:58 get through the lines.
13:58 **Q.** And you see: "I tried to press for how much, what kind.
13:58 All I can get is everything we had before."
13:58 And this was at the end of the Top Kill process,
13:58 correct?
13:58 **A.** This says May 28 is what it says.
13:58 **Q.** You would have conversations like this with, though,
13:58 Mr. Mazzella -- I mean, Mr. Moody, Mr. Barnett, Mr. Campbell
13:58 about the process as it was unfolding over those number of

days, correct?
A. Yes, sir. These days don't add up to me, but this would have been conversations that I had with them.
MR. PETOSA: Carl, if we can go down two more paragraphs. It starts with, "I can't get anything out of." On page 6. Right there.
BY MR. PETOSA:
Q. It says, sir: "I can't get anything out of Mazzella and I'm tired of trying. I asked if he wanted golf balls and he said he didn't care, get whatever we wanted to pump."
Wasn't there a specified procedure about what you could or could not pump, sir?
A. No, sir. If this is in the context that I believe it is, this is when we were trying to understand what we could and couldn't pump.
Q. Wild Well is operating on behalf of BP to execute the Top Kill, correct, sir?
A. Yes, sir.
Q. He is asking you, Mr. Barnett on behalf of Wild Well, what to get and you told him you didn't care, get whatever we wanted to pump?
MR. BROCK: Objection. This is not an e-mail that was sent to Mr. Mazzella. I object based on foundation. It wasn't sent to him. I think we ought to pull that second piece down. That's not something attributed to him, and it ought not

13:59 be put up in the courtroom.

MR. PETOSA: I apologize for that, Your Honor. I will move on.

THE COURT: Just move on.

MR. PETOSA: I'll move on, Your Honor.

BY MR. PETOSA:

Q. Sir, you would agree that in the operation of the Top Kill that operator error can occur, correct?

A. In any operation, from driving a car to pumping a Top Kill operation, you can have operator error.

Q. You would agree that in the process, that the wrong type of bridging material could be pumped down the well?

A. I'm sorry, sir.

Q. You would agree that during the Top Kill, operator error could mean that the wrong type of bridging material is pumped down the well?

A. There's that possibility.

Q. Did that happen here, sir?

A. No, sir.

Q. Sir, would you agree with me that on May 26 that on the first attempt of the Junk Shot, that when frac balls that were the standard 7/8 were supposed to be dropped in the well, instead all five of the 2 1/4-inch balls were dropped in the well. That caused a temporary clogging of the 90-degree turn in the choke line?

14:00 **A.** No, sir, there wasn't a temporary clogging in the line. We never experienced any bridging in the lines. There are pressure plots that monitored our operations that would have spawned that for us to review, and there wasn't any. As a matter of fact, we were looking for those kind of spikes.

Q. Did Cameron express concern to you that during the May 26, 2010 Junk Shot procedure, that the wrong frac balls, all five 2 1/4-inch balls were shot in the Junk Shot and none of the 7/8 balls that were supposed to go down the hole went down the hole?

A. Cameron?

Q. Cameron, sir.

A. I don't remember Cameron telling us that.

Q. Did Cameron express concern, sir, that in monitoring the Junk Shot procedure, that there was a choke line pressure increase because the 2 1/4-inch frac balls got stuck going around the 90 degree turn in the choke line?

A. Cameron wasn't part of our forward team. I don't recall Cameron reporting that to us.

Q. You would agree if that occurred, sir, that's common operator error?

A. No, sir, not necessarily.

Q. Why?

A. Depends on what the procedure said.

14:02 **Q.** Well, if the procedure at the time was supposed to send

14:02 the 7/8-inch frac balls down the hole first followed by the 2
14:02 1/4-inch balls, wouldn't that be common operator error if the
14:02 7/8-inch balls were never sent down the hole?
14:02 **A.** If you can show me those procedures where that happened
14:02 out of sequence, then there's a possibility that the wrong
14:02 balls were sequenced at the wrong time. The reality is it
14:02 would have had little to no impact on what we did.
14:02 **Q.** So, sir, it's your testimony that on May 26, that all
14:02 hundred of the 7/8-inch balls were sent down the hole?
14:02 **A.** No, sir. If I recall, we pumped everything that we could
14:02 get out of the shot tubes, but it seems like I recall there
14:02 were some that were left in that became lodged in the shot
14:02 lines.
14:02 **Q.** Okay, sir. You would agree that the reason that the
14:02 Top Kill failed was because the hole, the diameter of the hole,
14:03 the orifice that you were trying to plug up was just too big?
14:03 **A.** Look, I had an opinion on that, like others have opinions
14:03 on why Top Kill failed. For me I couldn't in no way provide
14:03 definitive data that the orifice or the flow path was the
14:03 reason that it failed or that it was multiple flow paths, no
14:03 more than the other people that had other opinions of why it
14:03 failed could provide definitive data.
14:03 So with all that in mind, it always pointed us toward
14:03 a conservative way of doing things. But, you know, I had an
14:03 opinion, like everyone else.

14:03 **Q.** Okay, sir. Let's refer to your deposition at TREX-100231, page 114 to page 115 about what you testified to about why the Top Kill failed.

MR. PETOSA: If we can start out, Carl, at line 18.

BY MR. PETOSA:

Q. Sir, you see there's a question? Line 21:

"QUESTION: What did you attribute to be the reason that the Top Kill was unsuccessful?"

MR. PETOSA: If we can go to the next page, please, Carl, at page 115. If we can go to line 6.

"ANSWER: Because we were restricted by the Macondo BOP fixed lines" --

Starting at line 6 and go down, Carl, I apologize.

"ANSWER: ....there was a limit to the size of material that we could put in there. We don't believe the pressure was the culprit because we saw the pressure being around 3,000 pounds and typically that's not enough to push it through any orifice that it could bridge. Some of this material was fairly large. So we think that the hole we were trying to plug was just too big."

BY MR. PETOSA:

Q. Is that what you testified to back in May of 2011?

A. Yes, sir, and that I thought that the hole was too big -- again, my opinion.

14:04 **Q.** That's your opinion still today, sir, correct?
14:04 **A.** Yes, sir.
14:04 **Q.** That's what you told BP's expert, Iain Adams, when you met
14:05 with him, or at least talked to him on March 3rd of 2013?
14:05 **A.** I don't recall a conversation with Iain Adams specifically
14:05 about that orifice size. I'm not discounting it or saying that
14:05 I did. I just don't remember that conversation.
14:05 **Q.** You don't remember telling Mr. Adams that the reason that
14:05 Top Kill failed was material was too small and the hole was too
14:05 big?
14:05 **A.** No, I don't recall that. Pumping Junk Shots, you always
14:05 pump small material into large areas. I pumped one in
14:05 South Texas where the biggest line I could get was 2 inch and I
14:05 had to pump into an 11-inch BOP and seal around components in
14:05 it that were a lot larger than that 2 inch. I had to pump over
14:05 300 golf balls in it to do it, but we got it bridged off and we
14:05 successfully killed the well.
14:05 So the size of the material that goes through the
14:05 line is not -- excuse me. The success of a Junk Shot is not
14:06 contingent with the size of the material that goes through that
14:06 line. Can your success factors be better? Absolutely. But
14:06 the way the procedure is designed is that it builds on itself,
14:06 and that's why you can use smaller lines.
14:06 **Q.** Sir, it's your opinion that the reason the Top Kill failed
14:06 was the hole was too big, correct?

14:06 **A.** Again, my opinion was that the holes were too big or there were multiple holes.
14:06 **Q.** Wild Well Control told you the same thing on May 31st of 2010, correct?
14:06 **A.** Yes, sir.
14:06 **Q.** Bob Grace agreed with that, the well control specialist we talked about, correct?
14:06 **A.** Yes, sir. The consensus of the whole forward team was that our opinion was that there was either multiple flow paths or too big a flow path to try and plug up.
14:06 **Q.** You would agree, sir, that if you have a larger geometry, that increases the likelihood that you have less restrictions in the hole, correct?
14:06 **A.** Yes, sir.
14:06 **Q.** And in turn, you can have increased flow, correct?
14:06 **A.** Yes, sir.
14:06 **Q.** Did Kurt Mix tell you on May 27th or May 28th of 2010 that the reason that the Top Kill was failing was there was too much flow rate, over 15,000, and too large an orifice?
14:07 **A.** I don't know which part of Top Kill that Kurt was speaking to. As we discussed earlier, Top Kill has two components. One is the placement of bridging material and the other is the Momentum Kill. If he was speaking to the placement of bridging material, that's not flow dependent.
14:07 **Q.** Sir, you would agree on May 27, 2010, the procedure that

14:07 went forward was the Junk Shot component with Momentum Kill over the Top Kill, correct?
A. Yes, sir. There was two parts of Top Kill and that -- again, one was the bridging material and the other was the Momentum Kill.
Q. You didn't answer my question. I would like to ask it again, sir.
A. Okay.
Q. On May 27, 2010, sir, did Kurt Mix tell you there was too much flow rate, over 15,000, and too large an orifice?
A. I don't recall that because, if memory serves me correctly, we were in the throes of doing drills and things like that. I don't remember exactly the dates on when the job was pumped.
Q. The last thing, sir, that I'm going to wrap up is that you said your whole team was in agreement that the reason the Top Kill failed was there was too large of a hole you were trying to plug up, correct?
A. That was the consensus of the forward team, yes, sir.
Q. You communicated that from your forward onshore -- offshore team to the onshore group at BP Westlake, correct?
A. Yes, sir, I communicated that with our leadership.
Q. You were not involved in any of the post Top Kill analysis after that, correct, sir?
A. No, sir.

14:08 **MR. PETOSA:** Thank you so much for your time, sir. I appreciate it.

14:08 **THE COURT:** Mr. Brock.

REDIRECT EXAMINATION

BY MR. BROCK:

14:09 **Q.** Mr. Mazzella, is it correct that following the Top Kill that there were opinions about why it failed other than orifice size being too large?

14:09 **A.** Absolutely. There were opinions floating around like feathers on a bird. Some of them involved various components in the wellbore.

14:09 **Q.** Did you understand that one of the items that was considered was the possibility that the collapse disks had opened during the initial blowout?

14:09 **A.** Yes, sir, I do remember discussions to that respect.

14:09 **Q.** Did you understand that both the teams from BP, industry, and government could not rule out that the collapse disks had opened during the initial blowout?

14:09 **MR. PETOSA:** Your Honor, I would like to object. Mr. Mazzella just testified that he was not involved in any of the post Top Kill analysis after his team provided their consensus opinion about why they thought the Top Kill failed.

14:10 **MR. BROCK:** He could know about it without having been involved in the analysis.

14:10 **MR. PETOSA:** Not without hearsay, Your Honor.

14:10 **THE COURT:** I sustain the objection.
14:10 **BY MR. BROCK:**
14:10 **Q.** Did you agree, sir, with the idea of going forward to
14:10 collection following the Top Kill procedure?
14:10 **A.** Well, I was not involved in the decision for collection.
14:10 However, in my opinion it's a prudent way forward while we were
14:10 continuing to develop our procedures for the other intervention
14:10 opportunities.
14:10 **Q.** Thank you. Going back to one of the questions that were
14:10 asked early in the exam, you were asked: Did your procedures
14:10 contain a detailed "how to shut the Macondo well in" section?
14:10 Do you remember questions to that effect?
14:10 **A.** You're speaking to the Well Control Response Guide?
14:11 **Q.** Yes.
14:11 **A.** Yes, sir, I remember that.
14:11 **Q.** Can you tell the Court why there was no detail on how to
14:11 shut the well in procedure in that manual.
14:11 **A.** Well, as we had discussed earlier, every well control
14:11 situation is unique. Every BOP configuration is potentially
14:11 different. All the scenarios can be different, so we require
14:11 different procedures to shut the well in. Some of these that
14:11 you can predict, some of them you have no way of knowing that
14:11 you're going to be presented with that.
14:11 It's very difficult to come and put a complete plan
14:11 together that says every time there's going to be a blowout,

14:11 this is what we can do to stop it. There are so many different
14:11 variables to this thing. It's almost impossible to do that.
14:11 You know, you have got to evaluate, assemble a team,
14:11 evaluate, and then prepare the plan to go ahead and try to
14:11 remediate that based on the scenario that -- or the situation
14:12 that you are presented with.
14:12 **Q.** Is what you have just described the reason that the
14:12 industry standard is to stand up a team of experts in the event
14:12 of an unfortunate situation like Macondo?
14:12 **A.** Absolutely. That is the industry standard --
14:12 **MR. PETOSA:** Your Honor, object. This is beyond the
14:12 scope of cross, and it's really beyond the knowledge of the
14:12 witness.
14:12 **MR. BROCK:** He asked about why they didn't have a
14:12 detailed how-to. I'm responding to that, Your Honor.
14:12 **MR. PETOSA:** I was talking about the well control
14:12 guide, Your Honor.
14:12 **THE COURT:** I overrule the objection.
14:12 **BY MR. BROCK:**
14:12 **Q.** Go ahead.
14:12 **A.** I'm sorry.
14:12 **THE COURT:** You can answer. Do you remember the
14:12 question?
14:12 **THE WITNESS:** I just want to make sure I get it
14:12 right.

14:12 **THE COURT:** Why don't you re-ask it.
14:12 **MR. BROCK:** Make sure he has permission, too.
14:12 **THE WITNESS:** You guys talk a different language than us oil field guys.
14:12 **BY MR. BROCK:**
14:12 **Q.** Is your description of bringing in experts to look at the individual situation that you're presented with, is that done because you can't anticipate what you will find once you start your response?
14:13 **MR. PETOSA:** Your Honor, I object, leading.
14:13 **THE COURT:** Overruled.
14:13 **THE WITNESS:** It is, Your Honor. I mean, that's what we do in our industry is we surround ourselves with the experts to help us evaluate it. You know, the well control people do this stuff every day. They are going to understand what we can do a lot better than what the average oil field guy does. And it's a collaborative effort.
14:13 Some instances the -- what the well control people provide for you is a little bit different than what we would normally do. For instance, I could just push a button and shut a BOP where a well control guy says, you know, I can manually walk up there and close that well in. And that's what you do. You assemble a team. You've got to evaluate it, and you try and develop a plan based on what you have learned in looking at that well. Going forward you have to do that

because there are so many scenarios that get out there in front of you. It's impossible to predict them. It is.

BY MR. BROCK:

Q. Thank you for that.

One final question. You were asked some questions about your success rate in terms of conducting Top Kill operations in other than deepwater situations. I'll ask you, did you attend a meeting with Secretary Salazar and others in which you were specifically asked, "What is your history in terms of conducting Top Kill operations?"

A. Yes, sir, I was.

Q. Was that question posed to you by Secretary Salazar?

A. Yes, sir, it was.

Q. Just tell the Court what you told him.

A. Well, he asked me specifically what my experience was and as I told him, I had -- have done hundreds of these things on- and offshore and of the wells that I have pumped, that I have experienced a 60 to 70 percent success rate.

Q. Did you indicate to him that that was not in the deepwater environment?

A. Absolutely. That was one of the things that I was adamant about communicating that, you know, nowhere in history had there ever been a deepwater Top Kill-type operation performed.

Q. I'm not going to get into the details, but I feel like counsel from the other side was criticizing the way that you

14:15 ran the Top Kill operation.

Would you just state to the Court your opinion or your view about the rigor that you applied to the Top Kill operation that you led at the Macondo well.

A. Well, it was an unbelievable operation. As you can imagine, seeing the infrastructure with all the vessels, we had team members that were in charge of each one of those components that you saw floating out there. Plus, there were team members responsible for the ROV, the subsea engineers that manipulated the valves and the cameras and things like that. All these team members had a team of people under them that could facilitate anything they needed.

For instance, the BJ *Blue Dolphin*, we had a team leader for that pumping operation. That team leader had the whole BJ team under him that were helping follow the directions that we were given per the procedures. The same thing with the mud. I mean, something as simple as delivering the mud to the pumps, we had a team leader and a group of people there.

Q. Let's focus on the junk that was put in the well.

A. Fair enough.

Q. In terms of what was put in the well, was it done in an industry standard type of way and consistent with the procedures that were in place?

A. Yes, sir. What we did, we actually drew a board, a big board that had all the valves, all the load tubes that had all

14:17 the junk in it and we had them numbered systematically where I
14:17 was on the command vessel, I could call the team leader on the
14:17 other side, tell him which one we needed to pump and, of
14:17 course, they had the procedures as well. They would confirm
14:17 the one we wanted. Then they would launch it and confirm that
14:17 it was launched and then we would go sequentially down the line
14:17 with what the procedures required.

MR. BROCK: Thank you, Mr. Mazzella. That's all.

THE COURT: Thank you, sir.

Next witness, Mr. Brock.

14:17 **MR. BROCK:** Yes, sir, Your Honor. At this point we
14:17 are going to play excerpts from five depositions. The run time
14:17 on these depositions is about 12 minutes. We have Lars Herbst,
14:17 who was the MMS regional director and the 30(b)(6) for the
14:18 United States on responding to subsea oil well blowouts;
14:18 Dr. Rygg, who you heard about, who was Add Energy's 30(b)(6);
14:18 Richard Vargo, who was Halliburton's senior global adviser and
14:18 their 30(b)(6) for Top Kill; David McWhorter, who was Cameron's
14:18 30(b)(6) for BOP-on-BOP techniques; and Admiral Kevin Cook, who
14:18 was the United States' 30(b)(6) for BOP-on-BOP and sequencing
14:18 of source control efforts. And then we will follow with a
14:18 witness.

14:18 **THE COURT:** Okay. Thank you.

14:18 (Deposition clips of Lars Herbst, Ole Rygg, Richard
14:19 Vargo, David McWhorter, and Kevin Cook played.)

14:30 **MR. BROCK:** That's all, Your Honor. BP's next
14:31 witness is Mr. Trevor Smith, a fact witness.
14:31 **THE COURT:** Okay. Go ahead and call him.
14:31 **MR. BROCK:** He is coming in now, Your Honor.
14:31 **TREVOR SMITH,**
14:31 having been duly sworn, testified as follows:
14:31 **THE DEPUTY CLERK:** State your full name and correct
14:31 spelling for the record, please.
14:31 **THE WITNESS:** My name is Trevor Smith, T-R-E-V-O-R,
14:31 S-M-I-T-H.
14:31 **DIRECT EXAMINATION**
14:31 **BY MR. COLLIER:**
14:32 **Q.** Good afternoon, Mr. Smith.
14:32 **A.** Good afternoon.
14:32 **Q.** My name is Paul Collier. I'll be asking you questions
14:32 today on behalf of BP. I have you on direct examination.
14:32 Can you please introduce yourself to the Court.
14:32 **A.** My name is Trevor Smith.
14:32 **Q.** Where are you currently employed?
14:32 **A.** I'm employed by BP in Houston.
14:32 **Q.** What is your current role with BP?
14:32 **A.** I'm project manager for subsea production systems and
14:32 containment in Project 20K, a technology development project.
14:32 **Q.** You worked on the response effort relating to the
14:32 *Deepwater Horizon* incident?

14:32 **A.** Yes, I did.
14:32 **Q.** Can you briefly describe what role you had with respect to the response effort.
14:32 **A.** I was a project manager in what became known as the BOP Connections Team, organizing in the tasks of that members of that team.
14:32 **Q.** Now, before discussing your work on the response, I would like to talk a little bit about your background.
14:33 Can you please provide some information about your educational background.
14:33 **A.** I was educated in Ireland, finishing with a degree in engineering, science, and mathematics at Trinity College Dublin.
14:33 **Q.** Can you please describe your professional credentials.
14:33 **A.** I'm a chartered engineer and fellow of the UK Institution of Mechanical Engineers.
14:33 **Q.** Can you describe your professional work experience.
14:33 **A.** I have worked for BP since 1978 -- initially in pipeline engineering, then in subsea inspection and maintenance, followed by subsea projects.
14:33 **Q.** Can you provide a little bit more detail about the work that you have done with respect to subsea projects.
14:33 **A.** Most notably, in the mid to late '90s, I was subsea team leader for the Schiehallion subsea development west of Shetland in the UK, a deepwater subsea project. Following which, I was

14:33 seconded for a period into the Total project to provide input
14:34 from our experience in BP into the Total project for Angola. I
14:34 came to Houston in 2000 to work on Holstein development and
14:34 have been largely involved in work in Houston since that time.
14:34 **Q.** Can you describe what type of subsea equipment you have
14:34 worked on in your experience.
14:34 **A.** It's a full range of subsea equipment. Wellheads, subsea
14:34 trees, subsea jumpers, manifolds, flow line and riser systems
14:34 and their associated control systems.
14:34 **Q.** Now, with respect to the *Deepwater Horizon* response, I
14:34 think you identified that you were a member of a specific team;
14:34 is that right?
14:34 **A.** That's correct.
14:34 **Q.** What was that team?
14:34 **A.** Initially, it was named the Swing Valve Team and later
14:34 became known as the BOP Connections Team.
14:34 **Q.** What role did you have with that team?
14:34 **A.** Essentially, I was the project manager for a number of the
14:34 activities there.
14:34 **Q.** What was the purpose of the BOP Connections Team?
14:34 **A.** When I joined, which was April 30, the two main roles or
14:35 goals of that team were to establish methods and procedures and
14:35 equipment to allow us to cut away the damaged riser from the
14:35 top of the LMRP of the *Deepwater Horizon* stack; and secondly,
14:35 to devise some means of attaching a capping device to the flex

joint at the top of the LMRP on the stack.
Q. Now, when did the Response Team start looking at a way of attaching a capping stack to above the LMRP?
A. I believe it started approximately April 27.
Q. Now, can you describe who was on the BOP Connections Team?
A. There were a range of expertise engineers who had experience in subsea system design, subsea installation activities, ROVs, subsea installation tooling development, pipeline engineering, welding, and stress analysis, amongst others.
Q. Can you briefly describe how the BOP Connections Team worked to meet the goals that were set for it?
A. We were based in BP's offices at Westlake in Houston in the crisis center. We normally worked 12-hour days or more from 6:00 in the morning to 6:00 in the evening continuously during the response with occasionally time off for pressing family or personal matters.
Q. Did the BOP Connections Team work with other members of the response?
A. Yes, we did. We worked primarily with the Well Capping Team and the Subsea Installation Team that were operating -- controlling offshore operations from the hive at Westlake.
Q. Did the BOP Connections Team work with other members of the industry during the response?
A. Yes. Through the Well Capping Team, we worked with

engineers and personnel from Transocean and Cameron. We also had Oceaneering supporting us based at Westlake. We engaged, as part of our response, support and engineering services and fabrication services from companies such as INTECSEA and Oil States. And we also had some engineers assigned to us from Exxon early in the response to help with some of our studies.

Q. Now, did the BOP Connections Team have any interaction with MMS or the Federal Science Team?

A. Yes. We used to have daily briefings in the morning and end of the afternoon in Houston. And from the start, members of MMS and Coast Guard would attend those briefings, ask any questions. And if there were activities they were interested in that we were planning to do during the day, they would come and participate in those meetings. Later, in May, when the Government Science Team came onboard, I gave them some initial briefings on what our work plans were and what we were thinking and later gave updates and gave assurance reviews at their request as the work progressed.

Q. You talked earlier that the BOP Connections Team was tasked with the goal of attaching a capping stack above the LMRP, correct?

A. That's correct.

Q. Why was the BOP Connections Team asked to look at attaching a capping stack above the LMRP?

A. We were assigned to that location. There were others

working on attaching on top of the BOP, if the LMRP could be removed. So we were essentially looking at an alternative option.

MR. COLLIER: Now, if we could pull up D-23272A, please.

BY MR. COLLIER:

Q. Mr. Smith, can you identify for the Court where the BOP Connections Team was looking to attach a capping stack.

A. Yes. I'll use this laser pointer on the screen over here if that helps.

We were looking -- this is the flex joint and we were looking -- there's a flange at the top of the flex joint, and that's where we were looking initially to make the connection. And that's where, ultimately, we did make the capping connection.

Q. What is the flex joint?

A. It's an articulated joint that allows the riser from the drillship above -- it allows the drillship to move around on the surface around the fixed point of the BOP stack on the seabed. It's an articulated device.

Q. You mentioned a flex joint flange; can you identify where that is?

A. It's this flange right here where I'm pointing with the laser pointer.

Q. Did the BOP Connections Team look at other areas to attach

14:39 the capping stack?
14:39 **A.** Yes. If it was proven difficult or not possible to remove
14:39 that flange, we looked at connecting on the body of the flex
14:39 joint, gripping and sealing there on the main body I'm showing
14:39 here. Also looking at a way of connecting above with the
14:39 flanges still in place. Plus, we looked at unbolting the
14:39 flange at the base of the flex joint but discounted that as
14:39 being too difficult.
14:40 **Q.** Now, do you have a demonstrative prepared that shows the
14:40 flex joint flange in more detail?
14:40 **A.** Yes, I do.
14:40 **MR. COLLIER:** If we can pull up D-23274A, please.
14:40 **BY MR. COLLIER:**
14:40 **Q.** Using this slide, can you describe, Mr. Smith, in more
14:40 detail the flex joint flange.
14:40 **A.** Yes. This diagram here on the right is sort of a top-down
14:40 look at the stub of pipe that was left after the riser was cut.
14:40 Here's the flange. It's about 3.5 feet in diameter. It's held
14:40 together by six bolts around the perimeter. And in the center
14:40 is the large marine riser pipe, which was sheared by the
14:40 cutting device. Showing it after it was sheared. And around
14:40 the outside of it, there are also four service lines that
14:40 protrude through the flange that had been cut off.
14:40 **Q.** Prior to the *Deepwater Horizon* incident, had anyone
14:40 attached a capping stack to a flex joint flange?

14:40 **A.** I'm not aware of that occurring, and I very much doubt it occurred.
14:41 **Q.** Now, did the 3-ram capping stack that was installed on July 12 use a connection method that was developed by the BOP Connections Team?
14:41 **A.** Yes, it did.
14:41 **Q.** What was the name of that design?
14:41 **A.** The connection met what we called the transition spool.
14:41 **Q.** Was the transition spool the only design that the BOP Connections Team worked on?
14:41 **A.** No, we worked on two other methods. We called them the flex joint overshot and the latch cap.
14:41 **Q.** Why did the team work on more than one option?
14:41 **A.** Because it wasn't certain we would be successful in unbolting this flange. So we wanted to have alternative options available.
14:41 **Q.** Did the BOP Connections Team work on those options one at a time?
14:41 **A.** We started with the transition spool, and as the complexity of that operation became apparent, we initiated work on these other two options. So at one point in time, all three were progressing in parallel.
14:41 **Q.** Have you prepared a graphic that shows the three connection options that the BOP Connections Team pursued?
14:42 **A.** Yes, I have.

14:42 **MR. COLLIER:** If we can bring up 23277, please.
14:42 **BY MR. COLLIER:**
14:42 **Q.** Can you describe for the Court the three connection
14:42 methods that the BOP Connections Team pursued.
14:42 **A.** Again, if I use the screen to demonstrate with the laser
14:42 pointer --
14:42 So the transition spool is the method we actually
14:42 ended up using, which is landing this device inside the top of
14:42 the flex joint after the flange was removed. Basically,
14:42 stabbing inside it and making up the two flanges at the bottom
14:42 here. On top of that was a connection hub down to the cap
14:42 line.
14:42 The next one is the flex joint overshot. It's a
14:42 large structural pressure chamber intended to be landed over
14:42 the flex joint and would grip and seal at the bottom base.
14:42 The final one is the latch cap, which was designed to
14:42 grip over the pair of flanges that couldn't be unbolted and
14:42 seal on the well neck of the flange above.
14:42 **Q.** I think you mentioned it was the transition spool that was
14:43 used to attach the capping stack on July 12, correct?
14:43 **A.** That's correct.
14:43 **Q.** What happened to the flex joint overshot and the latch
14:43 cap?
14:43 **A.** We paused working on the flex joint overshot after we had
14:43 built the main chamber and started doing machining of the

14:43 sealing elements. We did a hazard risk assessment and realized
14:43 that it could be stuck partway on during the installation
14:43 process -- and potentially irreversibly without having created
14:43 a seal -- and that would be making a situation that we wouldn't
14:43 have a connection method any longer. The latch cap was
14:43 proceeded all the way through to successful completion of
14:43 onshore testing to demonstrate that it worked.
14:43 **Q.** Now, were there challenges associated with installing and
14:43 connecting a capping stack above the LMRP?
14:43 **A.** Yes, there were several.
14:43 **Q.** Have you prepared a slide to help you explain those
14:43 challenges?
14:43 **A.** Yes, I have.
14:43 **MR. COLLIER:** If we could bring up D-23276, please.
14:43 **BY MR. COLLIER:**
14:43 **Q.** Mr. Smith, if you could explain some of the challenges
14:44 that the BOP Connections Team faced with respect to attaching a
14:44 capping stack above the LMRP?
14:44 **A.** Yes. So first we had to cut away the damaged riser
14:44 without creating damage to the stack and connection point that
14:44 remained. When we did that, we actually saw that there were
14:44 two sections of drill pipe trapped inside that cut section of
14:44 the riser. So now we needed to take on board: How do we land
14:44 this connection device, transition spool, on top of a flex
14:44 joint with this debris present?

14:44 Also, after we cut the riser, the flex joint, which had been pulled right over to its extreme limit of travel, recovered partially toward a central or vertical position, but not fully. And to land the capping stack, we wanted the flex joint to be in a vertical position, and also needed to hold it centrally in that vertical position. So we needed to develop tooling to push it, to straighten it up, and then to lock it in place.

14:45 Also, we needed to address the case of we are landing now additional weight onto the *Horizon* stack, the transition spool, and the capping stack. We needed to demonstrate that this whole assembly had structural integrity, that it would support the loads.

We needed to look very closely at the flex joint and the flange and the transition spool itself because those elements, the flange and the flex joint, were not designed for the full well shut-in pressure that we expected. They were rated for 5000 pounds per square inch operating pressure, and the expected well shut-in pressure was 8000 pounds per square inch pressure or above. So we needed to do a careful review to ensure that -- to assure ourselves that the equipment could take the additional pressure we were going to put on them above their normal allowable limits.

Q. What were the conditions of where this connection was going to take place?

14:45 **A.** Well, the Macondo *Deepwater Horizon* stack was 5000 feet
14:46 down in the Gulf of Mexico, very deep water and in the dark.
14:46 So basically we needed to come down there with tooling and
14:46 equipment that -- basically, we were going to lower stuff down
14:46 on wires and with drill pipe, and any dextrous activity needed
14:46 was going to have to be conducted by ROVs, underwater remotely
14:46 controlled devices with two hydraulic arms with certain limited
14:46 capabilities. So we needed to devise solutions that worked
14:46 within the capabilities of -- limits of those constraints I
14:46 just described.
14:46 **Q.** Now, did the BOP Connections Team face challenges with
14:46 establishing the flex joint flange as a subsea connection?
14:46 **A.** Yes.
14:46 **Q.** Have you prepared a slide that discusses those challenges?
14:46 **A.** Yes, I have.
14:46 **MR. COLLIER:** If we can bring up D-23275, please.
14:46 **THE COURT:** Mr. Smith, why don't you move that
14:46 microphone a little closer to you. Thank you.
14:46 **THE WITNESS:** Thank you.
14:46 **BY MR. COLLIER:**
14:46 **Q.** Mr. Smith, if you can please describe some of the
14:47 challenges the BOP Connections Team faced with making the flex
14:47 joint flange a subsea connection?
14:47 **A.** Yes. So first, fundamentally, that flange was not a
14:47 subsea connection -- normal subsea connection. In fact, it was

intended -- its purpose is to be made up on the deck of the drillship as the riser is run and it's bolted up by personnel on deck using hydraulic tooling. It's not a conventional subsea connection point like you would have at the wellhead or at the top of the BOP. So we needed to devise a way of forming a connection at that point and offering a more conventional landing point or connection point for the capping stack itself.

Q. Can you describe in more detail some of the specific challenges that were faced with respect to making that subsea connection?

A. Yes. So we had to get access to the bolts. Four of them were relatively directly accessible by tooling, but one of them had the head of the bolt gouged by a circular saw as the ROV was cutting away a flap of steel from the drilling riser after it was sheared. And the crimping action of the drilling riser -- of the big shears, rather, on the drill pipe had also bulged the pipe on the opposite side of this diagram over -- or close to the head of one of the other bolts. So we weren't sure that we could get access on to that point with a torquing device.

Then having got access, we needed to loosen the bolts and tighten them back up after the flange connection was made to get appropriate torque. We learned in the course of the response that sometimes, on the rig of the drilling vessels, the captive nuts that sit beneath the flange on the flex joint

14:48 in this case -- or the captive nuts on the flange could drop
14:48 away. So as we were making up the flange, if the nut wasn't
14:48 present, there was nothing for the bolt to tighten into. So we
14:48 had to devise a tool so the ROV -- if this event happened --
14:49 could come and present a new nut while it was starting the
14:49 threading of the bolt above.
14:49 As we looked into it, we realized that this flange
14:49 had a volume of -- cavity of air trapped between the two
14:49 flanges, and down at 5000 feet, that air at that atmospheric
14:49 pressure with the external sea pressure on that large area
14:49 created a very large clamping force holding the flanges
14:49 together. So to lift the flange off, we would need to apply
14:49 force to separate the flanges and lift them away.
14:49 And potentially there was also the force of that flap
14:49 of metal in the middle of this diagram gripping, potentially,
14:49 drill pipe inside that could also provide resistance to
14:49 separating the flanges.
14:49 With the flange moved, we were expected to see and
14:49 did see stubs of pipe sticking up from the four service lines.
14:49 We needed to develop tooling to lift those stubs out because we
14:49 weren't sure how difficult that would be.
14:49 Then, with the flange ready to land the transition
14:49 spool, we had to bring the transition spool down, land over the
14:50 protruding drill pipe in the correct orientation to get all six
14:50 bolt holes lined up so that the flange bolts could be made up,

and also without damaging the sealing elements on this new flange we were coming down by gashing them against the drill pipe.

Finally, with the flange bolted up and landed, there was one further leak point we wanted to address, which was one of these service line stabs. The mud boost line outlet was a potential leak path because we suspected the valve was leaking earlier in the response, and we wanted to fit a plug into that location. So we did achieve these objectives.

Q. Did you share all of these challenges that the BOP Connections Team faced with the U.S. government?

A. Yes. We described what we were planning and doing in the series of reviews and presentations with the Government Science Team.

Q. You mentioned a number of tools that the BOP Connections Team developed to address these challenges. Have you prepared a slide that shows some of those tools?

A. Yes, I have.

MR. COLLIER: If we go to D-23766, please.

BY MR. COLLIER:

Q. Mr. Smith, can you describe some of the tools that the BOP Connections Team developed with respect to installation of the transition spool?

A. Yes. I can see it's clear on the screen but over here on the left, first, is the jacking system. So we needed to have

14:51 tools to push the flex joint to a centralized position or a
14:51 near-vertical position and then to lock that flex joint in
14:51 place, so it couldn't tilt further after the weight of the
14:51 capping stack was installed. So we devised a jacking system
14:51 based on a series of metal blocks that were handed around the
14:51 perimeter of the bottom of the flex joint to push the flex
14:51 joint vertical and a similar series of blocks to hold it in
14:51 position. We developed three different tools to separate the
14:51 flanges, two versions of this flange-splitter tool and the one
14:52 we actually used was this large flange overshot, which grips
14:52 the outside of the upper flange and lifted it away on drill
14:52 pipe.

14:52 Also shown in the picture there is the torque tool of
14:52 the type used to undo the bolts and to tighten them back up to
14:52 the desired torque.

14:52 **Q.** Are these all of the tools that the BOP Connections Team
14:52 developed during the response?

14:52 **A.** No. We also had tools to pull out the stubs and --
14:52 typically, we had several varieties of tools as contingencies.
14:52 We had stub pulling tools; we had assembled also large saws
14:52 that could be operated by the ROV in case we had to cut away
14:52 some of that metalwork that was deformed on the riser stub. So
14:52 there was a number of additional tools.

14:52 **Q.** Were these installation tools available before the
14:52 *Deepwater Horizon* incident?

14:52 **A.** Some of the more conventional ROV tools were. The
14:52 hydraulic torque tool there is a topside-based tool we adapted
14:52 for subsea. But the jacking system, the flange overshot, the
14:52 flange splitter, all of those -- and the stub pulling tools
14:53 were developed specifically for the geometries and details of
14:53 what we faced subsea.
14:53 **Q.** When were the installation tools ready to use to install
14:53 the capping stack and the transition spool?
14:53 **A.** The last tool that was installed subsea was the -- were
14:53 the restraint blocks on the flex joint to hold it in its
14:53 vertical position. They were installed -- they were the
14:53 critical path. They were installed on July 7, and at that
14:53 point, with the flex joint held in a centralized and
14:53 near-vertical position, we were ready to move ahead with the
14:53 capping operation.
14:53 **Q.** You mentioned the physical testing that the BOP
14:53 Connections Team conducted with respect to installing the
14:53 capping stack. Can you describe what type of physical testing
14:53 your team conducted?
14:53 **A.** Yes. There is the jacking system photo there and the
14:53 flange splitter indicate those sort of tests. We mocked up the
14:54 representation of what was on the *Horizon*, both subsea and
14:54 tested the tools against that condition to demonstrate they
14:54 worked, to perfect the procedure for installing those tools so
14:54 that we could describe that procedure, present that procedure

to the offshore personnel.

Q. Why did the BOP Connections Team conduct physical testing?

A. Well, these were all new tools. Most of them, almost all were new tools. And there's a general subsea principle of test something onshore before you put it in the water and try and use it for the first time. So given our special circumstances here with new tools with some uncertainties of the conditions subsea, we needed to test them all, sometimes repeatedly, to get them to the condition we wanted.

Q. Approximately how many tests did the BOP Connections Team run?

A. In total, I can't give you a complete answer. But, for example, the flange splitter tool or the jacking system went through multiple -- three to five tests to get them finally perfected.

The largest number of tests were performed on the transition spool to finalize the guidance device, to get over that challenge of how do you land that device on top of the flex joint with potentially two bits of drill pipe sticking out. And there we ran trials of 70 or so individual runs in a land-based mockup to finalize the guidance system.

Q. Did the team change anything about the transition spool design based on the physical testing it performed?

A. Yes. The original version of the transition spool was ready around mid-May. And when we used that original version

14:55 in those trials I just described, we realized that the guidance mule shoe -- the guidance system wasn't strong enough to deal with the potential risk of clashing with the drill pipe.

So we made the guidance system stronger. We made the edges of the guidance system harder so they would ride over potential gashes in drill pipe that could claw at it. We changed the guidance pins to a long and a short version and put guide wires on the tips of these pins so the ROV could pull the transition spool down. We put a connection hub on top of the transition spool so that the capping stack could be landed as a separate operation.

And originally we had the mud boost plug integral with the transition spool as it was landed. We felt that presented a risk, so we designed it to be installable after the transition spool itself was landed.

Q. Could the transition spool and capping stack have been successfully installed without performing the physical testing?

A. I don't believe so. There was too much risk of encountering a problem that we hadn't thought about if we hadn't done testing.

MR. COLLIER: Now, if we can bring up D-24355, please.

BY MR. COLLIER:

Q. Mr. Smith, if you can describe what this particular picture shows.

14:56 **A.** This is the transition spool assembly after -- on the way to or coming back from a pressure test after we had done its first construction.

So the yellow assembly in the middle there, that is the transition spool itself. It's about 6 feet long, big flange on the end, and a dummy base to it here that the guidance system was inside. And it's on the back of a flatbed truck. So you get a feel for the scale there.

Q. I would like to talk about other areas of the capping stack development for a moment. Were you involved with other aspects of the development and installation of the capping stack?

A. Yes. I provided input to the Well Capping Team on two aspects relating to the capping stack.

Firstly, in early June, after the views that we needed to develop this cap as a containment device, I got the Well Capping Team to convert the side outlet valves into a fail open position as opposed to a fail closed position. And later, on the request of the Government Science Team, I arranged for an accurate, very accurate pressure transducer to be fitted to the capping stack.

Q. Now, during the response did the design of the capping stack change?

A. Yes. It changed significantly.

Q. Have you prepared a demonstrative that shows how the

14:58 capping stack changed during the response?
14:58 **A.** Yes, I have.
14:58 **MR. COLLIER:** If we can bring up D-23774A, please.
14:58 **THE WITNESS:** So on the left here is the original
14:58 concept for the capping stack with an integral transition
14:58 spool, two rams, and on the right is the final assembly.
14:58 The upper part is the 3-ram capping stack, and
14:58 the bottom part, to which it's attached, is the transition
14:58 spool. There's a connection in the middle. So that is quite
14:58 different assemblies.
14:58 **BY MR. COLLIER:**
14:58 **Q.** Can you describe some of the differences between the 2-ram
14:58 capping stack and the 3-ram capping stack that ultimately was
14:59 used on July 12.
14:59 **MR. MILLER:** Objection, Your Honor. This witness was
14:59 not on the Capping Stack Team, and he specifically said in his
14:59 deposition, other than those two things he just mentioned, he
14:59 had no involvement with the capping stack. This witness has no
14:59 foundation to answer that question. It would all be based on
14:59 hearsay.
14:59 **MR. COLLIER:** Your Honor, that's not correct.
14:59 Mr. Smith did have ongoing interactions with the Well Capping
14:59 Team. That was an integral part of the work that he was doing,
14:59 was interfacing with them, and had a full understanding of how
14:59 that capping stack developed during the entire response.

14:59 **MR. MILLER:** I think counsel needs to lay a foundation then, Your Honor.

14:59 **THE COURT:** Go ahead. Ask some foundational questions.

14:59 **BY MR. COLLIER:**

14:59 **Q.** During the response, Mr. Smith, did you interact with the Well Capping Team with respect to the development of the capping stack?

14:59 **A.** Yes. And can I clarify or add that for a one-week period in early June I was actually accountable for the build of the capping stack. And it was during that point in time that I asked for the side outlet valves to be converted from fail close to fail open.

15:00 After that period I relinquished control of building the capping stack and focused more back on the transition spool activities as the Capping Stack Team resumed their work on getting the capping stack ready.

15:00 **BY MR. COLLIER:**

15:00 **Q.** Prior to that time in June, did you also interact with the Capping Stack Team or the Well Capping Team at that point in time, with respect to the response?

15:00 **A.** Yes. I was interacting with them back in this early stage where we were building that transition spool to be attached to the 2-ram version of the stack at that time.

15:00 **Q.** After the June time period, where you had control of the

capping stack development, did you continue to interact with the Well Capping Team with respect to development of the capping stack?

A. In respect to two things. One was attaching that, getting that pressure sensor sent down and attached --

MR. MILLER: Objection, Your Honor. This is hearsay. "Interact" means he got it from a different source. He is giving hearsay testimony. Other than that one week in June, he can't testify.

THE COURT: Are you just asking him what he was told by others who were actually doing that work?

MR. MILLER: In England they use the word "interaction," but I think it means what did somebody else tell you, which is hearsay.

THE COURT: What we are trying to understand, Mr. Smith, is whether what you're being asked about now is something that you have personal knowledge of or something you were told by people who were actually doing that work.

THE WITNESS: On the attachment of the pressure transducer, I was asked to send somebody down to arrange to -- somebody reporting to me to ensure that transducer got fitted. So the work -- we were actually asked by the capping team to develop the procedure and equipment, bring it to site, and get it installed. So somebody from my team was engaged there and reporting in to me. I wasn't personally down in Berwick

myself.

THE COURT: I sustain the objection.

MR. COLLIER: Your Honor, maybe I can clarify.

BY MR. COLLIER:

Q. Mr. Smith, did you have an understanding from your own personal knowledge as to the features of the 3-ram capping stack as it was installed on July 12?

A. Yes.

MR. COLLIER: Your Honor, if I may ask Mr. Smith, then, questions about what he understood to be the features of the 3-ram capping stack as of July 12, that would be based on his personal knowledge.

MR. MILLER: It has to be based on his personal knowledge. The source of that understanding can't came from others who were working on the 3-ram capping stack. He testified he never worked on the 3-ram capping stack himself.

MR. COLLIER: Your Honor, it was based on his personal knowledge, from reviewing engineering documents, from developing the work that he was doing with respect to the capping stack, and then also with respect to doing the work with respect to the pressure transducer that he understood the features of the 3-ram capping stack.

THE COURT: What was your involvement with the 3-ram capping stack beyond what you have already told us? I think you said in June you had some -- you were the one that came up

15:03 with the idea of the two side outlets.
15:03 **THE WITNESS:** No, not the side outlets themselves,
15:03 but to convert the valves that were there to fail open.
15:03 **THE COURT:** Fail open instead of fail --
15:03 **THE WITNESS:** They were fail closed.
15:03 **THE COURT:** What was your involvement with this, you
15:03 personally, after that?
15:03 **THE WITNESS:** I received reports on its status. I
15:03 arranged for our transition spool to be sent to Berwick, to be
15:03 mated, to be connected to the capping stack itself, to make
15:03 sure both fit together without any obstructions. I arranged
15:03 for the replacement of the original pressure sensor. When it
15:03 was found during that test onshore between the two components,
15:03 that they were slightly faulty, I arranged for a second
15:03 transducer to be fitted.
15:03 **THE COURT:** I sustain the objection.
15:03 **MR. COLLIER:** Your Honor, if I may ask a couple of
15:04 additional foundation questions that I think may clear up this
15:04 issue.
15:04 **THE COURT:** I think it's pretty clear. It's pretty
15:04 clear. Why don't you move on to something else.
15:04 **MR. COLLIER:** Your Honor, if I may ask Mr. Smith
15:04 about his involvement with respect to the installation
15:04 procedures for the 3-ram capping stack and developing those
15:04 particular procedures. I think that would be the basis, then,

for his understanding as to what features, then, the 3-ram capping stack had at the time of installation.

MR. MILLER: Installation is different from the manufacture, assembly, design. If he has personal knowledge as to installation, he needs to establish a foundation.

He was a 30(b)(6) witness for BP. He did not testify as to the installation issues in his deposition, in either his personal or corporate capacity.

THE COURT: Okay. I'll let you try to go at it that way.

MR. MILLER: Transition spool, I have no problems. He's clearly the fact witness with knowledge. But when we get into capping stacks, he specifically said--

THE COURT: Did he have something to do with installation?

THE WITNESS: Yes. Again, in that period in June when I was accountable for the capping stack, I had somebody on my team preparing the procedures for installation of the capping stack that were the foundation for the further evolution of those procedures, installation procedures, as the response progressed.

MR. COLLIER: Your Honor, if I may actually ask further questions.

THE COURT: Go ahead.

15:05 **BY MR. COLLIER:**
15:05 **Q.** Mr. Smith, did you also interact with the government in making presentations with regarding the capping stack and the features that the capping stack had?
15:05 **A.** That content was included in those presentations, yes.
15:05 **THE COURT:** You are back to that British word, "interact."
15:05 **MR. MILLER:** Can we take down the demonstrative, given that it's on capping stacks?
15:05 **THE COURT:** I don't think you are getting there, Mr. Collier. Maybe move on to another subject.
15:05 **MR. COLLIER:** Sure.
15:05 **BY MR. COLLIER:**
15:05 **Q.** Now, Mr. Smith, did you prepare presentations and provide presentations to the Federal Science Team during the development of the capping stack and transition spool?
15:06 **A.** I did, yes.
15:06 **Q.** In your presentations to the government, did you explain how the capping stack, the 3-ram capping stack could be used as a collection device?
15:06 **A.** I did, yes.
15:06 **MR. COLLIER:** If we can pull up TREX-9800.1.1, please.
15:06 **BY MR. COLLIER:**
15:06 **Q.** Do you see this, Mr. Smith, as an e-mail that you sent on

15:06 June 12, 2010, to members of the Response Team?
15:06 **A.** Yes, I do.
15:06 **Q.** If you can look at the body of the e-mail, it reads: "For
15:06 information - this is the presentation we made to the
15:06 Government Science Team on Thursday. We also reviewed the
15:06 backup slides with them"; is that right?
15:06 **A.** Yes.
15:07 **Q.** Is the attachment to this e-mail one of the presentations
15:07 that you gave to the Government Science Team?
15:07 **A.** Yes, it is.
15:07 **MR. COLLIER:** If we can go to 9800.4.1, please.
15:07 **BY MR. COLLIER:**
15:07 **Q.** Is this one of the slides that was presented in the
15:07 meeting with the Federal Science Team?
15:07 **A.** Yes, it is.
15:07 **Q.** I would like to draw your attention to Item 3 on the
15:07 slide. It reads: "Building longer term containment
15:07 system(s)." Do you see that?
15:07 **A.** Yes, I do.
15:07 **Q.** Can you explain what that means.
15:07 **A.** At that stage of the response, you had the *Enterprise* and
15:07 the *Q4000* collecting oil out of the capping stack, and
15:07 preparations were ongoing to add more collection capacity,
15:07 because at that point there was a view that -- the concern was
15:07 that it was not going to be possible to close in the well after

15:07 a capping stack was landed due to concerns of the downhole well
15:08 integrity. So the intent, the objective of the capping stack
15:08 was to add more connection points, connection offtake points,
15:08 that we could take flow to new surface collection vessels that
15:08 we were adding.
15:08 **Q.** Did you provide slides to the government scientists about
15:08 how the capping stack would work on a collection system?
15:08 **A.** Yes.
15:08 **MR. COLLIER:** If we can go to TREX-9800.8.1, please.
15:08 **BY MR. COLLIER:**
15:08 **Q.** If you can explain to the Court what this particular slide
15:08 shows.
15:08 **A.** So if I again use my pointer, this illustrates the 3-ram
15:08 capping stack landed on the -- the scenario where the 3-ram
15:08 stack landed on the *Deepwater Horizon* stack. And over here to
15:08 the left is a new containment system that was being
15:08 constructed. So we had two new surface collection vessels. We
15:08 built two new freestanding riser systems, and a manifold was
15:09 being built. So the intent was the side outlets on the capping
15:09 stack, we would take the flexible lines down to these manifolds
15:09 and back up to these additional surface collection vessels.
15:09 **Q.** Was there equipment that was added to the capping stack
15:09 that allowed for this collection system to be able to work?
15:09 **A.** That was the purpose of the side outlets. And we were
15:09 also looking at using the top outlet of the capping stack as a

potential source.
Q. Was the BOP-on-BOP option ever being developed as a collection system?
A. I don't know.
Q. Now, you also discussed earlier you worked on adding a pressure sensor to the capping stack; is that right?
A. I arranged for that to occur, yes.
Q. When did you arrange for the pressure sensor to be added to the capping stack?
A. It was in late June, after this was requested by the Government Science Team.
Q. For what reason was the pressure sensor added to the 3-ram capping stack?
A. My understanding, it was to be part of a well integrity test that had come into play as a potential outcome. Further work had indicated that perhaps a controlled closure of the well with accurate pressure readings could potentially determine if it was safe to leave the well closed in, and it was to provide the accurate data for that close-in activity.
Q. Now, when did you begin working on the capping stack solution?
A. When I joined on April 30.
Q. When was the 3-ram capping stack installed on the Macondo well?
A. It was installed on July 12, 2010.

15:10 **Q.** Based on your work during the response, are you generally aware of the activities that occurred between when you joined the Response Team and July 12 as it relates to the capping stack?

A. Yes.

Q. Have you prepared a demonstrative exhibit that provides a timeline of the activities relating to the installing and connecting the capping stack to the flex joint flange?

A. Yes, I have.

MR. COLLIER: If we can bring up D-23934, please.

BY MR. COLLIER:

Q. If you can explain to the Court -- I understand this is a rather busy slide, but if you can explain to the Court what this timeline shows.

A. It's to illustrate that there are four main bands of activity going on. There was the capping stack build activity itself. There was the transition spool build activity that would provide a connection point onto which to land the capping stack. There was offshore activities preparing for the capping operation, leading to the implementation of the capping solution. And above all of this were organizational or governance activities coordinating the work below and certain assurance processes leading to approval to initiate the capping operation. And all of these activities were converging on readiness in early July. All of those had to occur before the

15:12 capping operation could complete, could initiate.
15:12 **Q.** Now, if I can draw your attention to the band that says
15:12 "Installation Activities." There's an event on June 3. Do you
15:12 see that, Mr. Smith?
15:12 **A.** Yes, I do.
15:12 **Q.** It says "riser cut"?
15:12 **A.** Yeah.
15:12 **Q.** Can you explain what that event is.
15:12 **A.** That's when the large shearing device cut the damaged
15:12 riser away from the top of the LMRP.
15:12 **Q.** Based on the riser cut, was there any information learned
15:12 that influenced the connection method that was used to attach
15:12 the capping stack to the flex joint flange?
15:12 **A.** Yes. We saw that there was debris in the bottom section
15:12 of the riser that was cut, so we needed to work on a solution
15:13 to overcome or work around that debris in landing the
15:13 transition spool, leading to a series of tests to perfect the
15:13 guidance device and landing procedures. We also saw that the
15:13 flex joint didn't become centralized for whatever reason, so we
15:13 realized we needed to push it back to a central position and
15:13 lock it there.
15:13 **Q.** You also identified on the timeline on July 7 a first
15:13 version of Technical Assurance Report issued. What was the
15:13 Technical Assurance Report?
15:13 **A.** It was a document that addressed the points I raised

15:13 earlier about needing to ensure that the overall structural
15:13 integrity of the stack landed on the *Deepwater Horizon*, that
15:13 the whole system was strong enough to take the additional
15:13 loads, including the anticipated loads from the containment
15:13 offtake lines that were going to be added later. And also, it
15:13 included a detailed review of the pressure integrity, the
15:13 question of could we take the flex joint and flange above
15:14 5000 psi, the designed pressure limits. It addressed those
15:14 scenarios and gave assurance that, yes, these things could be
15:14 done in this particular case and the solution should work.
15:14 **Q.** Are you familiar with the Technical Assurance Report?
15:14 **A.** Yes. I read it before it was finalized.
15:14 **MR. COLLIER:** TREX-9575.1, please.
15:14 **BY MR. COLLIER:**
15:14 **Q.** Mr. Smith, do you recognize this as the cover page of the
15:14 Technical Assurance Report for the 3-ram capping stack?
15:14 **A.** Yes, it is.
15:14 **MR. COLLIER:** If we can go to TREX-9575.1.2, please.
15:14 **BY MR. COLLIER:**
15:14 **Q.** Can you identify the date on which the Technical Assurance
15:14 Report issued.
15:14 **A.** Revision 0 was issued on the 7th of July 2010.
15:14 **Q.** What type of engineering work did the Technical Assurance
15:15 Report contain?
15:15 **A.** It contained structural stress analysis of the

15:15 *Deepwater Horizon* stack with the added load from the capping
15:15 stack, a lot of stress analysis of the stress joints -- sorry,
15:15 the transition spool and the flange and the tension loads on
15:15 the bolts under the loads from the capping stack. It included
15:15 a detailed review conducted with the manufacturer of the flex
15:15 joint to get assurance that it could handle pressures above its
15:15 rate of 5000 psi, amongst other things.
15:15 **Q.** How many pages is the Technical Assurance Report?
15:15 **A.** With all the appendices, it's 500 to 600 pages, and it's a
15:15 binder about 3 inches thick.
15:15 **Q.** Could the capping stack have been installed without
15:15 preparation of the Technical Assurance Report?
15:15 **A.** No, because that assurance report demonstrated that the
15:15 solution we were about to embark on was likely to work. If we
15:16 hadn't completed that analysis, we wouldn't have known if we
15:16 had overlooked, potentially overlooked something important.
15:16 **Q.** Was the Technical Assurance Report shared with the
15:16 government and the Federal Science Team?
15:16 **A.** Yes.
15:16 **Q.** Now, you mentioned earlier that you gave presentations to
15:16 the Federal Science Team during the response relating to the
15:16 capping stack, correct?
15:16 **A.** That's correct.
15:16 **Q.** Now, did the Federal Science Team provide you any feedback
15:16 after those presentations?

15:16 **A.** Yes. In particular, the technical work being done in support, eventually documented in this Technical Assurance Report, was an in-depth review sometime mid to late June by the Government Science Team out of which came several recommendations and findings which we actioned.

MR. COLLIER: If we could turn to TREX-9575.160.1.

BY MR. COLLIER:

Q. Mr. Smith, do you recognize that as one of the appendices to the Technical Assurance Report?

A. Yes.

Q. Is this one of the presentations that you received from the Federal Science Team relating to the capping stack?

A. Yes, it is.

Q. Can you describe what the Federal Science Team provided in this document.

A. Yeah. We walked through what we were planning to do and the level, the degree of structural and pressure analysis we had done, and presented that to them.

The Tri-Labs were basically providing assurance to the government that the work we were doing was being done thoroughly and correctly. And they came up with a number of additional points they would like us to -- wanted us to action.

MR. COLLIER: If we can pull up 9575.175.1, please.

BY MR. COLLIER:

Q. Are these some of the recommendations and action items

that the government presented to the BOP Connections Team related to attaching the capping stack to the flex joint?

A. Yes.

Q. Were there other recommendations that the Federal Science Team made to the BOP Connections Team relating to the --

A. Yes, there were several.

Q. If we can focus on one of these, Recommendation Number 2.

MR. COLLIER: If we can bring up 9575.175.2.

BY MR. COLLIER:

Q. It reads: "Measures should be taken to limit maximum pressure during well integrity testing and well shut-in operations."

Can you explain what recommendation -- let me ask it a different way. Did the BOP Connections Team implement that recommendation from the Federal Science Team?

A. Yes. It was effectively implemented by the use of choke -- it was the last flow path out of the well -- to allow the well to be closed in. And by closing the choke in small steps and monitoring the pressure change at each point, we were able to monitor the pressure increase slowly over time as we closed in the well, as opposed to closing it in suddenly, which could have generated a pressure surge and not achieved this objective of limiting the maximum pressure.

Q. Now, were all of the recommendations and action items that the Federal Science Team provided to the BOP Connections Team

15:19 implemented?
15:19 **A.** I believe so, yes.
15:19 **Q.** Now, if someone were to describe the connections in
15:19 installing the 3-ram capping stack on the Macondo well as a
15:19 piece of cake, would you agree that is an accurate description?
15:19 **A.** No. I think that would be a very large simplification.
15:19 **MR. COLLIER:** Thank you, Mr. Smith. No further
15:19 questions at this time.
15:19 **THE COURT:** Mr. Miller, are you going to be a while?
15:19 **MR. MILLER:** 30 to 40 minutes.
15:19 **THE COURT:** Let's go ahead and take our afternoon
15:20 recess.
15:20 **MR. MILLER:** Thanks.
15:20 **THE DEPUTY CLERK:** All rise.
15:20 (Recess.)
15:40 **THE COURT:** Please be seated, everyone.
15:40 Mr. Miller.
15:40 **MR. MILLER:** Good afternoon, Your Honor. May I
15:40 proceed?
15:40 **THE COURT:** Yes.
15:40 **CROSS-EXAMINATION**
15:40 **BY MR. MILLER:**
15:40 **Q.** Mr. Smith, we haven't met. My name is Kerry Miller. I'm
15:40 a lawyer from Transocean, and I'm going to cross-examine you on
15:40 behalf of the aligned parties. Good afternoon, sir.

15:40 **A.** Good afternoon.
15:40 **Q.** The first part of your cross-examination I want to talk a little bit about your role in the response for BP. Mr. Collier had some questions at the beginning for you on that and just to summarize, let's pull up D-23231A.
15:41 While it's coming up, Mr. Smith, I think you said your title during the response was the project manager of the BOP Connections Team?
15:41 **A.** I said that was effectively the role I was fulfilling. My formal title in that team was delivery -- lead delivery manager. That might not have translated in a more normal term.
15:41 **Q.** I just want to clarify in terms of the various options -- and this is a slide that BP just created to summarize source control options -- what your role was and what your role wasn't and then we will talk about transition spools.
15:41 Mr. Smith, you had no involvement with the BP ROV intervention, correct?
15:41 **A.** That is correct.
15:41 **Q.** You had no role with the relief wells, correct?
15:41 **A.** That is correct.
15:41 **Q.** You had no role with the cofferdam, right?
15:41 **A.** Correct.
15:41 **Q.** We talked about your role with the capping stack. You were directly involved for one week in June and you described those activities, correct?

15:41 **A.** Yes.
15:42 **Q.** And then you were also heavily involved in the transition spools and the connector for the capping stack, correct?
15:42 **A.** That is correct.
15:42 **Q.** We will get to that substantive information in a minute. But you weren't formally part of the Capping Stack Team at BP, correct?
15:42 **A.** Not of the Well Capping Team, as we called it, yes.
15:42 **Q.** Mr. Smith, someone mentioned to me -- and I think it's happening -- if you can get closer to the mic, I think the folks back here in the overflow camp can't hear you.
15:42 **A.** I was not part of the Well Capping Team, correct.
15:42 **Q.** You weren't involved in Top Kill, correct, Mr. Smith?
15:42 **A.** That's correct.
15:42 **Q.** You weren't involved on the BOP-on-BOP Team, correct?
15:42 **A.** Correct.
15:42 **Q.** In fact, the title that Mr. Collier gave you of BOP connections is a bit of a misnomer because you didn't work on the BOP-on-BOP idea, did you?
15:42 **A.** That was the term we called our team was the BOP Connections Team.
15:42 **Q.** You didn't work on the BOP part of it, correct?
15:43 **A.** Not the BOP-on-BOP option, correct.
15:43 **Q.** There were people at BP who were both on BOP-on-BOP option and on capping stack option, but you weren't one of those

15:43 folks, right?
15:43 **A.** I was in neither of those activities.
15:43 **Q.** You didn't work on the RITT, correct?
15:43 **A.** That's correct.
15:43 **Q.** You didn't work on the Top Hat, correct?
15:43 **A.** That's correct.
15:43 **Q.** You didn't work on the Static Kill, correct?
15:43 **A.** Not directly, no. We were monitoring the stack at that
15:43 time, so that was part of the role of my team, but not on the
15:43 implementation of Static Kill.
15:43 **Q.** With respect to containment, as I understand it, you
15:43 described your function on containment in Mr. Collier's direct
15:43 examination?
15:43 **A.** That's a very broad term, "containment."
15:43 **Q.** So what was your role in containment specifically?
15:43 **A.** Ensuring that we, I guess -- I was interfacing with -- I
15:44 was part of the containment disposal project for a week also
15:44 and during that week in June, I was actually sitting in the
15:44 containment disposal project. So I was part of the team
15:44 enabling these additional offtake points that we would connect
15:44 up in due course to the Helix producer.
15:44 **Q.** That would have been the extent of your role on
15:44 containment?
15:44 **A.** In that sense, yes. With that knowledge I was able to
15:44 communicate the interfaces that would be needed on the capping

15:44 stack to that back to that containment team.
15:44 **Q.** Mr. Smith, you weren't involved in flow rate evaluations for BP, correct?
15:44 **A.** I was not.
15:44 **Q.** You weren't involved in evaluating risk of broaching, correct?
15:44 **A.** That's correct.
15:44 **Q.** You weren't involved in well integrity evaluations, correct?
15:44 **A.** That's correct.
15:44 **Q.** You weren't involved in burst disk risk evaluations, correct?
15:45 **A.** Not for the downhole well integrity. We did intend to install a -- potentially a burst disk device on the capping stack side outlet, but not the downhole ones, if that's what you're referring to.
15:45 **Q.** I was talking about downhole. In terms of within the organization at BP, is it correct that you didn't have any decision-making authority as to when these various source control options would be implemented or executed as they are called on this demonstrative, correct?
15:45 **A.** That's correct, I would provide input on the area I was working in.
15:45 **MR. MILLER:** You can take that down.

BY MR. MILLER:

Q. Thank you, Mr. Smith.

Mr. Smith, I know in your direct examination you mentioned doing some presentations with the Coast Guard, but you were not authorized on behalf of BP to report to the U.S. Coast Guard, correct?

A. I don't know if anybody in BP reported to the Coast Guard. I was providing information to the Coast Guard. They attended the briefings. They would hear what was said in the briefings we were giving, so in that sense I was communicating with the Coast Guard.

Q. Let's pull up your deposition, 337, pages 1 through 10, please.

Question at your deposition, Mr. Smith:

"QUESTION: Did you have interaction with the United States Coast Guard? So I assume you did not report to the United States Coast Guard?

"ANSWER: Correct. I reported within BP."

Do you see that answer, Mr. Smith?

A. I do, yes.

Q. That answer was correct when you gave it, correct?

A. Uh-huh.

Q. The next question is:

"QUESTION: And no one from the United States Coast Guard reported to you?"

15:46 Do you see that answer, Mr. Smith?
15:46 **MR. COLLIER:** I think this is improper impeachment.
15:46 I don't think that was the question Mr. Smith was asked.
15:46 **MR. MILLER:** I think it was, Your Honor. I asked him
15:46 if he was authorized by BP to report to the United States
15:47 Coast Guard.
15:47 **MR. COLLIER:** I think that's a different question
15:47 than what's being asked here in the deposition.
15:47 **THE COURT:** Well, okay. I think he has answered.
15:47 **BY MR. MILLER:**
15:47 **Q.** Is this testimony correct, Mr. Smith?
15:47 **A.** That testimony is correct.
15:47 **Q.** Thank you, sir.
15:47 **MR. MILLER:** Go back to that slide. I'm sorry. I
15:47 just want to get a date from it, and then we will talk about
15:47 transition spools.
15:47 **BY MR. MILLER:**
15:47 **Q.** According to this slide, Mr. Smith, BP began working on
15:47 the capping stack around April 23. Do you see that?
15:47 **A.** Yep.
15:47 **Q.** Is that consistent with your understanding, Mr. Smith?
15:47 **A.** I believe that is -- I believe the first thought of
15:47 capping was April 23, and the first meeting, I believe, of the
15:47 team working on that option was April 27.
15:48 **Q.** To connect the capping stack to the LMRP flex joint, you

needed a transition spool, correct?
A. That was the solution that we -- one of the solutions we worked on. That's the one we actually implemented.
Q. Let's talk about the BP Technical Assurance Report. Mr. Collier covered that with you.
To cut through some of this, Mr. Smith, there were three revisions or three versions of the BP Technical Assurance Report on well cap with triple-ram stack, correct?
A. Yes.
Q. Let's look at the initial version.
MR. MILLER: It's TREX-120129.1.1.TO.
BY MR. MILLER:
Q. That is the "Technical Assurance Report Well Cap with Triple-Ram Stack," correct, Mr. Smith?
A. That's correct.
Q. That's the document you gave testimony on during your direct examination, correct?
A. I attested that the Revision 0 was issued on July 7.
MR. MILLER: Let's turn to page 7 of this document, which is TREX-120129.7.1.TO.
BY MR. MILLER:
Q. This is on page 7 of the Technical Assurance Report. Mr. Smith, this is a component overview of what was ultimately used to cap the well, correct?
A. Yes.

15:49 **Q.** At the bottom this would be the wellhead casing on the seafloor, correct?
15:49 **A.** Yes.
15:49 **Q.** This would be the *Horizon* BOP, correct?
15:49 **A.** Correct.
15:49 **Q.** *Horizon* LMRP, correct?
15:49 **A.** Yes.
15:49 **Q.** Flex joint, correct?
15:49 **A.** Yes.
15:49 **Q.** This would be the transition spool, correct?
15:49 **A.** Yes. Just above the point where you had the pointer, yes.
15:50 **Q.** And finally on top, we have the triple-ram stack, correct?
15:50 **A.** That's correct.
15:50 **Q.** I think you testified on direct examination if you look at these dimensions here, from wellhead casing to top of triple-ram stack was 91 feet. Do you see that? Right here?
15:50 **A.** Yes. I wasn't asked dimensions in my direct.
15:50 **Q.** But what you did say was the transition spool was about 6 feet and that appears to be correct based upon this schematic, correct, Mr. Smith? I tell you how I did it --
15:50 **A.** Roughly scaling, but yes.
15:50 **Q.** If you take the 91, which is the total length, and you subtract the 53, which is the *Deepwater Horizon* BOP, and the 25, which is the triple-ram stack, it gives you about 13 feet split between the flex joint and transition spool, correct?

15:50 **A.** No. The line there, actually, the 26 -- 25 feet, includes the transition spool and the triple-ram stack. Is that what you are asking?

15:50 **Q.** Yes, correct. So it appears to be about 6 feet from this drawing, that's my question.

15:51 **A.** I would have to roughly scale it off. I know that in practice it was about 6 feet long.

15:51 **Q.** The pipe diameter here is 21 1/2 inches; is that correct, Mr. Smith?

15:51 **A.** I'm sorry?

15:51 **Q.** The pipe diameter of the transition spool?

15:51 **A.** Approximately that, yes. I'm not sure of the exact dimensions. I can't recall them right now.

15:51 **Q.** Let's go to page 28 of the Technical Assurance Report. It kind of focuses in on the transition spool, so we will do that at this point.

15:51 **A.** Can I just clarify that? The transition spool between flange dimension was 6 feet. There was a connector hub on top and the guidance devises below. So the overall length was more in the 10- to 12-foot range, I guess.

15:51 **Q.** We'll look at pictures of it later on in the cross-examination.

15:51 **MR. MILLER:** So let's pull up TREX-144745.28.1.TO, which is page 28 of the BP Technical Assurance Report.

15:52 **BY MR. MILLER:**
15:52 **Q.** Do you see this, Mr. Smith?
15:52 **A.** Yes.
15:52 **Q.** Again, this is in the BP Technical Assurance Report. It states "Transition Spool." And here's a picture of it. Here's a close-up, correct, Mr. Smith?
15:52 **A.** Yes.
15:52 **Q.** It states: "The transition spool is shown in Figure 13 and is comprised of three elements."
15:52 Are you with me, Mr. Smith?
15:52 **A.** Uh-huh.
15:52 **Q.** Number 1: "A GE/VetcoGray G-Series flange complete with male nose ring and 6 bolts."
15:52 Did I read that correctly, Mr. Smith?
15:52 **A.** You read that correctly.
15:52 **Q.** That would be the part here at the bottom, correct?
15:52 **A.** Yes. It doesn't show the male nose ring, which would protrude below that flange.
15:52 **Q.** Right. But that would be this part.
15:52 And then second is a 25-1/2-inch outer diameter time one WT X80 transition pipe and that would be this element, correct?
15:52 **A.** That is correct.
15:52 **Q.** Then finally, the third element would be the 18 3/4-inch
15:53 API 15K weld neck flange. That would be at the top, correct,

Mr. Smith?
A. That's correct.
Q. The capping stack would go on top of that flange, correct?
A. There would be a hub connection, a hub subsea connection bolted to the top of that flange, and that was part of the overall transition spool assembly, and the capping stack then landed on that and made up the connection to that hub.
Q. Thank you, sir.

The male G Series flange, that was a stock component from GE/Vetco, correct?
A. I can't recall whether it was in stock or whether it was taken from an existing joint of riser pipe we got from Transocean. I can't remember its provenance.
Q. But that male G Series flange was something that was quickly attained by BP, correct?
A. I believe so, yes.
Q. The pipe in the middle, that's just riser pipe, correct, Mr. Smith?
A. That is the -- yeah, drilling riser-type pipe.
Q. Uh-huh.

At the top, that's the well neck flange, which has API specifications, correct?
A. Correct.
Q. Let's go to same document, different page, TREX-9575.11.1.TO, which is page 11 of the final BP Technical

15:54 Assurance Report dated July 16. This is a table from that report.

Are you familiar with this table, Mr. Smith?

A. I can't recall the exact table, but, yes, I believe it was in the report.

Q. This is a document you testified to in direct examination that you read and reviewed, correct?

A. I did.

Q. So Component 2 was the transition spool, correct, Mr. Smith?

A. That's what's listed there.

Q. We were just looking at the transition spool, all three elements of it, correct?

A. That's correct.

Q. It was designed by INTECSEA, correct, Mr. Smith?

A. The overall concept of the assembly was developed by INTECSEA. Rather, just to repeat, that transition spool we looked at back there didn't include the hub at the top or the guidance device at the bottom. So we'll call that, perhaps, the transition spool assembly with all those components included, maybe, to be more clear.

Q. Then let's go back to that last slide. Let's see what BP called it. They called these three elements "the transition spool," correct? They don't call it "the transition spool assembly" or "the transition spool light," do they?

15:55 **A.** This is under a section entitled "Transition Spool," yes.
15:55 **Q.** It says: "The transition spool is shown in Figure 13 below."
15:56 And there you have a spool with three elements, correct, Mr. Smith?
15:56 **A.** I believe that, yes.
15:56 **Q.** Let's go back to the table. So we were talking about INTECSEA, the firm that designed the transition spool. Are they a well-regarded oil and gas engineering firm, Mr. Smith?
15:56 **A.** I believe so, yes.
15:56 **Q.** Let's turn to page 36 of this document.
15:56 **MR. MILLER:** So that would be TREX-19575.36.2.TO. It's page 36. It's just the highlighting underneath. Same page, I'm sorry.
15:56 **BY MR. MILLER:**
15:57 **Q.** There were manufacturing drawings from the transition spool that were attached to the Technical Assurance Report, correct?
15:57 **A.** I cannot recall specifically what attachments were there.
15:57 **Q.** I just want to show this to you, Mr. Smith. If you can see that, here it is again from the Technical Assurance Report. It says: "The manufacturing drawings from the transition spool are attached as Appendix E."
15:57 Do you see that?
15:58 **A.** I can read that.

15:58 **Q.** This comes from the BP Technical Assurance Report, correct, Mr. Smith?
15:58 **A.** I believe so, yes.
15:58 **Q.** Let's look at those manufacturing drawings.
15:58 **MR. MILLER:** Let's go to TREX-9575.457.1TO.
15:58 **BY MR. MILLER:**
15:58 **Q.** This would be the INTECSEA Transition Spool Design Report. Do you see that, Mr. Smith?
15:58 **A.** I do.
15:58 **Q.** That would have been the one that was attached as Exhibit E to the BP Technical Assurance Report on the 3-ram capping stack, correct, Mr. Smith?
15:58 **A.** Again, I don't recall specifically.
15:58 **Q.** What's the date of this document, Mr. Smith? It's May 7, 2010, correct?
15:58 **A.** That appears to be the date, yes.
15:58 **Q.** Let's look at some of these drawings. Let's pull page -- TREX-9575.520.1.TO, and this is one of the pages from Appendix E to the BP Technical Assurance Report.
15:59 Mr. Smith, what we have here is an engineering design drawing of the transition spool. Can you see that?
15:59 **A.** Yes.
15:59 **Q.** By INTECSEA, the design firm hired by BP to design it. Do you see that, Mr. Smith?
15:59 **A.** I see the logo, yes.

15:59 **Q.** And the date of design drawing is May 4, 2010. Do you see that, Mr. Smith?
15:59 **A.** I do.
15:59 **Q.** This would be the same transition spool design with the three elements that we saw in the BP Technical Assurance Report, correct, Mr. Smith?
15:59 **A.** Essentially, yes.
15:59 **Q.** These design drawings, they were very detailed engineering drawings, correct, Mr. Smith?
16:00 **A.** I would call this a very high-level generic drawing, not a detailed drawing.
16:00 **Q.** Let's look at some of INTECSEA's drawings.
16:00 **MR. MILLER:** Let's pull up 9575.512.1.TO.
16:00 **BY MR. MILLER:**
16:00 **Q.** This is another INTECSEA drawing. Do you see that, Mr. Smith? This was attached to the BP Technical Assurance Report.
16:00 **A.** Yes. I see that.
16:00 **Q.** Transition spool, Option 1, API 3/4-inch flange, and it's dated May 1, 2010. Do you see that, Mr. Smith?
16:00 **A.** Yes, I do.
16:00 **Q.** You mentioned, I think in your direct examination, that part of the design of the transition spool dealt with the alignment pins, correct, Mr. Smith?
16:00 **A.** Yes.

16:00 **MR. MILLER:** So let's pull up TREX-9575.519.1.TO.
16:00 **BY MR. MILLER:**
16:00 **Q.** Again, this is an INTECSEA engineering drawing of the
16:01 transition spool offshore G-flange alignment pin arrangement.
16:01 These are the alignment pins that you were talking about,
16:01 correct, Mr. Smith?
16:01 **A.** Those were an early version we used after we did the
16:01 series of onshore tests. With landing over drill pipe, we
16:01 modified the design of the guide pins.
16:01 **Q.** The date of this engineering design drawing is May 5,
16:01 2010, correct?
16:01 **A.** It seems so, based on the blowup, yes.
16:01 **MR. MILLER:** Let's pull up TREX-9575.518.1.TO.
16:01 **BY MR. MILLER:**
16:01 **Q.** And you talked about in your direct examination the mule
16:01 shoe. This is an INTECSEA engineering design document of the
16:01 mule shoe, which is at the bottom of the transition spool,
16:01 dated May 4, 2010, correct?
16:01 **A.** That's correct.
16:02 **Q.** Let's go back to the first page of this, Exhibit E. It's
16:02 TREX-9575.457.1.TO. This would be the full set. INTECSEA gave
16:02 BP a set of drawings and information from CAD on the transition
16:02 spool, correct?
16:02 **A.** Yes, that was for the first version of the transition
16:02 spool and its guidance system.

16:02 **Q.** These design drawings that came from INTECSEA, Mr. Smith, are you aware that Exhibit E to the technical assurance report is 87 pages of information from INTECSEA?
16:02 **A.** I don't recall the specific number of pages.
16:02 **Q.** Are you aware that the design drawings themselves of this 6-foot piece of steel of three elements consists of 22 pages alone, Mr. Smith?
16:02 **A.** Not -- I couldn't recall the number of pages.
16:02 **Q.** Let's go back to the July 16, 2010 final BP Technical Assurance Report, TREX-9575.
16:03 That was the last version -- there were three versions, like we talked about earlier, correct, of the Technical Assurance Report?
16:03 **A.** That's correct.
16:03 **Q.** The last version was dated July 16, 2010, correct?
16:03 **A.** Yes, that was Revision 2.
16:03 **Q.** That was one day after the well was capped, correct, Mr. Smith?
16:03 **A.** That is correct.
16:03 **Q.** It was four days after the transition spool was landed, correct, Mr. Smith?
16:03 **A.** That's correct.
16:03 **Q.** Now, the July 16, 2010 final BP Technical Assurance Report does not state that BP rejected any of the INTECSEA drawings, correct, Mr. Smith? Any of the drawings of the transition

16:03 spool, correct, Mr. Smith?
16:03 **A.** I don't know if it did or did not.
16:03 **Q.** Likewise, Mr. Smith -- I have looked at the whole
16:03 document -- the July 16 of 2010 final BP Technical Assurance
16:03 Report does not contain any engineering change notices that BP
16:04 would have issued to INTECSEA in connection with its design of
16:04 the transition spool; are you aware of that, Mr. Smith?
16:04 **A.** I don't recall.
16:04 **Q.** Let's go back to D-23231A, back where we started, because
16:04 we're not going back to these roles.
16:04 The work on the transition spool, as I understand
16:04 it -- and I want to make sure my understanding is correct,
16:04 Mr. Smith -- that would have been included within the bar here
16:04 for the capping stack; do you have that understanding as well,
16:04 Mr. Smith?
16:04 **A.** No, I do not. I do not recognize this slide or what it's
16:04 actually intended to represent. So I don't know where the
16:04 transition spool would go in here. It appears to be -- the
16:04 transition spool and the development of the connection system
16:04 does not appear to be included within the scope of this slide
16:04 for some reason.
16:04 **Q.** Mr. Smith, the transition spool was ultimately used as a
16:05 connection device for the capping stack, though, correct?
16:05 **A.** It was a connection device between the -- from the *Horizon*
16:05 BOP and the capping stack. It was necessary for the capping

16:05 stack to connect to the *Horizon* BOP.
16:05 **Q.** The BP Technical Assurance Report that we just studied
16:05 covered both the 3-ram capping stack that was used to cap the
16:05 well and the transition spool designed by INTECSEA, correct?
16:05 **A.** I'm sorry, could you repeat that question?
16:05 **Q.** The BP Technical Assurance Report that you told
16:05 Mr. Collier you had read and reviewed and we have been covering
16:05 the last five or ten minutes or so covered both the 3-ram
16:05 capping stack that capped the well and the transition spool
16:05 that you worked on, correct?
16:05 **A.** Yes, it covered both those items.
16:05 I'm sorry, I don't understand the source of this
16:05 slide and where the transition -- you asked me where the
16:05 transition spool scope is within this. I don't see that
16:05 represented here.
16:05 **Q.** Yeah, I just assumed it would call it the capping stack,
16:05 but if you don't know, you don't know.
16:05 **A.** No, it did not fall within the capping stack, so it's not
16:06 included on this slide.
16:06 Well, in my interpretation of the events -- I showed
16:06 you my diagram that there was capping stack activities and
16:06 transition spool activities. So I don't know the source of
16:06 this particular slide. So maybe the intent was it was covered
16:06 within the capping stack, but it's not clear to me that the
16:06 transition spool is included in the capping stack activity.

16:06 **Q.** Good enough. We may use it for a date reference later on, but we can take that down. And I want to ask you a question about an e-mail you sent to Jim Wellings.

MR. MILLER: Let's pull up TREX-140563.4.1.TO.

BY MR. MILLER:

Q. You know who Jim Wellings is, correct, Mr. Smith?

A. Yes, I do.

Q. Who was he?

A. He, at the time -- he is an engineer -- a drilling engineering manager who works for BP.

Q. We'll all get eye strain taking a look at this, but what the heck.

This is an e-mail from Trevor Smith dated May 23, 2010. Do you see that?

A. Yes, I do.

Q. It's to Jim Wellings, correct?

A. Yes.

Q. I know it's blurry, so I will have to duck down and read it. It states: "We shipped this assembly to Berwick on May 9 for use with the double-ram stack when the plan was to land on the flex joint top flange."

Do you see that, Mr. Smith?

A. I do.

Q. Are you able to make that out? Thanks.

A. Yes.

16:07 **Q.** Underneath, there's a little signal which indicates a jpeg file, correct? That would be here.
16:07 **A.** I see that, yes.
16:07 **Q.** The jpeg reference is to "trans" -- I think that means transition spool -- and "hydro spool," and the date is May 9, 2010. Do you see that?
16:07 **A.** I do.
16:08 **Q.** There would have been a picture attached to this e-mail that you sent to Mr. Jim Wellings, correct?
16:08 **A.** That should be the case, yes.
16:08 **Q.** Let's take a look at the picture.

Mr. Smith, are you familiar with this photograph?

16:08 **A.** I've probably seen it. I can't recall it instantly, but, yes, I know what it represents.
16:08 **Q.** And let me ask you: It appears to me to represent a photo of the transition spool taken on May 9, 2010, at 9:00 a.m. Do you see that, Mr. Smith?
16:08 **A.** I do.
16:08 **Q.** That date is consistent with the reference on the cover e-mail which said it was a jpeg from May 9, 2010, correct?
16:08 **A.** That's correct.
16:08 **Q.** What we see in this picture is the transition spool just like it appears in the BP Technical Assurance Report with its three elements and just like it appears in the INTECSEA design drawings, correct, Mr. Smith?

16:09 **A.** Yes, it has attachments at the bottom end and at the top end.
16:09 **Q.** Just quickly --
16:09 **MR. MILLER:** I've got the split screen -- just so we know what we're looking at, let's pull up the split screen between Figure 12 and this.
16:09 **BY MR. MILLER:**
16:09 **Q.** This is a split screen from the BP Technical Assurance Report, correct, Mr. Smith?
16:09 **A.** Yes.
16:09 **Q.** Figure 12, this is a photograph that you took on May 9, 2010, correct?
16:09 **A.** I didn't take the photograph, but it was --
16:09 **Q.** It's a photograph you sent to Jim Wellings, correct?
16:09 **A.** That is correct.
16:09 **Q.** The orientation is basically, if this were to rotate counterclockwise, that's how it would be laying on the ground. correct?
16:09 **A.** That's correct.
16:09 **Q.** You have the 18 and 3/4-inch API flange right here, correct, Mr. Smith?
16:09 **A.** Correct.
16:09 **Q.** You have the riser pipe right here, correct, Mr. Smith?
16:09 **A.** That is correct.
16:09 **Q.** And you have the male G-series flange right here, correct,

16:09 Mr. Smith?
16:09 **A.** That's correct.
16:10 **Q.** It's painted yellow, isn't it, Mr. Smith?
16:10 **A.** Yes.
16:10 **Q.** And it's fully assembled, isn't it, Mr. Smith?
16:10 **A.** It's assembled into its hydrotest device there, correct.
16:10 **Q.** This was just a dummy test device, correct?
16:10 **A.** Yes, to allow a hydrotest to be performed.
16:10 **Q.** Mr. Smith, there is -- it was shown yesterday in court -- I know you weren't here -- ROV footage -- you have probably seen it separately -- of the capping stack on July 12 being landed down below, on top of the transition spool. I'm going to show you a split screen.
16:10 **MR. MILLER:** Let's go to that split screen, please.
16:10 **BY MR. MILLER:**
16:10 **Q.** Again, this is the photograph from May 9, 2010, you sent to Jim Wellings on the left side of the screen, correct, Mr. Smith?
16:10 **A.** That's correct.
16:10 **Q.** On the right side of the screen, this was what was shown in court yesterday in terms of a video -- I just took a screenshot. I just want to make sure I understand what I'm looking at.
16:10 This appears to me -- right here, Mr. Smith -- to be the transition spool that you took a picture of on May 9, 2010,

correct?
A. Yes, that is correct.
Q. Again, here it is painted yellow, as assembled, correct, Mr. Smith?
A. Uh-huh.
Q. Here are the three components. Here's the first component we talked about, correct, 18 and 3/4-inch API flange, right?
A. That is correct.
Q. Here is the riser pipe that was welded to it, correct, Mr. Smith?
A. That is correct.
Q. At the bottom is the male flange, correct?
A. That is correct.
Q. Right out of the screenshot would have been the flex joint. That would have been right here, correct, Mr. Smith?
A. I believe right below where your red dot is would be the guidance device, potentially -- it would be connected at that point, wasn't it, to the flex joint. At this point, it was flanged into the flex joint.
Q. You talked about the guidance device. As I understand it, that consists of three basic elements. It consists of the mule shoe that was sort of the male device that was stabbed inside the flex joint, correct?
A. Yes.
Q. And then two guidance pins which were right here, on the

16:12 sides of the bolt, correct, Mr. Smith?
16:12 **A.** A long and a short guide pin, and each pin, a guide wire,
16:12 a tether, attached to the tip of it for the ROV to pull it
16:12 together.
16:12 And also, I could point out that, on the top of your
16:12 photo that's on the screen, there is the -- if I point in green
16:12 here with that -- this was the connection hub that was flanged
16:12 to the top of the transition spool on to which the connector of
16:12 the capping stack is about to land and connect.
16:12 **Q.** Correct.
16:12 **A.** Plus, there is the guidance sling arrangement attached
16:12 underneath the flange at the top of the transition spool is how
16:12 we slung it -- how we installed it. So there are additional
16:12 components making up that assembly that I referred to earlier
16:12 as the "transition spool assembly."
16:12 **Q.** These additional components, these are not welded; these
16:12 are basically add-on tools that were used to put it into place
16:13 and for the ROVs to latch onto, correct, Mr. Smith?
16:13 **A.** Yes. They were bolted on, I believe, as was the hub.
16:13 **Q.** Take a look at a PowerPoint presentation you created,
16:13 Mr. Smith, during your work in response for BP. That's
16:13 TREX-144408.1.1.TO. This is a PowerPoint dated May 11, 2010,
16:13 from Trevor Smith and Mark Nichols. Do you see that,
16:13 Mr. Smith?
16:13 **A.** I do, yes.

16:13 **Q.** Let's go to page 4 of the PowerPoint. I'm sorry, page 2.
16:13 The purpose of the PowerPoint, as I appreciate it, is
16:13 set forth on page 2 of the PowerPoint where you identify a
16:13 problem statement and it is: "Capping of the well with the
16:13 dual-ram capping stack or isolation valve assembly."
16:13 Do you see that, Mr. Smith?
16:14 **A.** Yes, I do.
16:14 **Q.** That was the purpose of your PowerPoint was to address
16:14 these issues or present these issues to others at BP, correct,
16:14 Mr. Smith?
16:14 **A.** It was presented in the overall context of the
16:14 installability of these devices. We have two devices using a
16:14 G-flange transition spool-type of component.
16:14 **Q.** Again, the date of this presentation, Mr. Smith, was
16:14 May 11, 2010, correct?
16:14 **A.** That's what I recall from the previous slide.
16:14 **Q.** Let's go to page 8 of this PowerPoint. That would be
16:14 TREX-144408.8.1.TO. You included in your PowerPoint
16:14 presentation to others at BP a schedule. Do you see that,
16:14 Mr. Smith?
16:14 **A.** Yes, that was a forecast of what we estimated it might
16:14 take to implement these activities.
16:14 **Q.** It was a forecast you created for your colleagues at BP,
16:14 correct, Mr. Smith?
16:14 **A.** That is correct.

16:15 **Q.** This forecast covers one month and it's the month of May 2010, correct, Mr. Smith?
16:15 **A.** It's not clear, but I believe that would be the case, yes.
16:15 **Q.** I have printouts of the calendar from 2010. If you have any doubts, I would be happy to show it to you, but do you agree it's the month of May, Mr. Smith?
16:15 **A.** I agree it's the month of May, yes.
16:15 **Q.** Thank you, sir.
16:15 Your forecast culminates at the end with "Well Capping," correct, Mr. Smith?
16:15 **A.** Yes.
16:15 **Q.** At the very end under the "Well Capping" section, it says: "Cap well."
16:15 Correct, Mr. Smith?
16:15 **A.** It does.
16:15 **Q.** You forecasted that date would be May 25, 2010, correct, Mr. Smith?
16:15 **A.** That was the forecast, and it's a draft view of a draft schedule, as it says at the top of the slide.
16:16 **Q.** Just bear with me for a second, Mr. Smith. I'm trying to get through this.
16:16 Let's pull up another e-mail that you would have received, Mr. Smith, from Charles Curtis. It is TREX-143045.
16:16 Mr. Smith, this is an e-mail from Charles Curtis dated the Sunday, May 30, 2010, to -- you actually were cc'd.

16:16 Do you see that, Mr. Smith?
16:16 **A.** I do.
16:16 **Q.** It was also to David Cameron at Transocean and John
16:16 Schwebel? Am I pronouncing that right?
16:16 **A.** Schwebel.
16:16 **Q.** He was a colleague of yours at BP?
16:16 **A.** That's correct.
16:16 **Q.** It says: "Dear John, Attached is a photo of the capping
16:16 stack this morning, May 30, around 11:00 a.m."
16:16 Do you see that, Mr. Smith?
16:16 **A.** Yes.
16:16 **Q.** This was a 3-ram capping stack that we are talking about;
16:16 this was the capping stack that we just saw on the screenshot
16:17 that was landed and capped the well on July 15, 2010, correct?
16:17 **A.** This was -- it appears to be the 3-ram stack in the course
16:17 of its build from the date.
16:17 **Q.** Mr. Curtis says to the recipients and carbon copies on
16:17 this e-mail that: "Completion date ready to ship offshore
16:17 Friday, June 4, 2010."
16:17 Correct, Mr. Smith? That's what it states, correct?
16:17 **A.** I'm sorry, I was reading. Where exactly is that?
16:17 **Q.** Right here.
16:17 **A.** Oh, sorry, yes. Highlighted, sorry.
16:17 **Q.** E-mail is from May 30?
16:17 **A.** Yep.

16:17 **Q.** E-mail from Mr. Curtis is saying completion date -- we are ready to ship offshore Friday, June 4, 2010?
16:17 **A.** That's what I take it to be Mr. Curtis' estimate at that time, yes.
16:17 **Q.** Let's go ahead and look at the attached photo.
16:17 Mr. Smith, can you confirm that this is the 3-ram capping stack that we saw in the ROV footage that was landed on July 12, 2010, and capped the well on July 15, 2010?
16:18 **MR. COLLIER:** Your Honor, I'm going to object to the extent that counsel made an issue out of Mr. Smith not having a foundation to identify the changes to the capping stack during the time. He shouldn't be able to now, on cross-examination, to probe the witness on the same issue.
16:18 **MR. MILLER:** This is a copy of a photograph that this witness received, Your Honor. I can rephrase my question and ask him if this is a photo that he received.
16:18 **BY MR. MILLER:**
16:18 **Q.** Was this a photo you received, Mr. Smith?
16:18 **A.** It's a photo I received, and it's of components of the capping stack but not the complete capping stack.
16:18 **Q.** There are 3 rams to this device, correct, Mr. Smith?
16:18 **A.** There are 3 rams to it. I see ROV panels missing. I see the side outlet hubs are not the ones that were installed subsea. Of course, there didn't include the pressure sensor that I arranged to be added. It may have -- I think the

16:19 guidance that was -- there was an additional guidance element
16:19 added to the capping stack -- I would have to check drawings --
16:19 at the bottom.
16:19 So it's not the complete capping stack. It's a
16:19 number of the components, but it's not the complete, finalized
16:19 capping stack. There's also a structural support member that
16:19 was installed under those side outlets later, on the drawings I
16:19 received.
16:19 **Q.** Okay, but this was a picture of it in whatever condition
16:19 it was in dated May 30, 2010, correct?
16:19 **A.** Yes, it was in the course of its development on that date
16:19 prior to Mr. Curtis' description.
16:19 **Q.** Sorry for the interruption, Mr. Smith.
16:19 Let's go back to the cover e-mail that this picture
16:19 came with. Again, Mr. Curtis wrote to you and to others that
16:19 completion date ready to ship offshore: Friday, June 4, 2010?
16:19 **A.** That was the forecast, evidently, he thought it would be
16:20 ready by, yes.
16:20 **Q.** I looked for it, Mr. Smith, and I couldn't find it. Did
16:20 you ever reply to this e-mail and say, "Mr. Curtis, you're
16:20 wrong. It won't be ready by Friday, June 4, 2010"?
16:20 Did you ever send that e-mail, Mr. Smith?
16:20 **A.** I was cc'd on that e-mail. It was input information to
16:20 us. It was -- I was receiving information; I didn't need to
16:20 respond to it.

16:20 **Q.** That wasn't my question, Mr. Smith. My question was: Did you respond to this e-mail?
16:20 **A.** I cannot recall. I might have said, "Thank you for the update."
16:20 **Q.** Did you tell Mr. Curtis in person, by e-mail, or over the phone -- or through sign language, any type of communication -- that he was wrong that the capping stack would be completed and ready to ship offshore on June 4, 2010?
16:20 **A.** I had no reason to send something back. That was his forecast at the time. He was the one on-site progressing the build.
16:20 **Q.** Let's go back and take a look at -- from your PowerPoint that we just looked at, your PowerPoint presentation -- TREX-144408.8.1. This was the schedule you made up, Mr. Smith.
16:21 On here -- I know it's hard to read, but what you have here, Mr. Smith, as I appreciate this document, is you set forth a projected time of six days. Do you see it says, "Ship assembly to *DDII*," right here?
16:21 **A.** Yes, I do see that activity.
16:21 **Q.** You are shipping the other information offshore. And you knew the shipment, under your projection, on May 19, correct?
16:21 **A.** On this schedule estimate, yes.
16:21 **Q.** So the time between the capping stack -- at this time, it was a 2-ram capping stack, but based on your projection at this point in time, based on the presentation you gave to your

16:22 colleagues at BP, you projected six days between shipment offshore and capping of the well, correct? From May 19 to May 25. Are you with me, Mr. Smith? Six days from shipment to cap?

A. That was the estimate we created at the time, yes.

Q. So let's go back to Mr. Curtis' e-mail -- just using that methodology in connection with Mr. Curtis' e-mail. Let's pull that TREX up.

Mr. Curtis says: "Completion date ready to ship offshore on Friday, June 4, 2010."

That was Mr. Curtis' projected ship date, correct, Mr. Smith?

A. That is correct.

Q. Under your projection you gave to your colleagues, you projected six days between shipment offshore and capping of the well, correct? In terms of logistical time period, correct, Mr. Smith?

A. In that early stage of the response, that was the estimate we created yes.

MR. MILLER: Thank you, sir. That's all I have.

REDIRECT EXAMINATION

BY MR. COLLIER:

Q. Mr. Smith, just a few follow-up questions.

Now, you were shown some drawings from INTEC, from -- I believe they were May 7 that was dated on those. Do you

16:23 recall that?
16:23 **A.** I do.
16:23 **Q.** Do you recall that that was a drawing and schematics
16:23 associated with the transition spool? Do you recall that?
16:23 **A.** Yes. It was an early version of the transition spool
16:24 assembly.
16:24 **Q.** Was there more to the transition spool that your team
16:24 created to connect the 3-ram capping stack to the flex joint
16:24 flange on July 12 than the drawings that were shown to you of
16:24 INTEC on May 7?
16:24 **A.** Yes. There was the perfecting of the guidance device,
16:24 making it more robust to be landed over the drill pipe. There
16:24 was the addition of the hub on the top. We took the mud boost
16:24 assembly off the valve, the block plug assembly off the side of
16:24 the spool, and made it a later addition. And, of course, we
16:24 had to develop a lot of the tooling. We realized we needed to
16:24 allow the flange connection to be made up and, of course, also
16:24 straighten and hold the flex joint in a vertical position to
16:24 allow the capping operation to proceed.
16:24 **Q.** Now, you were also shown a schedule, or Gantt charts,
16:25 relating to the capping stack. Do you recall that during
16:25 cross-examination?
16:25 **A.** Are you referring to the one on the PowerPoint slide that
16:25 I created?
16:25 **Q.** Correct.

16:25 **A.** Yes.
16:25 **Q.** How many rams did that capping stack have at that time, at least the design that you were identifying with respect to that schedule?
16:25 **A.** I think that schedule referred to the 2-ram version and potentially also referred to the single-valve capping device we also were working on at that time.
16:25 **Q.** Now, the capping stack that was installed on July 12, how many rams did that have?
16:25 **A.** It had 3 rams.
16:25 **Q.** I don't think I'm going outside your personal knowledge. That's a difference between the capping stack that you were providing in the schedule in May and the one that was actually installed on July 12, correct?
16:25 **A.** It's one of the differences.
16:25 **Q.** You identified during your direct examination that for a period of time you were in control of the capping stack development; is that right?
16:26 **A.** The build of the stack, I was responsible for it in that first week of June approximately.
16:26 **Q.** What changes to the capping stack design were changed at that point in time when you were leading that team?
16:26 **A.** The only activity I changed at that point in time was to get the side outlet valves converted from their fail-closed condition to fail-open because of the need for the device to

operate in a containment scenario.
Q. I think you testified earlier that one of the other additions was a pressure sensor. Is that correct?
A. That's correct. That happened late in June.
Q. One of the things that happened or occurred in June was testing of the connection system to connect the capping stack to the flex joint flange, correct?
A. Yeah. We brought the transition spool to Berwick to connect with the capping stack, if that's what you are referring to, and assembled both of those together and pressure-tested them.
MR. COLLIER: If we could bring up D-23934.
BY MR. COLLIER:
Q. This is the timeline that you discussed during your direct examination, correct, Mr. Smith?
A. Correct.
Q. If you can go to the bar that says "Transition Spool Activity." Can you identify some of the dates for the testing that was conducted for testing the connection system between the capping stack and the flex joint flange.
A. Yes. June 27 was the final test in Houston, and then we shipped it to Berwick and tested it and connected it up to the capping stack to make sure that it fit together correctly and could form a leak-tight connection.
Q. Was there testing performed before that point in time?

16:28 **A.** On the transition spool?
16:28 **Q.** Or the guidance system.
16:28 **A.** Yes. The June 7 to 13 was when we were taking that original version of the transition spool and its mule shoe guidance device devised by INTECSEA. And we tested that device in a mock-up of the flex joint with a range of different drill pipes to find out what the most appropriate guidance system would be to land over this drill pipe.
16:28 **Q.** Now, during the testing that was performed in June, were there changes that were made to the guidance system based on that testing?
16:28 **A.** Yes. We removed the -- we found that the original mule shoe was not strong enough, and under the potential loads it could see landing into the flex joint, it might crumple. We were concerned if it landed square onto the top of one of the drill pipes. So we made a thicker-walled guidance version of that original mule shoe concept. There were a couple of slots in the original design. We removed those. We made the nose of the mule shoe rounded so it would tend to glide over a drill pipe, and we made that surface hard so that it wouldn't catch on the drill pipe.

We also selected a short and a long guide pinned version. We also selected adding guide wires to allow the ROV to pull the transition spool into proximity with the lower flange.

16:29 **Q.** Did the transition spool assembly design change during the month of June?
16:29 **A.** Yes, as a result of those -- learning from those trials.
16:29 **Q.** During the cross-examination I didn't hear any discussion about the installation tools that your team developed. Did your team develop installation tools for the connection with the capping stack?
16:30 **MR. MILLER:** Objection, Your Honor. It's beyond the scope of my cross. Mr. Collier just said it.
16:30 **THE COURT:** Sustained.
16:30 **BY MR. COLLIER:**
16:30 **Q.** Now, you were asked some questions during cross-examination about a Charles Curtis e-mail. Mr. Smith, do you recall that?
16:30 **A.** Yes, I recall that.
16:30 **Q.** The e-mail related to the capping stack at that particular point in time. Do you recall that?
16:30 **A.** Yes, its condition and projected ship date.
16:30 **Q.** Were there changes made to the capping stack design beyond that point of time at the end of May?
16:30 **A.** These were changes -- the change I'm aware of and had influence over was adding the pressure sensor, but from the condition of the float -- the capping stack, as in the photo.
16:31 I know the side outlets were changed. I know that structural members were added. I know that ROV panels were

added. But the direction of those changes came from within that Capping Stack Team, which I was not personally a member.

MR. COLLIER: Thank you, Mr. Smith. No further questions.

THE COURT: Thank you, sir.

THE WITNESS: Thank you.

THE COURT: Who is your next witness, Mr. Brock?

MR. BROCK: Your Honor, our next witness is Adam Ballard. He is in the hall, and we will bring him right in.

ADAM BALLARD,

having been duly sworn, testified as follows:

THE DEPUTY CLERK: State your full name and correct spelling for the record, please.

THE WITNESS: Adam Ballard, B-A-L-L-A-R-D.

MS. KARIS: On behalf of BP, I have Dr. Ballard on direct examination.

VOIR DIRE

BY MS. KARIS:

Q. Good afternoon, Dr. Ballard. Could you please introduce yourself to the Court.

A. Yes. My name is Adam Ballard.

Q. Mr. Ballard, what company do you currently work for?

A. I currently work for BP.

Q. How long have you worked for BP?

A. I've worked for BP for over 11 years.

16:33 **Q.** What's your current job title?
16:33 **A.** I'm currently an executive assistant to our regional president.
16:33 **Q.** What is the job of an executive assistant to the regional president?
16:33 **A.** So in general it's to keep him informed of technical issues and prepared for meetings.
16:33 **Q.** Now, did you assist with BP's source control efforts following the *Deepwater Horizon* incident?
16:33 **A.** I did.
16:33 **Q.** How long were you personally involved in the efforts to stop the spill?
16:33 **A.** I was involved about a week after the incident started and was involved through mid-August.
16:34 **Q.** In addition to personally assisting with BP source control efforts, were you asked to provide certain expert opinions in this case regarding hydraulic modeling?
16:34 **A.** I was.
16:34 **Q.** Before we discuss your involvement and your opinions, I would like to give the Court a little bit of information about your background.
16:34 **MS. KARIS:** Actually, if we can pull up D-23212, please.
16:34 **BY MS. KARIS:**
16:34 **Q.** Mr. Ballard, does this slide accurately reflect your

educational background and some of the activities you have done in the industry in the past 11 years?

A. Yes, it does.

Q. Just give the Court an overview of your education and some of your professional activities.

A. Yes. I worked my way through college and earned a Bachelor of Science in mathematics, then went on to graduate school and earned a Ph.D. in chemical engineering. The focus of my work there was in applied mathematics, hydrates, and multiphase fluid equilibrium.

A summary of my professional activities: I have authored 29 publications in the area of flow assurance. I'm a member of two different societies or institutions and am involved in other industry-related activities.

MS. KARIS: Now, if we can pull up D-23213, please.

BY MS. KARIS:

Q. Dr. Ballard, does D-23213 accurately summarize your professional experience?

A. It does.

Q. Again, can you give the Court a little bit of an overview with respect to your professional experience.

A. Yes. I started with BP right after graduate school. For the first eight or so years, I worked in the area of flow assurance, both in the research and development side as well as technology in the projects side, designing production systems

as well as operations.

I have also spent time as an offshore operations engineer supporting on-site. And the role I had right before my current one, I was the engineering manager for *Thunder Horse* production platform.

Q. You mentioned that you have been a flow assurance engineer. What is a flow assurance engineer?

A. At a high level, it's basically applying hydraulic theory to production or oil and gas systems.

Q. In addition to being a flow assurance engineer, have you taught courses in the area of flow assurance?

A. Yes, I have. I have taught many.

Q. As a result of your education as well as work experience, are you familiar with hydraulic modeling that is used in the gas and oil industry?

A. Yes, I am.

Q. Just describe for the Court, what is hydraulic modeling that both you and Dr. Wilson spoke of?

A. Hydraulic modeling is, again, just applying hydraulic theory to a system. And in the oil and gas system, it would be wells, it would be subsea systems or topsides production systems.

Q. Are there a variety of different software packages that could be used to perform hydraulic modeling?

A. Yes, there are.

16:37 **Q.** What are some of those packages?
16:37 **A.** Some of the packages would be PROSPER, GAP, PIPESIM, OLGA, WellCAP, MBAL. There are several available ones.
16:37 **Q.** Are those the packages that were used in connection with some of the hydraulic modeling that was performed in April and May of 2010?
16:37 **A.** Yes, several of those were.
16:37 **Q.** Can you approximate for the Court on how many occasions you have used those very packages that you have just described or some version of them?
16:37 **A.** I have used each of those packages to some extent in my career. Total sum, on the order of hundreds to thousands of individual simulation runs.
16:38 **MS. KARIS:** Your Honor, at this time I would like to tender Dr. Ballard as an expert in hydraulic modeling and its use in the oil and gas industry.
16:38 **THE COURT:** Who is going to be cross-examining?
16:38 **MR. BRIAN:** No objection.
16:38 **THE COURT:** Okay. Without objection.

DIRECT EXAMINATION

BY MS. KARIS:

16:38 **Q.** Before we discuss the expert work you've done in this case, can you briefly tell the Court about your personal involvement in BP source control efforts.
16:38 **A.** Yes. I was involved about a week after the incident,

16:38 consulting with different groups; and then in mid-May, I got
16:38 seconded to the containment and disposal project, or the CDP.
16:38 I was on there until mid-August.
16:38 **Q.** Tell the Court, what is the containment disposal project
16:38 that you just described as CDP?
16:38 **A.** The CDP was a collection system that was designed to hook
16:39 up to the BOP or somewhere in that area and basically collect
16:39 the oil before it hit the seawater, and transport that oil and
16:39 gas through a subsea system to a floating production and
16:39 storage and offloading vessel, which was the *Helix Producer*.
16:39 **Q.** What was your role in connection with the CDP project?
16:39 **A.** My role was as a flow assurance engineer to design and
16:39 operate the subsea system.
16:39 **Q.** Did you perform any hydraulic modeling in support of the
16:39 CDP project?
16:39 **A.** Yes, I did.
16:39 **Q.** What was the purpose of the hydraulic modeling that you
16:39 performed?
16:39 **A.** The purpose of the hydraulic modeling that I did in
16:39 regards to the CDP was to ensure that the subsea system was
16:39 designed properly so that it could actually the flow the oil
16:39 and gas safely to the surface.
16:39 **Q.** Was the purpose of any of the hydraulic modeling you
16:40 performed aimed at estimating the flow rate or range of flow
16:40 rate from the Macondo well?

16:40 **A.** No, it wasn't.
16:40 **Q.** Now, in addition to performing some hydraulic modeling yourself in connection with the CDP project, were you asked -- you were asked to tender some opinions in this case with respect to hydraulic modeling done by other engineers, correct?
16:40 **A.** Yes.
16:40 **Q.** Just to orient ourselves, was your work done to respond to Dr. John Wilson's opinions, who the Court heard from earlier this week?
16:40 **A.** Yes, it was.
16:40 **Q.** Did you prepare a report stating your opinions?
16:40 **A.** I did.
16:40 **MS. KARIS:** If we can pull up 11905.1.1.
16:40 **BY MS. KARIS:**
16:40 **Q.** Is this the report that you prepared, titled "Rebuttal Expert Report of Adam L. Ballard, Ph.D."?
16:41 **MR. BRIAN:** Your Honor, just for clarification, I think there were some redactions in this report. I think there's an R version. I don't know if counsel is intending to use that or not.
16:41 **MS. KARIS:** We will definitely use the redacted version and submit into evidence the redacted version.
16:41 **MR. BRIAN:** In terms of my cross-examination, I have prepared questions based on the redacted version, so perhaps we can work off the same version.

16:41 **THE COURT:** It sounds like that's what she intends to do.

16:41 **MS. KARIS:** Yes, Your Honor.

16:41 **BY MS. KARIS:**

16:41 **Q.** Dr. Ballard, at a high level, can you describe for the Court what work you did in order to reach the opinions that you have reached in this case regarding hydraulic modeling.

16:41 **A.** Yes. So I drew upon my experience in the oil and gas industry as a flow assurance engineer. I also drew off my personal experience working in the response. And then about a year ago I served as the corporate representative for BP in regards to hydraulic modeling during the entire response.

16:42 **Q.** Let me stop you there. In order to serve as BP's corporate representative on hydraulic modeling, which was one of the issues that was requested, what work did you need to do in connection with testifying there?

16:42 **A.** So in preparation for that, I reviewed the totality of hydraulic modeling that was done during the response and talked to or had interviews with several of the people that were conducting the modeling, read the testimony of several of the people that were conducting the modeling, as well as reviewed the outputs of the slide decks and e-mails and reports.

16:42 And then to ensure that I really understood what that modeling was for, I actually took some of the models themselves and looked at those in the native software, like the PIPESIM,

PROSPER, and OLGA models, to ensure that I understood the assumptions that went into those models and how they were used.

Q. Now, in connection with your expert opinions in this case, is the hydraulic modeling that you're going to be speaking of the modeling done in April through May 31, 2010, as Dr. Wilson looked at?

A. Yes. So in preparation for this, I re-reviewed the material primarily in the April-May time frame.

Q. So you were telling us what you did to prepare the opinions in this report. You said you testified as a corporate rep; as a result of that, spoke to the individuals involved, did your own analysis of the modeling.

You reviewed Dr. Wilson's report and also heard his testimony here on Monday. Did Dr. Wilson do any analysis similar to what you did to understand the purpose of the hydraulic modeling?

A. Not from my understanding.

MS. KARIS: Now, I would like to pull up D-23214.

BY MS. KARIS:

Q. Dr. Ballard, does this summarize the opinions that you have reached in this case?

A. Yes, it does.

Q. I would like to start with your first opinion, which is that "neither BP nor any other party had the 'tools' in April and May 2010 necessary to reliably estimate the daily discharge

16:44 rates from the well using hydraulic models."
16:44 First, can you tell the Court, what does that mean?
16:44 **A.** What does that mean? From my analysis, there just wasn't
16:44 enough information available during that time frame to actually
16:44 do a hydraulic modeling analysis to determine the flow rate.
16:44 There were several uncertainties.
16:44 **Q.** We have *tools* there in quotes. What is the reference to
16:44 the tools?
16:44 **A.** So the tools I'm referencing are the tools that Dr. Wilson
16:44 references in his report. So that's PIPESIM, PROSPER, GAP,
16:44 OLGA, and some of the other tools as well.
16:45 **Q.** Now, did you observe Dr. Wilson's testimony here on
16:45 Monday?
16:45 **A.** Yes, I did.
16:45 **Q.** Dr. Wilson testified that in the course of their daily
16:45 activities, BP's engineers modeled flow from wells.
16:45 Is hydraulic modeling frequently applied in the oil
16:45 and gas industry in order to estimate the flow in a production
16:45 system?
16:45 **A.** Hydraulic modeling can be used and is used, but I would
16:45 not say it's frequent. It's certainly not on a daily basis.
16:45 **Q.** Is hydraulic modeling used in order to understand
16:45 production systems?
16:45 **A.** Absolutely.
16:45 **Q.** Now, how is hydraulic modeling used to understand

16:45 production systems? And then we'll talk about how it was used
16:45 in connection with the Macondo, on the system.
16:46 **A.** So in a production system hydraulic modeling is used to
16:46 primarily monitor the system and try to identify issues that
16:46 may be happening. So you would -- in a production scenario you
16:46 would know the rate of your system and you would know what the
16:46 system looks like. And you would use your model and you would
16:46 input the actual system -- what lengths of pipe and ID and all
16:46 the different parameters -- input the rate and look at what the
16:46 different pressures and temperatures look like in the system.
16:46 **Q.** Where do you typically get the rate from that you are
16:46 inputting?
16:46 **A.** You would get that from either a well test or just
16:46 basically your meters that you have on the production facility.
16:46 **Q.** Now, in your typical use of hydraulic modeling, you said
16:46 you get the rate from a meter. Was there such a meter at the
16:46 Macondo well that one could use in order to input into a
16:46 hydraulic model in order to understand flow?
16:47 **A.** No, there wasn't.
16:47 **Q.** You also mentioned a well test?
16:47 **A.** Yes.
16:47 **Q.** What's a well test?
16:47 **A.** A well test can take several forms. These are tests that
16:47 are required by regulatory on some frequency. And what you do
16:47 is you produce a well to a separator and you meter the oil that

16:47 comes out. And then you can also have an understanding of the different pressures in the system during that well test as well.

There's also well tests that can be conducted, such as like a pressure buildup test, and with that type of test you can understand different things.

Q. Is a well test typically done as part of the production process?

A. Yes. You need a production system to flow that to.

Q. Had there been any well tests done in connection with the Macondo well at the time of the incident, even though it was still in exploration?

A. Not from my understanding.

Q. Now, you did review a bunch of hydraulic modeling that was done in April and May of 2010 in connection with the Macondo incident, correct?

A. Yes, ma'am.

Q. Can you tell us what, if anything, was different from the typical industry situation where you are using hydraulic modeling to understand a well condition -- what was different at the Macondo incident?

A. So the big difference in the Macondo incident was you didn't have all the information that you would have in a normal production system, and the information you did have wasn't sufficient. There were too many uncertainties in the well to

16:48 be able to model it.
16:48 **Q.** Again, this is in connection with your opinion "and
16:48 neither BP nor any other party had the 'tools' in April and May
16:48 to reliably estimate the daily discharge rates from the well
16:48 using hydraulic modeling."
16:49 **MS. KARIS:** If we can now pull up D-23207B, please.
16:49 **BY MS. KARIS:**
16:49 **Q.** You reference that the significant difference between the
16:49 Macondo situation and your typical use of hydraulic modeling --
16:49 one of those differences, I should say, is the uncertainties
16:49 that existed.
16:49 Can you explain to the Court what you mean by that,
16:49 using this demonstrative?
16:49 **A.** This is an illustration of the Macondo well. What I mean
16:49 by uncertainties, I have listed a few here.
16:49 **Q.** Do you have a pointer?
16:49 **A.** I do.
16:49 So this is an illustration of the Macondo well.
16:49 There were several uncertain parameters in the system that were
16:49 just too uncertain, in my opinion, to actually be able to
16:49 conduct or create a hydraulic modeling estimate of flow rate.
16:49 **Q.** Tell us what some of those uncertainties were. The first
16:49 one you list is flow path?
16:49 **A.** Yes.
16:49 **Q.** What was the uncertainty regarding the flow path?

16:50 **A.** There was a lot of uncertainty about the flow path. There were two general flow paths that were decided could be potential. One was the annulus flow path, which I have depicted by this red line coming up through here. That would have been coming up around the casing annulus or around the casing, and that would have been due to a casing hanger failure. Then the flow would have come into the main wellbore.

There was a question at the time around whether there was drill pipe through the BOP or not, and there was thought to be either no drill pipe, one piece of drill pipe, or even potentially two. If there was drill pipe in there and the flow was going through that drill pipe, then one potential flow path would be going down the well and back up the drill pipe.

There was also a question about whether flow was going around the drill pipe through the BOP rams in this area, and if there was, then that would be another potential flow path.

Then, of course, there was a potential that you were flowing up the hole.

Q. What impact does not knowing the flow path have on the ability to use hydraulic modeling to estimate a flow rate?

A. So if you don't know the flow path, you don't know how to build the model, or at least the model of what the well actually looks like. You could certainly build separate models for each potential flow path.

16:51 **Q.** We are going to talk about that.

16:51 Restrictions to flow. Again, explain to the Court what you mean, that there were uncertainties regarding restrictions to flow as they related to hydraulic modeling.

16:51 **A.** So to talk about restrictions to flow, I guess the best way to describe what I mean by that is to expand upon Dr. Wilson's example that he gave to illustrate a simple hydraulic system, and that's the hose, like a garden hose.

16:52 So with a garden hose, you can have it hooked up to your city water through a spigot and have it open at the end. You can certainly flow water through that if you turn it on full blast. But you can actually -- so if you go to the middle of that hose, you could actually kink it. That kink would be a restriction to the flow through that hose. And so that's what I'm referring to when I'm talking about restrictions here or obstructions to flow.

16:52 There were several potential ones in this system. I will name a few.

16:52 **Q.** Go ahead.

16:52 **A.** One of them was, due to the presence of the drill pipe, if it was there and flow was going up that drill pipe, well, that drill pipe going through the BOP, when those BOP rams were activated, they would have potentially dented that pipe or crimped that pipe.

16:52 There were five different rams, and so if flow was

16:52 going up that way, each of those crimps within that pipe would
16:53 actually be considered a restriction, a potential restriction.
16:53 As mentioned earlier, for casing flow, in order for
16:53 that to happen, there would have to be a casing hanger failure,
16:53 which wasn't designed to have flow through it. So if flow were
16:53 going through it, it would be a restriction to flow.
16:53 As well, if flow was going around the BOP rams here,
16:53 each of those rams, which was in the closed position, would
16:53 create a potential restriction to the flow going through that.
16:53 It wouldn't be an open bore. There were five different ones.
16:53 Of course, the one you could see, which was the kink
16:53 in the riser, was thought to be a potential restriction to flow
16:53 as well.
16:53 **Q.** Was it known in April and May of 2010, when hydraulic
16:53 modeling was being conducted, which of those restrictions
16:53 existed?
16:53 **A.** It wasn't known.
16:53 **Q.** Other than the kink in the riser as you --
16:53 **A.** You can see the kink in the riser, but it wasn't known to
16:54 what extent it was kinking or restricting flow.
16:54 **Q.** Now, there's also reference to pay thickness,
16:54 permeability, and skin. And just briefly summarize what impact
16:54 that uncertainty about each of those has on the ability to
16:54 conduct hydraulic modeling, to estimate a daily discharge rate
16:54 or even a range, a reasonably reliable range of discharge rate.

16:54 **A.** So pay thickness, which is the sum of all the different net pay, has a potential to be up to 88 feet total. That's what the drilling logs showed. By design it was supposed to be cemented, and so it should have been zero feet of net pay or pay thickness that would be available to flow.

Due to the cement failure, it was unknown as to whether you had just a little bit open to flow or the full 88 feet and without knowing how much is open, that would highly affect the ability to model the rate coming out of that well to even bound it.

Permeability had some uncertainty to it as well. And skin, which is a factor that quantifies the effect of near wellbore damage or mechanical damage, wasn't known either.

Q. Did the fact that there were so many unknowns, flow path restrictions, multiple potential restrictions, pay thickness, permeability, and skin, did that fact affect the ability to accurately and reliably estimate flow in April and May of 2010 using hydraulic modeling?

A. Absolutely. And to illustrate that, I'll use the example with the hose again.

If I've got a hose -- so with hydraulic theory, it relies, as Dr. Wilson said, on knowing pressure to both ends and with two pressures you should -- if you know what the system looks like, you can determine the flow through it. With the Macondo system it was more like a hose with a constant

16:56 pressure on one end and a constant pressure on the other, but you had a bunch of kinks in it. Each restriction would potentially be a kink in that.

From a hydraulic modeling perspective, if I don't know anything about that kink, it could be kinked all the way to where there's no flow, and my pressures at both ends are the same, so hydraulic modeling can't tell, or it can be not kinked at all and potentially be flowing as much as it can through there as if there were no kink.

Q. Dr. Wilson testified there was a great deal of information known about the Macondo well and he cited reservoir fluids and properties. Was the information that was known about pressures or the fluids, the reservoir fluids, is that sufficient information in your opinion to allow you to use hydraulic modeling in order to estimate even a range of flow rates?

A. Not at all. The system wasn't known to a sufficient degree.

Q. There's been some testimony that while you might not be able to identify a daily discharge rate, you should at least be able to get a range by running a number of discrete scenarios, is what I believe they were referred to. Do you agree with that opinion?

A. No.

Q. Why not?

A. Well, I believe there are a discrete number of scenarios

you could run on flow path, as has been suggested, and there are many more than just the three. For any one of those flow paths, again, you don't understand -- or we didn't understand how to quantity the different restrictions in that system. So the best you could do was assume they weren't there and come up with a highest potential rate, but not bound it or range.

Q. You testified in preparation for the 30(b)(6) deposition you gave as well as for your recent testimony, you had spoken to a number of the engineers who were involved in the hydraulic modeling. Did any of them indicate to you that they thought their work would allow BP to estimate a range of flow rates based on the conditions known to exist at the time?

MR. BRIAN: Objection, hearsay, Your Honor. He can testify to his conclusions, but he can't relate specific hearsay statements of those employees. That's hearsay.

MS. KARIS: Your Honor, he is an expert. He can rely on his conversations. No different than him looking at documents.

MR. BRIAN: Experts can rely on reliable hearsay. Simply talking to people outside of the normal reporting chain is not the kind of hearsay that an expert can rely on. They can rely -- for example, if you do an audit pursuant to an ordinary course of audit due to a regular course of conduct. This is not what this is.

THE COURT: I overrule the objection.

16:59 **BY MS. KARIS:**
16:59 **Q.** You may answer.
16:59 **A.** No one I talked to said they could reliably predict flow rate during that time.
16:59 **Q.** Now, you just said nobody could reliably predict flow rate using the hydraulic modeling that was being performed in April and May. You don't dispute that there was, in fact, hydraulic modeling being done, correct?
16:59 **A.** No, I don't dispute that.
16:59 **Q.** Did you attempt to understand for what purpose that modeling was being done, since it wasn't for the purpose of estimating flow rate?
17:00 **A.** Yes, I did.
17:00 **MS. KARIS:** If we can go back to D-23214.
17:00 **BY MS. KARIS:**
17:00 **Q.** Your second opinion in this case -- tell the Court first what is your second opinion in this case.
17:00 **A.** So my second opinion is really the opinion as to what the modeling was actually used for, and that was to test robustness of different source control operations as well as to better understand the impact of different source control actions or the impact of changes in the conditions of the system.
17:00 **Q.** I would like to unpack that a little bit.
17:00 **MS. KARIS:** Let's use D23208.

17:00 **BY MS. KARIS:**
17:00 **Q.** When you say to test robustness of the operations and to better understand the impact, have you prepared this slide to assist you in explaining what that opinion is?
17:01 **A.** Yes.
17:01 **Q.** Tell us what this slide represents.
17:01 **A.** So what this represents is basically the different types of modeling or the purposes of the hydraulic modeling that was done during that time frame. It's grouped into two separate methods or separate purposes. One is what I have termed "what if." It was basically trying to answer a question of what if we do this source control action, what's the potential from the well. As well there was some modeling done around what if, what if there were changes in conditions, what would happen.

The second portion or the second purpose was really around evaluating worst-case scenarios and, again, that was in efforts to evaluate the robustness of the different operations.

17:01 **Q.** Can you explain how hydraulic modeling allows an engineer to assess a what-if scenario?
17:02 **A.** So hydraulic modeling can be used to look at a what-if by making certain assumptions in the model. Typically they would be biased toward the high end, and you would change the conditions to what the question you were actually asking about what if. So if -- what if we took the BOP off the riser or off the well, you could actually use the modeling to look, at least

17:02 qualitatively, what would happen in terms of -- in terms of what would happen.

Q. You said that typically it would be biased towards the high end. What do you mean?

A. What I mean is because you didn't know -- you couldn't tell with hydraulic modeling what a likely flow rate is from it, you could certainly with it use the upper end of all those uncertain variables. You could assume that you have a full 88 feet of net pay available to flow. You could assume that no restrictions were in this thing. You could assume the upper end of every variable that you don't understand and you would run the model under one condition and then you would run it under another condition to look at how the change potentially affects -- or what actually happens.

Q. Did much of the hydraulic modeling that you reviewed in fact assume or -- strike that.

For the hydraulic modeling that you reviewed that was performed in April and May, was it being run with this bias towards the high end?

A. I would say nearly all of it was, if not all of it.

Q. Based on your experience as well as the work you have done in this case, would that -- the fact it's run with a bias towards a high end reflect what the actual conditions at the well were?

A. Well, no. As I mentioned, hydraulic modeling couldn't

tell you what the actual was. It couldn't even give you a probabilistic understanding. It could give you the high end. It could answer the question, this is the most that could flow from this well. But there are restrictions in there or kinks in my hose and I can't tell with hydraulic modeling whether it's kinked all the way, I can't tell whether it's kinked partially, or not kinked at all.

Q. We will look at some of those models.

You also indicated here that some of the modeling was for the purpose of evaluating worst case scenario for source control operations. Explain what that means.

A. So what I mean by that is -- and this is really about -- around robustness of different operations -- is if I'm going to design a piece of equipment for a source control operation, I need to ensure that that equipment is going to be designed for whatever it may expect or whatever it may see when I use it.

And so not knowing the rate from the well but knowing what the most that can come from the well, there were quite a few hydraulic modeling efforts to look at helping to design systems and you would use the upper end because if you design it for the upper end of the most that this well could be making from a flow rate perspective, then whatever it does encounter you can be sure that it is sufficiently designed.

Q. Given the number of uncertainties you have identified for us, consistent with your experience, would it be prudent, if

17:05 you are going to run modeling for the purpose of source control
17:05 operations, to run that modeling looking on the high end?
17:05 **A.** Yes.
17:05 **Q.** Now, let's look at some of the specific examples I think
17:05 the Court has seen previously and talk about what that modeling
17:05 actually shows.
17:05 **MS. KARIS:** If you can please pull up TREX-5063.1.2.
17:05 **BY MS. KARIS:**
17:05 **Q.** Dr. Wilson referenced this modeling, and I would like to
17:06 discuss it with you. First of all, who is Trevor Hill?
17:06 **A.** Trevor Hill is the -- currently he's our segment
17:06 engineering technical authority for flow assurance.
17:06 **Q.** On April 28, 2010 when he sends this communication with
17:06 these modeling results, were there a significant number of
17:06 unknown conditions at the Macondo well one week after the
17:06 incident had taken place?
17:06 **A.** Yes. This was very early on. There was not much known at
17:06 all.
17:06 **Q.** Was it known what the condition of the BOP was?
17:06 **A.** Not from my understanding.
17:06 **Q.** Was it known whether there were any downhole restrictions
17:06 that were going to affect flow?
17:06 **A.** Not from my understanding.
17:06 **Q.** Was it known what effect the kink in the riser was having
17:06 on flow?

17:06 **A.** No.
17:06 **Q.** Mr. Hill says: "We have modeled the whole system from reservoir to sea in order to bound the answers on flow rate."
17:07 **MS. KARIS:** If we can now look at 5063.4.5, please.
17:07 **BY MS. KARIS:**
17:07 **Q.** Does Mr. Hill and Mr. Lockett, who was also involved in this, their modeling, if you get into the substance of their paper rather than the initial one-liner on the cover e-mail, does it identify the fact that there were multiple unknowns at the time they were generating this modeling?
17:07 **A.** Yes. In fact, it says that the only thing they really do know is the pressure on the reservoir and the pressure of sea as well as some fluid properties. It's very similar to the hose example of I know the pressure of the city water, I know atmospheric pressure, and I know how to describe the water going through it, but I don't understand anything else, is basically what they say.
17:07 **Q.** So they say: "We are currently less certain of the following aspects..."
17:07 Can you tell us what those aspects are that their modeling recognizes they simply do not know when they're running this?
17:08 **A.** Yes. So they list them out here. The first one is around inflow performance and the formation damage, which is really the productivity of that well. They don't understand the

productivity.

Then the next three are around flow path. They didn't understand the flow path through the well itself, through the BOP, or the -- and through the riser itself.

Q. Are these some of the same uncertainties that you told us prevent you from using hydraulic modeling to estimate reliably a flow rate from the Macondo well at this time?

A. Yes.

Q. Now, in connection with Mr. Lockett and Mr. Hill's work, Dr. Wilson testified that these are the type of uncertainties that modeling is designed to deal with. Do you agree with that statement?

A. Not at all.

Q. Why not?

A. Because, again, the models are designed maybe with one unknown and if you knew everything else, you could determine what that one unknown is. And they were designed for modeling actual systems that you knew or designing systems based on all the other things that you do know. But in this case we didn't understand the system, so you didn't even understand how to describe the system at which the oil and gas was flowing. And you didn't understand the inflow performance because that is a high function of the net pay thickness that we were talking about earlier.

Q. Now, given the uncertainties that are identified here, do

17:09 you know what the purpose was then for doing this modeling since there were all these uncertainties?
A. Yes.
Q. What was the purpose?
A. After reviewing Mr. Hill's testimony, I said the purpose of this was to understand -- kind of going back to the purpose was what if. They were asked what if the kink or the -- well, what if the kink were to erode and it was not holding back flow? And so to answer that question, they did this modeling.
Q. Was it known what, if any, restriction the kink may have been presenting to the flow of the Macondo well?
A. No.
Q. Were they trying to understand what impact that may have had on the overall system?
A. Can you repeat the question?
Q. Sorry. Were Mr. Hill and Dr. Lockett attempting to understand what might happen to the system if the kink erodes?
A. Yes.
Q. Given these uncertainties that you have just described and the purpose for their modeling, how did Mr. Hill and Dr. Lockett approach the modeling that they performed in order to generate whatever figures we have?
A. Again, reviewing Mr. Hill's testimony, he said because of all the uncertainties, they had to use counterfactual assumptions in their models to generate what he termed "extreme

conditions."

MS. KARIS: If we can look at D-23922.

BY MS. KARIS:

Q. Is this the testimony you relied on from Mr. Hill discussing this precise modeling in which he was asked:

"QUESTION: When you say it was focused on the erosion work, what do you mean?

"ANSWER: The potential that the restriction of the kink would erode with time.

"QUESTION: Did you understand the potential would require you to have an understanding of what your best estimate of flow rate was?

"ANSWER: It required us to look at extreme values across a range to see what could happen."

A. Yes.

Q. Can you tell the Court what were the extreme values that Mr. Hill and Dr. Lockett's work used.

A. Yes. So even though they knew there were potential restrictions throughout the system and didn't understand the flow path, what they did here was assume that the kink was the only thing restricting flow in the entire system. They also used different productivity indexes all the way up through what is called an infinite productivity index, which is not realistic, but it definitely looks at an extreme case.

MS. KARIS: Now, if we can pull up 5063.4.6.

17:12 **BY MS. KARIS:**
17:12 **Q.** Do Dr. Lockett and Mr. Hill state in their memo that was attached to that cover e-mail precisely what you just told us --
17:12 **A.** Yes.
17:12 **Q.** -- they are using these extreme conditions?
17:12 And then they go on to say: "The last of these three shows the maximum hydraulic capacity of the system from bottom hole to sea and is a theoretical-only worst case."
17:12 Does that tell you anything about what a reliable estimate of flow rate was as of the time this modeling was being performed?
17:13 **A.** No, not at all.
17:13 **MS. KARIS:** If we can pull up 5063.4.3, please.
17:13 **BY MS. KARIS:**
17:13 **Q.** You saw this on Monday as well. It's attached to the same memo: "The data generated takes the form of the following illustrative table."
17:13 There was a reference to orifice size and then flow rate. The orifice sizes range from .25 down to 5 inches and then the corresponding flow rates using these theoretical worst-case conditions generate from 2,523 down to 65,171.
17:13 First, can you tell the Court what this is showing?
17:13 **A.** Well, as Mr. Hill and Dr. Lockett say in their report, it's an illustrative table of the types of results they were

getting in that form.
Q. There's a reference to orifice size. An example was used on Monday that the .25 inches would be the equivalent of saying that the only flow coming out of the well is the size of a pen cap. Is that an accurate description of what orifice size and hydraulic modeling represents?
A. Not in the case that it was used here or during the Macondo incident.
Q. Tell us why.
A. Orifice size is relating to an orifice plate, which is a thin plate with a hole in the middle of it that you would typically use in a topsides or at the surface to measure flow. There's been a lot of data generated to put a correlation together to be able to use that. So we didn't have orifice plates in the Macondo system. We had restrictions that we didn't understand.

So to -- in the models the only way to model a restriction is to put in an orifice into the models. And so because it wasn't an orifice plate, because -- especially in this model, they assumed all the restrictions were not restricting and only the kink was. Any orifice size you would have to use in your model or that you would use in your model is not related to reality. So a .25, for instance, inch diameter orifice in this model, especially with the extreme conditions that were used, would not be even close to -- well,

it cannot be related to what the actual size of restrictions are in the Macondo well. I believe I heard Dr. Wilson say that, that it was an extraction and that's exactly what it is, especially how it was used in these models.

Q. Do these figures in any way -- these orifice sizes in any way allow you to bound the real conditions that existed at Macondo at this time?

A. Again, not at all. The model used to generate this used an infinite productivity index and all they were doing -- you can tell by how they discretized the orifice size. They basically just stepped it out to try to understand what the curvature of that rate looked like over different restrictions.

Q. If you recall in the cover e-mail to this work, Dr. Lockett and Mr. Hill say: "We have modeled the whole system from reservoir to sea in order to bound the answers on flow rate."

What's your understanding of what that bounding refers to in light of what they say in the actual memo?

A. So going back to the purpose of modeling, which was to understand what would happen if the kink were to erode, they used their modeling to understand what's the worst it could get and that's really related to the orifice size of 5, which would be no restriction at all at the kink. So that would be -- at least for the model that they created with an infinite productivity index, it would be the equivalent of not having

any restriction in that system at all.
Q. We also heard reference to some modeling done by Mr. Mason and a suggestion that that work was used to help BP bound an estimate of flow rate.
MS. KARIS: Let's look at 9156.1.1.
BY MS. KARIS:
Q. And to be clear, that was Dr. Wilson's review of Mr. Mason's modeling. Have you reviewed the modeling performed by Mr. Mason on May 11?
A. Yes.
Q. Have you also reviewed Mr. Mason's testimony as to what the purpose was for which he was actually doing the work?
A. Yes.
Q. Start with, was Mr. Mason doing this work in order to help him understand or estimate what the flow rate was for Macondo at this time?
A. No. His testimony and -- in his testimony he said the purpose of this was to understand -- again, going back to the categories, it was a what-if type of analysis and it was -- the question was: What if we took off the LMRP to expose the flange so that they could maybe put a BOP or some other piece of equipment on it, what would happen to the flow rate?
MS. KARIS: If we can look at D-23923.
BY MS. KARIS:
Q. Is this Mr. Mason's testimony when he is asked in his

17:18 deposition what the purpose was for his modeling?
17:18 **A.** Yes.
17:18 **Q.** Is this consistent with what you said, which is he is
17:18 looking at what would happen if we took off the LMRP?
17:18 **A.** Yes.
17:18 **Q.** Now, was the LMRP ever taken off at this time to your
17:19 knowledge?
17:19 **A.** No, it wasn't.
17:19 **MS. KARIS:** If we can now look at 9156.6.1, please.
17:19 **BY MS. KARIS:**
17:19 **Q.** These are some of the tables that are attached to
17:19 Mr. Mason's May 11 work.
17:19 First, can you tell the Court, in light of what the
17:19 purpose was for Mr. Mason's modeling, what Mr. Mason modeled.
17:19 **A.** So what they modeled here, because of the uncertainties
17:19 that they did, they basically did what's called a parametric
17:19 study, and that's a study in which you look at different values
17:19 of the uncertain things that you do have just to look it up,
17:19 what I would call a mapping of the system.
17:19 So to be specific in here, they chose what they call
17:19 a maximum reservoir exposed version or set of modeling runs and
17:20 they did a partial reservoir exposed conditions. For those
17:20 conditions, of which one was 88 feet of reservoir exposed, you
17:20 can see in the scenario at the top left. They looked at
17:20 several different values for skin and they looked at four

17:20 different flow paths to understand what the different -- and then they calculated flow rate for those conditions.

They then did that same scenario -- or they did that same set of simulations with 44 feet of reservoir exposed and a smaller permeability to look at what the conditions were or the calculated rates were there.

You can see the top tables were done at a pressure of 3800 psi. That was the thought-to-be pressure underneath the BOP at the time, which would simulate what it could look like right now, 3800 psi. And then to simulate the taking off of the LMRP, that's the bottom set, which is where they are running it at the seawater ambient pressure of 2270 psi. So they look at the change in rate for those different runs and then they summarize it. You can see at the bottom of the slides in which they say for the maximum case, they see a 15 percent change in flow rate, increase in flow rate, when you take the LMRP off or you change those pressures.

Likewise, they saw an average of 22 percent for the partial reservoir exposed.

Q. You called this a parametric study. What is a parametric study?

A. Basically where you look at different sets of parameters to create a mapping of the system; at least that's how I would define it.

Q. Is that commonly done with respect to hydraulic modeling

on a number of scenarios under a variety of conditions to understand what the potential or what the possibilities are?
A. Yes, quite often.
Q. Is it your understanding that that's what Mr. Mason was doing here in connection with looking at different skins, different reservoirs, different permeabilities, different wellhead pressures here?
A. Yes.
MS. KARIS: You can now pull up 9156.7.1, please.
BY MS. KARIS:
Q. Is this some of the work that was generated -- what is this, I'll ask you?
A. So the one on the left is actually the first slide of the deck, which summarizes their work, and it's titled Key Messages. They summarize it in the first bullet, which is that when you take the wellhead pressure from 3800 pounds to 2270, which is the effect of removing the LMRP, that you would see a flow rate increase anywhere from 15 to 30 percent, which was the range at which they saw that flow rate increase over their parametric study.
Q. Did Mr. Mason's key message reflect what he believed the actual flow rate to be from the Macondo well or estimate or bound that range?
A. No.
Q. Did Mr. Mason perform any work regarding the

5,000-barrel-per-day figure at the time that he did this work to understand the percentage change in wellhead pressure rates?

A. He did.

MS. KARIS: If we could now look at D-23209.

BY MS. KARIS:

Q. I think we saw the slide -- first of all, is the slide on the left from Mr. Mason's package, the parametric study package?

A. Yes.

Q. The testimony on the right, is that Mr. Mason explaining what he was actually doing in connection with this case for 5000 and 3800 psi analysis?

A. Yes. He basically says that what he was doing here was a reasonableness check on the value that NOAA had come up with of 5,000 barrels a day. He was looking to see if he could match that using the unknown or uncertain input parameters and then determine whether those were reasonable inputs based on what they knew of the system.

Q. Dr. Wilson testified that this is basically -- he obtained this number by targeting or adjusting resistances to get this rate.

Is that consistent with Mr. Mason's testimony where he said he is doing a reasonableness check?

A. Can you repeat that question. I'm sorry.

Q. I'm sorry. That was a terrible question.

17:25 Dr. Wilson testified, in connection with this: "So it was a target simulation. Most of the 5,000 simulations here are targeted to be 5,000 by adjusting the resistance in the system."

Do you agree with that statement?

A. For the most part, yeah. I mean, that's exactly what he was doing here. Since hydraulic modeling could not inform you of what the actual rate or even a lower bound of what the rate was, what he is doing here is taking, through another observation, what they believe the rate to be and seeing if that fits within what you would expect using hydraulic modeling. Which he ends his testimony here, or at least on here, saying it looked reasonable to him.

Q. There's been a lot of testimony previously about the 5,000-barrel estimate. Does Mr. Mason's work show here that he was able, doing this reasonableness check, to generate permeability reservoir thickness and skins that were consistent with the 5,000 figure that was the then-stated Unified Command figure?

A. Yes.

Q. Now, Dr. Lockett's work, Mr. Mason's work, and a number of the other hydraulic models that you reviewed, were all those studies being done in order to try to understand what would happen if certain conditions existed?

A. Well, Dr. Lockett and Mr. Hill and Mr. Mason's were, yes.

17:26 **Q.** Now, you also testified that some modeling was done for the purpose of understanding worst-case scenario?
17:26 **A.** Yes.
17:26 **MS. KARIS:** If we can now pull up D-23885, please.
17:27 **BY MS. KARIS:**
17:27 **Q.** Are you familiar with the hydraulic modeling that Dr. Rygg did that, again, we heard about earlier this week?
17:27 **A.** Yes, I'm familiar with that modeling.
17:27 **Q.** Dr. Rygg's work generated flow rate numbers in the range of 43,000, 63,000, 87,000 barrels.
17:27 First of all, tell us for what purpose Dr. Rygg was doing his modeling.
17:27 **A.** So the purpose of this modeling here was to help design the relief well, in which he was looking at -- well, basically helping to design what would happen "if," when they intersected it, and designing the equipment to be able to handle that as well as the relief well operation.
17:27 So in this set of simulations -- and he says it here in the highlighted portion. He ran these for worst-case Dynamic Kill requirements, which would be the upper end of all those values that were uncertain. And the three values here are of the three different, in general, flow paths that were available: up the casing, up the annulus, and then one for up both.
17:28 **MS. KARIS:** If we can now look at 9266.2.1.

17:28 **BY MS. KARIS:**
17:28 **Q.** Are these the figures that Dr. Rygg's modeling generated
17:28 when he was looking at worst-case scenario in connection with
17:28 designing the relief well?
17:28 **A.** Yes. This table has got three of those values on there.
17:28 So this table shows basically his models at ambient seawater
17:28 conditions, which is where he ran the ones for the relief well.
17:28 As well, as he ran cases with the thought-to-be-known
17:28 pressure under the BOP of 3800 pounds at that time. So you can
17:29 see the numbers are slightly smaller. But it's the same model
17:29 that he ran in which he says that he had no restrictions and
17:29 used the upper bound of everything with worst case down in the
17:29 well itself.
17:29 **Q.** Now, this modeling is dated May 9. Did there remain a
17:29 number of uncertainties about the conditions of the well,
17:29 including all of those that you told the Court about at the
17:29 beginning of your testimony?
17:29 **A.** Yes, there were several uncertainties.
17:29 **Q.** Did Dr. Rygg's modeling, in your opinion, in any way
17:29 inform BP as to what the flow rate was coming from the Macondo
17:29 well as of May 9?
17:29 **A.** Well, as mentioned before, especially the ones where he is
17:29 using the 3800 pounds in this table here, that would be the
17:29 most for any given flow path that could be coming up the well
17:29 at that time based on his model, but it doesn't inform what a

17:29 "most likely" would be.
17:29 **Q.** Are all of these numbers that are generated during this
17:30 time period less than the 162,000-barrel worst-case discharge
17:30 number that BP had provided in its MMS application?
17:30 **A.** Yes.
17:30 **Q.** So did this provide any new information in terms of
17:30 worst-case discharge from the Macondo well?
17:30 **A.** No.
17:30 **Q.** Dr. Ballard, in the interest of time and given the number
17:30 of models that were run, I'm going to wrap up by asking you
17:30 whether the hydraulic modeling that was performed in April and
17:30 May 2010 was performed for the same purposes that you have
17:30 already described to the Court.
17:30 **A.** Yes. In my review of all the modeling that was done
17:31 during the April-May time frame, they all fit within one of
17:31 those two buckets as to the purposes of that modeling that I
17:31 have reviewed.
17:31 **Q.** Based on your experience, what would have been the
17:31 purpose -- strike that.
17:31 Based on your involvement as well as your background
17:31 and experience, was that a prudent practice, to run modeling to
17:31 try and understand the conditions at the Macondo well?
17:31 **A.** It was prudent practice to use hydraulic modeling. It
17:31 could certainly inform you as to -- tell you what would happen
17:31 "if," as I mentioned. As well, it could help you design

different source control operations.
Q. Sir, if we can go back to your last opinion quickly, and we will wrap up. D-23214.
Your last opinion -- first tell the Court, what is your final opinion in this case?
A. So based on the first two, that there was too much uncertainty and the tools weren't capable of reliably estimating the discharge rate or flow rate from the well or even a range, as well as looking at the purposes of that modeling itself, in my opinion, the hydraulic modeling didn't inform BP that the daily rate from the well, the actual rate was above 15,000 barrels of oil per day at the time of the Top Kill.
Q. Did it inform BP as to what a reasonably reliable estimate was, even within a range, of what conditions actually existed at Macondo?
A. From a hydraulic-modeling-only perspective, it said it could be zero up to that worst-case scenario.
Q. Now, Dr. Wilson, using this board here that's to your right, testified that since a majority of BP's hydraulic modeling runs in April and May resulted in flow rate numbers that were higher than 15,000, that should have informed BP that the flow rate was higher than 15,000 barrels per day.
Do you agree with that?
A. Not at all.

17:33 **Q.** Explain to the Court why.
17:33 **A.** As I mentioned, the purpose of the modeling was to do robustness checks or to do worst-case scenarios to design systems. As well, it was to look at "what if," what could happen. And so I would expect that most of the runs or the modeling was done on the high end or the upper end of what the rate could be. In fact, if you look at a few of these runs here, they are actually the examples I gave earlier.

So Dr. Rygg's work, in which he was looking at worst case -- in which he said in his report he was looking at worst case for the relief well modeling or the relief well design -- and that's this line here, from 37,000 up to 87,000, I believe.

In fact, some of those cases there are using counterfactual inputs. If we saw that table, we knew that the pressure was 3800 pounds, but he ran three of those simulations at 2200, or seawater ambient. So I would certainly not expect those to be informing us of what the actual rate is.

Mr. Mason's work, which is this line here, I believe we talked about that work. And the work was to try to understand what the change in flow rate would be if we removed the LMRP. So many of those runs were run at seafloor ambient conditions simulating taking off the LMRP. So I certainly wouldn't expect those to inform us of anything in regards to what the actual rate is. We knew the pressure. The LMRP was on the stack.

17:35 As well, the purpose of those runs, as Mr. Mason said, was to be able to land something on that flange; and in order to land something on that flange, the biggest variable you would be worried about is how big is that plume coming out, because that would affect whether I would be able to drop a piece of equipment on that.

So you would of course do that on the high end. Because if it's a low rate, I don't care as much in regards -- it's not going to affect my operation as much. I'm going to design it for that high end.

The last set of work, I believe, is represented right here by Dr. Lockett and Mr. Hill. And that work, again, as I mentioned, it was trying to simulate what would happen if the kink had eroded and so, in other words, there were no restrictions on the system. In that model that we -- that's listed here, or the numbers that are listed here, that's actually using that infinite productivity index, which we knew was theoretical maximum and couldn't actually exist.

So when I see this graph, that's what I would expect based on the purpose of the modeling. I don't look at that and say, well, the likely is. It would be unreasonable, I believe, to assume that, based on the purpose of the modeling, on all the modeling that was done during this time frame.

MS. KARIS: I have no further questions. Thank you.

17:36 **CROSS-EXAMINATION**

BY MR. BRIAN:

Q. Brad Brian on behalf of Transocean and the aligned parties.

Mr. Ballard, in April and May of 2010, BP set up at least four teams to do hydraulic modeling, did it not?

A. From what I have seen, yes.

Q. And filled those four teams with a number of engineers who were experienced doing hydraulic modeling; isn't that true?

A. Yes.

Q. You know some of those people, don't you, sir?

A. Yes, I do.

Q. Do you think highly of their competence or not?

A. For the most part, yeah, I think everyone I saw who was running models was certainly competent of running those models.

Q. You believe that -- not only are they competent, you think they are men and women of integrity, do you not?

A. I believe so.

Q. So if they write something down in one of their e-mails or memos, you have no reason to believe they are not telling the truth; isn't that right?

A. Well, I would have to see what it is and look at the context, but in general I would say I would believe that.

Q. In fact, during the period of April and May, BP used various computer software, like PIPESIM and PROSPER and OLGA,

17:38 to run hydraulic models to calculate flow rates, right?
17:38 **A.** Well, they used hydraulic models, as I mentioned, to do
17:38 what-if type of scenarios as well as to look at robustness of
17:38 different operations.
17:38 **Q.** In doing that, on occasion -- in fact, more than on
17:38 occasion, they generated a number which was a flow rate,
17:39 correct?
17:39 **A.** Yes.
17:39 **Q.** We can quarrel about what it means, but it was a flow
17:39 rate?
17:39 **A.** Yes, they calculated flow rates in some of that work.
17:39 **Q.** You were a member of one of those groups, weren't you,
17:39 sir?
17:39 **A.** Yes.
17:39 **Q.** Now, it's your testimony, is it not, that hydraulic
17:39 modeling could not be used to provide an accurate or reliable
17:39 gauge of what the rate of flow actually was from the Macondo
17:39 well in April and May, correct?
17:39 **A.** Yes.
17:39 **Q.** So you agree that if someone from BP -- or anyone,
17:39 actually -- represented on May 28 that the best estimate of
17:39 flow rate was 2,500 barrels or 5,000 barrels, they couldn't
17:39 justify that with hydraulic modeling, correct?
17:39 **A.** From hydraulic modeling, I don't believe so.
17:39 **Q.** Nor could they justify with hydraulic modeling a

17:39 representation on May 10 of a most likely model of
17:39 5,000 barrels per day, could they, sir?
17:40 **A.** From a hydraulic modeling, as I said, I don't think you
17:40 could come up with a likely estimate of what the flow rate was.
17:40 **Q.** You're not an expert on sheen modeling or plume analysis,
17:40 are you, sir?
17:40 **A.** No, I'm not.
17:40 **Q.** You don't purport to be testifying as an expert in those
17:40 areas, do you, sir?
17:40 **A.** No, I don't.
17:40 **Q.** Now, you were -- in addition to being selected by BP as an
17:40 expert, you also were selected to testify as the company's
17:40 Rule 30(b)(6) witness on hydraulic modeling, were you not?
17:40 **A.** Yes, I was.
17:40 **Q.** So you had your deposition taken a few times, didn't you,
17:40 sir?
17:40 **A.** Yes, I have.
17:40 **Q.** Okay. It's your opinion and you stated at your deposition
17:40 that you are not aware of any modeling estimate that was done
17:40 to estimate the flow rate during this period of April and
17:40 May 2010.
17:40 That's your testimony and that's your opinion, is it
17:40 not?
17:40 **A.** That's right.
17:40 **Q.** You still stand by that testimony, don't you, sir?

17:41 **A.** Yes, sir.

17:41 **MR. BRIAN:** Let's pull up TREX-9155.1.1.TO.

17:41 **BY MR. BRIAN:**

17:41 **Q.** Now, this is an e-mail from Doug Suttles to Admiral Landry, dated May 10, 2010, is it not, sir?

17:41 **A.** Yes.

17:41 **Q.** You have seen this before, haven't you, sir?

17:41 **A.** I believe I have.

17:41 **Q.** You know who Mr. Suttles is, don't you, sir?

17:41 **A.** I do.

17:41 **Q.** He was one of the heads of the BP Response Team during this critical period, was he not?

17:41 **A.** He was the head of something. I don't know his specific role.

17:41 **Q.** A senior guy?

17:41 **A.** Yes.

17:41 **Q.** This is an e-mail from Doug Suttles to Admiral Landry. And you know that she was one of the senior admirals involved in the response effort, correct?

17:41 **A.** Yes.

17:41 **Q.** You see where Mr. Suttles wrote "Attached is a short note covering our view of the worst-case scenario"? Do you see that?

17:42 **A.** Yes.

17:42 **MR. BRIAN:** Now, let's put up TREX-9155.4.1.TO.

17:42 **BY MR. BRIAN:**
17:42 **Q.** Now, I will represent to you, sir, that this model was attached to Mr. Suttles' May 10 e-mail to Admiral Landry. You have in fact seen this model, have you not, sir?
17:42 **A.** I have.
17:42 **Q.** This shows two flow rates, one starting at approximately 55,000 barrels and a constant one at 5,000 barrels per day, does it not?
17:42 **A.** Yes.
17:42 **Q.** It shows at the top a worst-case model, which is depicting the 55,000 barrels per day, right?
17:42 **A.** Yes.
17:42 **Q.** It states in the lower right-hand corner "most likely model," which depicts the 5,000 barrels per day; isn't that right?
17:42 **A.** Yes, that's what it appears to have.
17:42 **Q.** Now, isn't it the fact that both the worst-case model and the most likely model on this chart came from hydraulic modeling performed by BP engineers?
17:43 **A.** So what this chart is showing is the depletion, which is a hydraulic model, and so the change in those curves over time is absolutely from hydraulic modeling.
17:43 **Q.** So the answer to my question is yes, isn't it?
17:43 **A.** Well, the way the depletion works, it was using -- from my recollection, this is using the MBAL model. And from my

understanding of the MBAL model, you assume a rate and then you look at how it changes over time, because it's a mass balance model.

Q. I'm going to ask you about that. You're testifying that the engineers were told to assume a rate of 5,000 barrels per day and essentially see what the other factors would be to get to a rate of 5,000 barrels per day, correct?

A. In this specific scenario?

Q. When you just said an assumed rate, that's what you are talking about, right?

A. Yes. From my understanding, in reviewing the documents in preparation for this, I think it was Captain Little had asked Mr. Suttles to look at what would happen to depletion of a 5,000-barrel-a-day rate. So they would assume that rate and then look at how it changes over time and how long it could potentially flow based on the reservoir.

Q. One of your first assignments, when you came on board in the Macondo response effort, was to do hydraulic modeling with an assumed rate of 1,000 barrels a day, right?

A. I believe so, yes.

Q. Let me go back to my question and see if I can get an answer. Very simply, both of these lines on this chart, 55,000 and 5,000, came from hydraulic modeling, correct?

MS. KARIS: Your Honor, I think that's been asked and answered three times now.

17:45 **MR. BRIAN:** I don't think so, Your Honor.
17:45 **THE COURT:** Overruled.
17:45 **BY MR. BRIAN:**
17:45 **Q.** Isn't that right?
17:45 **A.** So the change in curvature of those lines came from hydraulic modeling.
17:45 **Q.** Thank you.
17:45 So now I want to put up TREX-150110.1.1.TO.
17:45 Do you know who Jasper Peijs is?
17:45 **A.** I don't know him personally, but I believe he was assisting Andy Inglis.
17:45 **Q.** He was the executive assistant to Andy Inglis, the CEO of BP Production & Exploration, was he not?
17:45 **A.** I believe so.
17:45 **Q.** He sent an e-mail on May 10, the same day as the other one we just saw, to Doug Suttles, didn't he?
17:45 **A.** This is an e-mail on May 10, yes.
17:45 **Q.** You see where he wrote in the e-mail: "We have run two reservoir models based on mass balance"? Do you see that?
17:45 **A.** Yes.
17:45 **Q.** Mass balance refers to something called the M-B-A-L, which is a software program to perform hydraulic modeling. Isn't that right, sir?
17:46 **A.** It's a mass balance model looking at depletion in a reservoir.

17:46 **MR. BRIAN:** Let's pull up Mr. Ballard's expert deposition at page 237, lines 5 through 17.

Not what I was looking for. We'll move on.

Let's go back to the one we had up before, TREX-150110.1.1.TO.

BY MR. BRIAN:

Q. Mr. Peijs also wrote in this e-mail to Mr. Suttles on May 10 that Model 1 showed a worst-case model -- "worst-case model: unconstrained flow, zero skin, no BOP, initial flow rate of 55,000 barrels of oil per day."

He wrote that, did he not?

A. Yes.

Q. He wrote that model 2 was "our most likely case with initial flow rate of 5,000 barrels of oil per day."

He wrote that as well, didn't he, sir?

A. Yes.

Q. Those numbers, the 55,000 and the 5,000, referred to by Mr. Peijs, Mr. Inglis' executive assistant, on May 10, are the same numbers that Mr. Suttles put in the chart that went to Admiral Landry that same day, correct?

A. It appears to be, yes.

MR. BRIAN: Let's put up now TREX-11907.1.1.TO.

BY MR. BRIAN:

Q. This is another e-mail, that Mr. Peijs sent to Suttles a few minutes later that day, isn't it, sir?

17:48 **A.** Yes.
17:48 **Q.** You see the subject line? What does it say?
17:48 **A.** It says "Updated model slide."
17:48 **MR. BRIAN:** Let's put up TREX-11907.3.1.TO.
17:48 **BY MR. BRIAN:**
17:48 **Q.** That's the chart that was attached to Mr. Peijs' e-mail to Mr. Suttles. That's the same chart Mr. Suttles then attached to his e-mail to Admiral Landry that same day, is it not?
17:48 **A.** It appears to be. It looks like some of the text is different, but it appears to be.
17:48 **Q.** Let's go back now to TREX-9155.4.1.TO.
17:48 Do you see where both boxes, where it says "worst-case model" and "most likely model," have the phrase "actual reservoir conditions"? Do you see that?
17:48 **A.** Yes.
17:48 **Q.** Are you aware, sir, that the chart Mr. Suttles sent to Admiral Landry was an edited version of a slightly different chart that was sent to Jasper Peijs by a modeler named Kelly -- McAughan is how you pronounce it? Are you aware of that?
17:49 **A.** Yes. I have reviewed Ms. McAughan's work.
17:49 **Q.** You know her, do you not?
17:49 **A.** I may have met her in the past.
17:49 **Q.** You understand that she was one of the BP engineers who was doing some of the hydraulic modeling, correct?
17:49 **A.** Yes. She was doing MBAL type of modeling, from my

17:49 understanding.
17:49 **MR. BRIAN:** Let's put up TREX-9330.1.1.TO.
17:49 **BY MR. BRIAN:**
17:49 **Q.** This is an e-mail from -- is it McAughan? How do you
17:49 pronounce that?
17:49 **A.** I believe it's McAughan.
17:49 **Q.** This is an e-mail from Ms. McAughan, dated May 6, to
17:49 Jasper Peijs and some other people, correct?
17:49 **A.** Yes.
17:49 **Q.** She wrote to Jasper: "Ran the new cases and put them in a
17:49 graph with the other six (total of eight cases now). I
17:50 attached the Excel file as well so you can edit freely."
17:50 That's what she wrote to Jasper, didn't she, sir?
17:50 **A.** Yes.
17:50 **MR. BRIAN:** Let's look at TREX-9330.3.1.TO.
17:50 **BY MR. BRIAN:**
17:50 **Q.** This is the chart that she attached to her e-mail to
17:50 Jasper Peijs, which she said he could edit freely, isn't it,
17:50 sir?
17:50 **A.** Yes.
17:50 **Q.** This has the eight different cases that she mentioned in
17:50 her cover e-mail, doesn't it?
17:50 **A.** It appears to have eight cases on it, yes.
17:50 **Q.** The lowest one is the 5,000 barrels of oil per day,
17:50 correct?

17:50 **A.** It appears that's around 5,000, yes.
17:50 **Q.** The highest one starts at about 162,000, which you understood was the pre-spill worst-case calculation, correct?
17:50 **A.** Yeah. That would be open hole conditions.
17:50 **Q.** So if you discard that one for a second, the highest number on the chart that Ms. McAughan sent was approximately 110,000 barrels per day, correct?
17:51 **A.** It starts at 110.
17:51 **Q.** Then goes down from there, correct?
17:51 **A.** Yes, using the MBAL model.
17:51 **Q.** This chart doesn't say anything about a worst-case or a most likely model, does it, sir? Those words don't appear there, do they?
17:51 **A.** No. Some of the input assumptions are the upper end of those uncertain variables that I was talking about, though.
17:51 **MR. BRIAN:** Let's put up Demonstrative 25021.
17:51 **BY MR. BRIAN:**
17:51 **Q.** Now, the chart on the right is the chart that I will represent to you is the chart that Ms. McAughan sent on May 6, and the one on the left is the one that Jasper Peijs sent back on May 10.
17:52 Do you have any information, as the Rule 30(b)(6) witness or BP's expert on hydraulic modeling, how the chart on the right morphed into the chart on the left?
17:52 **A.** Yeah. Yeah. As I mentioned, I reviewed a communication

between Captain Little and Rear Admiral Landry and some other U.S. government folks, in which he was telling her that he had requested BP to do a -- to look at the reservoir depletion or the rate and cumulative oil for the 5,000-barrel-a-day case. And then he also -- I believe, from my recollection, Admiral Landry had responded back, saying, "We have also asked him to do the worst-case scenario and compare it to theirs," which was around 50.

Q. You understand that Jasper Peijs took Kelly McAughan's chart and changed it and then produced what is now TREX-11907.3.1, right?

A. I can infer that.

Q. Have you looked at the electronic metadata?

A. To see whether Jasper Peijs had edited it?

Q. Yes.

A. No.

MR. BRIAN: Let's do that. Let's put up TREX-11906.7.1.TO.

BY MR. BRIAN:

Q. This is a copy of the spreadsheet that Ms. McAughan sent to Mr. Peijs, is it not?

A. It seems to be an Excel spreadsheet.

MR. BRIAN: Let's put up TREX-11906.6.1.TO.

BY MR. BRIAN:

Q. This Excel tab is labeled -- actually, there's a typo. Do

17:53 you see in the lower left it says "Jasper WC"? You would agree
17:53 with me that that was a typographical error? It should have
17:53 been "Jasper"?
17:53 **A.** Yes.
17:53 **Q.** That means that Jasper Peijs has copied the chart over and
17:53 started making edits, doesn't it?
17:53 **A.** I can infer that from -- based on that, I could agree with
17:53 that.
17:54 **Q.** By the way, you say you interviewed some people. Did you
17:54 ever interview Jasper Peijs?
17:54 **A.** No, I didn't.
17:54 **Q.** Did you ever interview Andy Inglis?
17:54 **A.** No, I didn't.
17:54 **Q.** Let's pull up TREX-11906.5.TO. You see where this one is
17:54 labeled "Jasper WC (simple)" in the lower left-hand corner?
17:54 **A.** Yes.
17:54 **Q.** It's a lot more simple; it has just two lines on it,
17:54 doesn't it?
17:54 **A.** It has two lines on it, yes.
17:54 **Q.** Let's go to TREX-11906.4.1.TO. Now, this is a PowerPoint,
17:54 not an Excel spreadsheet, right?
17:54 **A.** Yes.
17:54 **Q.** It looks like the chart we saw has been converted into a
17:54 PowerPoint slide entitled "Macondo Reservoir Model"; isn't that
17:54 true?

17:54 **A.** Yes.
17:54 **Q.** You have these boxes that appear in the upper right-hand and the lower right-hand corners, right?
17:55 **A.** Yes.
17:55 **Q.** Now, you were designated as BP's corporate representative to testify about, quote, "the manner and/or methodology that BP used to predict, estimate, characterize, and/or measure the daily amount of hydrocarbons flowing from the Macondo well from April 20, 2010, through July 15, 2010."
17:55 Right?
17:55 **A.** Yes.
17:55 **Q.** You reviewed -- as part of that work, you reviewed TREX-9155, which is Mr. Suttle's e-mail to Admiral Landry and the attachments, didn't you?
17:55 **A.** I'm not sure. I can't recall if I reviewed that one before or after.
17:55 **Q.** When it came time for you to testify as an expert, you didn't identify TREX-9155 as one of the documents you considered in forming your opinions, did you, sir?
17:56 **A.** I don't believe so, but I can't be sure.
17:56 **Q.** Now, when you testified as an expert, did you personally select the documents you reviewed or did someone else select the documents for you to review?
17:56 **A.** In regards to my preparation for an expert?
17:56 **Q.** Yeah.

17:56 **A.** Well, based on what I had reviewed in the 30(b)(6), I
17:56 asked for the documents to review. I knew what the totality
17:56 looked like, so I knew what I wanted to review for that -- to
17:56 look at, from an expert opinion, the hydraulic modeling work
17:56 that was done.
17:56 **Q.** Now -- and I take it you never interviewed Doug Suttles,
17:56 did you, sir?
17:56 **A.** No, I didn't.
17:56 **Q.** One of the things you did say in your report --
17:56 **MR. BRIAN:** Let's pull up TREX-11905R.21.1.TO.
17:56 **BY MR. BRIAN:**
17:57 **Q.** You said that one of the things that was done during this
17:57 time period in connection with the hydraulic modeling were
17:57 these -- what you called "assumed studies," right?
17:57 **A.** Yes.
17:57 **Q.** Very simply stated, if you were to determine a flow rate,
17:57 you would input various factors on pressure and size and
17:57 orifices and that kind of stuff to determine a flow rate. But
17:57 if you do an assumed study, it's kind of the opposite: You are
17:57 told to assume a flow rate and figure out what are the various
17:57 factors that would lead to that flow rate, right?
17:57 **A.** Well, the intent of the assumed studies that I had here
17:57 was for things in which you would use different type of
17:57 modeling, such as finite element analysis. You would assume a
17:57 flow rate and look at, for instance, what the plume looked like

17:57 in order to model the BOP being landed on it or something of
17:57 that sort. You aren't calculating a rate with the finite
17:58 element analysis; you would be assuming what rate you would
17:58 use.
17:58 **MR. BRIAN:** Let's put up TREX-11905R.16.1.
17:58 **BY MR. BRIAN:**
17:58 **Q.** You criticize Dr. Wilson's report for not acknowledging
17:58 BP's effort to provide the federal responders with the data
17:58 needed to perform hydraulic modeling. That's one of the things
17:58 you say in your report; isn't that right, sir?
17:58 **A.** Yes. I say that he doesn't acknowledge BP's effort to
17:58 provide the data to the federal responders.
17:58 **Q.** Is it your testimony under oath before Judge Barbier that
17:58 BP provided the Unified Command and the federal responders with
17:58 all the data they needed to do their jobs? Is that your
17:58 testimony under oath?
17:58 **A.** In regards to hydraulic modeling, I have reviewed all the
17:58 information or -- not everything under the sun, but I have
17:58 certainly seen that all the information needed to do hydraulic
17:59 modeling, I have seen that communicated and transferred to the
17:59 federal government.
17:59 **Q.** Not my question.
17:59 Is it your testimony under oath in this courtroom
17:59 that BP provided the Unified Command and the federal responders
17:59 with all the information that BP had that those folks needed to

do their jobs?
A. I can't speak to what I didn't form my opinion around, and my opinion was around information -- because I was responding to Dr. Wilson, it was around information needed to do hydraulic modeling.
Q. Okay. I'll reframe my question.

Is it your testimony under oath that BP, during this time period, provided the Unified Command and the federal responders with all the information relating to flow rate and hydraulic modeling that the government needed to do its job? Is that your testimony?
A. So -- there's a lot in there. I'm trying to understand what you are asking.
Q. I'll reframe it.

Is it your testimony that, in April and May, BP gave these federal responders all of the information pertaining to hydraulic modeling and flow rate that they needed to do their jobs?
A. So it's my testimony that, from what I have reviewed, they provided the information to the federal government needed to conduct hydraulic modeling.

I'm unclear what you mean by "flow rate."
Q. The rate by which the oil was flowing from the well.
A. So as I mentioned, from a hydraulic modeling basis, you could not estimate what the rate flowing from the well was.

Q. I understand that's your testimony, sir. I got that. My question is different.

My question is: Is it your testimony -- is it your opinion that BP, during this period, gave the government responders all the information they needed pertaining to flow rate and hydraulic modeling that they needed to do their jobs?

Those two subjects. The subjects you were identified as BP's corporate representative on, sir.

MS. KARIS: I object. That misstates the scope of his expertise. It misstates the scope of his corporate representative testimony. And I think, just to avoid any confusion, he is talking about data there with respect to what was provided to federal responders. The issue of what they needed to do their job, that's beyond the scope of Mr. Ballard's expertise. I don't know that he could opine to what they needed to do their job.

MR. BRIAN: He was --

THE COURT: I overrule the objection.

BY MR. BRIAN:

Q. Can you answer the question, sir?

A. Can you repeat it one more time, please?

Q. I will.

Is it your testimony under oath that, during this time period, BP gave the federal responders all of the information they needed to do their jobs pertaining to

hydraulic modeling and flow rate?
A. So I don't know all the information that they needed to do their jobs, but I can tell you from my review, they have certainly provided the modeling or the data needed for doing hydraulic modeling. In terms of flow rate, I've seen many communications of what the "worst case" was, which is what the hydraulic modeling could inform. I can't speak to any other methods for what the flow rate may be, but from a hydraulic modeling perspective, I have seen where they have provided the government -- as the example we just looked at -- where they are providing to the government what the hydraulic modeling could tell them about flow rate, which was the upper bound could not flow more than this.
Q. It's not your testimony, is it, sir, under oath that BP gave the federal responders during this time period every piece of information regarding flow rates, flow rate calculations that BP performed. That's not your testimony, is it, sir?
A. I told you what I said I did see them communicate, the upper bounds of flow rate based on the hydraulic modeling. Did they -- I don't know what else they may have actually communicated, because I'm unclear what you mean by "Did they provide them flow rates," what you're talking about.
MR. BRIAN: Let's put up TREX-9313.1.1.TO. If we could expand the e-mail in the middle.
BY MR. BRIAN:

18:03 **Q.** This is an e-mail from Tony Liao to Mike Mason, is it not?
18:04 **A.** Yes, it is.
18:04 **Q.** Now, you testified earlier today about Mike Mason, right?
18:04 **A.** Yes.
18:04 **Q.** He was actually the head of one of the teams -- one of the hydraulic modeling teams, was he not?
18:04 **A.** Yes.
18:04 **Q.** Tony Liao worked for him, didn't he?
18:04 **A.** I believe so, yes.
18:04 **Q.** In this e-mail, Tony Liao said to Mike Mason on Sunday May 16, quote: "To get a 700 psi depletion from April 20, 2010, to May 15, 2010, the rate required is 86,600 barrels per day."
18:05 That's what he wrote, didn't he, sir?
18:05 **A.** Yes, that's what he wrote.
18:05 **Q.** This document was not given to the federal responders, was it, sir?
18:05 **A.** I didn't look at all the communications that went to the government, so I don't know.
18:05 **Q.** So you have no knowledge one way or the other whether this document was given to the federal government, do you, sir?
18:05 **A.** No, I don't have that knowledge.
18:05 **Q.** Were you here when Mr. Dupree testified?
18:05 **A.** No, I wasn't.
18:05 **Q.** You have no reason to believe that he testified falsely

18:05 when he said that this was not provided to the Unified Command, do you, sir?
A. I have no reason not to believe Mr. Dupree.
MR. BRIAN: Let's pull up TREX-9446.1.1.
BY MR. BRIAN:
Q. Now, you did testify about Mr. Tim Lockett earlier today, did you not, sir?
A. Yes.
Q. He was another one of the modelers, wasn't he?
A. Yes.
Q. What's the subject line on this May 3, 2010 e-mail from Mr. Lockett to Trevor Hill?
A. "Best estimate."
Q. "Best estimate."
And he states in this e-mail to Trevor Hill: "Some of the data from Ian's model has been updated (fluid model, completion below the end of the drill string) so I reran the cases to generate the attached xls which then uses that data to give a flow rate estimate as a function of pressure at the BOP, temperature, etc."
That's what he wrote, did he not?
A. It is.
MR. BRIAN: Let's put up TREX-9446.1.2, the same page, next paragraph.
BY MR. BRIAN:

18:06 **Q.** He wrote -- Mr. Lockett wrote, did he not, and I quote:
18:07 "The velocity is very dependent on the riser ID being correct
18:07 and the holdup, but is probably the best line of estimation if
18:07 we can measure the transport of a dispersion pulse and get
18:07 gamma to clarify the holdup."
18:07 He wrote that as well, did he not?
18:07 **A.** Yes, he did.
18:07 **Q.** Did you interview Mr. Lockett?
18:07 **A.** I did.
18:07 **Q.** Did you interview him about this document?
18:07 **A.** I'm familiar with this document and talked to him about
18:07 it, yes.
18:07 **Q.** So he just got it wrong when he used the word "best
18:07 estimate"? He didn't mean that; is that your testimony?
18:07 **A.** What he told me --
18:07 **Q.** Sir, that's not my question.
18:07 **MS. KARIS:** Your Honor --
18:07 **BY MR. BRIAN:**
18:07 **Q.** My question is: Did he tell you he didn't mean it?
18:07 **MS. KARIS:** Your Honor, he asked him whether he told
18:07 him he didn't mean it. The witness should be allowed to answer
18:07 what Mr. Lockett told him.
18:07 **MR. BRIAN:** I never --
18:07 **MS. KARIS:** The question specifically asked about
18:07 what Mr. Lockett told him.

18:08 **MR. BRIAN:** I never ask an open question on cross, Your Honor.

18:08 **THE COURT:** Overruled. Overruled.

18:08 **MR. BRIAN:** Go ahead, sir.

18:08 **THE COURT:** Re-ask the question.

18:08 **BY MR. BRIAN:**

18:08 **Q.** Sir, did Mr. Lockett tell you that, after he sent this e-mail, he sent an e-mail correcting it saying, "I did not mean this was probably the best line of estimation"? Did he say that to you?

18:08 **A.** I don't think so. To what question that I had for him?

18:08 **Q.** Mr. Lockett's modeling showed flow estimates in excess of 20,000 barrels of oil per day, did they not?

18:08 **A.** Can you repeat that?

18:08 **Q.** No, I'll move on.

18:09 Isn't it a fact, sir, that at the time this number of 5000 barrels per day was being told to the Unified Command, the public, various modelers at BP, engineers were expressing concern that 5,000 barrels per day was not the best estimate? Isn't that a fact?

18:09 **A.** I've seen some correspondence from Mr. Mason to Andy Inglis.

18:09 **MR. BRIAN:** Let's pull up TREX-3220.1.1.TO.

18:09 **BY MR. BRIAN:**

18:09 **Q.** This is one of the documents from Mr. Mason you just were

alluding to, is it not?
A. Yes, it is.
Q. This is Mr. Mason's May 5, 2010 e-mail to Andy Inglis. Do you see that?
A. Yes.
Q. When you were a modeler, an engineer, in the April and May of 2010 time period, did you ever send an e-mail directly to the CEO?
A. No.
I do want to correct that. I think it's May 15, actually.
Q. You're right, actually. I'm sorry, I misread that.
But you never sent an e-mail during that time period to the CEO of BP production and exploration, did you, sir?
A. No, I didn't.
Q. Mr. Mason said in this e-mail --
MR. BRIAN: Your Honor, I know it's a little bit after 6:00.
THE COURT: I'm just waiting for a convenient break here unless you are just about finished.
MR. BRIAN: No, I have probably 20, 30 minutes at least.
THE COURT: Is this a good time? As good as any other time?
MR. BRIAN: It's as good as any other.

18:10 **THE COURT:** It's about 10 minutes after 6:00. We will resume at 8:00 a.m. in the morning.

What witnesses do we have after this witness?

18:10 **MR. BROCK:** Mr. Gibson and Mr. Adams.

18:10 **THE COURT:** Have a good evening.

18:10 **THE DEPUTY CLERK:** All rise.

18:10 (Proceedings adjourned.)

* * *

CERTIFICATE

I, Toni Doyle Tusa, CCR, 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 matter.

s/ Toni Doyle Tusa
Toni Doyle Tusa, CCR, FCRR
Official Court Reporter