

1 UNITED STATES DISTRICT COURT
 2 EASTERN DISTRICT OF LOUISIANA

3
 4 IN RE: OIL SPILL BY THE OIL RIG * Docket 10-MD-2179
 DEEPWATER HORIZON IN THE *
 5 GULF OF MEXICO ON APRIL 20, 2010 * Section J
 *

6 Applies to: * New Orleans, Louisiana
 *
 7 Docket 10-CV-02771, * October 2, 2013
 *
 8 IN RE: THE COMPLAINT AND *
 PETITION OF TRITON ASSET *
 LEASING GmbH, et al. *
 9 *

10 Docket 10-CV-4536, *
 UNITED STATES OF AMERICA v. *
 11 BP EXPLORATION & PRODUCTION, *
 INC., et al. *

12 * * * * *

13
 14 DAY 3, AFTERNOON SESSION
 TRANSCRIPT OF NONJURY TRIAL BEFORE
 15 THE HONORABLE CARL J. BARBIER
 16 UNITED STATES DISTRICT JUDGE

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1 **AFTERNOON SESSION**

2 **(October 2, 2013)**

3 **THE COURT:** Please be seated, everyone.

4 Any preliminary matters?

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

10 **THE COURT:** Without objection, those are admitted.

11 **MARK MAZZELLA,**

12 having been duly sworn, testified as follows:

13 **CROSS-EXAMINATION**

14 **BY MR. PETOSA:**

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

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

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

20 **BY MR. PETOSA:**

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

24 **MR. PETOSA:** If you could please call it up, Carl.
25

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13:03 1 BY MR. PETOSA:

13:03 2 Q. This is the January of 2010 BP Gulf of Mexico deepwater
13:03 3 SPU that you spoke about with Mr. Brock.

13:04 4 You joined BP in 2005, sir?

13:04 5 A. Yes, sir.

13:04 6 Q. Did you join it as the well control SETA?

13:04 7 A. No, sir.

13:04 8 Q. How long did it take you to progress until you became the
13:04 9 well control SETA?

13:04 10 A. I became well control SETA about three years after I
13:04 11 joined the team.

13:04 12 Q. So it took you two years to work on this Well Control
13:04 13 Response Guide?

13:04 14 A. No, sir. This Well Control Response Guide, in part, is
13:04 15 what I have written and developed and provided for operators
13:04 16 over the previous 28 years.

13:04 17 Q. That's the first time that BP published its own internal
13:04 18 Well Control Response Guide was in January of 2010, sir?

13:04 19 A. No, sir. They had a document standing prior to me getting
13:04 20 there.

13:04 21 Q. Then you took the document and revised it into the
13:04 22 document that we discussed this morning as TREG-2386?

13:04 23 A. No, sir. That document still exists. This one took its
13:05 24 place. It's two completely different formats.

13:05 25 Q. Let's talk about the document that's been marked as

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13:05 1 TREX-2386 --

13:05 2 THE COURT: Mr. Petosa, do you have a lapel mic on?

13:05 3 MR. PETOSA: Let me put it on. Sorry about that.

13:05 4 Carl, if you could go to page 9 of Exhibit 2386.

13:05 5 Carl, I would like to have you blow up, if you could, please,
13:05 6 the first two paragraphs under Section 5.1.

13:05 7 BY MR. PETOSA:

13:05 8 Q. Mr. Mazzella, I know with Mr. Brock you talked about the
13:05 9 first sentence: "This manual is applicable for the BP Gulf of
13:05 10 Mexico deepwater business unit. It's a guide to ensure that an
13:05 11 organized source control response to a well control event is
13:05 12 brought swiftly and efficiently into action."

13:05 13 You did not talk about the second part. Would you
13:05 14 agree, sir, that the manual you talked about earlier this
13:06 15 morning, the January 2010 Deepwater SPU Well Control Response
13:06 16 Guide, is a manual that provides a working methodology to
13:06 17 safely and effectively manage initial response to a well
13:06 18 control incident which would normally cover the first 48 hours?

13:06 19 A. That's what it says.

13:06 20 Q. Would you agree, sir, that this document is not a
13:06 21 how-to-fix-it manual?

13:06 22 A. I would agree it's not a how-to.

13:06 23 Q. You would agree, sir, it's not going to tell you what the
13:06 24 remediation tools are for source control?

13:06 25 A. It provides the organizational infrastructure to begin

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13:06 1 development of those tools.

13:06 2 Q. Would you agree, sir, that the only actual source control
13:06 3 measure identified in this document, this 127-page document,
13:06 4 are relief wells?

13:06 5 A. No, sir, that's not accurate.

13:06 6 Q. Sir, I would like to refer you to the deposition that you
13:07 7 attended on May of 2011, May 24.

13:07 8 MR. PETOSA: Carl, if you could please pull up
13:07 9 TREN-100231.

13:07 10 BY MR. PETOSA:

13:07 11 Q. And I would like to refer you, sir, to page 163 starting
13:07 12 at line 23.

13:07 13 MR. PETOSA: If you could pull that up for me,
13:07 14 please, Carl.

13:07 15 BY MR. PETOSA:

13:07 16 Q. And pull out the question, sir, at line 23 to 25.

13:07 17 MR. PETOSA: Pull that up, please, Carl. And then to
13:07 18 the top, we are going to page 164 through line 7.

13:07 19 BY MR. PETOSA:

13:07 20 Q. The question, sir:

13:07 21 "QUESTION: All right, I've read through this
13:07 22 document, Exhibit 2386, and the only well source control
13:07 23 option that I see in it is relief wells; is that right?

13:07 24 "ANSWER: Again, this is not how to fix it. This is
13:07 25 the organizational infrastructure. It's not going to tell

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13:07 1 you what the remediation tools are."

13:07 2 A. That's what it says, yes, sir.

13:07 3 Q. So the bottom line is: This is a document that gives
13:07 4 organizational guidance to BP, as you have talked about with
13:08 5 Mr. Brock?

13:08 6 A. Yes, sir.

13:08 7 Q. It's not a source control manual that identifies the
13:08 8 different options of source control to move forward with in the
13:08 9 event of a deepwater blowout in the Gulf of Mexico, correct?

13:08 10 A. No, sir. This is, in part, a source control document. It
13:08 11 establishes setting up the teams and providing the
13:08 12 infrastructure to begin work on the details of a remediation
13:08 13 program. It's the blueprint for every source control-type
13:08 14 operation there is in well control that I have ever been
13:08 15 associated with.

13:08 16 Q. That blueprint is to attempt to activate the BOP through
13:08 17 ROV intervention or through other means, correct, sir?

13:08 18 A. This document doesn't speak to that.

13:08 19 Q. The other blueprint, as set forth by BP, sir, is to begin
13:08 20 or commence drilling relief wells, correct?

13:08 21 A. This document prepares us for assembly of the teams to
13:09 22 start designing relief wells and implementing them. Yes, sir.

13:09 23 Q. But this document doesn't set up the plans on how to
13:09 24 actually go forward and shut in a blown-out deepwater well.
13:09 25 Correct, sir?

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13:09 1 A. No, sir. As I mentioned previously, this is not a
13:09 2 how-to-fix-it. This is to get the structure together and the
13:09 3 blueprint that gives the teams the tools to develop those
13:09 4 procedures. Now, those procedures are going to be very
13:09 5 specific to the unique conditions of that well. So it's
13:09 6 impossible to put all those pieces and tools into a complete
13:09 7 document because there's just so many variables.

13:09 8 Q. And then you call in your well control experts. You
13:09 9 mentioned some of them, Wild Well Control, Boots & Coots, Cudd,
13:09 10 correct, sir?

13:09 11 A. Yes, sir. They are part of the team.

13:09 12 Q. You have, in fact, said that Wild Well Control is one of
13:09 13 the best offshore marine well divisions?

13:09 14 A. Yes, sir, they have one of the most comprehensive marine
13:09 15 divisions.

13:09 16 Q. And that's why, on April 21, 2010, when you were alerted
13:10 17 about the *Deepwater Horizon* blowout, you called Wild Well
13:10 18 Control, Pat Campbell, David Barnett, to assist you and BP in
13:10 19 responding to this event, correct?

13:10 20 A. Yes, sir. I called Wild Well Control, Cudd, and Boots &
13:10 21 Coots.

13:10 22 Q. Sir, I would like to switch gears a little bit. I would
13:10 23 like to talk about the Junk Shot and the Momentum Kill that you
13:10 24 spent some time talking about with Mr. Brock today, okay, sir?

13:10 25 A. Yes, sir.

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13:10 1 Q. You mentioned, sir, that the Junk Shot peer assist, that
13:10 2 occurred on May 6. But prior to that, you had to create the
13:10 3 terms of reference for the actual peer assist, and I believe
13:10 4 you talked about that a little bit with Mr. Brock earlier at
13:10 5 TREN-142916.

13:10 6 You put those terms of reference together, didn't
13:10 7 you?

13:10 8 A. I don't recall if I did 100 percent myself or whether it
13:10 9 was a collaborative with some of the other team members, but I
13:10 10 would have been a part of it, yes, sir.

13:10 11 Q. You sent this document, sir, 142346, to Mr. James Dupree,
13:10 12 right? That's on May 5, 2010.

13:11 13 A. That's what this e-mail says, yes, sir.

13:11 14 Q. He was the head of source control with respect to the
13:11 15 *Deepwater Horizon* blowout, correct, for BP?

13:11 16 A. Yes, sir.

13:11 17 Q. You also copied Mark Patteson. Mark Patteson headed up
13:11 18 the Top Kill Team that was formed following Exhibit 2386, the
13:11 19 deepwater well control guide; one of the teams you have
13:11 20 discussed, correct?

13:11 21 A. Yes, sir. Mark Patteson led our efforts in pulling
13:11 22 together the planning and procedures and all the diligence that
13:11 23 we did for the Top Kill procedure.

13:11 24 Q. Okay. And, sir, you asked Mr. Dupree: "As requested,
13:11 25 please find the attached subject TOR" -- terms of reference.

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

3 A. That's correct.

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

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

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

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

13 BY MR. PETOSA:

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

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

18 BY MR. PETOSA:

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

24 A. That's correct.

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

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1 between energy expertise and operational teams and reduce
2 reactive risks."

3 Correct?

4 A. Yes, sir.

5 Q. Now, sir, the "industry expertise" you have talked about a
6 little bit with Mr. Brock, correct?

7 A. Yes, sir.

8 Q. I would like to highlight who those people are.

9 MR. PETOSA: Carl, if you could bring up Exhibit 3917
10 at page 1. If you could highlight Section C, please, here
11 under "Peer Assist Team."

12 BY MR. PETOSA:

13 Q. These are all the outside experts that you invited to join
14 BP in the peer assist of the Junk Shot, sir, correct?

15 A. I don't know where this list came from. Is this off of
16 the TOR?

17 Q. No, sir. This is actually the Junk Shot peer assist
18 agenda, which is Exhibit 3917.

19 A. Again, I would like to look at the agenda so I make sure
20 I'm speaking correctly to it.

21 Q. This is the agenda, sir, Exhibit 3917.

22 MR. PETOSA: Carl, do you want to flare that down.
23 Let's go up to the top and highlight it.

24 BY MR. PETOSA:

25 Q. See that, sir, "MC 252 Junk Shot peer assist: May 6,

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1 2010"?

2 A. (No audible response.)

3 Q. You don't dispute that that's the Peer Assist agenda, do
4 you, sir?

5 A. I don't know that I have seen this. I may have, but it's
6 not recognizable to me right now.

7 MR. PETOSA: Carl, if we could, could we go to page 2
8 of Exhibit 3917. If you could highlight the "Agenda" box down
9 to Number 4, Carl, under D, please.

10 BY MR. PETOSA:

11 Q. You see that the "Welcome Remarks and Introductions" were
12 led by Mr. Dupree, the head of BP source control, correct?

13 A. Yes, I do. Thank you.

14 Q. You attended this Junk Shot peer assist, correct?

15 A. Yes, sir, I did.

16 Q. You, in fact, set forth for all of those industry experts
17 that you called in BP's plan and procedure for the Junk Shot,
18 correct?

19 A. Yes, sir. I presented the methodology behind our program.

20 Q. And at that time, you would have been the one that
21 developed the methodology for BP that was presented to the peer
22 assist, correct?

23 A. No, sir. It would have been a collaborative between the
24 teams that had been stood up.

25 Q. But those were all BP teams at that time, correct?

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1 A. No, sir. They were industry experts and contractors, well
2 control specialists. It was a group of people.

3 Q. But you're the one who presented that over 45 minutes,
4 correct?

5 A. Yes, sir.

6 MR. PETOSA: Carl, if we can go back to page 1 of
7 Exhibit 3917, please, and again highlight the bottom C,
8 "Participants."

9 BY MR. PETOSA:

10 Q. Sir, you would agree that you brought in some of the
11 preeminent petroleum engineer professors in the country to
12 assist BP in this May 6, 2010 peer assist, correct?

13 A. Again, this looks like a list of people that were invited.

14 Q. You had members of Boots & Coots present, correct?

15 A. Yes, sir. As best as I can recall.

16 Q. Cudd, Wild Well, the teams -- or well control specialists
17 you have indicated on direct, sir, that you would normally call
18 in with BP and that you have, in fact, reviewed the contracts
19 for for BP?

20 A. Yes, sir.

21 Q. It even has industry experts, Shell, ConocoPhillips,
22 Chevron, ExxonMobil, correct?

23 A. That's correct, sir.

24 Q. And that was --

25 MR. PETOSA: If we go back, Carl, to page 2 of

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1 Exhibit 3917.

2 BY MR. PETOSA:

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

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

7 BY MR. PETOSA:

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

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

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

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

17 BY MR. PETOSA:

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

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

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

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

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13:17 1 Q. He at least gave the welcome and introductory remarks,
13:17 2 correct?

13:17 3 A. Like I said, I'm not sure if he was there. So he may not
13:17 4 have.

13:17 5 Q. I'm just relying on the document, sir.

13:18 6 Mark Patteson, the Top Kill lead, he was present in
13:18 7 the peer assist, wasn't he?

13:18 8 A. I believe Mark was.

13:18 9 Q. You were clearly present during the peer assist?

13:18 10 A. Yes, sir.

13:18 11 Q. And Kurt Mix, who is Kurt Mix?

13:18 12 A. Kurt was one of the team members that were working with
13:18 13 the engineering team.

13:18 14 Q. Was he present?

13:18 15 A. I don't recall if all these people were present. Like I
13:18 16 said, this has been some time ago. Whether or not those guys
13:18 17 were there, you know, the best of recollection, a lot of them
13:18 18 were, but I can't definitively say yes, they were all there.

13:18 19 Q. Sir, would you agree that --

13:18 20 **MR. PETOSA:** Carl, if we can go back to
13:18 21 Exhibit 142916 at page 2. If we can go to the top under
13:18 22 "Project Description," Carl, please. If we can highlight the
13:18 23 "Project Description" box, please, Carl.

13:18 24 **BY MR. PETOSA:**

13:19 25 Q. I think you talked a little bit about this with Mr. Brock,

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1 but I want to make sure we are clear. The purpose of this
2 project says it was to: "Participate in an overview of
3 presented information and resources required for successful
4 implementation of titled objectives and to assist with
5 identification of risks associated with prescribed program."

6 Sir, the prescribed program was the Junk Shot,
7 Bullhead, and Momentum Kill, correct?

8 A. Yes, sir. That's what the peer review was to take part
9 of.

10 Q. It goes on to say: "Additionally, identify any support or
11 considerations which may be required."

12 That's one of the things that you did with the
13 industry individuals you invited to the peer assist, correct,
14 sir?

15 A. Yes, sir, in part.

16 Q. And then the last part, sir, it says: "Provide
17 constructive feedback to BP through an engaged participation
18 with industry experts assembled from various well control
19 points of view."

20 Those are all those individuals we saw on the agenda
21 that were at least invited to attend the peer assist, correct?

22 A. There were others as well.

23 Q. Who else was there from the industry, sir?

24 A. There were various professors from some of the
25 universities that had petroleum engineering curriculums.

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13:20 1 Q. Dr. Tad Patzek? He was invited, correct?

13:20 2 A. Yes.

13:20 3 Q. Did he attend?

13:20 4 A. I believe he was.

13:20 5 Q. Dr. John Smith?

13:20 6 A. Yes, sir. I remember John Smith.

13:20 7 Q. Ted Bourgoyne?

13:20 8 A. He was there.

13:20 9 Q. Okay, sir.

13:20 10 Now, let's talk a little bit about the actual
13:20 11 Junk Shot peer assist report of findings you talked about with
13:20 12 Mr. Brock.

13:20 13 MR. PETOSA: Carl, if we could pull up TRES-140342 at
13:20 14 page 1, please. Now, if you can highlight this box right here,
13:20 15 please, Carl.

13:20 16 BY MR. PETOSA:

13:20 17 Q. You see, sir, this is an e-mail from a Gary Wulf to Bill
13:20 18 Kirton, May 7, 2010. The attachment says: "May 6, 2010 Peer
13:20 19 Assist Executive Summary." We are going to go to page 2 now of
13:21 20 this document, sir.

13:21 21 MR. PETOSA: Carl, if we can please move to page 2 of
13:21 22 Exhibit 140342. Highlight the box right here, Carl, please.

13:21 23 BY MR. PETOSA:

13:21 24 Q. You see, sir, this is the MC 252 Junk Shot peer assist
13:21 25 May 6, 2010 Report of Findings that you discussed with

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1 Mr. Brock. You remember talking about that with him?

2 A. Well, I haven't seen this e-mail.

3 Q. You haven't seen the May 7 report of the May 6, 2010
4 Junk Shot peer assist Report of Findings? That's the same
5 document you talked about with Mr. Brock on direct.

6 A. Well, I don't know this. This is a cover sheet to a
7 report. Frankly, I haven't seen that e-mail or -- if this was
8 an attachment to it. I'm not saying I haven't seen a report.
9 I'm not sure if this one is.

10 Q. Why don't we actually go to the exact exhibit Mr. Brock
11 used with you and maybe that will make it easier since you seem
12 to recall reviewing that document.

13 MR. PETOSA: Carl, can you pull up TREX-10506,
14 please. We can highlight the same box, Carl.

15 BY MR. PETOSA:

16 Q. You recall seeing this document, don't you, sir?

17 A. Yes, sir, this one is familiar.

18 MR. PETOSA: If we can go to page 4, Carl, of
19 Exhibit 10506 -- actually if we can go back to page 3. I'm
20 sorry, Carl. If we can highlight right there.

21 BY MR. PETOSA:

22 Q. Sir, you see it says "Top 10 Findings." Now, you would
23 agree that, out of the peer assist -- you talked with Mr. Brock
24 a little bit about this document -- that there were 10 key
25 findings of the Junk Shot Peer Assist Group when you brought

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1 together industry experts for BP along with BP employees to
2 discuss the plan procedure for the Junk Shot and, in turn,
3 Momentum Kill and the Bullhead?

4 A. Yes, sir.

5 Q. Now, you see, sir, Bullet 1: "These key findings are
6 nearly unanimous messages delivered from the three groups of
7 the Peer Assist Team."

8 That was the purpose of this document, to deliver the
9 key findings that were nearly unanimous messages delivered from
10 the three groups of the Peer Assist Team, correct?

11 A. Well, the purpose of this peer review is to help us
12 understand the risks and help us prepare for the mitigations.

13 Q. They were nearly unanimous messages, correct, sir?

14 A. According to this report, the consensus of the group was
15 that -- of the three groups were that these findings were
16 unanimous.

17 Q. This is BP's report, correct, sir?

18 A. Yes, sir.

19 MR. PETOSA: Carl, if we can go to page 5 of
20 Exhibit 10506 and highlight -- actually, go back to 4. I
21 apologize, Carl. That's my bad. Sorry about that.

22 If we can highlight Number 2, please, Carl. I'm
23 sorry, Number 3. Right here. Just the first entry.

24 BY MR. PETOSA:

25 Q. You see, sir, that one of the nearly unanimous top 10

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

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

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

10 A. Yes, sir.

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

14 A. Yes, sir.

15 Q. In your words, you said, in your experience in surface
16 wells and offshore that was not deepwater, you had a 60 or
17 70 percent success rate, correct?

18 A. Yes, sir.

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

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

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1 Q. But the industry experts you brought in for BP that
2 attended the May 6, 2010 peer assist didn't just tell you, BP,
3 that Junk Shots are often not successful, did they, sir?

4 A. No, sir. They also said that there was no technical
5 showstoppers. There was no reason not to do it.

6 Q. That wasn't my question, sir. My question is a little
7 more specific, and I guess I'll try to direct it to you.

8 They didn't just tell you that Junk Shots are often
9 not successful. Industry experts also told you, in that May 6,
10 2010 peer assist, that Junk Shot in this case, in this
11 deepwater well at 5,000 feet down, had a very low likelihood of
12 success.

13 Didn't they tell you that, sir?

14 A. No, sir, that's not what they said.

15 Q. You called in Wild Well Control, right, within hours of
16 learning of the event, correct?

17 A. That's correct.

18 Q. Pat Campbell and Dave Barnett were the individuals you
19 spoke with, correct?

20 A. Yes, sir, that's correct.

21 Q. And representatives of Wild Well were at BP's Westlake
22 offices at 6:00 a.m. on April 21, 2010?

23 A. That's correct.

24 Q. You recognize Pat Campbell as a well control expert?

25 A. Yes, sir.

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

5 A. Yes, sir. Pat Campbell was quite accomplished in his
6 discipline.

7 Q. Would you say the same about David Barnett, sir?

8 A. Yes, sir, I would.

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

14 A. No, sir, they did not tell me that.

15 Q. Okay, sir. I would like to refer to the deposition of Pat
16 Campbell, TRES-100203, page 11, line 18, to page 12 at line 12.

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

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

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

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

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

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

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

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

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

21 **THE WITNESS:** I don't recall that.

22 **BY MR. PETOSA:**

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

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1 A. No, sir. To the contrary, I thought it was a good idea.

2 Q. Wild Well Control was operating under contract for BP to
3 assist you in this response, correct?

4 A. That's correct.

5 Q. You're telling me, sir, that Wild Well never expressed to
6 you any concern about proceeding with the Top Kill Junk Shot
7 procedure that you discussed during this peer assist and
8 ultimately commenced beginning on May 26, 2010?

9 A. There was conversations going on back and forth trying to
10 understand the risks. You know, the reality is the forward
11 team had Wild Well people on it. The majority of the people
12 were Wild Well specialists, including Mr. Barnett.

13 Q. Were you ever told by Wild Well that they had a lack of
14 confidence in the ability of the Junk Shot procedure that was
15 planned, that you were involved in shaping -- that they had a
16 lack of confidence in it?

17 A. I don't remember any conversations "lacking confidence."

18 Q. Did Mr. Barnett, Mr. Campbell, or any other outside
19 industry experts ever tell you, sir, that the reason that the
20 Junk Shot had a very low likelihood of success was due to the
21 size of the flow path and due to the technical limitations on
22 the operation?

23 A. Well, at that time we didn't know what the flow path
24 looked like. You know, there had never been a deepwater
25 Junk Shot-type operation completed before. There was a lot of

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1 concern whether or not we could be successful.

2 The only thing we could measure it against was the
3 success we had with surface operations. We looked at all the
4 risks. We tried to understand the risks, plan the mitigation,
5 and make sure that we had a very clear, concise plan going
6 forward with boundary conditions where we wouldn't make matters
7 worse.

8 Q. Did Mr. Campbell tell you during the Junk Shot peer assist
9 or at any time prior to BP commencing the Junk Shot that you
10 executed on behalf of BP that the Momentum Kill in this process
11 required injection very near the surface, not via long string
12 or something of that nature, creating technical limitations in
13 the ability of the procedure to succeed?

14 A. I'm sorry. That was a really long question, sir. Can you
15 repeat it?

16 Q. Did Mr. Campbell, sir, ever tell you in the peer assist on
17 May 6, 2010, or at any time prior to executing the Junk Shot
18 Top Kill procedure, that the Momentum Kill part of that process
19 had a very low likelihood of success because it required
20 injection near the surface, not via a long drill string or
21 something of that nature?

22 A. I'm not saying that he didn't. I just don't recall it.

23 Q. You would agree that that would have been one of the
24 technical limitations of the procedure, correct, sir?

25 A. Well, not necessarily. We placed a manifold on the seabed

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

3 Q. Did any of the industry experts in attendance on May 6,
4 2010, for the Junk Shot peer review tell you that they thought
5 it was a good idea?

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

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

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

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

17 A. Yes, sir, that's correct.

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

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

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1 A. No, sir. Mark Patteson was the lead. I was technical
2 contributor and one of the guys that implemented the
3 procedures.

4 Q. Did you design the program or did Mr. Patteson?

5 A. Mr. Patteson was the lead, and it was a collaborative of
6 many team members that developed the procedures.

7 Q. You would agree with me, sir, that the plan for the
8 Top Kill, as you have described it, both the Momentum Kill and
9 the Junk Shot, was to pump mud at 50 barrels per minute,
10 correct?

11 A. There was an opportunity to pump at least that, yes, sir.

12 Q. In fact, on the last day you exceeded that and went up to
13 78 barrels per minute of mud, correct?

14 A. That's correct, sir.

15 Q. In your words, to give it one last hard shot to see if you
16 could kill the well, correct?

17 A. We had established some parameters. By performing the
18 previous attempts, we knew what the pressures were. Our
19 engineers had plotted that. We didn't come anywhere near the
20 boundary conditions, so there was not any reason not to go
21 ahead and try and ramp up and see if we could move the bridging
22 material around where we could effect a kill.

23 Q. Sir, on May 14, 2010, there was a Top Kill analysis and
24 Junk Shot review that you attended for BP, correct?

25 A. No, sir, I didn't attend any review.

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1 Q. You didn't attend any Junk Shot review, Top Kill analysis
2 for BP on May 14, 2010?

3 A. No, sir, not that I recall.

4 When I got back from completing the Top Kill
5 procedures, I went straight into a mode of helping the teams
6 that were progressing other options and seeing what I could do
7 to further our efforts.

8 Q. Sir, around that time -- May 14, May 15, May 16 -- were
9 you advised that you were supposed to be doing additional work
10 on kill rate estimates with Bob Grace, a well control expert
11 that was brought in by BP to assist in the response, and
12 Dr. Ole Rygg?

13 A. No, sir, I was not part of that analysis. I had nothing
14 to do with any flow rate calculations.

15 MR. PETOSA: Carl, if we can refer to TREN-5363,
16 page 10. Actually, let's go to page 1 first, please, Carl.

17 BY MR. PETOSA:

18 Q. You can see, sir --

19 MR. PETOSA: If we can blow up the top box, please.

20 BY MR. PETOSA:

21 Q. -- it's an e-mail sent May 14, 2010, from Jonathan Sprague
22 to Andy Frazelle, and it says "Attachments: Top Kill analysis."

23 You never received or reviewed any Top Kill analysis
24 for a Junk Shot review that was performed by BP on or about
25 May 14, 2010, before you commenced the Top Kill operation?

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1 A. Can you ask that again.

2 Q. Did you ever receive the May 14, 2010 Top Kill analysis
3 and Junk Shot review and review it before you commenced the
4 Top Kill procedure, sir?

5 A. There was an analysis done on the boundary conditions
6 where we would understand what pressures not to exceed. If
7 that's the analysis you're speaking to, then, yes, I did.

8 MR. PETOSA: Carl, if we could go to page 2 of
9 Exhibit TREX-5363. If we can just blow that box up, Carl.

10 BY MR. PETOSA:

11 Q. Do you see it says "Junk Shot review"?

12 A. That's what it says, yes, sir.

13 Q. Did you ever receive that document, sir?

14 A. I don't know what this document is in this context.

15 MR. PETOSA: Carl, let's go to page 3, please.

16 BY MR. PETOSA:

17 Q. You see it says "Context," sir, "Final assurance checks
18 being made for Junk Shot operations. Focus is on well system
19 integrity. Range of flow" -- and this word you've been talking
20 about today -- "Don't make situation worse"?

21 A. That's what it says, sir. Yes, sir.

22 Q. Did you receive any of this information on this slide
23 here?

24 A. I'm not familiar with this information.

25 MR. PETOSA: Carl, let's go to page 10 of TREX-5363,

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1 please.

2 **BY MR. PETOSA:**

3 **Q.** See how this says "Next Steps," sir? Let's talk about the
4 first box.

5 "More work to be done on kill rate estimates -
6 Mark M." Was there any other Mark M. involved in the Junk Shot
7 Top Kill procedure besides you for BP?

8 **A.** Not that I'm aware of.

9 **Q.** We can go back and look at the agenda, but I don't recall
10 seeing any other Mark M. You agree with me on that, correct,
11 sir?

12 **A.** Fair enough. Fair enough.

13 **Q.** Bob G., that was Bob Grace, correct?

14 **A.** I believe that it is, sir.

15 **Q.** You would also consider him to be one of the foremost,
16 preeminent well control experts in the field?

17 **A.** Yes, sir.

18 **Q.** He has even written books on the subject, hasn't he?

19 **A.** Yes, sir, he has.

20 **Q.** It says "Ole"?

21 **A.** Yes, sir.

22 **Q.** That's Dr. Ole Rygg, you would agree?

23 **A.** Yes, sir. He is the only Ole I know.

24 **Q.** He was brought in by BP, with Add Energy, to assist on
25 certain modeling of flow and other items like that, correct?

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1 A. In this context we are talking about kill rate estimates,
2 which is different than flow rate estimates.

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

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

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

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

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

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

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1 A. I don't know that to be true, sir.

2 Q. No one ever told you that?

3 A. No, sir. I mean, it depends on what your inputs are to
4 the program. If your inputs are wrong, your outputs are wrong.
5 In this instance we didn't know what the inputs were.

6 MR. PETOSA: Carl, if we can pull up TREX-8537,
7 please. Highlight the box right here, Carl.

8 BY MR. PETOSA:

9 Q. "Kurt, look at the presentation. Interesting results.
10 Looks like with 15,000 bopd you cannot kill it with 50 bpm.

11 "Let's discuss and QC these before distributing."

12 That's sent by Mr. Ole Rygg, correct, May 16, 2010?

13 A. Looks like his e-mail to Kurt, yes.

14 Q. Kurt Mix attended the Junk Shot peer assist with you,
15 correct?

16 A. I don't recall if he was there. I think he was. But, you
17 know, memory fails me.

18 Q. Did Kurt ever tell you that there was a limitation on the
19 ability of the Momentum Kill portion of the Top Kill to succeed
20 if the flow was in excess of 15,000 barrels of oil per day with
21 a planned 50-barrel-per-minute pump rate?

22 A. I don't recall if he did or not.

23 The Top Kill wasn't predicated as a procedure on flow
24 rate. Flow rate was a part of the Momentum Kill, not a part of
25 Top Kill. Top Kill is placement of the bridging material,

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

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

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

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

14 A. There was definitely an opinion to that effect.

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

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

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

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1 the Top Kill commenced, it was supposed to go forward with the
2 Momentum Kill first, without bridging material?

3 A. That's correct.

4 Q. And only if the Momentum Kill failed were you to proceed
5 with bridging material, correct?

6 A. That's correct.

7 MR. PETOSA: Carl, if you can pull up TREX-9148,
8 please.

9 BY MR. PETOSA:

10 Q. I think Mr. Brock highlighted for you the signatures of
11 Unified Command here.

12 MR. PETOSA: If we can go down to the bottom, Carl,
13 and just highlight now the box at the bottom. Just the date.

14 BY MR. PETOSA:

15 Q. So this is the May 22, 2010 Momentum Kill procedure with
16 the contingent alternative LCM pills added in, correct?

17 A. Yes, sir.

18 Q. That's the Junk Shot portion of the Top Kill, correct?

19 A. In part, yes, sir.

20 MR. PETOSA: Carl, if we can go to page 4 of
21 TREX-9148, please, and highlight Number 1 under well status,
22 please.

23 BY MR. PETOSA:

24 Q. You see, sir, under well status, "This approved procedure
25 by the Unified Command says well is under blowout conditions."

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1 I think we can all agree with that, right, the well
2 was blowing out?

3 A. Yes, sir, that's pretty obvious, unfortunately.

4 Q. Let's talk about the second bullet point. We just talked
5 about this.

6 Sir, do you agree that the approved procedure said
7 that the Top Kill plan is to pump a Momentum Kill with only mud
8 followed by cement. That was the plan, correct, sir?

9 A. If the well was successfully killed.

10 Q. Again, sir, "No attempt will be made to bridge or seal the
11 flow upwards in the BOP," correct?

12 A. That's what this says.

13 Q. You knew all along that that was not going to work?

14 A. No, sir, I did not.

15 Q. You didn't think it was going to succeed, or did you?

16 A. Well, I wouldn't have put 300 people offshore, all these
17 vessels, spent all this time away from my family if I didn't
18 think it was going to work.

19 Q. You didn't hear my question right, sir, and I apologize
20 for that if I misstated.

21 A. Okay. I --

22 Q. You knew all along that the Momentum Kill portion of the
23 Top Kill was not going to work?

24 A. No, sir, I didn't know that. I didn't have definitive
25 data that said that Momentum Kill wouldn't work.

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

4 A. Nobody had definitive data that could provide any flow
5 rate estimates to me.

6 Q. No one from BP provided you with all the internal flow
7 rate modeling data they did, did they?

8 A. No, sir.

9 Q. You see this chart over here, "BP Flow Rate Modeling,
10 April 21 to May 31, 2010"?

11 MR. PETOSA: Your Honor, can I approach?

12 THE COURT: Sure.

13 BY MR. PETOSA:

14 Q. It's labeled here, sir, D-25015C.

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

18 MR. PETOSA: If I could ask my question, maybe I
19 could --

20 THE COURT: Let's see what the question is.

21 MR. PETOSA: Thank you, Your Honor.

22 BY MR. PETOSA:

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

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1 13 : 4 6 1 Top Kill, correct, sir?

2 13 : 4 6 2 A. Well, you know, there was a lot of people working a lot of
3 13 : 4 6 3 different work fronts, and I'm sure there were some people
4 13 : 4 6 4 trying to take a look at it and doing their best to understand
5 13 : 4 6 5 it. What those inputs and outputs looked like, I don't have
6 13 : 4 6 6 any knowledge of.

7 13 : 4 6 7 Q. But my question, simply, sir, you are aware that BP was
8 13 : 4 6 8 modeling ranges of flow from the Macondo well from when the
9 13 : 4 6 9 blowout occurred until the Top Kill commenced, correct?

10 13 : 4 6 10 A. I don't have any detailed knowledge of that, no, sir.

11 13 : 4 6 11 Q. Are you aware at all, sir, if they were doing that?

12 13 : 4 6 12 A. As I mentioned previously, you know, there were a lot of
13 13 : 4 6 13 people working a lot of different work fronts. My focus was
14 13 : 4 6 14 getting these procedures and people and plans in place where we
15 13 : 4 6 15 could go out there and try and kill this well.

16 13 : 4 6 16 Q. I want to understand this. You are the person that was
17 13 : 4 7 17 involved in executing the Top Kill, correct?

18 13 : 4 7 18 A. Yes, sir.

19 13 : 4 7 19 Q. And BP was doing some modeling of flow rate ranges. You
20 13 : 4 7 20 just don't know what, how, or who was doing it, correct?

21 13 : 4 7 21 A. That's correct.

22 13 : 4 7 22 Q. You know that Dr. Rygg was doing some modeling of the
23 13 : 4 7 23 Momentum Kill, not the Junk Shot, correct?

24 13 : 4 7 24 A. I assume he was. He was helping us try and understand
25 13 : 4 7 25 what we could pump, the maximum rates we could pump.

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

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

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

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

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

18 BY MR. PETOSA:

19 Q. Let's go to the third bullet point, sir.

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

23 Bridging Platelets are trademarked, aren't they?

24 A. According to this, it is.

25 Q. There's a specific material that's actually called

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1 Bridging Platelets, correct?

2 A. Yes, sir.

3 Q. The next bullet point: "Frac balls are also a contingency
4 bridging option. The frac ball procedure is a part of the
5 Top Kill procedure."

6 What are frac balls?

7 A. Frac balls are used in stimulation operations.

8 Q. You would agree this doesn't talk about putting rope knots
9 down the well, does it?

10 A. No, sir. It doesn't prohibit it either.

11 Q. It doesn't talk about putting portions of chewed-up tires
12 down the well?

13 A. This information you have pulled up here, no, sir, it does
14 not.

15 MR. PETOSA: Let's go down to the bottom of the same
16 page -- actually, on page 6, Carl, if we go down to Table 1.
17 Let's highlight Table 1 all the way down to that bottom
18 paragraph.

19 BY MR. PETOSA:

20 Q. You see it says, sir: "Calculated Hole Diameters for
21 Platelets and Frac Balls - refer to Figure 1 below."

22 This is information that the Unified Command approved
23 about the type of bridging material that you were authorized to
24 attempt to shoot down the Macondo well, correct?

25 A. In part, yes, sir. We had procedures that allowed us to

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1 pump everything that we pumped into that well.

2 Q. Then you see at Bullet Point 1: "Adding more frac balls
3 will not significantly reduce the flow."

4 Do you agree with that?

5 A. No, sir.

6 Q. But that was a procedure that BP sent to Unified Command
7 that was approved, correct?

8 A. Yes, sir. But this doesn't forbid you to pump --

9 Q. It doesn't authorize you to do it either, does it, sir?

10 A. No, sir.

11 We have procedures for everything we pump. As a
12 matter of fact, we went out and did simulations with this stuff
13 with people like Stress Engineering, a firm we hired, well
14 control specialists that went out, took all the material we
15 had, and tried to pump it. We tried to plug up with it. All
16 of this stuff was under the review of all of our leadership,
17 all of the Unified Command. We were completely transparent
18 with this material.

19 Q. Bottom line, though, sir, there was no modeling done of
20 the Junk Shot to determine whether or not it would succeed or
21 if it would in fact increase the chances of success of the
22 Momentum Kill, correct?

23 A. Well, there's not any modeling available for
24 Junk Shot-type scenarios in the industry. It doesn't exist. I
25 don't know how you would do that. There's just not any tool

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1 like that.

2 Q. BP had no basis to conclude prior to the commencement of
3 the Top Kill that the Top Kill had a 60 or 70 percent chance to
4 succeed, did they, sir?

5 A. Well, they had the experience of our well control
6 specialists and myself. I'm the one that had the 60 to
7 70 percent success rate of the wells that I have done on- and
8 offshore.

9 Q. Not deepwater though, correct, sir?

10 A. No, sir. As we testified earlier, there has never been a
11 deepwater Junk Shot pumped until Macondo.

12 Q. Not with the technical limitations of trying to commence a
13 Junk Shot procedure on a deepwater well, correct, sir?

14 A. Again, this has never been attempted before.

15 Q. Sir, you would agree that BP had no basis to conclude
16 prior to the Top Kill commencement on May 26, 2010, that the
17 Top Kill procedure had an 80 percent chance to succeed?

18 A. Well, I can't comment to the percentages that you have
19 mentioned because I personally have not had that kind of
20 success rate. But we did have the basis for success. We had
21 the experience and recommendations from our well control
22 specialists and guys like me that have done it our whole
23 career.

24 Q. You would agree, sir, that prior to commencing the
25 Top Kill on May 26, 2010, BP had no basis to conclude that the

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1 13 : 5 2 1 Top Kill was a slam dunk?

2 13 : 5 2 2 A. I don't like the term "slam dunk." In our business
3 13 : 5 2 3 nothing is ever a slam dunk until a well is dead and we are
4 13 : 5 2 4 headed home.

5 13 : 5 2 5 Q. You executed the Top Kill, you told us, correct, sir?

6 13 : 5 2 6 A. Yes, sir, that's correct.

7 13 : 5 3 7 Q. Wild Well Control, Mr. Barnett and Mr. Campbell and their
8 13 : 5 3 8 group, worked under your direction or collaboratively with you
9 13 : 5 3 9 to execute the Top Kill, correct?

10 13 : 5 3 10 A. That's correct, sir.

11 13 : 5 3 11 Q. But it was actually under your direction, wasn't it?

12 13 : 5 3 12 A. Well, yes, sir. I was charged with implementing and
13 13 : 5 3 13 performing the procedures.

14 13 : 5 3 14 Q. Wild Well Control proceeded with commencing the pumping of
15 13 : 5 3 15 the Top Kill and executing it and getting the materials under
16 13 : 5 3 16 your direction, correct?

17 13 : 5 3 17 A. No, sir. BJ Services pumped -- Halliburton Services
18 13 : 5 3 18 pumped the jobs for us.

19 13 : 5 3 19 Q. How about obtaining bridging material? Who did that?

20 13 : 5 3 20 A. We had several areas. Wild Well Control engineered some
21 13 : 5 3 21 and had some made for us and shipped to us. The Brinker
22 13 : 5 3 22 platelets that you are speaking to were shipped in from the UK.
23 13 : 5 3 23 There was various other materials. Frac balls, things like
24 13 : 5 3 24 that were provided from companies like BJ and Halliburton.
25 13 : 5 3 25 There was unconventional equipment that we procured by

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1 purchase. There was lots of different ways we brought it in,
2 but it was a collaborative that brought it together.

3 Q. And you would have conversations with Mr. Barnett,
4 Mr. Campbell, and other representatives of Wild Well as the
5 planning was going up to the Top Kill and during the actual
6 Top Kill about the procedure, correct?

7 A. Yes, sir. We were always collaborating about this whole
8 process, you know. One of the things that we have learned in
9 well control is collectively we are a lot smarter than we are
10 individually and by surrounding ourselves with those kind of
11 experienced people, it just helps us with overall knowledge and
12 reducing the opportunity for failure.

13 Q. Sir, during the Top Kill, did you tell Mr. Barnett
14 during -- or his representatives from Wild Well during the
15 process to get a whole bunch of big junk, as big as they could
16 pump through the lines?

17 A. I probably did. I don't remember specifically that
18 conversation, but I probably would have.

19 Q. Did Mr. Barnett continue to inquire of you as the process
20 continued forward for the Top Kill and try to get more
21 information from you as to exactly what you, on behalf of BP,
22 wanted Wild Well to get to have pumped for the Junk Shot?

23 A. Well, as I mentioned previously, this was a collaborative.
24 Wild Well and I, Cudd, Boots & Coats, everyone that was
25 involved in this thing would have conversations. We would try

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

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

9 A. No, sir.

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

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

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

20 A. Sure.

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

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

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1 THE COURT: I sustain that.

2 BY MR. PETOSA:

3 Q. Sir, I would also like to pull up Exhibit 120216. It's an
4 e-mail string.

5 MR. PETOSA: Carl, if we can go to page 5 to 6.

6 BY MR. PETOSA:

7 Q. You see at the bottom, sir, on May 28 of 2010, it says:
8 "I sent Dave Moody an e-mail just a few minutes ago passing on
9 a request from Mark Mazzella for Wild Well Control to get a
10 whole bunch of big junk, big as we can pump through the lines."

11 Those were certain requests that you would make of
12 Wild Well during the commencement and the operations of the
13 Top Kill?

14 A. This would have been -- as I testified earlier, would have
15 been the conversation between Barnett and I where we asked
16 Wild Well to procure as big of material as we thought we could
17 get through the lines.

18 Q. And you see: "I tried to press for how much, what kind.
19 All I can get is everything we had before."

20 And this was at the end of the Top Kill process,
21 correct?

22 A. This says May 28 is what it says.

23 Q. You would have conversations like this with, though,
24 Mr. Mazzella -- I mean, Mr. Moody, Mr. Barnett, Mr. Campbell
25 about the process as it was unfolding over those number of

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13:58 1 days, correct?

13:58 2 A. Yes, sir. These days don't add up to me, but this would
13:58 3 have been conversations that I had with them.

13:58 4 MR. PETOSA: Carl, if we can go down two more
13:58 5 paragraphs. It starts with, "I can't get anything out of." On
13:58 6 page 6. Right there.

13:58 7 BY MR. PETOSA:

13:58 8 Q. It says, sir: "I can't get anything out of Mazzella and
13:58 9 I'm tired of trying. I asked if he wanted golf balls and he
13:58 10 said he didn't care, get whatever we wanted to pump."

13:58 11 Wasn't there a specified procedure about what you
13:59 12 could or could not pump, sir?

13:59 13 A. No, sir. If this is in the context that I believe it is,
13:59 14 this is when we were trying to understand what we could and
13:59 15 couldn't pump.

13:59 16 Q. Wild Well is operating on behalf of BP to execute the
13:59 17 Top Kill, correct, sir?

13:59 18 A. Yes, sir.

13:59 19 Q. He is asking you, Mr. Barnett on behalf of Wild Well, what
13:59 20 to get and you told him you didn't care, get whatever we wanted
13:59 21 to pump?

13:59 22 MR. BROCK: Objection. This is not an e-mail that
13:59 23 was sent to Mr. Mazzella. I object based on foundation. It
13:59 24 wasn't sent to him. I think we ought to pull that second piece
13:59 25 down. That's not something attributed to him, and it ought not

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1 be put up in the courtroom.

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

4 THE COURT: Just move on.

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

6 BY MR. PETOSA:

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

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

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

13 A. I'm sorry, sir.

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

17 A. There's that possibility.

18 Q. Did that happen here, sir?

19 A. No, sir.

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

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

6 Q. Did Cameron express concern to you that during the May 26,
7 2010 Junk Shot procedure, that the wrong frac balls, all five 2
8 1/4-inch balls were shot in the Junk Shot and none of the
9 7/8 balls that were supposed to go down the hole went down the
10 hole?

11 A. Cameron?

12 Q. Cameron, sir.

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

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

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

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

22 A. No, sir, not necessarily.

23 Q. Why?

24 A. Depends on what the procedure said.

25 Q. Well, if the procedure at the time was supposed to send

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1 the 7/8-inch frac balls down the hole first followed by the 2
2 1/4-inch balls, wouldn't that be common operator error if the
3 7/8-inch balls were never sent down the hole?

4 A. If you can show me those procedures where that happened
5 out of sequence, then there's a possibility that the wrong
6 balls were sequenced at the wrong time. The reality is it
7 would have had little to no impact on what we did.

8 Q. So, sir, it's your testimony that on May 26, that all
9 hundred of the 7/8-inch balls were sent down the hole?

10 A. No, sir. If I recall, we pumped everything that we could
11 get out of the shot tubes, but it seems like I recall there
12 were some that were left in that became lodged in the shot
13 lines.

14 Q. Okay, sir. You would agree that the reason that the
15 Top Kill failed was because the hole, the diameter of the hole,
16 the orifice that you were trying to plug up was just too big?

17 A. Look, I had an opinion on that, like others have opinions
18 on why Top Kill failed. For me I couldn't in no way provide
19 definitive data that the orifice or the flow path was the
20 reason that it failed or that it was multiple flow paths, no
21 more than the other people that had other opinions of why it
22 failed could provide definitive data.

23 So with all that in mind, it always pointed us toward
24 a conservative way of doing things. But, you know, I had an
25 opinion, like everyone else.

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1 14:03 Q. Okay, sir. Let's refer to your deposition at TRES-100231,
2 14:03 page 114 to page 115 about what you testified to about why the
3 14:03 Top Kill failed.

4 14:03 MR. PETOSA: If we can start out, Carl, at line 18.

5 14:03 BY MR. PETOSA:

6 14:03 Q. Sir, you see there's a question? Line 21:

7 14:03 "QUESTION: What did you attribute to be the reason
8 14:03 that the Top Kill was unsuccessful?"

9 14:03 MR. PETOSA: If we can go to the next page, please,
10 14:04 Carl, at page 115. If we can go to line 6.

11 14:04 "ANSWER: Because we were restricted by the Macondo
12 14:04 BOP fixed lines" --

13 14:04 Starting at line 6 and go down, Carl, I
14 14:04 apologize.

15 14:04 "ANSWER:there was a limit to the size of
16 14:04 material that we could put in there. We don't believe the
17 14:04 pressure was the culprit because we saw the pressure being
18 14:04 around 3,000 pounds and typically that's not enough to
19 14:04 push it through any orifice that it could bridge. Some of
20 14:04 this material was fairly large. So we think that the hole
21 14:04 we were trying to plug was just too big."

22 14:04 BY MR. PETOSA:

23 14:04 Q. Is that what you testified to back in May of 2011?

24 14:04 A. Yes, sir, and that I thought that the hole was too big --
25 14:04 again, my opinion.

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1 14:04 Q. That's your opinion still today, sir, correct?

2 14:04 A. Yes, sir.

3 14:04 Q. That's what you told BP's expert, Iain Adams, when you met
4 with him, or at least talked to him on March 3rd of 2013?

5 14:05 A. I don't recall a conversation with Iain Adams specifically
6 about that orifice size. I'm not discounting it or saying that
7 I did. I just don't remember that conversation.

8 14:05 Q. You don't remember telling Mr. Adams that the reason that
9 Top Kill failed was material was too small and the hole was too
10 big?

11 14:05 A. No, I don't recall that. Pumping Junk Shots, you always
12 pump small material into large areas. I pumped one in
13 South Texas where the biggest line I could get was 2 inch and I
14 had to pump into an 11-inch BOP and seal around components in
15 it that were a lot larger than that 2 inch. I had to pump over
16 300 golf balls in it to do it, but we got it bridged off and we
17 successfully killed the well.

18 14:05 So the size of the material that goes through the
19 line is not -- excuse me. The success of a Junk Shot is not
20 contingent with the size of the material that goes through that
21 line. Can your success factors be better? Absolutely. But
22 the way the procedure is designed is that it builds on itself,
23 and that's why you can use smaller lines.

24 14:06 Q. Sir, it's your opinion that the reason the Top Kill failed
25 was the hole was too big, correct?

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1 A. Again, my opinion was that the holes were too big or there
2 were multiple holes.

3 Q. Wild Well Control told you the same thing on May 31st of
4 2010, correct?

5 A. Yes, sir.

6 Q. Bob Grace agreed with that, the well control specialist we
7 talked about, correct?

8 A. Yes, sir. The consensus of the whole forward team was
9 that our opinion was that there was either multiple flow paths
10 or too big a flow path to try and plug up.

11 Q. You would agree, sir, that if you have a larger geometry,
12 that increases the likelihood that you have less restrictions
13 in the hole, correct?

14 A. Yes, sir.

15 Q. And in turn, you can have increased flow, correct?

16 A. Yes, sir.

17 Q. Did Kurt Mix tell you on May 27th or May 28th of 2010 that
18 the reason that the Top Kill was failing was there was too much
19 flow rate, over 15,000, and too large an orifice?

20 A. I don't know which part of Top Kill that Kurt was speaking
21 to. As we discussed earlier, Top Kill has two components. One
22 is the placement of bridging material and the other is the
23 Momentum Kill. If he was speaking to the placement of bridging
24 material, that's not flow dependent.

25 Q. Sir, you would agree on May 27, 2010, the procedure that

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14:07 1 went forward was the Junk Shot component with Momentum Kill
14:07 2 over the Top Kill, correct?

14:07 3 A. Yes, sir. There was two parts of Top Kill and that --
14:07 4 again, one was the bridging material and the other was the
14:07 5 Momentum Kill.

14:07 6 Q. You didn't answer my question. I would like to ask it
14:07 7 again, sir.

14:07 8 A. Okay.

14:07 9 Q. On May 27, 2010, sir, did Kurt Mix tell you there was too
14:07 10 much flow rate, over 15,000, and too large an orifice?

14:08 11 A. I don't recall that because, if memory serves me
14:08 12 correctly, we were in the throes of doing drills and things
14:08 13 like that. I don't remember exactly the dates on when the job
14:08 14 was pumped.

14:08 15 Q. The last thing, sir, that I'm going to wrap up is that you
14:08 16 said your whole team was in agreement that the reason the
14:08 17 Top Kill failed was there was too large of a hole you were
14:08 18 trying to plug up, correct?

14:08 19 A. That was the consensus of the forward team, yes, sir.

14:08 20 Q. You communicated that from your forward onshore --
14:08 21 offshore team to the onshore group at BP Westlake, correct?

14:08 22 A. Yes, sir, I communicated that with our leadership.

14:08 23 Q. You were not involved in any of the post Top Kill analysis
14:08 24 after that, correct, sir?

14:08 25 A. No, sir.

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

3 **THE COURT:** Mr. Brock.

4 **REDIRECT EXAMINATION**

5 **BY MR. BROCK:**

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

9 **A.** Absolutely. There were opinions floating around like
10 feathers on a bird. Some of them involved various components
11 in the wellbore.

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

15 **A.** Yes, sir, I do remember discussions to that respect.

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

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

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

25 **MR. PETOSA:** Not without hearsay, Your Honor.

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1 THE COURT: I sustain the objection.

2 BY MR. BROCK:

3 Q. Did you agree, sir, with the idea of going forward to
4 collection following the Top Kill procedure?

5 A. Well, I was not involved in the decision for collection.
6 However, in my opinion it's a prudent way forward while we were
7 continuing to develop our procedures for the other intervention
8 opportunities.

9 Q. Thank you. Going back to one of the questions that were
10 asked early in the exam, you were asked: Did your procedures
11 contain a detailed "how to shut the Macondo well in" section?

12 Do you remember questions to that effect?

13 A. You're speaking to the Well Control Response Guide?

14 Q. Yes.

15 A. Yes, sir, I remember that.

16 Q. Can you tell the Court why there was no detail on how to
17 shut the well in procedure in that manual.

18 A. Well, as we had discussed earlier, every well control
19 situation is unique. Every BOP configuration is potentially
20 different. All the scenarios can be different, so we require
21 different procedures to shut the well in. Some of these that
22 you can predict, some of them you have no way of knowing that
23 you're going to be presented with that.

24 It's very difficult to come and put a complete plan
25 together that says every time there's going to be a blowout,

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1 this is what we can do to stop it. There are so many different
2 variables to this thing. It's almost impossible to do that.

3 You know, you have got to evaluate, assemble a team,
4 evaluate, and then prepare the plan to go ahead and try to
5 remediate that based on the scenario that -- or the situation
6 that you are presented with.

7 Q. Is what you have just described the reason that the
8 industry standard is to stand up a team of experts in the event
9 of an unfortunate situation like Macondo?

10 A. Absolutely. That is the industry standard --

11 MR. PETOSA: Your Honor, object. This is beyond the
12 scope of cross, and it's really beyond the knowledge of the
13 witness.

14 MR. BROCK: He asked about why they didn't have a
15 detailed how-to. I'm responding to that, Your Honor.

16 MR. PETOSA: I was talking about the well control
17 guide, Your Honor.

18 THE COURT: I overrule the objection.

19 BY MR. BROCK:

20 Q. Go ahead.

21 A. I'm sorry.

22 THE COURT: You can answer. Do you remember the
23 question?

24 THE WITNESS: I just want to make sure I get it
25 right.

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1 THE COURT: Why don't you re-ask it.

2 MR. BROCK: Make sure he has permission, too.

3 THE WITNESS: You guys talk a different language than
4 us oil field guys.

5 BY MR. BROCK:

6 Q. Is your description of bringing in experts to look at the
7 individual situation that you're presented with, is that done
8 because you can't anticipate what you will find once you start
9 your response?

10 MR. PETOSA: Your Honor, I object, leading.

11 THE COURT: Overruled.

12 THE WITNESS: It is, Your Honor. I mean, that's what
13 we do in our industry is we surround ourselves with the experts
14 to help us evaluate it. You know, the well control people do
15 this stuff every day. They are going to understand what we can
16 do a lot better than what the average oil field guy does. And
17 it's a collaborative effort.

18 Some instances the -- what the well control
19 people provide for you is a little bit different than what we
20 would normally do. For instance, I could just push a button
21 and shut a BOP where a well control guy says, you know, I can
22 manually walk up there and close that well in. And that's what
23 you do. You assemble a team. You've got to evaluate it, and
24 you try and develop a plan based on what you have learned in
25 looking at that well. Going forward you have to do that

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

3 **BY MR. BROCK:**

4 **Q.** Thank you for that.

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

11 **A.** Yes, sir, I was.

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

13 **A.** Yes, sir, it was.

14 **Q.** Just tell the Court what you told him.

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

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

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

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

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1 ran the Top Kill operation.

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

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

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

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

20 A. Fair enough.

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

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

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

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

9 **THE COURT:** Thank you, sir.

10 Next witness, Mr. Brock.

11 **MR. BROCK:** Yes, sir, Your Honor. At this point we
12 are going to play excerpts from five depositions. The run time
13 on these depositions is about 12 minutes. We have Lars Herbst,
14 who was the MMS regional director and the 30(b)(6) for the
15 United States on responding to subsea oil well blowouts;
16 Dr. Rygg, who you heard about, who was Add Energy's 30(b)(6);
17 Richard Vargo, who was Halliburton's senior global adviser and
18 their 30(b)(6) for Top Kill; David McWhorter, who was Cameron's
19 30(b)(6) for BOP-on-BOP techniques; and Admiral Kevin Cook, who
20 was the United States' 30(b)(6) for BOP-on-BOP and sequencing
21 of source control efforts. And then we will follow with a
22 witness.

23 **THE COURT:** Okay. Thank you.

24 (Deposition clips of Lars Herbst, Ole Rygg, Richard
25 Vargo, David McWhorter, and Kevin Cook played.)

1 **MR. BROCK:** That's all, Your Honor. BP's next
2 witness is Mr. Trevor Smith, a fact witness.

3 **THE COURT:** Okay. Go ahead and call him.

4 **MR. BROCK:** He is coming in now, Your Honor.

5 **TREVOR SMITH,**

6 having been duly sworn, testified as follows:

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

9 **THE WITNESS:** My name is Trevor Smith, T-R-E-V-O-R,
10 S-M-I-T-H.

11 **DIRECT EXAMINATION**

12 **BY MR. COLLIER:**

13 **Q.** Good afternoon, Mr. Smith.

14 **A.** Good afternoon.

15 **Q.** My name is Paul Collier. I'll be asking you questions
16 today on behalf of BP. I have you on direct examination.

17 Can you please introduce yourself to the Court.

18 **A.** My name is Trevor Smith.

19 **Q.** Where are you currently employed?

20 **A.** I'm employed by BP in Houston.

21 **Q.** What is your current role with BP?

22 **A.** I'm project manager for subsea production systems and
23 containment in Project 20K, a technology development project.

24 **Q.** You worked on the response effort relating to the
25 *Deepwater Horizon* incident?

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1 A. Yes, I did.

2 Q. Can you briefly describe what role you had with respect to
3 the response effort.

4 A. I was a project manager in what became known as the BOP
5 Connections Team, organizing in the tasks of that members of
6 that team.

7 Q. Now, before discussing your work on the response, I would
8 like to talk a little bit about your background.

9 Can you please provide some information about your
10 educational background.

11 A. I was educated in Ireland, finishing with a degree in
12 engineering, science, and mathematics at Trinity College
13 Dublin.

14 Q. Can you please describe your professional credentials.

15 A. I'm a chartered engineer and fellow of the UK Institution
16 of Mechanical Engineers.

17 Q. Can you describe your professional work experience.

18 A. I have worked for BP since 1978 -- initially in pipeline
19 engineering, then in subsea inspection and maintenance,
20 followed by subsea projects.

21 Q. Can you provide a little bit more detail about the work
22 that you have done with respect to subsea projects.

23 A. Most notably, in the mid to late '90s, I was subsea team
24 leader for the Schiehallion subsea development west of Shetland
25 in the UK, a deepwater subsea project. Following which, I was

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1 seconded for a period into the Total project to provide input
2 from our experience in BP into the Total project for Angola. I
3 came to Houston in 2000 to work on Holstein development and
4 have been largely involved in work in Houston since that time.

5 Q. Can you describe what type of subsea equipment you have
6 worked on in your experience.

7 A. It's a full range of subsea equipment. Wellheads, subsea
8 trees, subsea jumpers, manifolds, flow line and riser systems
9 and their associated control systems.

10 Q. Now, with respect to the *Deepwater Horizon* response, I
11 think you identified that you were a member of a specific team;
12 is that right?

13 A. That's correct.

14 Q. What was that team?

15 A. Initially, it was named the Swing Valve Team and later
16 became known as the BOP Connections Team.

17 Q. What role did you have with that team?

18 A. Essentially, I was the project manager for a number of the
19 activities there.

20 Q. What was the purpose of the BOP Connections Team?

21 A. When I joined, which was April 30, the two main roles or
22 goals of that team were to establish methods and procedures and
23 equipment to allow us to cut away the damaged riser from the
24 top of the LMRP of the *Deepwater Horizon* stack; and secondly,
25 to devise some means of attaching a capping device to the flex

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1 joint at the top of the LMRP on the stack.

2 Q. Now, when did the Response Team start looking at a way of
3 attaching a capping stack to above the LMRP?

4 A. I believe it started approximately April 27.

5 Q. Now, can you describe who was on the BOP Connections Team?

6 A. There were a range of expertise engineers who had
7 experience in subsea system design, subsea installation
8 activities, ROVs, subsea installation tooling development,
9 pipeline engineering, welding, and stress analysis, amongst
10 others.

11 Q. Can you briefly describe how the BOP Connections Team
12 worked to meet the goals that were set for it?

13 A. We were based in BP's offices at Westlake in Houston in
14 the crisis center. We normally worked 12-hour days or more
15 from 6:00 in the morning to 6:00 in the evening continuously
16 during the response with occasionally time off for pressing
17 family or personal matters.

18 Q. Did the BOP Connections Team work with other members of
19 the response?

20 A. Yes, we did. We worked primarily with the Well Capping
21 Team and the Subsea Installation Team that were operating --
22 controlling offshore operations from the hive at Westlake.

23 Q. Did the BOP Connections Team work with other members of
24 the industry during the response?

25 A. Yes. Through the Well Capping Team, we worked with

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

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

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

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

22 A. That's correct.

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

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

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1 14:38 working on attaching on top of the BOP, if the LMRP could be
2 14:38 removed. So we were essentially looking at an alternative
3 14:38 option.

4 14:38 **MR. COLLIER:** Now, if we could pull up D-23272A,
5 14:38 please.

6 14:38 **BY MR. COLLIER:**

7 14:38 **Q.** Mr. Smith, can you identify for the Court where the BOP
8 14:38 Connections Team was looking to attach a capping stack.

9 14:38 **A.** Yes. I'll use this laser pointer on the screen over here
10 14:38 if that helps.

11 14:38 We were looking -- this is the flex joint and we were
12 14:38 looking -- there's a flange at the top of the flex joint, and
13 14:39 that's where we were looking initially to make the connection.
14 14:39 And that's where, ultimately, we did make the capping
15 14:39 connection.

16 14:39 **Q.** What is the flex joint?

17 14:39 **A.** It's an articulated joint that allows the riser from the
18 14:39 drillship above -- it allows the drillship to move around on
19 14:39 the surface around the fixed point of the BOP stack on the
20 14:39 seabed. It's an articulated device.

21 14:39 **Q.** You mentioned a flex joint flange; can you identify where
22 14:39 that is?

23 14:39 **A.** It's this flange right here where I'm pointing with the
24 14:39 laser pointer.

25 14:39 **Q.** Did the BOP Connections Team look at other areas to attach

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1 the capping stack?

2 A. Yes. If it was proven difficult or not possible to remove
3 that flange, we looked at connecting on the body of the flex
4 joint, gripping and sealing there on the main body I'm showing
5 here. Also looking at a way of connecting above with the
6 flanges still in place. Plus, we looked at unbolting the
7 flange at the base of the flex joint but discounted that as
8 being too difficult.

9 Q. Now, do you have a demonstrative prepared that shows the
10 flex joint flange in more detail?

11 A. Yes, I do.

12 MR. COLLIER: If we can pull up D-23274A, please.

13 BY MR. COLLIER:

14 Q. Using this slide, can you describe, Mr. Smith, in more
15 detail the flex joint flange.

16 A. Yes. This diagram here on the right is sort of a top-down
17 look at the stub of pipe that was left after the riser was cut.
18 Here's the flange. It's about 3.5 feet in diameter. It's held
19 together by six bolts around the perimeter. And in the center
20 is the large marine riser pipe, which was sheared by the
21 cutting device. Showing it after it was sheared. And around
22 the outside of it, there are also four service lines that
23 protrude through the flange that had been cut off.

24 Q. Prior to the *Deepwater Horizon* incident, had anyone
25 attached a capping stack to a flex joint flange?

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1 1 4 : 4 0 A. I'm not aware of that occurring, and I very much doubt it
2 1 4 : 4 1 occurred.

3 1 4 : 4 1 Q. Now, did the 3-ram capping stack that was installed on
4 1 4 : 4 1 July 12 use a connection method that was developed by the BOP
5 1 4 : 4 1 Connections Team?

6 1 4 : 4 1 A. Yes, it did.

7 1 4 : 4 1 Q. What was the name of that design?

8 1 4 : 4 1 A. The connection met what we called the transition spool.

9 1 4 : 4 1 Q. Was the transition spool the only design that the BOP
10 1 4 : 4 1 Connections Team worked on?

11 1 4 : 4 1 A. No, we worked on two other methods. We called them the
12 1 4 : 4 1 flex joint overshoot and the latch cap.

13 1 4 : 4 1 Q. Why did the team work on more than one option?

14 1 4 : 4 1 A. Because it wasn't certain we would be successful in
15 1 4 : 4 1 unbolting this flange. So we wanted to have alternative
16 1 4 : 4 1 options available.

17 1 4 : 4 1 Q. Did the BOP Connections Team work on those options one at
18 1 4 : 4 1 a time?

19 1 4 : 4 1 A. We started with the transition spool, and as the
20 1 4 : 4 1 complexity of that operation became apparent, we initiated work
21 1 4 : 4 1 on these other two options. So at one point in time, all three
22 1 4 : 4 1 were progressing in parallel.

23 1 4 : 4 1 Q. Have you prepared a graphic that shows the three
24 1 4 : 4 2 connection options that the BOP Connections Team pursued?

25 1 4 : 4 2 A. Yes, I have.

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1 MR. COLLIER: If we can bring up 23277, please.

2 BY MR. COLLIER:

3 Q. Can you describe for the Court the three connection
4 methods that the BOP Connections Team pursued.

5 A. Again, if I use the screen to demonstrate with the laser
6 pointer --

7 So the transition spool is the method we actually
8 ended up using, which is landing this device inside the top of
9 the flex joint after the flange was removed. Basically,
10 stabbing inside it and making up the two flanges at the bottom
11 here. On top of that was a connection hub down to the cap
12 line.

13 The next one is the flex joint overshoot. It's a
14 large structural pressure chamber intended to be landed over
15 the flex joint and would grip and seal at the bottom base.

16 The final one is the latch cap, which was designed to
17 grip over the pair of flanges that couldn't be unbolted and
18 seal on the well neck of the flange above.

19 Q. I think you mentioned it was the transition spool that was
20 used to attach the capping stack on July 12, correct?

21 A. That's correct.

22 Q. What happened to the flex joint overshoot and the latch
23 cap?

24 A. We paused working on the flex joint overshoot after we had
25 built the main chamber and started doing machining of the

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1 sealing elements. We did a hazard risk assessment and realized
2 that it could be stuck partway on during the installation
3 process -- and potentially irreversibly without having created
4 a seal -- and that would be making a situation that we wouldn't
5 have a connection method any longer. The latch cap was
6 proceeded all the way through to successful completion of
7 onshore testing to demonstrate that it worked.

8 Q. Now, were there challenges associated with installing and
9 connecting a capping stack above the LMRP?

10 A. Yes, there were several.

11 Q. Have you prepared a slide to help you explain those
12 challenges?

13 A. Yes, I have.

14 MR. COLLIER: If we could bring up D-23276, please.

15 BY MR. COLLIER:

16 Q. Mr. Smith, if you could explain some of the challenges
17 that the BOP Connections Team faced with respect to attaching a
18 capping stack above the LMRP?

19 A. Yes. So first we had to cut away the damaged riser
20 without creating damage to the stack and connection point that
21 remained. When we did that, we actually saw that there were
22 two sections of drill pipe trapped inside that cut section of
23 the riser. So now we needed to take on board: How do we land
24 this connection device, transition spool, on top of a flex
25 joint with this debris present?

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

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

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

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

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1 A. Well, the Macondo *Deepwater Horizon* stack was 5000 feet
2 down in the Gulf of Mexico, very deep water and in the dark.
3 So basically we needed to come down there with tooling and
4 equipment that -- basically, we were going to lower stuff down
5 on wires and with drill pipe, and any dextrous activity needed
6 was going to have to be conducted by ROVs, underwater remotely
7 controlled devices with two hydraulic arms with certain limited
8 capabilities. So we needed to devise solutions that worked
9 within the capabilities of -- limits of those constraints I
10 just described.

11 Q. Now, did the BOP Connections Team face challenges with
12 establishing the flex joint flange as a subsea connection?

13 A. Yes.

14 Q. Have you prepared a slide that discusses those challenges?

15 A. Yes, I have.

16 MR. COLLIER: If we can bring up D-23275, please.

17 THE COURT: Mr. Smith, why don't you move that
18 microphone a little closer to you. Thank you.

19 THE WITNESS: Thank you.

20 BY MR. COLLIER:

21 Q. Mr. Smith, if you can please describe some of the
22 challenges the BOP Connections Team faced with making the flex
23 joint flange a subsea connection?

24 A. Yes. So first, fundamentally, that flange was not a
25 subsea connection -- normal subsea connection. In fact, it was

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

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

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

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

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1 in this case -- or the captive nuts on the flange could drop
2 away. So as we were making up the flange, if the nut wasn't
3 present, there was nothing for the bolt to tighten into. So we
4 had to devise a tool so the ROV -- if this event happened --
5 could come and present a new nut while it was starting the
6 threading of the bolt above.

7 As we looked into it, we realized that this flange
8 had a volume of -- cavity of air trapped between the two
9 flanges, and down at 5000 feet, that air at that atmospheric
10 pressure with the external sea pressure on that large area
11 created a very large clamping force holding the flanges
12 together. So to lift the flange off, we would need to apply
13 force to separate the flanges and lift them away.

14 And potentially there was also the force of that flap
15 of metal in the middle of this diagram gripping, potentially,
16 drill pipe inside that could also provide resistance to
17 separating the flanges.

18 With the flange moved, we were expected to see and
19 did see stubs of pipe sticking up from the four service lines.
20 We needed to develop tooling to lift those stubs out because we
21 weren't sure how difficult that would be.

22 Then, with the flange ready to land the transition
23 spool, we had to bring the transition spool down, land over the
24 protruding drill pipe in the correct orientation to get all six
25 bolt holes lined up so that the flange bolts could be made up,

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

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

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

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

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

18 A. Yes, I have.

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

20 BY MR. COLLIER:

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

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

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

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

16 Q. Are these all of the tools that the BOP Connections Team
17 developed during the response?

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

24 Q. Were these installation tools available before the
25 *Deepwater Horizon* incident?

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1 A. Some of the more conventional ROV tools were. The
2 hydraulic torque tool there is a topside-based tool we adapted
3 for subsea. But the jacking system, the flange overshoot, the
4 flange splitter, all of those -- and the stub pulling tools
5 were developed specifically for the geometries and details of
6 what we faced subsea.

7 Q. When were the installation tools ready to use to install
8 the capping stack and the transition spool?

9 A. The last tool that was installed subsea was the -- were
10 the restraint blocks on the flex joint to hold it in its
11 vertical position. They were installed -- they were the
12 critical path. They were installed on July 7, and at that
13 point, with the flex joint held in a centralized and
14 near-vertical position, we were ready to move ahead with the
15 capping operation.

16 Q. You mentioned the physical testing that the BOP
17 Connections Team conducted with respect to installing the
18 capping stack. Can you describe what type of physical testing
19 your team conducted?

20 A. Yes. There is the jacking system photo there and the
21 flange splitter indicate those sort of tests. We mocked up the
22 representation of what was on the *Horizon*, both subsea and
23 tested the tools against that condition to demonstrate they
24 worked, to perfect the procedure for installing those tools so
25 that we could describe that procedure, present that procedure

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1 to the offshore personnel.

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

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

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

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

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

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

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

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

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

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

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

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

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

23 BY MR. COLLIER:

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

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1 A. This is the transition spool assembly after -- on the way
2 to or coming back from a pressure test after we had done its
3 first construction.

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

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

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

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

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

24 A. Yes. It changed significantly.

25 Q. Have you prepared a demonstrative that shows how the

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1 capping stack changed during the response?

2 A. Yes, I have.

3 MR. COLLIER: If we can bring up D-23774A, please.

4 THE WITNESS: So on the left here is the original
5 concept for the capping stack with an integral transition
6 spool, two rams, and on the right is the final assembly.

7 The upper part is the 3-ram capping stack, and
8 the bottom part, to which it's attached, is the transition
9 spool. There's a connection in the middle. So that is quite
10 different assemblies.

11 BY MR. COLLIER:

12 Q. Can you describe some of the differences between the 2-ram
13 capping stack and the 3-ram capping stack that ultimately was
14 used on July 12.

15 MR. MILLER: Objection, Your Honor. This witness was
16 not on the Capping Stack Team, and he specifically said in his
17 deposition, other than those two things he just mentioned, he
18 had no involvement with the capping stack. This witness has no
19 foundation to answer that question. It would all be based on
20 hearsay.

21 MR. COLLIER: Your Honor, that's not correct.
22 Mr. Smith did have ongoing interactions with the Well Capping
23 Team. That was an integral part of the work that he was doing,
24 was interfacing with them, and had a full understanding of how
25 that capping stack developed during the entire response.

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

3 **THE COURT:** Go ahead. Ask some foundational
4 questions.

5 **BY MR. COLLIER:**

6 **Q.** During the response, Mr. Smith, did you interact with the
7 Well Capping Team with respect to the development of the
8 capping stack?

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

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

18 **BY MR. COLLIER:**

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

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

25 **Q.** After the June time period, where you had control of the

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

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

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

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

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

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

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

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15 : 02 1 myself.

15 : 02 2 THE COURT: I sustain the objection.

15 : 02 3 MR. COLLIER: Your Honor, maybe I can clarify.

15 : 02 4 BY MR. COLLIER:

15 : 02 5 Q. Mr. Smith, did you have an understanding from your own
15 : 02 6 personal knowledge as to the features of the 3-ram capping
15 : 02 7 stack as it was installed on July 12?

15 : 02 8 A. Yes.

15 : 02 9 MR. COLLIER: Your Honor, if I may ask Mr. Smith,
15 : 02 10 then, questions about what he understood to be the features of
15 : 02 11 the 3-ram capping stack as of July 12, that would be based on
15 : 02 12 his personal knowledge.

15 : 02 13 MR. MILLER: It has to be based on his personal
15 : 02 14 knowledge. The source of that understanding can't come from
15 : 02 15 others who were working on the 3-ram capping stack. He
15 : 02 16 testified he never worked on the 3-ram capping stack himself.

15 : 02 17 MR. COLLIER: Your Honor, it was based on his
15 : 02 18 personal knowledge, from reviewing engineering documents, from
15 : 02 19 developing the work that he was doing with respect to the
15 : 02 20 capping stack, and then also with respect to doing the work
15 : 02 21 with respect to the pressure transducer that he understood the
15 : 02 22 features of the 3-ram capping stack.

15 : 02 23 THE COURT: What was your involvement with the 3-ram
15 : 03 24 capping stack beyond what you have already told us? I think
15 : 03 25 you said in June you had some -- you were the one that came up

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1 with the idea of the two side outlets.

2 **THE WITNESS:** No, not the side outlets themselves,
3 but to convert the valves that were there to fail open.

4 **THE COURT:** Fail open instead of fail --

5 **THE WITNESS:** They were fail closed.

6 **THE COURT:** What was your involvement with this, you
7 personally, after that?

8 **THE WITNESS:** I received reports on its status. I
9 arranged for our transition spool to be sent to Berwick, to be
10 mated, to be connected to the capping stack itself, to make
11 sure both fit together without any obstructions. I arranged
12 for the replacement of the original pressure sensor. When it
13 was found during that test onshore between the two components,
14 that they were slightly faulty, I arranged for a second
15 transducer to be fitted.

16 **THE COURT:** I sustain the objection.

17 **MR. COLLIER:** Your Honor, if I may ask a couple of
18 additional foundation questions that I think may clear up this
19 issue.

20 **THE COURT:** I think it's pretty clear. It's pretty
21 clear. Why don't you move on to something else.

22 **MR. COLLIER:** Your Honor, if I may ask Mr. Smith
23 about his involvement with respect to the installation
24 procedures for the 3-ram capping stack and developing those
25 particular procedures. I think that would be the basis, then,

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

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

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

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

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

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

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

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

24 **THE COURT:** Go ahead.
25

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1 15:05 BY MR. COLLIER:

2 15:05 Q. Mr. Smith, did you also interact with the government in
3 15:05 making presentations with regarding the capping stack and the
4 15:05 features that the capping stack had?

5 15:05 A. That content was included in those presentations, yes.

6 15:05 THE COURT: You are back to that British word,
7 15:05 "interact."

8 15:05 MR. MILLER: Can we take down the demonstrative,
9 15:05 given that it's on capping stacks?

10 15:05 THE COURT: I don't think you are getting there,
11 15:05 Mr. Collier. Maybe move on to another subject.

12 15:05 MR. COLLIER: Sure.

13 15:05 BY MR. COLLIER:

14 15:05 Q. Now, Mr. Smith, did you prepare presentations and provide
15 15:06 presentations to the Federal Science Team during the
16 15:06 development of the capping stack and transition spool?

17 15:06 A. I did, yes.

18 15:06 Q. In your presentations to the government, did you explain
19 15:06 how the capping stack, the 3-ram capping stack could be used as
20 15:06 a collection device?

21 15:06 A. I did, yes.

22 15:06 MR. COLLIER: If we can pull up TRES-9800.1.1,
23 15:06 please.

24 15:06 BY MR. COLLIER:

25 15:06 Q. Do you see this, Mr. Smith, as an e-mail that you sent on

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1 15:06 1 June 12, 2010, to members of the Response Team?

2 15:06 2 A. Yes, I do.

3 15:06 3 Q. If you can look at the body of the e-mail, it reads: "For
4 15:06 4 information - this is the presentation we made to the
5 15:06 5 Government Science Team on Thursday. We also reviewed the
6 15:06 6 backup slides with them"; is that right?

7 15:06 7 A. Yes.

8 15:07 8 Q. Is the attachment to this e-mail one of the presentations
9 15:07 9 that you gave to the Government Science Team?

10 15:07 10 A. Yes, it is.

11 15:07 11 **MR. COLLIER:** If we can go to 9800.4.1, please.

12 15:07 12 **BY MR. COLLIER:**

13 15:07 13 Q. Is this one of the slides that was presented in the
14 15:07 14 meeting with the Federal Science Team?

15 15:07 15 A. Yes, it is.

16 15:07 16 Q. I would like to draw your attention to Item 3 on the
17 15:07 17 slide. It reads: "Building longer term containment
18 15:07 18 system(s)." Do you see that?

19 15:07 19 A. Yes, I do.

20 15:07 20 Q. Can you explain what that means.

21 15:07 21 A. At that stage of the response, you had the *Enterprise* and
22 15:07 22 the *Q4000* collecting oil out of the capping stack, and
23 15:07 23 preparations were ongoing to add more collection capacity,
24 15:07 24 because at that point there was a view that -- the concern was
25 15:07 25 that it was not going to be possible to close in the well after

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1 a capping stack was landed due to concerns of the downhole well
2 integrity. So the intent, the objective of the capping stack
3 was to add more connection points, connection offtake points,
4 that we could take flow to new surface collection vessels that
5 we were adding.

6 Q. Did you provide slides to the government scientists about
7 how the capping stack would work on a collection system?

8 A. Yes.

9 MR. COLLIER: If we can go to TREN-9800.8.1, please.

10 BY MR. COLLIER:

11 Q. If you can explain to the Court what this particular slide
12 shows.

13 A. So if I again use my pointer, this illustrates the 3-ram
14 capping stack landed on the -- the scenario where the 3-ram
15 stack landed on the *Deepwater Horizon* stack. And over here to
16 the left is a new containment system that was being
17 constructed. So we had two new surface collection vessels. We
18 built two new freestanding riser systems, and a manifold was
19 being built. So the intent was the side outlets on the capping
20 stack, we would take the flexible lines down to these manifolds
21 and back up to these additional surface collection vessels.

22 Q. Was there equipment that was added to the capping stack
23 that allowed for this collection system to be able to work?

24 A. That was the purpose of the side outlets. And we were
25 also looking at using the top outlet of the capping stack as a

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15:09 1 potential source.

15:09 2 Q. Was the BOP-on-BOP option ever being developed as a
15:09 3 collection system?

15:09 4 A. I don't know.

15:09 5 Q. Now, you also discussed earlier you worked on adding a
15:09 6 pressure sensor to the capping stack; is that right?

15:09 7 A. I arranged for that to occur, yes.

15:09 8 Q. When did you arrange for the pressure sensor to be added
15:09 9 to the capping stack?

15:09 10 A. It was in late June, after this was requested by the
15:09 11 Government Science Team.

15:09 12 Q. For what reason was the pressure sensor added to the 3-ram
15:10 13 capping stack?

15:10 14 A. My understanding, it was to be part of a well integrity
15:10 15 test that had come into play as a potential outcome. Further
15:10 16 work had indicated that perhaps a controlled closure of the
15:10 17 well with accurate pressure readings could potentially
15:10 18 determine if it was safe to leave the well closed in, and it
15:10 19 was to provide the accurate data for that close-in activity.

15:10 20 Q. Now, when did you begin working on the capping stack
15:10 21 solution?

15:10 22 A. When I joined on April 30.

15:10 23 Q. When was the 3-ram capping stack installed on the Macondo
15:10 24 well?

15:10 25 A. It was installed on July 12, 2010.

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1 15:10 Q. Based on your work during the response, are you generally
2 15:10 aware of the activities that occurred between when you joined
3 15:10 the Response Team and July 12 as it relates to the capping
4 15:11 stack?

5 15:11 A. Yes.

6 15:11 Q. Have you prepared a demonstrative exhibit that provides a
7 15:11 timeline of the activities relating to the installing and
8 15:11 connecting the capping stack to the flex joint flange?

9 15:11 A. Yes, I have.

10 15:11 MR. COLLIER: If we can bring up D-23934, please.

11 15:11 BY MR. COLLIER:

12 15:11 Q. If you can explain to the Court -- I understand this is a
13 15:11 rather busy slide, but if you can explain to the Court what
14 15:11 this timeline shows.

15 15:11 A. It's to illustrate that there are four main bands of
16 15:11 activity going on. There was the capping stack build activity
17 15:11 itself. There was the transition spool build activity that
18 15:11 would provide a connection point onto which to land the capping
19 15:11 stack. There was offshore activities preparing for the capping
20 15:11 operation, leading to the implementation of the capping
21 15:11 solution. And above all of this were organizational or
22 15:11 governance activities coordinating the work below and certain
23 15:12 assurance processes leading to approval to initiate the capping
24 15:12 operation. And all of these activities were converging on
25 15:12 readiness in early July. All of those had to occur before the

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1 capping operation could complete, could initiate.

2 Q. Now, if I can draw your attention to the band that says
3 "Installation Activities." There's an event on June 3. Do you
4 see that, Mr. Smith?

5 A. Yes, I do.

6 Q. It says "riser cut"?

7 A. Yeah.

8 Q. Can you explain what that event is.

9 A. That's when the large shearing device cut the damaged
10 riser away from the top of the LMRP.

11 Q. Based on the riser cut, was there any information learned
12 that influenced the connection method that was used to attach
13 the capping stack to the flex joint flange?

14 A. Yes. We saw that there was debris in the bottom section
15 of the riser that was cut, so we needed to work on a solution
16 to overcome or work around that debris in landing the
17 transition spool, leading to a series of tests to perfect the
18 guidance device and landing procedures. We also saw that the
19 flex joint didn't become centralized for whatever reason, so we
20 realized we needed to push it back to a central position and
21 lock it there.

22 Q. You also identified on the timeline on July 7 a first
23 version of Technical Assurance Report issued. What was the
24 Technical Assurance Report?

25 A. It was a document that addressed the points I raised

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1 earlier about needing to ensure that the overall structural
2 integrity of the stack landed on the *Deepwater Horizon*, that
3 the whole system was strong enough to take the additional
4 loads, including the anticipated loads from the containment
5 offtake lines that were going to be added later. And also, it
6 included a detailed review of the pressure integrity, the
7 question of could we take the flex joint and flange above
8 5000 psi, the designed pressure limits. It addressed those
9 scenarios and gave assurance that, yes, these things could be
10 done in this particular case and the solution should work.

11 Q. Are you familiar with the Technical Assurance Report?

12 A. Yes. I read it before it was finalized.

13 MR. COLLIER: TREX-9575.1, please.

14 BY MR. COLLIER:

15 Q. Mr. Smith, do you recognize this as the cover page of the
16 Technical Assurance Report for the 3-ram capping stack?

17 A. Yes, it is.

18 MR. COLLIER: If we can go to TREX-9575.1.2, please.

19 BY MR. COLLIER:

20 Q. Can you identify the date on which the Technical Assurance
21 Report issued.

22 A. Revision 0 was issued on the 7th of July 2010.

23 Q. What type of engineering work did the Technical Assurance
24 Report contain?

25 A. It contained structural stress analysis of the

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1 *Deepwater Horizon* stack with the added load from the capping
2 stack, a lot of stress analysis of the stress joints -- sorry,
3 the transition spool and the flange and the tension loads on
4 the bolts under the loads from the capping stack. It included
5 a detailed review conducted with the manufacturer of the flex
6 joint to get assurance that it could handle pressures above its
7 rate of 5000 psi, amongst other things.

8 Q. How many pages is the Technical Assurance Report?

9 A. With all the appendices, it's 500 to 600 pages, and it's a
10 binder about 3 inches thick.

11 Q. Could the capping stack have been installed without
12 preparation of the Technical Assurance Report?

13 A. No, because that assurance report demonstrated that the
14 solution we were about to embark on was likely to work. If we
15 hadn't completed that analysis, we wouldn't have known if we
16 had overlooked, potentially overlooked something important.

17 Q. Was the Technical Assurance Report shared with the
18 government and the Federal Science Team?

19 A. Yes.

20 Q. Now, you mentioned earlier that you gave presentations to
21 the Federal Science Team during the response relating to the
22 capping stack, correct?

23 A. That's correct.

24 Q. Now, did the Federal Science Team provide you any feedback
25 after those presentations?

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

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

7 BY MR. COLLIER:

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

10 A. Yes.

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

13 A. Yes, it is.

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

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

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

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

24 BY MR. COLLIER:

25 Q. Are these some of the recommendations and action items

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

3 A. Yes.

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

6 A. Yes, there were several.

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

8 **MR. COLLIER:** If we can bring up 9575.175.2.

9 **BY MR. COLLIER:**

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

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

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

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

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15:19 1 implemented?

15:19 2 A. I believe so, yes.

15:19 3 Q. Now, if someone were to describe the connections in
15:19 4 installing the 3-ram capping stack on the Macondo well as a
15:19 5 piece of cake, would you agree that is an accurate description?

15:19 6 A. No. I think that would be a very large simplification.

15:19 7 MR. COLLIER: Thank you, Mr. Smith. No further
15:19 8 questions at this time.

15:19 9 THE COURT: Mr. Miller, are you going to be a while?

15:19 10 MR. MILLER: 30 to 40 minutes.

15:19 11 THE COURT: Let's go ahead and take our afternoon
15:20 12 recess.

15:20 13 MR. MILLER: Thanks.

15:20 14 THE DEPUTY CLERK: All rise.

15:20 15 (Recess.)

15:40 16 THE COURT: Please be seated, everyone.

15:40 17 Mr. Miller.

15:40 18 MR. MILLER: Good afternoon, Your Honor. May I
15:40 19 proceed?

15:40 20 THE COURT: Yes.

15:40 21 CROSS-EXAMINATION

15:40 22 BY MR. MILLER:

15:40 23 Q. Mr. Smith, we haven't met. My name is Kerry Miller. I'm
15:40 24 a lawyer from Transocean, and I'm going to cross-examine you on
15:40 25 behalf of the aligned parties. Good afternoon, sir.

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1 15:40 A. Good afternoon.

2 15:40 Q. The first part of your cross-examination I want to talk a
3 15:40 little bit about your role in the response for BP. Mr. Collier
4 15:40 had some questions at the beginning for you on that and just to
5 15:40 summarize, let's pull up D-23231A.

6 15:41 While it's coming up, Mr. Smith, I think you said
7 15:41 your title during the response was the project manager of the
8 15:41 BOP Connections Team?

9 15:41 A. I said that was effectively the role I was fulfilling. My
10 15:41 formal title in that team was delivery -- lead delivery
11 15:41 manager. That might not have translated in a more normal term.

12 15:41 Q. I just want to clarify in terms of the various options --
13 15:41 and this is a slide that BP just created to summarize source
14 15:41 control options -- what your role was and what your role wasn't
15 15:41 and then we will talk about transition spools.

16 15:41 Mr. Smith, you had no involvement with the BP ROV
17 15:41 intervention, correct?

18 15:41 A. That is correct.

19 15:41 Q. You had no role with the relief wells, correct?

20 15:41 A. That is correct.

21 15:41 Q. You had no role with the cofferdam, right?

22 15:41 A. Correct.

23 15:41 Q. We talked about your role with the capping stack. You
24 15:41 were directly involved for one week in June and you described
25 15:41 those activities, correct?

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1 1 5 : 4 1 A. Yes.

2 1 5 : 4 2 Q. And then you were also heavily involved in the transition
3 spools and the connector for the capping stack, correct?

4 1 5 : 4 2 A. That is correct.

5 1 5 : 4 2 Q. We will get to that substantive information in a minute.
6 But you weren't formally part of the Capping Stack Team at BP,
7 correct?

8 1 5 : 4 2 A. Not of the Well Capping Team, as we called it, yes.

9 1 5 : 4 2 Q. Mr. Smith, someone mentioned to me -- and I think it's
10 happening -- if you can get closer to the mic, I think the
11 folks back here in the overflow camp can't hear you.

12 1 5 : 4 2 A. I was not part of the Well Capping Team, correct.

13 1 5 : 4 2 Q. You weren't involved in Top Kill, correct, Mr. Smith?

14 1 5 : 4 2 A. That's correct.

15 1 5 : 4 2 Q. You weren't involved on the BOP-on-BOP Team, correct?

16 1 5 : 4 2 A. Correct.

17 1 5 : 4 2 Q. In fact, the title that Mr. Collier gave you of BOP
18 connections is a bit of a misnomer because you didn't work on
19 the BOP-on-BOP idea, did you?

20 1 5 : 4 2 A. That was the term we called our team was the BOP
21 Connections Team.

22 1 5 : 4 2 Q. You didn't work on the BOP part of it, correct?

23 1 5 : 4 3 A. Not the BOP-on-BOP option, correct.

24 1 5 : 4 3 Q. There were people at BP who were both on BOP-on-BOP option
25 and on capping stack option, but you weren't one of those

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1 folks, right?

2 A. I was in neither of those activities.

3 Q. You didn't work on the RITT, correct?

4 A. That's correct.

5 Q. You didn't work on the Top Hat, correct?

6 A. That's correct.

7 Q. You didn't work on the Static Kill, correct?

8 A. Not directly, no. We were monitoring the stack at that
9 time, so that was part of the role of my team, but not on the
10 implementation of Static Kill.

11 Q. With respect to containment, as I understand it, you
12 described your function on containment in Mr. Collier's direct
13 examination?

14 A. That's a very broad term, "containment."

15 Q. So what was your role in containment specifically?

16 A. Ensuring that we, I guess -- I was interfacing with -- I
17 was part of the containment disposal project for a week also
18 and during that week in June, I was actually sitting in the
19 containment disposal project. So I was part of the team
20 enabling these additional offtake points that we would connect
21 up in due course to the Helix producer.

22 Q. That would have been the extent of your role on
23 containment?

24 A. In that sense, yes. With that knowledge I was able to
25 communicate the interfaces that would be needed on the capping

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1 1 5 : 4 4 1 stack to that back to that containment team.

2 1 5 : 4 4 2 Q. Mr. Smith, you weren't involved in flow rate evaluations
3 1 5 : 4 4 3 for BP, correct?

4 1 5 : 4 4 4 A. I was not.

5 1 5 : 4 4 5 Q. You weren't involved in evaluating risk of broaching,
6 1 5 : 4 4 6 correct?

7 1 5 : 4 4 7 A. That's correct.

8 1 5 : 4 4 8 Q. You weren't involved in well integrity evaluations,
9 1 5 : 4 4 9 correct?

10 1 5 : 4 4 10 A. That's correct.

11 1 5 : 4 4 11 Q. You weren't involved in burst disk risk evaluations,
12 1 5 : 4 5 12 correct?

13 1 5 : 4 5 13 A. Not for the downhole well integrity. We did intend to
14 1 5 : 4 5 14 install a -- potentially a burst disk device on the capping
15 1 5 : 4 5 15 stack side outlet, but not the downhole ones, if that's what
16 1 5 : 4 5 16 you're referring to.

17 1 5 : 4 5 17 Q. I was talking about downhole. In terms of within the
18 1 5 : 4 5 18 organization at BP, is it correct that you didn't have any
19 1 5 : 4 5 19 decision-making authority as to when these various source
20 1 5 : 4 5 20 control options would be implemented or executed as they are
21 1 5 : 4 5 21 called on this demonstrative, correct?

22 1 5 : 4 5 22 A. That's correct, I would provide input on the area I was
23 1 5 : 4 5 23 working in.

24 1 5 : 4 5 24 MR. MILLER: You can take that down.

25

TREVOR SMITH - CROSS

1 15 : 4 5 BY MR. MILLER:

2 15 : 4 5 Q. Thank you, Mr. Smith.

3 15 : 4 5 Mr. Smith, I know in your direct examination you
4 15 : 4 5 mentioned doing some presentations with the Coast Guard, but
5 15 : 4 5 you were not authorized on behalf of BP to report to the U.S.
6 15 : 4 5 Coast Guard, correct?

7 15 : 4 6 A. I don't know if anybody in BP reported to the Coast Guard.
8 15 : 4 6 I was providing information to the Coast Guard. They attended
9 15 : 4 6 the briefings. They would hear what was said in the briefings
10 15 : 4 6 we were giving, so in that sense I was communicating with the
11 15 : 4 6 Coast Guard.

12 15 : 4 6 Q. Let's pull up your deposition, 337, pages 1 through 10,
13 15 : 4 6 please.

14 15 : 4 6 Question at your deposition, Mr. Smith:

15 15 : 4 6 "QUESTION: Did you have interaction with the
16 15 : 4 6 United States Coast Guard? So I assume you did not report
17 15 : 4 6 to the United States Coast Guard?

18 15 : 4 6 "ANSWER: Correct. I reported within BP."

19 15 : 4 6 Do you see that answer, Mr. Smith?

20 15 : 4 6 A. I do, yes.

21 15 : 4 6 Q. That answer was correct when you gave it, correct?

22 15 : 4 6 A. Uh-huh.

23 15 : 4 6 Q. The next question is:

24 15 : 4 6 "QUESTION: And no one from the United States
25 15 : 4 6 Coast Guard reported to you?"

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1 Do you see that answer, Mr. Smith?

2 **MR. COLLIER:** I think this is improper impeachment.

3 I don't think that was the question Mr. Smith was asked.

4 **MR. MILLER:** I think it was, Your Honor. I asked him
5 if he was authorized by BP to report to the United States
6 Coast Guard.

7 **MR. COLLIER:** I think that's a different question
8 than what's being asked here in the deposition.

9 **THE COURT:** Well, okay. I think he has answered.

10 **BY MR. MILLER:**

11 **Q.** Is this testimony correct, Mr. Smith?

12 **A.** That testimony is correct.

13 **Q.** Thank you, sir.

14 **MR. MILLER:** Go back to that slide. I'm sorry. I
15 just want to get a date from it, and then we will talk about
16 transition spools.

17 **BY MR. MILLER:**

18 **Q.** According to this slide, Mr. Smith, BP began working on
19 the capping stack around April 23. Do you see that?

20 **A.** Yep.

21 **Q.** Is that consistent with your understanding, Mr. Smith?

22 **A.** I believe that is -- I believe the first thought of
23 capping was April 23, and the first meeting, I believe, of the
24 team working on that option was April 27.

25 **Q.** To connect the capping stack to the LMRP flex joint, you

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1 15 : 4 8 needed a transition spool, correct?

2 15 : 4 8 A. That was the solution that we -- one of the solutions we
3 15 : 4 8 worked on. That's the one we actually implemented.

4 15 : 4 8 Q. Let's talk about the BP Technical Assurance Report.
5 15 : 4 8 Mr. Collier covered that with you.

6 15 : 4 8 To cut through some of this, Mr. Smith, there were
7 15 : 4 8 three revisions or three versions of the BP Technical Assurance
8 15 : 4 8 Report on well cap with triple-ram stack, correct?

9 15 : 4 8 A. Yes.

10 15 : 4 8 Q. Let's look at the initial version.

11 15 : 4 8 MR. MILLER: It's TRES-120129.1.1.T0.

12 15 : 4 8 BY MR. MILLER:

13 15 : 4 8 Q. That is the "Technical Assurance Report Well Cap with
14 15 : 4 8 Triple-Ram Stack," correct, Mr. Smith?

15 15 : 4 9 A. That's correct.

16 15 : 4 9 Q. That's the document you gave testimony on during your
17 15 : 4 9 direct examination, correct?

18 15 : 4 9 A. I attested that the Revision 0 was issued on July 7.

19 15 : 4 9 MR. MILLER: Let's turn to page 7 of this document,
20 15 : 4 9 which is TRES-120129.7.1.T0.

21 15 : 4 9 BY MR. MILLER:

22 15 : 4 9 Q. This is on page 7 of the Technical Assurance Report.

23 15 : 4 9 Mr. Smith, this is a component overview of what was ultimately
24 15 : 4 9 used to cap the well, correct?

25 15 : 4 9 A. Yes.

TREVOR SMITH - CROSS

1 15:49 Q. At the bottom this would be the wellhead casing on the
2 seafloor, correct?

3 15:49 A. Yes.

4 15:49 Q. This would be the *Horizon* BOP, correct?

5 15:49 A. Correct.

6 15:49 Q. *Horizon* LMRP, correct?

7 15:49 A. Yes.

8 15:49 Q. Flex joint, correct?

9 15:49 A. Yes.

10 15:49 Q. This would be the transition spool, correct?

11 15:49 A. Yes. Just above the point where you had the pointer, yes.

12 15:50 Q. And finally on top, we have the triple-ram stack, correct?

13 15:50 A. That's correct.

14 15:50 Q. I think you testified on direct examination if you look at
15 these dimensions here, from wellhead casing to top of
16 triple-ram stack was 91 feet. Do you see that? Right here?

17 15:50 A. Yes. I wasn't asked dimensions in my direct.

18 15:50 Q. But what you did say was the transition spool was about
19 6 feet and that appears to be correct based upon this
20 schematic, correct, Mr. Smith? I tell you how I did it --

21 15:50 A. Roughly scaling, but yes.

22 15:50 Q. If you take the 91, which is the total length, and you
23 subtract the 53, which is the *Deepwater Horizon* BOP, and the
24 25, which is the triple-ram stack, it gives you about 13 feet
25 split between the flex joint and transition spool, correct?

TREVOR SMITH - CROSS

1 15:50 A. No. The line there, actually, the 26 -- 25 feet, includes
2 15:50 the transition spool and the triple-ram stack. Is that what
3 15:50 you are asking?

4 15:50 Q. Yes, correct. So it appears to be about 6 feet from this
5 15:51 drawing, that's my question.

6 15:51 A. I would have to roughly scale it off. I know that in
7 15:51 practice it was about 6 feet long.

8 15:51 Q. The pipe diameter here is 21 1/2 inches; is that correct,
9 15:51 Mr. Smith?

10 15:51 A. I'm sorry?

11 15:51 Q. The pipe diameter of the transition spool?

12 15:51 A. Approximately that, yes. I'm not sure of the exact
13 15:51 dimensions. I can't recall them right now.

14 15:51 Q. Let's go to page 28 of the Technical Assurance Report. It
15 15:51 kind of focuses in on the transition spool, so we will do that
16 15:51 at this point.

17 15:51 A. Can I just clarify that? The transition spool between
18 15:51 flange dimension was 6 feet. There was a connector hub on top
19 15:51 and the guidance devices below. So the overall length was more
20 15:51 in the 10- to 12-foot range, I guess.

21 15:51 Q. We'll look at pictures of it later on in the
22 15:51 cross-examination.

23 15:51 **MR. MILLER:** So let's pull up TREV-144745.28.1.T0,
24 15:51 which is page 28 of the BP Technical Assurance Report.

25

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1 BY MR. MILLER:

2 Q. Do you see this, Mr. Smith?

3 A. Yes.

4 Q. Again, this is in the BP Technical Assurance Report. It
5 states "Transition Spool." And here's a picture of it. Here's
6 a close-up, correct, Mr. Smith?

7 A. Yes.

8 Q. It states: "The transition spool is shown in Figure 13
9 and is comprised of three elements."

10 Are you with me, Mr. Smith?

11 A. Uh-huh.

12 Q. Number 1: "A GE/VetcoGray G-Series flange complete with
13 male nose ring and 6 bolts."

14 Did I read that correctly, Mr. Smith?

15 A. You read that correctly.

16 Q. That would be the part here at the bottom, correct?

17 A. Yes. It doesn't show the male nose ring, which would
18 protrude below that flange.

19 Q. Right. But that would be this part.

20 And then second is a 25-1/2-inch outer diameter time
21 one WT X80 transition pipe and that would be this element,
22 correct?

23 A. That is correct.

24 Q. Then finally, the third element would be the 18 3/4-inch
25 API 15K weld neck flange. That would be at the top, correct,

TREVOR SMITH - CROSS

1 15 : 5 3 Mr. Smith?

2 15 : 5 3 A. That's correct.

3 15 : 5 3 Q. The capping stack would go on top of that flange, correct?

4 15 : 5 3 A. There would be a hub connection, a hub subsea connection
5 15 : 5 3 bolted to the top of that flange, and that was part of the
6 15 : 5 3 overall transition spool assembly, and the capping stack then
7 15 : 5 3 landed on that and made up the connection to that hub.

8 15 : 5 3 Q. Thank you, sir.

9 15 : 5 3 The male G Series flange, that was a stock component
10 15 : 5 3 from GE/Vetco, correct?

11 15 : 5 3 A. I can't recall whether it was in stock or whether it was
12 15 : 5 3 taken from an existing joint of riser pipe we got from
13 15 : 5 3 Transocean. I can't remember its provenance.

14 15 : 5 3 Q. But that male G Series flange was something that was
15 15 : 5 3 quickly attained by BP, correct?

16 15 : 5 3 A. I believe so, yes.

17 15 : 5 3 Q. The pipe in the middle, that's just riser pipe, correct,
18 15 : 5 3 Mr. Smith?

19 15 : 5 3 A. That is the -- yeah, drilling riser-type pipe.

20 15 : 5 4 Q. Uh-huh.

21 15 : 5 4 At the top, that's the well neck flange, which has
22 15 : 5 4 API specifications, correct?

23 15 : 5 4 A. Correct.

24 15 : 5 4 Q. Let's go to same document, different page,
25 15 : 5 4 TREX-9575.11.1.T0, which is page 11 of the final BP Technical

TREVOR SMITH - CROSS

1 Assurance Report dated July 16. This is a table from that
2 report.

3 Are you familiar with this table, Mr. Smith?

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

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

8 A. I did.

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

11 A. That's what's listed there.

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

14 A. That's correct.

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

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

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

TREVOR SMITH - CROSS

1 A. This is under a section entitled "Transition Spool," yes.

2 Q. It says: "The transition spool is shown in Figure 13
3 below."

4 And there you have a spool with three elements,
5 correct, Mr. Smith?

6 A. I believe that, yes.

7 Q. Let's go back to the table. So we were talking about
8 INTECSEA, the firm that designed the transition spool. Are
9 they a well-regarded oil and gas engineering firm, Mr. Smith?

10 A. I believe so, yes.

11 Q. Let's turn to page 36 of this document.

12 MR. MILLER: So that would be TRES-19575.36.2.T0.
13 It's page 36. It's just the highlighting underneath. Same
14 page, I'm sorry.

15 BY MR. MILLER:

16 Q. There were manufacturing drawings from the transition
17 spool that were attached to the Technical Assurance Report,
18 correct?

19 A. I cannot recall specifically what attachments were there.

20 Q. I just want to show this to you, Mr. Smith. If you can
21 see that, here it is again from the Technical Assurance Report.
22 It says: "The manufacturing drawings from the transition spool
23 are attached as Appendix E."

24 Do you see that?

25 A. I can read that.

TREVOR SMITH - CROSS

1 15:58 Q. This comes from the BP Technical Assurance Report,
2 correct, Mr. Smith?

3 15:58 A. I believe so, yes.

4 15:58 Q. Let's look at those manufacturing drawings.

5 15:58 MR. MILLER: Let's go to TREN-9575.457.1T0.

6 15:58 BY MR. MILLER:

7 15:58 Q. This would be the INTECSEA Transition Spool Design Report.
8 Do you see that, Mr. Smith?

9 15:58 A. I do.

10 15:58 Q. That would have been the one that was attached as
11 Exhibit E to the BP Technical Assurance Report on the 3-ran
12 capping stack, correct, Mr. Smith?

13 15:58 A. Again, I don't recall specifically.

14 15:58 Q. What's the date of this document, Mr. Smith? It's May 7,
15 2010, correct?

16 15:58 A. That appears to be the date, yes.

17 15:58 Q. Let's look at some of these drawings. Let's pull page --
18 TREN-9575.520.1.T0, and this is one of the pages from Appendix
19 E to the BP Technical Assurance Report.

20 15:59 Mr. Smith, what we have here is an engineering design
21 drawing of the transition spool. Can you see that?

22 15:59 A. Yes.

23 15:59 Q. By INTECSEA, the design firm hired by BP to design it. Do
24 you see that, Mr. Smith?

25 15:59 A. I see the logo, yes.

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1 15:59 Q. And the date of design drawing is May 4, 2010. Do you see
2 that, Mr. Smith?

3 15:59 A. I do.

4 15:59 Q. This would be the same transition spool design with the
5 three elements that we saw in the BP Technical Assurance
6 Report, correct, Mr. Smith?

7 15:59 A. Essentially, yes.

8 15:59 Q. These design drawings, they were very detailed engineering
9 drawings, correct, Mr. Smith?

10 16:00 A. I would call this a very high-level generic drawing, not a
11 detailed drawing.

12 16:00 Q. Let's look at some of INTECSEA's drawings.

13 16:00 MR. MILLER: Let's pull up 9575.512.1.T0.

14 16:00 BY MR. MILLER:

15 16:00 Q. This is another INTECSEA drawing. Do you see that,
16 Mr. Smith? This was attached to the BP Technical Assurance
17 Report.

18 16:00 A. Yes. I see that.

19 16:00 Q. Transition spool, Option 1, API 3/4-inch flange, and it's
20 dated May 1, 2010. Do you see that, Mr. Smith?

21 16:00 A. Yes, I do.

22 16:00 Q. You mentioned, I think in your direct examination, that
23 part of the design of the transition spool dealt with the
24 alignment pins, correct, Mr. Smith?

25 16:00 A. Yes.

TREVOR SMITH - CROSS

1 16:00 MR. MILLER: So let's pull up TREN-9575.519.1.T0.

2 16:00 BY MR. MILLER:

3 16:00 Q. Again, this is an INTECSEA engineering drawing of the
4 16:01 transition spool offshore G-flange alignment pin arrangement.
5 16:01 These are the alignment pins that you were talking about,
6 16:01 correct, Mr. Smith?

7 16:01 A. Those were an early version we used after we did the
8 16:01 series of onshore tests. With landing over drill pipe, we
9 16:01 modified the design of the guide pins.

10 16:01 Q. The date of this engineering design drawing is May 5,
11 16:01 2010, correct?

12 16:01 A. It seems so, based on the blowup, yes.

13 16:01 MR. MILLER: Let's pull up TREN-9575.518.1.T0.

14 16:01 BY MR. MILLER:

15 16:01 Q. And you talked about in your direct examination the mule
16 16:01 shoe. This is an INTECSEA engineering design document of the
17 16:01 mule shoe, which is at the bottom of the transition spool,
18 16:01 dated May 4, 2010, correct?

19 16:01 A. That's correct.

20 16:02 Q. Let's go back to the first page of this, Exhibit E. It's
21 16:02 TREN-9575.457.1.T0. This would be the full set. INTECSEA gave
22 16:02 BP a set of drawings and information from CAD on the transition
23 16:02 spool, correct?

24 16:02 A. Yes, that was for the first version of the transition
25 16:02 spool and its guidance system.

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1 16:02 Q. These design drawings that came from INTECSEA, Mr. Smith,
2 16:02 are you aware that Exhibit E to the technical assurance report
3 16:02 is 87 pages of information from INTECSEA?

4 16:02 A. I don't recall the specific number of pages.

5 16:02 Q. Are you aware that the design drawings themselves of this
6 16:02 6-foot piece of steel of three elements consists of 22 pages
7 16:02 alone, Mr. Smith?

8 16:02 A. Not -- I couldn't recall the number of pages.

9 16:02 Q. Let's go back to the July 16, 2010 final BP Technical
10 16:02 Assurance Report, TREN-9575.

11 16:03 That was the last version -- there were three
12 16:03 versions, like we talked about earlier, correct, of the
13 16:03 Technical Assurance Report?

14 16:03 A. That's correct.

15 16:03 Q. The last version was dated July 16, 2010, correct?

16 16:03 A. Yes, that was Revision 2.

17 16:03 Q. That was one day after the well was capped, correct,
18 16:03 Mr. Smith?

19 16:03 A. That is correct.

20 16:03 Q. It was four days after the transition spool was landed,
21 16:03 correct, Mr. Smith?

22 16:03 A. That's correct.

23 16:03 Q. Now, the July 16, 2010 final BP Technical Assurance Report
24 16:03 does not state that BP rejected any of the INTECSEA drawings,
25 16:03 correct, Mr. Smith? Any of the drawings of the transition

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1 spool, correct, Mr. Smith?

2 A. I don't know if it did or did not.

3 Q. Likewise, Mr. Smith -- I have looked at the whole
4 document -- the July 16 of 2010 final BP Technical Assurance
5 Report does not contain any engineering change notices that BP
6 would have issued to INTECSEA in connection with its design of
7 the transition spool; are you aware of that, Mr. Smith?

8 A. I don't recall.

9 Q. Let's go back to D-23231A, back where we started, because
10 we're not going back to these roles.

11 The work on the transition spool, as I understand
12 it -- and I want to make sure my understanding is correct,
13 Mr. Smith -- that would have been included within the bar here
14 for the capping stack; do you have that understanding as well,
15 Mr. Smith?

16 A. No, I do not. I do not recognize this slide or what it's
17 actually intended to represent. So I don't know where the
18 transition spool would go in here. It appears to be -- the
19 transition spool and the development of the connection system
20 does not appear to be included within the scope of this slide
21 for some reason.

22 Q. Mr. Smith, the transition spool was ultimately used as a
23 connection device for the capping stack, though, correct?

24 A. It was a connection device between the -- from the *Horizon*
25 BOP and the capping stack. It was necessary for the capping

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1 stack to connect to the *Horizon* BOP.

2 Q. The BP Technical Assurance Report that we just studied
3 covered both the 3-ram capping stack that was used to cap the
4 well and the transition spool designed by INTECSEA, correct?

5 A. I'm sorry, could you repeat that question?

6 Q. The BP Technical Assurance Report that you told
7 Mr. Collier you had read and reviewed and we have been covering
8 the last five or ten minutes or so covered both the 3-ram
9 capping stack that capped the well and the transition spool
10 that you worked on, correct?

11 A. Yes, it covered both those items.

12 I'm sorry, I don't understand the source of this
13 slide and where the transition -- you asked me where the
14 transition spool scope is within this. I don't see that
15 represented here.

16 Q. Yeah, I just assumed it would call it the capping stack,
17 but if you don't know, you don't know.

18 A. No, it did not fall within the capping stack, so it's not
19 included on this slide.

20 Well, in my interpretation of the events -- I showed
21 you my diagram that there was capping stack activities and
22 transition spool activities. So I don't know the source of
23 this particular slide. So maybe the intent was it was covered
24 within the capping stack, but it's not clear to me that the
25 transition spool is included in the capping stack activity.

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

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

5 BY MR. MILLER:

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

7 A. Yes, I do.

8 Q. Who was he?

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

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

13 This is an e-mail from Trevor Smith dated May 23,
14 2010. Do you see that?

15 A. Yes, I do.

16 Q. It's to Jim Wellings, correct?

17 A. Yes.

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

22 Do you see that, Mr. Smith?

23 A. I do.

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

25 A. Yes.

TREVOR SMITH - CROSS

1 16:07 Q. Underneath, there's a little signal which indicates a jpeg
2 16:07 file, correct? That would be here.

3 16:07 A. I see that, yes.

4 16:07 Q. The jpeg reference is to "trans" -- I think that means
5 16:07 transition spool -- and "hydro spool," and the date is May 9,
6 16:07 2010. Do you see that?

7 16:07 A. I do.

8 16:08 Q. There would have been a picture attached to this e-mail
9 16:08 that you sent to Mr. Jim Wellings, correct?

10 16:08 A. That should be the case, yes.

11 16:08 Q. Let's take a look at the picture.

12 Mr. Smith, are you familiar with this photograph?

13 16:08 A. I've probably seen it. I can't recall it instantly, but,
14 16:08 yes, I know what it represents.

15 16:08 Q. And let me ask you: It appears to me to represent a photo
16 16:08 of the transition spool taken on May 9, 2010, at 9:00 a.m. Do
17 16:08 you see that, Mr. Smith?

18 16:08 A. I do.

19 16:08 Q. That date is consistent with the reference on the cover
20 16:08 e-mail which said it was a jpeg from May 9, 2010, correct?

21 16:08 A. That's correct.

22 16:08 Q. What we see in this picture is the transition spool just
23 16:08 like it appears in the BP Technical Assurance Report with its
24 16:08 three elements and just like it appears in the INTECSEA design
25 16:08 drawings, correct, Mr. Smith?

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1 A. Yes, it has attachments at the bottom end and at the top
2 end.

3 Q. Just quickly --

4 MR. MILLER: I've got the split screen -- just so we
5 know what we're looking at, let's pull up the split screen
6 between Figure 12 and this.

7 BY MR. MILLER:

8 Q. This is a split screen from the BP Technical Assurance
9 Report, correct, Mr. Smith?

10 A. Yes.

11 Q. Figure 12, this is a photograph that you took on May 9,
12 2010, correct?

13 A. I didn't take the photograph, but it was --

14 Q. It's a photograph you sent to Jim Wellings, correct?

15 A. That is correct.

16 Q. The orientation is basically, if this were to rotate
17 counterclockwise, that's how it would be laying on the ground.
18 correct?

19 A. That's correct.

20 Q. You have the 18 and 3/4-inch API flange right here,
21 correct, Mr. Smith?

22 A. Correct.

23 Q. You have the riser pipe right here, correct, Mr. Smith?

24 A. That is correct.

25 Q. And you have the male G-series flange right here, correct,

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1 16:09 Mr. Smith?

2 16:09 A. That's correct.

3 16:10 Q. It's painted yellow, isn't it, Mr. Smith?

4 16:10 A. Yes.

5 16:10 Q. And it's fully assembled, isn't it, Mr. Smith?

6 16:10 A. It's assembled into its hydrotest device there, correct.

7 16:10 Q. This was just a dummy test device, correct?

8 16:10 A. Yes, to allow a hydrotest to be performed.

9 16:10 Q. Mr. Smith, there is -- it was shown yesterday in court --
10 I know you weren't here -- ROV footage -- you have probably
11 seen it separately -- of the capping stack on July 12 being
12 landed down below, on top of the transition spool. I'm going
13 to show you a split screen.

14 16:10 MR. MILLER: Let's go to that split screen, please.

15 16:10 BY MR. MILLER:

16 16:10 Q. Again, this is the photograph from May 9, 2010, you sent
17 to Jim Wellings on the left side of the screen, correct,
18 Mr. Smith?

19 16:10 A. That's correct.

20 16:10 Q. On the right side of the screen, this was what was shown
21 in court yesterday in terms of a video -- I just took a
22 screenshot. I just want to make sure I understand what I'm
23 looking at.

24 16:10 This appears to me -- right here, Mr. Smith -- to be
25 16:11 the transition spool that you took a picture of on May 9, 2010,

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1 correct?

2 A. Yes, that is correct.

3 Q. Again, here it is painted yellow, as assembled, correct,
4 Mr. Smith?

5 A. Uh-huh.

6 Q. Here are the three components. Here's the first component
7 we talked about, correct, 18 and 3/4-inch API flange, right?

8 A. That is correct.

9 Q. Here is the riser pipe that was welded to it, correct,
10 Mr. Smith?

11 A. That is correct.

12 Q. At the bottom is the male flange, correct?

13 A. That is correct.

14 Q. Right out of the screenshot would have been the flex
15 joint. That would have been right here, correct, Mr. Smith?

16 A. I believe right below where your red dot is would be the
17 guidance device, potentially -- it would be connected at that
18 point, wasn't it, to the flex joint. At this point, it was
19 flanged into the flex joint.

20 Q. You talked about the guidance device. As I understand it,
21 that consists of three basic elements. It consists of the mule
22 shoe that was sort of the male device that was stabbed inside
23 the flex joint, correct?

24 A. Yes.

25 Q. And then two guidance pins which were right here, on the

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1 sides of the bolt, correct, Mr. Smith?

2 A. A long and a short guide pin, and each pin, a guide wire,
3 a tether, attached to the tip of it for the ROV to pull it
4 together.

5 And also, I could point out that, on the top of your
6 photo that's on the screen, there is the -- if I point in green
7 here with that -- this was the connection hub that was flanged
8 to the top of the transition spool on to which the connector of
9 the capping stack is about to land and connect.

10 Q. Correct.

11 A. Plus, there is the guidance sling arrangement attached
12 underneath the flange at the top of the transition spool is how
13 we slung it -- how we installed it. So there are additional
14 components making up that assembly that I referred to earlier
15 as the "transition spool assembly."

16 Q. These additional components, these are not welded; these
17 are basically add-on tools that were used to put it into place
18 and for the ROVs to latch onto, correct, Mr. Smith?

19 A. Yes. They were bolted on, I believe, as was the hub.

20 Q. Take a look at a PowerPoint presentation you created,
21 Mr. Smith, during your work in response for BP. That's
22 TREN-144408.1.1.T0. This is a PowerPoint dated May 11, 2010,
23 from Trevor Smith and Mark Nichols. Do you see that,
24 Mr. Smith?

25 A. I do, yes.

TREVOR SMITH - CROSS

1 1.6 : 1.3 Q. Let's go to page 4 of the PowerPoint. I'm sorry, page 2.

2 1.6 : 1.3 The purpose of the PowerPoint, as I appreciate it, is
3 1.6 : 1.3 set forth on page 2 of the PowerPoint where you identify a
4 1.6 : 1.3 problem statement and it is: "Capping of the well with the
5 1.6 : 1.3 dual-ram capping stack or isolation valve assembly."

6 1.6 : 1.3 Do you see that, Mr. Smith?

7 1.6 : 1.4 A. Yes, I do.

8 1.6 : 1.4 Q. That was the purpose of your PowerPoint was to address
9 1.6 : 1.4 these issues or present these issues to others at BP, correct,
10 1.6 : 1.4 Mr. Smith?

11 1.6 : 1.4 A. It was presented in the overall context of the
12 1.6 : 1.4 installability of these devices. We have two devices using a
13 1.6 : 1.4 G-flange transition spool-type of component.

14 1.6 : 1.4 Q. Again, the date of this presentation, Mr. Smith, was
15 1.6 : 1.4 May 11, 2010, correct?

16 1.6 : 1.4 A. That's what I recall from the previous slide.

17 1.6 : 1.4 Q. Let's go to page 8 of this PowerPoint. That would be
18 1.6 : 1.4 TREX-144408.8.1.T0. You included in your PowerPoint
19 1.6 : 1.4 presentation to others at BP a schedule. Do you see that,
20 1.6 : 1.4 Mr. Smith?

21 1.6 : 1.4 A. Yes, that was a forecast of what we estimated it might
22 1.6 : 1.4 take to implement these activities.

23 1.6 : 1.4 Q. It was a forecast you created for your colleagues at BP,
24 1.6 : 1.4 correct, Mr. Smith?

25 1.6 : 1.4 A. That is correct.

TREVOR SMITH - CROSS

1 16:15 Q. This forecast covers one month and it's the month of
2 16:15 May 2010, correct, Mr. Smith?

3 16:15 A. It's not clear, but I believe that would be the case, yes.

4 16:15 Q. I have printouts of the calendar from 2010. If you have
5 16:15 any doubts, I would be happy to show it to you, but do you
6 16:15 agree it's the month of May, Mr. Smith?

7 16:15 A. I agree it's the month of May, yes.

8 16:15 Q. Thank you, sir.

9 16:15 Your forecast culminates at the end with "Well
10 16:15 Capping," correct, Mr. Smith?

11 16:15 A. Yes.

12 16:15 Q. At the very end under the "Well Capping" section, it says:
13 16:15 "Cap well."

14 16:15 Correct, Mr. Smith?

15 16:15 A. It does.

16 16:15 Q. You forecasted that date would be May 25, 2010, correct,
17 16:15 Mr. Smith?

18 16:15 A. That was the forecast, and it's a draft view of a draft
19 16:15 schedule, as it says at the top of the slide.

20 16:16 Q. Just bear with me for a second, Mr. Smith. I'm trying to
21 16:16 get through this.

22 16:16 Let's pull up another e-mail that you would have
23 16:16 received, Mr. Smith, from Charles Curtis. It is TREX-143045.

24 16:16 Mr. Smith, this is an e-mail from Charles Curtis
25 16:16 dated the Sunday, May 30, 2010, to -- you actually were cc'd.

TREVOR SMITH - CROSS

1 16:16 Do you see that, Mr. Smith?

2 16:16 A. I do.

3 16:16 Q. It was also to David Cameron at Transocean and John
4 16:16 Schwebel? Am I pronouncing that right?

5 16:16 A. Schwebel.

6 16:16 Q. He was a colleague of yours at BP?

7 16:16 A. That's correct.

8 16:16 Q. It says: "Dear John, Attached is a photo of the capping
9 16:16 stack this morning, May 30, around 11:00 a.m."

10 16:16 Do you see that, Mr. Smith?

11 16:16 A. Yes.

12 16:16 Q. This was a 3-ram capping stack that we are talking about;
13 16:16 this was the capping stack that we just saw on the screenshot
14 16:17 that was landed and capped the well on July 15, 2010, correct?

15 16:17 A. This was -- it appears to be the 3-ram stack in the course
16 16:17 of its build from the date.

17 16:17 Q. Mr. Curtis says to the recipients and carbon copies on
18 16:17 this e-mail that: "Completion date ready to ship offshore
19 16:17 Friday, June 4, 2010."

20 16:17 Correct, Mr. Smith? That's what it states, correct?

21 16:17 A. I'm sorry, I was reading. Where exactly is that?

22 16:17 Q. Right here.

23 16:17 A. Oh, sorry, yes. Highlighted, sorry.

24 16:17 Q. E-mail is from May 30?

25 16:17 A. Yep.

TREVOR SMITH - CROSS

1 Q. E-mail from Mr. Curtis is saying completion date -- we are
2 ready to ship offshore Friday, June 4, 2010?

3 A. That's what I take it to be Mr. Curtis' estimate at that
4 time, yes.

5 Q. Let's go ahead and look at the attached photo.

6 Mr. Smith, can you confirm that this is the 3-ram
7 capping stack that we saw in the ROV footage that was landed on
8 July 12, 2010, and capped the well on July 15, 2010?

9 **MR. COLLIER:** Your Honor, I'm going to object to the
10 extent that counsel made an issue out of Mr. Smith not having a
11 foundation to identify the changes to the capping stack during
12 the time. He shouldn't be able to now, on cross-examination,
13 to probe the witness on the same issue.

14 **MR. MILLER:** This is a copy of a photograph that this
15 witness received, Your Honor. I can rephrase my question and
16 ask him if this is a photo that he received.

17 **BY MR. MILLER:**

18 Q. Was this a photo you received, Mr. Smith?

19 A. It's a photo I received, and it's of components of the
20 capping stack but not the complete capping stack.

21 Q. There are 3 rams to this device, correct, Mr. Smith?

22 A. There are 3 rams to it. I see ROV panels missing. I see
23 the side outlet hubs are not the ones that were installed
24 subsea. Of course, there didn't include the pressure sensor
25 that I arranged to be added. It may have -- I think the

TREVOR SMITH - CROSS

1 guidance that was -- there was an additional guidance element
2 added to the capping stack -- I would have to check drawings --
3 at the bottom.

4 So it's not the complete capping stack. It's a
5 number of the components, but it's not the complete, finalized
6 capping stack. There's also a structural support member that
7 was installed under those side outlets later, on the drawings I
8 received.

9 Q. Okay, but this was a picture of it in whatever condition
10 it was in dated May 30, 2010, correct?

11 A. Yes, it was in the course of its development on that date
12 prior to Mr. Curtis' description.

13 Q. Sorry for the interruption, Mr. Smith.

14 Let's go back to the cover e-mail that this picture
15 came with. Again, Mr. Curtis wrote to you and to others that
16 completion date ready to ship offshore: Friday, June 4, 2010?

17 A. That was the forecast, evidently, he thought it would be
18 ready by, yes.

19 Q. I looked for it, Mr. Smith, and I couldn't find it. Did
20 you ever reply to this e-mail and say, "Mr. Curtis, you're
21 wrong. It won't be ready by Friday, June 4, 2010"?

22 Did you ever send that e-mail, Mr. Smith?

23 A. I was cc'd on that e-mail. It was input information to
24 us. It was -- I was receiving information; I didn't need to
25 respond to it.

TREVOR SMITH - CROSS

1 Q. That wasn't my question, Mr. Smith. My question was: Did
2 you respond to this e-mail?

3 A. I cannot recall. I might have said, "Thank you for the
4 update."

5 Q. Did you tell Mr. Curtis in person, by e-mail, or over the
6 phone -- or through sign language, any type of communication --
7 that he was wrong that the capping stack would be completed and
8 ready to ship offshore on June 4, 2010?

9 A. I had no reason to send something back. That was his
10 forecast at the time. He was the one on-site progressing the
11 build.

12 Q. Let's go back and take a look at -- from your PowerPoint
13 that we just looked at, your PowerPoint presentation --
14 TREX-144408.8.1. This was the schedule you made up, Mr. Smith.

15 On here -- I know it's hard to read, but what you
16 have here, Mr. Smith, as I appreciate this document, is you set
17 forth a projected time of six days. Do you see it says, "Ship
18 assembly to *DDII*," right here?

19 A. Yes, I do see that activity.

20 Q. You are shipping the other information offshore. And you
21 knew the shipment, under your projection, on May 19, correct?

22 A. On this schedule estimate, yes.

23 Q. So the time between the capping stack -- at this time, it
24 was a 2-ram capping stack, but based on your projection at this
25 point in time, based on the presentation you gave to your

TREVOR SMITH - CROSS

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

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

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

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

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

13 A. That is correct.

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

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

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

REDIRECT EXAMINATION

21
22 **BY MR. COLLIER:**

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

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

TREVOR SMITH - REDIRECT

1 recall that?

2 A. I do.

3 Q. Do you recall that that was a drawing and schematics
4 associated with the transition spool? Do you recall that?

5 A. Yes. It was an early version of the transition spool
6 assembly.

7 Q. Was there more to the transition spool that your team
8 created to connect the 3-ram capping stack to the flex joint
9 flange on July 12 than the drawings that were shown to you of
10 INTEC on May 7?

11 A. Yes. There was the perfecting of the guidance device,
12 making it more robust to be landed over the drill pipe. There
13 was the addition of the hub on the top. We took the mud boost
14 assembly off the valve, the block plug assembly off the side of
15 the spool, and made it a later addition. And, of course, we
16 had to develop a lot of the tooling. We realized we needed to
17 allow the flange connection to be made up and, of course, also
18 straighten and hold the flex joint in a vertical position to
19 allow the capping operation to proceed.

20 Q. Now, you were also shown a schedule, or Gantt charts,
21 relating to the capping stack. Do you recall that during
22 cross-examination?

23 A. Are you referring to the one on the PowerPoint slide that
24 I created?

25 Q. Correct.

TREVOR SMITH - REDIRECT

1 A. Yes.

2 Q. How many rams did that capping stack have at that time, at
3 least the design that you were identifying with respect to that
4 schedule?

5 A. I think that schedule referred to the 2-ram version and
6 potentially also referred to the single-valve capping device we
7 also were working on at that time.

8 Q. Now, the capping stack that was installed on July 12, how
9 many rams did that have?

10 A. It had 3 rams.

11 Q. I don't think I'm going outside your personal knowledge.
12 That's a difference between the capping stack that you were
13 providing in the schedule in May and the one that was actually
14 installed on July 12, correct?

15 A. It's one of the differences.

16 Q. You identified during your direct examination that for a
17 period of time you were in control of the capping stack
18 development; is that right?

19 A. The build of the stack, I was responsible for it in that
20 first week of June approximately.

21 Q. What changes to the capping stack design were changed at
22 that point in time when you were leading that team?

23 A. The only activity I changed at that point in time was to
24 get the side outlet valves converted from their fail-closed
25 condition to fail-open because of the need for the device to

TREVOR SMITH - REDIRECT

1 operate in a containment scenario.

2 Q. I think you testified earlier that one of the other
3 additions was a pressure sensor. Is that correct?

4 A. That's correct. That happened late in June.

5 Q. One of the things that happened or occurred in June was
6 testing of the connection system to connect the capping stack
7 to the flex joint flange, correct?

8 A. Yeah. We brought the transition spool to Berwick to
9 connect with the capping stack, if that's what you are
10 referring to, and assembled both of those together and
11 pressure-tested them.

12 MR. COLLIER: If we could bring up D-23934.

13 BY MR. COLLIER:

14 Q. This is the timeline that you discussed during your direct
15 examination, correct, Mr. Smith?

16 A. Correct.

17 Q. If you can go to the bar that says "Transition Spool
18 Activity." Can you identify some of the dates for the testing
19 that was conducted for testing the connection system between
20 the capping stack and the flex joint flange.

21 A. Yes. June 27 was the final test in Houston, and then we
22 shipped it to Berwick and tested it and connected it up to the
23 capping stack to make sure that it fit together correctly and
24 could form a leak-tight connection.

25 Q. Was there testing performed before that point in time?

TREVOR SMITH - REDIRECT

1 A. On the transition spool?

2 Q. Or the guidance system.

3 A. Yes. The June 7 to 13 was when we were taking that
4 original version of the transition spool and its mule shoe
5 guidance device devised by INTECSEA. And we tested that device
6 in a mock-up of the flex joint with a range of different drill
7 pipes to find out what the most appropriate guidance system
8 would be to land over this drill pipe.

9 Q. Now, during the testing that was performed in June, were
10 there changes that were made to the guidance system based on
11 that testing?

12 A. Yes. We removed the -- we found that the original mule
13 shoe was not strong enough, and under the potential loads it
14 could see landing into the flex joint, it might crumple. We
15 were concerned if it landed square onto the top of one of the
16 drill pipes. So we made a thicker-walled guidance version of
17 that original mule shoe concept. There were a couple of slots
18 in the original design. We removed those. We made the nose of
19 the mule shoe rounded so it would tend to glide over a drill
20 pipe, and we made that surface hard so that it wouldn't catch
21 on the drill pipe.

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

TREVOR SMITH - REDIRECT

1 Q. Did the transition spool assembly design change during the
2 month of June?

3 A. Yes, as a result of those -- learning from those trials.

4 Q. During the cross-examination I didn't hear any discussion
5 about the installation tools that your team developed. Did
6 your team develop installation tools for the connection with
7 the capping stack?

8 MR. MILLER: Objection, Your Honor. It's beyond the
9 scope of my cross. Mr. Collier just said it.

10 THE COURT: Sustained.

11 BY MR. COLLIER:

12 Q. Now, you were asked some questions during
13 cross-examination about a Charles Curtis e-mail. Mr. Smith, do
14 you recall that?

15 A. Yes, I recall that.

16 Q. The e-mail related to the capping stack at that particular
17 point in time. Do you recall that?

18 A. Yes, its condition and projected ship date.

19 Q. Were there changes made to the capping stack design beyond
20 that point of time at the end of May?

21 A. These were changes -- the change I'm aware of and had
22 influence over was adding the pressure sensor, but from the
23 condition of the float -- the capping stack, as in the photo.

24 I know the side outlets were changed. I know that
25 structural members were added. I know that ROV panels were

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

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

5 **THE COURT:** Thank you, sir.

6 **THE WITNESS:** Thank you.

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

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

10 **ADAM BALLARD,**

11 having been duly sworn, testified as follows:

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

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

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

17 **VOIR DIRE**

18 **BY MS. KARIS:**

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

21 **A.** Yes. My name is Adam Ballard.

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

23 **A.** I currently work for BP.

24 **Q.** How long have you worked for BP?

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

ADAM BALLARD - VOIR DIRE

1 1.6:33 Q. What's your current job title?

2 1.6:33 A. I'm currently an executive assistant to our regional
3 1.6:33 president.

4 1.6:33 Q. What is the job of an executive assistant to the regional
5 1.6:33 president?

6 1.6:33 A. So in general it's to keep him informed of technical
7 1.6:33 issues and prepared for meetings.

8 1.6:33 Q. Now, did you assist with BP's source control efforts
9 1.6:33 following the *Deepwater Horizon* incident?

10 1.6:33 A. I did.

11 1.6:33 Q. How long were you personally involved in the efforts to
12 1.6:33 stop the spill?

13 1.6:33 A. I was involved about a week after the incident started and
14 1.6:34 was involved through mid-August.

15 1.6:34 Q. In addition to personally assisting with BP source control
16 1.6:34 efforts, were you asked to provide certain expert opinions in
17 1.6:34 this case regarding hydraulic modeling?

18 1.6:34 A. I was.

19 1.6:34 Q. Before we discuss your involvement and your opinions, I
20 1.6:34 would like to give the Court a little bit of information about
21 1.6:34 your background.

22 1.6:34 MS. KARIS: Actually, if we can pull up D-23212,
23 1.6:34 please.

24 1.6:34 BY MS. KARIS:

25 1.6:34 Q. Mr. Ballard, does this slide accurately reflect your

ADAM BALLARD - VOIR DIRE

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

3 A. Yes, it does.

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

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

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

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

16 BY MS. KARIS:

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

19 A. It does.

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

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

ADAM BALLARD - VOIR DIRE

1 1 6 : 3 6 as well as operations.

2 1 6 : 3 6 I have also spent time as an offshore operations
3 1 6 : 3 6 engineer supporting on-site. And the role I had right before
4 1 6 : 3 6 my current one, I was the engineering manager for *Thunder Horse*
5 1 6 : 3 6 production platform.

6 1 6 : 3 6 Q. You mentioned that you have been a flow assurance
7 1 6 : 3 6 engineer. What is a flow assurance engineer?

8 1 6 : 3 6 A. At a high level, it's basically applying hydraulic theory
9 1 6 : 3 6 to production or oil and gas systems.

10 1 6 : 3 6 Q. In addition to being a flow assurance engineer, have you
11 1 6 : 3 6 taught courses in the area of flow assurance?

12 1 6 : 3 6 A. Yes, I have. I have taught many.

13 1 6 : 3 6 Q. As a result of your education as well as work experience,
14 1 6 : 3 6 are you familiar with hydraulic modeling that is used in the
15 1 6 : 3 6 gas and oil industry?

16 1 6 : 3 6 A. Yes, I am.

17 1 6 : 3 6 Q. Just describe for the Court, what is hydraulic modeling
18 1 6 : 3 6 that both you and Dr. Wilson spoke of?

19 1 6 : 3 6 A. Hydraulic modeling is, again, just applying hydraulic
20 1 6 : 3 7 theory to a system. And in the oil and gas system, it would be
21 1 6 : 3 7 wells, it would be subsea systems or topsides production
22 1 6 : 3 7 systems.

23 1 6 : 3 7 Q. Are there a variety of different software packages that
24 1 6 : 3 7 could be used to perform hydraulic modeling?

25 1 6 : 3 7 A. Yes, there are.

ADAM BALLARD – VOIR DIRE

1 Q. What are some of those packages?

2 A. Some of the packages would be PROSPER, GAP, PIPESIM, OLGA,
3 WellCAP, MBAL. There are several available ones.

4 Q. Are those the packages that were used in connection with
5 some of the hydraulic modeling that was performed in April and
6 May of 2010?

7 A. Yes, several of those were.

8 Q. Can you approximate for the Court on how many occasions
9 you have used those very packages that you have just described
10 or some version of them?

11 A. I have used each of those packages to some extent in my
12 career. Total sum, on the order of hundreds to thousands of
13 individual simulation runs.

14 MS. KARIS: Your Honor, at this time I would like to
15 tender Dr. Ballard as an expert in hydraulic modeling and its
16 use in the oil and gas industry.

17 THE COURT: Who is going to be cross-examining?

18 MR. BRIAN: No objection.

19 THE COURT: Okay. Without objection.

20 DIRECT EXAMINATION

21 BY MS. KARIS:

22 Q. Before we discuss the expert work you've done in this
23 case, can you briefly tell the Court about your personal
24 involvement in BP source control efforts.

25 A. Yes. I was involved about a week after the incident,

ADAM BALLARD - DIRECT

1 consulting with different groups; and then in mid-May, I got
2 seconded to the containment and disposal project, or the CDP.
3 I was on there until mid-August.

4 Q. Tell the Court, what is the containment disposal project
5 that you just described as CDP?

6 A. The CDP was a collection system that was designed to hook
7 up to the BOP or somewhere in that area and basically collect
8 the oil before it hit the seawater, and transport that oil and
9 gas through a subsea system to a floating production and
10 storage and offloading vessel, which was the *Helix Producer*.

11 Q. What was your role in connection with the CDP project?

12 A. My role was as a flow assurance engineer to design and
13 operate the subsea system.

14 Q. Did you perform any hydraulic modeling in support of the
15 CDP project?

16 A. Yes, I did.

17 Q. What was the purpose of the hydraulic modeling that you
18 performed?

19 A. The purpose of the hydraulic modeling that I did in
20 regards to the CDP was to ensure that the subsea system was
21 designed properly so that it could actually the flow the oil
22 and gas safely to the surface.

23 Q. Was the purpose of any of the hydraulic modeling you
24 performed aimed at estimating the flow rate or range of flow
25 rate from the Macondo well?

ADAM BALLARD - DIRECT

1 16:40 A. No, it wasn't.

2 16:40 Q. Now, in addition to performing some hydraulic modeling
3 16:40 yourself in connection with the CDP project, were you asked --
4 16:40 you were asked to tender some opinions in this case with
5 16:40 respect to hydraulic modeling done by other engineers, correct?

6 16:40 A. Yes.

7 16:40 Q. Just to orient ourselves, was your work done to respond to
8 16:40 Dr. John Wilson's opinions, who the Court heard from earlier
9 16:40 this week?

10 16:40 A. Yes, it was.

11 16:40 Q. Did you prepare a report stating your opinions?

12 16:40 A. I did.

13 16:40 MS. KARIS: If we can pull up 11905.1.1.

14 16:40 BY MS. KARIS:

15 16:40 Q. Is this the report that you prepared, titled "Rebuttal
16 16:41 Expert Report of Adam L. Ballard, Ph.D."?

17 16:41 MR. BRIAN: Your Honor, just for clarification, I
18 16:41 think there were some redactions in this report. I think
19 16:41 there's an R version. I don't know if counsel is intending to
20 16:41 use that or not.

21 16:41 MS. KARIS: We will definitely use the redacted
22 16:41 version and submit into evidence the redacted version.

23 16:41 MR. BRIAN: In terms of my cross-examination, I have
24 16:41 prepared questions based on the redacted version, so perhaps we
25 16:41 can work off the same version.

ADAM BALLARD - DIRECT

1 THE COURT: It sounds like that's what she intends to
2 do.

3 MS. KARIS: Yes, Your Honor.

4 BY MS. KARIS:

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

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

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

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

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

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

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

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

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

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

17 A. Not from my understanding.

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

19 BY MS. KARIS:

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

22 A. Yes, it does.

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

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1 rates from the well using hydraulic models."

2 First, can you tell the Court, what does that mean?

3 A. What does that mean? From my analysis, there just wasn't
4 enough information available during that time frame to actually
5 do a hydraulic modeling analysis to determine the flow rate.
6 There were several uncertainties.

7 Q. We have *tools* there in quotes. What is the reference to
8 the tools?

9 A. So the tools I'm referencing are the tools that Dr. Wilson
10 references in his report. So that's PIPESIM, PROSPER, GAP,
11 OLGA, and some of the other tools as well.

12 Q. Now, did you observe Dr. Wilson's testimony here on
13 Monday?

14 A. Yes, I did.

15 Q. Dr. Wilson testified that in the course of their daily
16 activities, BP's engineers modeled flow from wells.

17 Is hydraulic modeling frequently applied in the oil
18 and gas industry in order to estimate the flow in a production
19 system?

20 A. Hydraulic modeling can be used and is used, but I would
21 not say it's frequent. It's certainly not on a daily basis.

22 Q. Is hydraulic modeling used in order to understand
23 production systems?

24 A. Absolutely.

25 Q. Now, how is hydraulic modeling used to understand

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1 production systems? And then we'll talk about how it was used
2 in connection with the Macondo, on the system.

3 A. So in a production system hydraulic modeling is used to
4 primarily monitor the system and try to identify issues that
5 may be happening. So you would -- in a production scenario you
6 would know the rate of your system and you would know what the
7 system looks like. And you would use your model and you would
8 input the actual system -- what lengths of pipe and ID and all
9 the different parameters -- input the rate and look at what the
10 different pressures and temperatures look like in the system.

11 Q. Where do you typically get the rate from that you are
12 inputting?

13 A. You would get that from either a well test or just
14 basically your meters that you have on the production facility.

15 Q. Now, in your typical use of hydraulic modeling, you said
16 you get the rate from a meter. Was there such a meter at the
17 Macondo well that one could use in order to input into a
18 hydraulic model in order to understand flow?

19 A. No, there wasn't.

20 Q. You also mentioned a well test?

21 A. Yes.

22 Q. What's a well test?

23 A. A well test can take several forms. These are tests that
24 are required by regulatory on some frequency. And what you do
25 is you produce a well to a separator and you meter the oil that

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1 comes out. And then you can also have an understanding of the
2 different pressures in the system during that well test as
3 well.

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

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

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

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

13 A. Not from my understanding.

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

17 A. Yes, ma'am.

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

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

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1 be able to model it.

2 Q. Again, this is in connection with your opinion "and
3 neither BP nor any other party had the 'tools' in April and May
4 to reliably estimate the daily discharge rates from the well
5 using hydraulic modeling."

6 MS. KARIS: If we can now pull up D-23207B, please.

7 BY MS. KARIS:

8 Q. You reference that the significant difference between the
9 Macondo situation and your typical use of hydraulic modeling --
10 one of those differences, I should say, is the uncertainties
11 that existed.

12 Can you explain to the Court what you mean by that,
13 using this demonstrative?

14 A. This is an illustration of the Macondo well. What I mean
15 by uncertainties, I have listed a few here.

16 Q. Do you have a pointer?

17 A. I do.

18 So this is an illustration of the Macondo well.
19 There were several uncertain parameters in the system that were
20 just too uncertain, in my opinion, to actually be able to
21 conduct or create a hydraulic modeling estimate of flow rate.

22 Q. Tell us what some of those uncertainties were. The first
23 one you list is flow path?

24 A. Yes.

25 Q. What was the uncertainty regarding the flow path?

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

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

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

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

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

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

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1 1.6:51 Q. We are going to talk about that.

2 1.6:51 Restrictions to flow. Again, explain to the Court
3 1.6:51 what you mean, that there were uncertainties regarding
4 1.6:51 restrictions to flow as they related to hydraulic modeling.

5 1.6:51 A. So to talk about restrictions to flow, I guess the best
6 1.6:51 way to describe what I mean by that is to expand upon
7 1.6:51 Dr. Wilson's example that he gave to illustrate a simple
8 1.6:51 hydraulic system, and that's the hose, like a garden hose.

9 1.6:52 So with a garden hose, you can have it hooked up to
10 1.6:52 your city water through a spigot and have it open at the end.
11 1.6:52 You can certainly flow water through that if you turn it on
12 1.6:52 full blast. But you can actually -- so if you go to the middle
13 1.6:52 of that hose, you could actually kink it. That kink would be a
14 1.6:52 restriction to the flow through that hose. And so that's what
15 1.6:52 I'm referring to when I'm talking about restrictions here or
16 1.6:52 obstructions to flow.

17 1.6:52 There were several potential ones in this system. I
18 1.6:52 will name a few.

19 1.6:52 Q. Go ahead.

20 1.6:52 A. One of them was, due to the presence of the drill pipe, if
21 1.6:52 it was there and flow was going up that drill pipe, well, that
22 1.6:52 drill pipe going through the BOP, when those BOP rams were
23 1.6:52 activated, they would have potentially dented that pipe or
24 1.6:52 crimped that pipe.

25 1.6:52 There were five different rams, and so if flow was

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1 going up that way, each of those crimps within that pipe would
2 actually be considered a restriction, a potential restriction.

3 As mentioned earlier, for casing flow, in order for
4 that to happen, there would have to be a casing hanger failure,
5 which wasn't designed to have flow through it. So if flow were
6 going through it, it would be a restriction to flow.

7 As well, if flow was going around the BOP rams here,
8 each of those rams, which was in the closed position, would
9 create a potential restriction to the flow going through that.
10 It wouldn't be an open bore. There were five different ones.

11 Of course, the one you could see, which was the kink
12 in the riser, was thought to be a potential restriction to flow
13 as well.

14 Q. Was it known in April and May of 2010, when hydraulic
15 modeling was being conducted, which of those restrictions
16 existed?

17 A. It wasn't known.

18 Q. Other than the kink in the riser as you --

19 A. You can see the kink in the riser, but it wasn't known to
20 what extent it was kinking or restricting flow.

21 Q. Now, there's also reference to pay thickness,
22 permeability, and skin. And just briefly summarize what impact
23 that uncertainty about each of those has on the ability to
24 conduct hydraulic modeling, to estimate a daily discharge rate
25 or even a range, a reasonably reliable range of discharge rate.

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

6 Due to the cement failure, it was unknown as to
7 whether you had just a little bit open to flow or the full
8 88 feet and without knowing how much is open, that would highly
9 affect the ability to model the rate coming out of that well to
10 even bound it.

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

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

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

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

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

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

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

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

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

23 A. No.

24 Q. Why not?

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

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

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

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

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

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

25 **THE COURT:** I overrule the objection.

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1 16:59 BY MS. KARIS:

2 16:59 Q. You may answer.

3 16:59 A. No one I talked to said they could reliably predict flow
4 16:59 rate during that time.

5 16:59 Q. Now, you just said nobody could reliably predict flow rate
6 16:59 using the hydraulic modeling that was being performed in April
7 16:59 and May. You don't dispute that there was, in fact, hydraulic
8 16:59 modeling being done, correct?

9 16:59 A. No, I don't dispute that.

10 16:59 Q. Did you attempt to understand for what purpose that
11 16:59 modeling was being done, since it wasn't for the purpose of
12 17:00 estimating flow rate?

13 17:00 A. Yes, I did.

14 17:00 MS. KARIS: If we can go back to D-23214.

15 17:00 BY MS. KARIS:

16 17:00 Q. Your second opinion in this case -- tell the Court first
17 17:00 what is your second opinion in this case.

18 17:00 A. So my second opinion is really the opinion as to what the
19 17:00 modeling was actually used for, and that was to test robustness
20 17:00 of different source control operations as well as to better
21 17:00 understand the impact of different source control actions or
22 17:00 the impact of changes in the conditions of the system.

23 17:00 Q. I would like to unpack that a little bit.

24 17:00 MS. KARIS: Let's use D23208.

25

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17:00 1 BY MS. KARIS:

17:00 2 Q. When you say to test robustness of the operations and to
17:00 3 better understand the impact, have you prepared this slide to
17:01 4 assist you in explaining what that opinion is?

17:01 5 A. Yes.

17:01 6 Q. Tell us what this slide represents.

17:01 7 A. So what this represents is basically the different types
17:01 8 of modeling or the purposes of the hydraulic modeling that was
17:01 9 done during that time frame. It's grouped into two separate
17:01 10 methods or separate purposes. One is what I have termed "what
17:01 11 if." It was basically trying to answer a question of what if
17:01 12 we do this source control action, what's the potential from the
17:01 13 well. As well there was some modeling done around what if,
17:01 14 what if there were changes in conditions, what would happen.

17:01 15 The second portion or the second purpose was really
17:01 16 around evaluating worst-case scenarios and, again, that was in
17:01 17 efforts to evaluate the robustness of the different operations.

17:01 18 Q. Can you explain how hydraulic modeling allows an engineer
17:02 19 to assess a what-if scenario?

17:02 20 A. So hydraulic modeling can be used to look at a what-if by
17:02 21 making certain assumptions in the model. Typically they would
17:02 22 be biased toward the high end, and you would change the
17:02 23 conditions to what the question you were actually asking about
17:02 24 what if. So if -- what if we took the BOP off the riser or off
17:02 25 the well, you could actually use the modeling to look, at least

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17:02 1 qualitatively, what would happen in terms of -- in terms of
17:02 2 what would happen.

17:02 3 Q. You said that typically it would be biased towards the
17:02 4 high end. What do you mean?

17:02 5 A. What I mean is because you didn't know -- you couldn't
17:02 6 tell with hydraulic modeling what a likely flow rate is from
17:02 7 it, you could certainly with it use the upper end of all those
17:02 8 uncertain variables. You could assume that you have a full
17:02 9 88 feet of net pay available to flow. You could assume that no
17:03 10 restrictions were in this thing. You could assume the upper
17:03 11 end of every variable that you don't understand and you would
17:03 12 run the model under one condition and then you would run it
17:03 13 under another condition to look at how the change potentially
17:03 14 affects -- or what actually happens.

17:03 15 Q. Did much of the hydraulic modeling that you reviewed in
17:03 16 fact assume or -- strike that.

17:03 17 For the hydraulic modeling that you reviewed that was
17:03 18 performed in April and May, was it being run with this bias
17:03 19 towards the high end?

17:03 20 A. I would say nearly all of it was, if not all of it.

17:03 21 Q. Based on your experience as well as the work you have done
17:03 22 in this case, would that -- the fact it's run with a bias
17:03 23 towards a high end reflect what the actual conditions at the
17:03 24 well were?

17:03 25 A. Well, no. As I mentioned, hydraulic modeling couldn't

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

8 Q. We will look at some of those models.

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

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

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

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

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17:05 1 you are going to run modeling for the purpose of source control
17:05 2 operations, to run that modeling looking on the high end?

17:05 3 A. Yes.

17:05 4 Q. Now, let's look at some of the specific examples I think
17:05 5 the Court has seen previously and talk about what that modeling
17:05 6 actually shows.

17:05 7 MS. KARIS: If you can please pull up TREC-5063.1.2.

17:05 8 BY MS. KARIS:

17:05 9 Q. Dr. Wilson referenced this modeling, and I would like to
17:06 10 discuss it with you. First of all, who is Trevor Hill?

17:06 11 A. Trevor Hill is the -- currently he's our segment
17:06 12 engineering technical authority for flow assurance.

17:06 13 Q. On April 28, 2010 when he sends this communication with
17:06 14 these modeling results, were there a significant number of
17:06 15 unknown conditions at the Macondo well one week after the
17:06 16 incident had taken place?

17:06 17 A. Yes. This was very early on. There was not much known at
17:06 18 all.

17:06 19 Q. Was it known what the condition of the BOP was?

17:06 20 A. Not from my understanding.

17:06 21 Q. Was it known whether there were any downhole restrictions
17:06 22 that were going to affect flow?

17:06 23 A. Not from my understanding.

17:06 24 Q. Was it known what effect the kink in the riser was having
17:06 25 on flow?

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17:06 1 A. No.

17:06 2 Q. Mr. Hill says: "We have modeled the whole system from
17:06 3 reservoir to sea in order to bound the answers on flow rate."

17:07 4 MS. KARIS: If we can now look at 5063.4.5, please.

17:07 5 BY MS. KARIS:

17:07 6 Q. Does Mr. Hill and Mr. Lockett, who was also involved in
17:07 7 this, their modeling, if you get into the substance of their
17:07 8 paper rather than the initial one-liner on the cover e-mail,
17:07 9 does it identify the fact that there were multiple unknowns at
17:07 10 the time they were generating this modeling?

17:07 11 A. Yes. In fact, it says that the only thing they really do
17:07 12 know is the pressure on the reservoir and the pressure of sea
17:07 13 as well as some fluid properties. It's very similar to the
17:07 14 hose example of I know the pressure of the city water, I know
17:07 15 atmospheric pressure, and I know how to describe the water
17:07 16 going through it, but I don't understand anything else, is
17:07 17 basically what they say.

17:07 18 Q. So they say: "We are currently less certain of the
17:07 19 following aspects..."

17:07 20 Can you tell us what those aspects are that their
17:07 21 modeling recognizes they simply do not know when they're
17:07 22 running this?

17:08 23 A. Yes. So they list them out here. The first one is around
17:08 24 inflow performance and the formation damage, which is really
17:08 25 the productivity of that well. They don't understand the

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17:08 1 productivity.

17:08 2 Then the next three are around flow path. They
17:08 3 didn't understand the flow path through the well itself,
17:08 4 through the BOP, or the -- and through the riser itself.

17:08 5 Q. Are these some of the same uncertainties that you told us
17:08 6 prevent you from using hydraulic modeling to estimate reliably
17:08 7 a flow rate from the Macondo well at this time?

17:08 8 A. Yes.

17:08 9 Q. Now, in connection with Mr. Lockett and Mr. Hill's work,
17:08 10 Dr. Wilson testified that these are the type of uncertainties
17:08 11 that modeling is designed to deal with. Do you agree with that
17:08 12 statement?

17:08 13 A. Not at all.

17:08 14 Q. Why not?

17:08 15 A. Because, again, the models are designed maybe with one
17:09 16 unknown and if you knew everything else, you could determine
17:09 17 what that one unknown is. And they were designed for modeling
17:09 18 actual systems that you knew or designing systems based on all
17:09 19 the other things that you do know. But in this case we didn't
17:09 20 understand the system, so you didn't even understand how to
17:09 21 describe the system at which the oil and gas was flowing. And
17:09 22 you didn't understand the inflow performance because that is a
17:09 23 high function of the net pay thickness that we were talking
17:09 24 about earlier.

17:09 25 Q. Now, given the uncertainties that are identified here, do

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17:09 1 you know what the purpose was then for doing this modeling
17:09 2 since there were all these uncertainties?

17:09 3 A. Yes.

17:09 4 Q. What was the purpose?

17:09 5 A. After reviewing Mr. Hill's testimony, I said the purpose
17:09 6 of this was to understand -- kind of going back to the purpose
17:09 7 was what if. They were asked what if the kink or the -- well,
17:10 8 what if the kink were to erode and it was not holding back
17:10 9 flow? And so to answer that question, they did this modeling.

17:10 10 Q. Was it known what, if any, restriction the kink may have
17:10 11 been presenting to the flow of the Macondo well?

17:10 12 A. No.

17:10 13 Q. Were they trying to understand what impact that may have
17:10 14 had on the overall system?

17:10 15 A. Can you repeat the question?

17:10 16 Q. Sorry. Were Mr. Hill and Dr. Lockett attempting to
17:10 17 understand what might happen to the system if the kink erodes?

17:10 18 A. Yes.

17:10 19 Q. Given these uncertainties that you have just described and
17:10 20 the purpose for their modeling, how did Mr. Hill and
17:10 21 Dr. Lockett approach the modeling that they performed in order
17:10 22 to generate whatever figures we have?

17:10 23 A. Again, reviewing Mr. Hill's testimony, he said because of
17:10 24 all the uncertainties, they had to use counterfactual
17:11 25 assumptions in their models to generate what he termed "extreme

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17:11 1 conditions."

17:11 2 MS. KARIS: If we can look at D-23922.

17:11 3 BY MS. KARIS:

17:11 4 Q. Is this the testimony you relied on from Mr. Hill
17:11 5 discussing this precise modeling in which he was asked:

17:11 6 "QUESTION: When you say it was focused on the
17:11 7 erosion work, what do you mean?

17:11 8 "ANSWER: The potential that the restriction of the
17:11 9 kink would erode with time.

17:11 10 "QUESTION: Did you understand the potential would
17:11 11 require you to have an understanding of what your best
17:11 12 estimate of flow rate was?

17:11 13 "ANSWER: It required us to look at extreme values
17:11 14 across a range to see what could happen."

17:11 15 A. Yes.

17:11 16 Q. Can you tell the Court what were the extreme values that
17:11 17 Mr. Hill and Dr. Lockett's work used.

17:11 18 A. Yes. So even though they knew there were potential
17:11 19 restrictions throughout the system and didn't understand the
17:12 20 flow path, what they did here was assume that the kink was the
17:12 21 only thing restricting flow in the entire system. They also
17:12 22 used different productivity indexes all the way up through what
17:12 23 is called an infinite productivity index, which is not
17:12 24 realistic, but it definitely looks at an extreme case.

17:12 25 MS. KARIS: Now, if we can pull up 5063.4.6.

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1 BY MS. KARIS:

2 Q. Do Dr. Lockett and Mr. Hill state in their memo that was
3 attached to that cover e-mail precisely what you just told
4 us --

5 A. Yes.

6 Q. -- they are using these extreme conditions?

7 And then they go on to say: "The last of these three
8 shows the maximum hydraulic capacity of the system from bottom
9 hole to sea and is a theoretical-only worst case."

10 Does that tell you anything about what a reliable
11 estimate of flow rate was as of the time this modeling was
12 being performed?

13 A. No, not at all.

14 MS. KARIS: If we can pull up 5063.4.3, please.

15 BY MS. KARIS:

16 Q. You saw this on Monday as well. It's attached to the same
17 memo: "The data generated takes the form of the following
18 illustrative table."

19 There was a reference to orifice size and then flow
20 rate. The orifice sizes range from .25 down to 5 inches and
21 then the corresponding flow rates using these theoretical
22 worst-case conditions generate from 2,523 down to 65,171.

23 First, can you tell the Court what this is showing?

24 A. Well, as Mr. Hill and Dr. Lockett say in their report,
25 it's an illustrative table of the types of results they were

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17:13 1 getting in that form.

17:13 2 Q. There's a reference to orifice size. An example was used
17:14 3 on Monday that the .25 inches would be the equivalent of saying
17:14 4 that the only flow coming out of the well is the size of a pen
17:14 5 cap. Is that an accurate description of what orifice size and
17:14 6 hydraulic modeling represents?

17:14 7 A. Not in the case that it was used here or during the
17:14 8 Macondo incident.

17:14 9 Q. Tell us why.

17:14 10 A. Orifice size is relating to an orifice plate, which is a
17:14 11 thin plate with a hole in the middle of it that you would
17:14 12 typically use in a topsides or at the surface to measure flow.
17:14 13 There's been a lot of data generated to put a correlation
17:14 14 together to be able to use that. So we didn't have orifice
17:14 15 plates in the Macondo system. We had restrictions that we
17:14 16 didn't understand.

17:14 17 So to -- in the models the only way to model a
17:14 18 restriction is to put in an orifice into the models. And so
17:15 19 because it wasn't an orifice plate, because -- especially in
17:15 20 this model, they assumed all the restrictions were not
17:15 21 restricting and only the kink was. Any orifice size you would
17:15 22 have to use in your model or that you would use in your model
17:15 23 is not related to reality. So a .25, for instance, inch
17:15 24 diameter orifice in this model, especially with the extreme
17:15 25 conditions that were used, would not be even close to -- well,

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17:15 1 it cannot be related to what the actual size of restrictions
17:15 2 are in the Macondo well. I believe I heard Dr. Wilson say
17:15 3 that, that it was an extraction and that's exactly what it is,
17:15 4 especially how it was used in these models.

17:16 5 Q. Do these figures in any way -- these orifice sizes in any
17:16 6 way allow you to bound the real conditions that existed at
17:16 7 Macondo at this time?

17:16 8 A. Again, not at all. The model used to generate this used
17:16 9 an infinite productivity index and all they were doing -- you
17:16 10 can tell by how they discretized the orifice size. They
17:16 11 basically just stepped it out to try to understand what the
17:16 12 curvature of that rate looked like over different restrictions.

17:16 13 Q. If you recall in the cover e-mail to this work,
17:16 14 Dr. Lockett and Mr. Hill say: "We have modeled the whole
17:16 15 system from reservoir to sea in order to bound the answers on
17:16 16 flow rate."

17:16 17 What's your understanding of what that bounding
17:16 18 refers to in light of what they say in the actual memo?

17:16 19 A. So going back to the purpose of modeling, which was to
17:16 20 understand what would happen if the kink were to erode, they
17:16 21 used their modeling to understand what's the worst it could get
17:17 22 and that's really related to the orifice size of 5, which would
17:17 23 be no restriction at all at the kink. So that would be -- at
17:17 24 least for the model that they created with an infinite
17:17 25 productivity index, it would be the equivalent of not having

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17:17 1 any restriction in that system at all.

17:17 2 Q. We also heard reference to some modeling done by Mr. Mason
17:17 3 and a suggestion that that work was used to help BP bound an
17:17 4 estimate of flow rate.

17:17 5 MS. KARIS: Let's look at 9156.1.1.

17:17 6 BY MS. KARIS:

17:17 7 Q. And to be clear, that was Dr. Wilson's review of
17:17 8 Mr. Mason's modeling. Have you reviewed the modeling performed
17:17 9 by Mr. Mason on May 11?

17:17 10 A. Yes.

17:17 11 Q. Have you also reviewed Mr. Mason's testimony as to what
17:17 12 the purpose was for which he was actually doing the work?

17:17 13 A. Yes.

17:18 14 Q. Start with, was Mr. Mason doing this work in order to help
17:18 15 him understand or estimate what the flow rate was for Macondo
17:18 16 at this time?

17:18 17 A. No. His testimony and -- in his testimony he said the
17:18 18 purpose of this was to understand -- again, going back to the
17:18 19 categories, it was a what-if type of analysis and it was -- the
17:18 20 question was: What if we took off the LMRP to expose the
17:18 21 flange so that they could maybe put a BOP or some other piece
17:18 22 of equipment on it, what would happen to the flow rate?

17:18 23 MS. KARIS: If we can look at D-23923.

17:18 24 BY MS. KARIS:

17:18 25 Q. Is this Mr. Mason's testimony when he is asked in his

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17:18 1 deposition what the purpose was for his modeling?

17:18 2 A. Yes.

17:18 3 Q. Is this consistent with what you said, which is he is
17:18 4 looking at what would happen if we took off the LMRP?

17:18 5 A. Yes.

17:18 6 Q. Now, was the LMRP ever taken off at this time to your
17:19 7 knowledge?

17:19 8 A. No, it wasn't.

17:19 9 MS. KARIS: If we can now look at 9156.6.1, please.

17:19 10 BY MS. KARIS:

17:19 11 Q. These are some of the tables that are attached to
17:19 12 Mr. Mason's May 11 work.

17:19 13 First, can you tell the Court, in light of what the
17:19 14 purpose was for Mr. Mason's modeling, what Mr. Mason modeled.

17:19 15 A. So what they modeled here, because of the uncertainties
17:19 16 that they did, they basically did what's called a parametric
17:19 17 study, and that's a study in which you look at different values
17:19 18 of the uncertain things that you do have just to look it up,
17:19 19 what I would call a mapping of the system.

17:19 20 So to be specific in here, they chose what they call
17:19 21 a maximum reservoir exposed version or set of modeling runs and
17:20 22 they did a partial reservoir exposed conditions. For those
17:20 23 conditions, of which one was 88 feet of reservoir exposed, you
17:20 24 can see in the scenario at the top left. They looked at
17:20 25 several different values for skin and they looked at four

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1 different flow paths to understand what the different -- and
2 then they calculated flow rate for those conditions.

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

7 You can see the top tables were done at a pressure of
8 3800 psi. That was the thought-to-be pressure underneath the
9 BOP at the time, which would simulate what it could look like
10 right now, 3800 psi. And then to simulate the taking off of
11 the LMRP, that's the bottom set, which is where they are
12 running it at the seawater ambient pressure of 2270 psi. So
13 they look at the change in rate for those different runs and
14 then they summarize it. You can see at the bottom of the
15 slides in which they say for the maximum case, they see a
16 15 percent change in flow rate, increase in flow rate, when you
17 take the LMRP off or you change those pressures.

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

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

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

25 Q. Is that commonly done with respect to hydraulic modeling

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1 on a number of scenarios under a variety of conditions to
2 understand what the potential or what the possibilities are?

3 A. Yes, quite often.

4 Q. Is it your understanding that that's what Mr. Mason was
5 doing here in connection with looking at different skins,
6 different reservoirs, different permeabilities, different
7 wellhead pressures here?

8 A. Yes.

9 MS. KARIS: You can now pull up 9156.7.1, please.

10 BY MS. KARIS:

11 Q. Is this some of the work that was generated -- what is
12 this, I'll ask you?

13 A. So the one on the left is actually the first slide of the
14 deck, which summarizes their work, and it's titled Key
15 Messages. They summarize it in the first bullet, which is that
16 when you take the wellhead pressure from 3800 pounds to 2270,
17 which is the effect of removing the LMRP, that you would see a
18 flow rate increase anywhere from 15 to 30 percent, which was
19 the range at which they saw that flow rate increase over their
20 parametric study.

21 Q. Did Mr. Mason's key message reflect what he believed the
22 actual flow rate to be from the Macondo well or estimate or
23 bound that range?

24 A. No.

25 Q. Did Mr. Mason perform any work regarding the

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1 5,000-barrel-per-day figure at the time that he did this work
2 to understand the percentage change in wellhead pressure rates?

3 A. He did.

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

5 BY MS. KARIS:

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

9 A. Yes.

10 Q. The testimony on the right, is that Mr. Mason explaining
11 what he was actually doing in connection with this case for
12 5000 and 3800 psi analysis?

13 A. Yes. He basically says that what he was doing here was a
14 reasonableness check on the value that NOAA had come up with of
15 5,000 barrels a day. He was looking to see if he could match
16 that using the unknown or uncertain input parameters and then
17 determine whether those were reasonable inputs based on what
18 they knew of the system.

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

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

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

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

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

5 Do you agree with that statement?

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

14 Q. There's been a lot of testimony previously about the
15 5,000-barrel estimate. Does Mr. Mason's work show here that he
16 was able, doing this reasonableness check, to generate
17 permeability reservoir thickness and skins that were consistent
18 with the 5,000 figure that was the then-stated Unified Command
19 figure?

20 A. Yes.

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

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

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1 17:26 Q. Now, you also testified that some modeling was done for
2 17:26 the purpose of understanding worst-case scenario?

3 17:26 A. Yes.

4 17:26 MS. KARIS: If we can now pull up D-23885, please.

5 17:27 BY MS. KARIS:

6 17:27 Q. Are you familiar with the hydraulic modeling that Dr. Rygg
7 17:27 did that, again, we heard about earlier this week?

8 17:27 A. Yes, I'm familiar with that modeling.

9 17:27 Q. Dr. Rygg's work generated flow rate numbers in the range
10 17:27 of 43,000, 63,000, 87,000 barrels.

11 17:27 First of all, tell us for what purpose Dr. Rygg was
12 17:27 doing his modeling.

13 17:27 A. So the purpose of this modeling here was to help design
14 17:27 the relief well, in which he was looking at -- well, basically
15 17:27 helping to design what would happen "if," when they intersected
16 17:27 it, and designing the equipment to be able to handle that as
17 17:27 well as the relief well operation.

18 17:27 So in this set of simulations -- and he says it here
19 17:27 in the highlighted portion. He ran these for worst-case
20 17:28 Dynamic Kill requirements, which would be the upper end of all
21 17:28 those values that were uncertain. And the three values here
22 17:28 are of the three different, in general, flow paths that were
23 17:28 available: up the casing, up the annulus, and then one for up
24 17:28 both.

25 17:28 MS. KARIS: If we can now look at 9266.2.1.

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1 17:28 BY MS. KARIS:

2 17:28 Q. Are these the figures that Dr. Rygg's modeling generated
3 17:28 when he was looking at worst-case scenario in connection with
4 17:28 designing the relief well?

5 17:28 A. Yes. This table has got three of those values on there.
6 17:28 So this table shows basically his models at ambient seawater
7 17:28 conditions, which is where he ran the ones for the relief well.

8 17:28 As well, as he ran cases with the thought-to-be-known
9 17:28 pressure under the BOP of 3800 pounds at that time. So you can
10 17:29 see the numbers are slightly smaller. But it's the same model
11 17:29 that he ran in which he says that he had no restrictions and
12 17:29 used the upper bound of everything with worst case down in the
13 17:29 well itself.

14 17:29 Q. Now, this modeling is dated May 9. Did there remain a
15 17:29 number of uncertainties about the conditions of the well,
16 17:29 including all of those that you told the Court about at the
17 17:29 beginning of your testimony?

18 17:29 A. Yes, there were several uncertainties.

19 17:29 Q. Did Dr. Rygg's modeling, in your opinion, in any way
20 17:29 inform BP as to what the flow rate was coming from the Macondo
21 17:29 well as of May 9?

22 17:29 A. Well, as mentioned before, especially the ones where he is
23 17:29 using the 3800 pounds in this table here, that would be the
24 17:29 most for any given flow path that could be coming up the well
25 17:29 at that time based on his model, but it doesn't inform what a

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1 "most likely" would be.

2 Q. Are all of these numbers that are generated during this
3 time period less than the 162,000-barrel worst-case discharge
4 number that BP had provided in its MMS application?

5 A. Yes.

6 Q. So did this provide any new information in terms of
7 worst-case discharge from the Macondo well?

8 A. No.

9 Q. Dr. Ballard, in the interest of time and given the number
10 of models that were run, I'm going to wrap up by asking you
11 whether the hydraulic modeling that was performed in April and
12 May 2010 was performed for the same purposes that you have
13 already described to the Court.

14 A. Yes. In my review of all the modeling that was done
15 during the April-May time frame, they all fit within one of
16 those two buckets as to the purposes of that modeling that I
17 have reviewed.

18 Q. Based on your experience, what would have been the
19 purpose -- strike that.

20 Based on your involvement as well as your background
21 and experience, was that a prudent practice, to run modeling to
22 try and understand the conditions at the Macondo well?

23 A. It was prudent practice to use hydraulic modeling. It
24 could certainly inform you as to -- tell you what would happen
25 "if," as I mentioned. As well, it could help you design

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1 different source control operations.

2 Q. Sir, if we can go back to your last opinion quickly, and
3 we will wrap up. D-23214.

4 Your last opinion -- first tell the Court, what is
5 your final opinion in this case?

6 A. So based on the first two, that there was too much
7 uncertainty and the tools weren't capable of reliably
8 estimating the discharge rate or flow rate from the well or
9 even a range, as well as looking at the purposes of that
10 modeling itself, in my opinion, the hydraulic modeling didn't
11 inform BP that the daily rate from the well, the actual rate
12 was above 15,000 barrels of oil per day at the time of the
13 Top Kill.

14 Q. Did it inform BP as to what a reasonably reliable estimate
15 was, even within a range, of what conditions actually existed
16 at Macondo?

17 A. From a hydraulic-modeling-only perspective, it said it
18 could be zero up to that worst-case scenario.

19 Q. Now, Dr. Wilson, using this board here that's to your
20 right, testified that since a majority of BP's hydraulic
21 modeling runs in April and May resulted in flow rate numbers
22 that were higher than 15,000, that should have informed BP that
23 the flow rate was higher than 15,000 barrels per day.

24 Do you agree with that?

25 A. Not at all.

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1 17:33 Q. Explain to the Court why.

2 17:33 A. As I mentioned, the purpose of the modeling was to do
3 17:33 robustness checks or to do worst-case scenarios to design
4 17:33 systems. As well, it was to look at "what if," what could
5 17:33 happen. And so I would expect that most of the runs or the
6 17:33 modeling was done on the high end or the upper end of what the
7 17:33 rate could be. In fact, if you look at a few of these runs
8 17:33 here, they are actually the examples I gave earlier.

9 17:33 So Dr. Rygg's work, in which he was looking at worst
10 17:33 case -- in which he said in his report he was looking at worst
11 17:34 case for the relief well modeling or the relief well design --
12 17:34 and that's this line here, from 37,000 up to 87,000, I believe.

13 17:34 In fact, some of those cases there are using
14 17:34 counterfactual inputs. If we saw that table, we knew that the
15 17:34 pressure was 3800 pounds, but he ran three of those simulations
16 17:34 at 2200, or seawater ambient. So I would certainly not expect
17 17:34 those to be informing us of what the actual rate is.

18 17:34 Mr. Mason's work, which is this line here, I believe
19 17:34 we talked about that work. And the work was to try to
20 17:34 understand what the change in flow rate would be if we removed
21 17:34 the LMRP. So many of those runs were run at seafloor ambient
22 17:34 conditions simulating taking off the LMRP. So I certainly
23 17:34 wouldn't expect those to inform us of anything in regards to
24 17:34 what the actual rate is. We knew the pressure. The LMRP was
25 17:35 on the stack.

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

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

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

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

24 MS. KARIS: I have no further questions. Thank you.
25

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,

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17:38 1 to run hydraulic models to calculate flow rates, right?

17:38 2 A. Well, they used hydraulic models, as I mentioned, to do
17:38 3 what-if type of scenarios as well as to look at robustness of
17:38 4 different operations.

17:38 5 Q. In doing that, on occasion -- in fact, more than on
17:38 6 occasion, they generated a number which was a flow rate,
17:39 7 correct?

17:39 8 A. Yes.

17:39 9 Q. We can quarrel about what it means, but it was a flow
17:39 10 rate?

17:39 11 A. Yes, they calculated flow rates in some of that work.

17:39 12 Q. You were a member of one of those groups, weren't you,
17:39 13 sir?

17:39 14 A. Yes.

17:39 15 Q. Now, it's your testimony, is it not, that hydraulic
17:39 16 modeling could not be used to provide an accurate or reliable
17:39 17 gauge of what the rate of flow actually was from the Macondo
17:39 18 well in April and May, correct?

17:39 19 A. Yes.

17:39 20 Q. So you agree that if someone from BP -- or anyone,
17:39 21 actually -- represented on May 28 that the best estimate of
17:39 22 flow rate was 2,500 barrels or 5,000 barrels, they couldn't
17:39 23 justify that with hydraulic modeling, correct?

17:39 24 A. From hydraulic modeling, I don't believe so.

17:39 25 Q. Nor could they justify with hydraulic modeling a

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17:39 1 representation on May 10 of a most likely model of

17:39 2 5,000 barrels per day, could they, sir?

17:40 3 A. From a hydraulic modeling, as I said, I don't think you
17:40 4 could come up with a likely estimate of what the flow rate was.

17:40 5 Q. You're not an expert on sheen modeling or plume analysis,
17:40 6 are you, sir?

17:40 7 A. No, I'm not.

17:40 8 Q. You don't purport to be testifying as an expert in those
17:40 9 areas, do you, sir?

17:40 10 A. No, I don't.

17:40 11 Q. Now, you were -- in addition to being selected by BP as an
17:40 12 expert, you also were selected to testify as the company's
17:40 13 Rule 30(b)(6) witness on hydraulic modeling, were you not?

17:40 14 A. Yes, I was.

17:40 15 Q. So you had your deposition taken a few times, didn't you,
17:40 16 sir?

17:40 17 A. Yes, I have.

17:40 18 Q. Okay. It's your opinion and you stated at your deposition
17:40 19 that you are not aware of any modeling estimate that was done
17:40 20 to estimate the flow rate during this period of April and
17:40 21 May 2010.

17:40 22 That's your testimony and that's your opinion, is it
17:40 23 not?

17:40 24 A. That's right.

17:40 25 Q. You still stand by that testimony, don't you, sir?

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17:41 1 A. Yes, sir.

17:41 2 MR. BRIAN: Let's pull up TREG-9155.1.1.T0.

17:41 3 BY MR. BRIAN:

17:41 4 Q. Now, this is an e-mail from Doug Suttles to
17:41 5 Admiral Landry, dated May 10, 2010, is it not, sir?

17:41 6 A. Yes.

17:41 7 Q. You have seen this before, haven't you, sir?

17:41 8 A. I believe I have.

17:41 9 Q. You know who Mr. Suttles is, don't you, sir?

17:41 10 A. I do.

17:41 11 Q. He was one of the heads of the BP Response Team during
17:41 12 this critical period, was he not?

17:41 13 A. He was the head of something. I don't know his specific
17:41 14 role.

17:41 15 Q. A senior guy?

17:41 16 A. Yes.

17:41 17 Q. This is an e-mail from Doug Suttles to Admiral Landry.
17:41 18 And you know that she was one of the senior admirals involved
17:41 19 in the response effort, correct?

17:41 20 A. Yes.

17:41 21 Q. You see where Mr. Suttles wrote "Attached is a short note
17:42 22 covering our view of the worst-case scenario"? Do you see
17:42 23 that?

17:42 24 A. Yes.

17:42 25 MR. BRIAN: Now, let's put up TREG-9155.4.1.T0.

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1 BY MR. BRIAN:

2 Q. Now, I will represent to you, sir, that this model was
3 attached to Mr. Suttles' May 10 e-mail to Admiral Landry. You
4 have in fact seen this model, have you not, sir?

5 A. I have.

6 Q. This shows two flow rates, one starting at approximately
7 55,000 barrels and a constant one at 5,000 barrels per day,
8 does it not?

9 A. Yes.

10 Q. It shows at the top a worst-case model, which is depicting
11 the 55,000 barrels per day, right?

12 A. Yes.

13 Q. It states in the lower right-hand corner "most likely
14 model," which depicts the 5,000 barrels per day; isn't that
15 right?

16 A. Yes, that's what it appears to have.

17 Q. Now, isn't it the fact that both the worst-case model and
18 the most likely model on this chart came from hydraulic
19 modeling performed by BP engineers?

20 A. So what this chart is showing is the depletion, which is a
21 hydraulic model, and so the change in those curves over time is
22 absolutely from hydraulic modeling.

23 Q. So the answer to my question is yes, isn't it?

24 A. Well, the way the depletion works, it was using -- from my
25 recollection, this is using the MBAL model. And from my

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

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

8 A. In this specific scenario?

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

11 A. Yes. From my understanding, in reviewing the documents in
12 preparation for this, I think it was Captain Little had asked
13 Mr. Suttles to look at what would happen to depletion of a
14 5,000-barrel-a-day rate. So they would assume that rate and
15 then look at how it changes over time and how long it could
16 potentially flow based on the reservoir.

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

20 A. I believe so, yes.

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

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

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17:45 1 MR. BRIAN: I don't think so, Your Honor.

17:45 2 THE COURT: Overruled.

17:45 3 BY MR. BRIAN:

17:45 4 Q. Isn't that right?

17:45 5 A. So the change in curvature of those lines came from
17:45 6 hydraulic modeling.

17:45 7 Q. Thank you.

17:45 8 So now I want to put up TREX-150110.1.1.T0.

17:45 9 Do you know who Jasper Peijs is?

17:45 10 A. I don't know him personally, but I believe he was
17:45 11 assisting Andy Inglis.

17:45 12 Q. He was the executive assistant to Andy Inglis, the CEO of
17:45 13 BP Production & Exploration, was he not?

17:45 14 A. I believe so.

17:45 15 Q. He sent an e-mail on May 10, the same day as the other one
17:45 16 we just saw, to Doug Suttles, didn't he?

17:45 17 A. This is an e-mail on May 10, yes.

17:45 18 Q. You see where he wrote in the e-mail: "We have run two
17:45 19 reservoir models based on mass balance"? Do you see that?

17:45 20 A. Yes.

17:45 21 Q. Mass balance refers to something called the M-B-A-L, which
17:46 22 is a software program to perform hydraulic modeling. Isn't
17:46 23 that right, sir?

17:46 24 A. It's a mass balance model looking at depletion in a
17:46 25 reservoir.

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

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

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

6 **BY MR. BRIAN:**

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

11 He wrote that, did he not?

12 **A.** Yes.

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

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

16 **A.** Yes.

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

21 **A.** It appears to be, yes.

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

23 **BY MR. BRIAN:**

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

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1 A. Yes.

2 Q. You see the subject line? What does it say?

3 A. It says "Updated model slide."

4 MR. BRIAN: Let's put up TREN-11907.3.1.T0.

5 BY MR. BRIAN:

6 Q. That's the chart that was attached to Mr. Peijs' e-mail to
7 Mr. Suttles. That's the same chart Mr. Suttles then attached
8 to his e-mail to Admiral Landry that same day, is it not?

9 A. It appears to be. It looks like some of the text is
10 different, but it appears to be.

11 Q. Let's go back now to TREN-9155.4.1.T0.

12 Do you see where both boxes, where it says
13 "worst-case model" and "most likely model," have the phrase
14 "actual reservoir conditions"? Do you see that?

15 A. Yes.

16 Q. Are you aware, sir, that the chart Mr. Suttles sent to
17 Admiral Landry was an edited version of a slightly different
18 chart that was sent to Jasper Peijs by a modeler named Kelly --
19 McAughan is how you pronounce it? Are you aware of that?

20 A. Yes. I have reviewed Ms. McAughan's work.

21 Q. You know her, do you not?

22 A. I may have met her in the past.

23 Q. You understand that she was one of the BP engineers who
24 was doing some of the hydraulic modeling, correct?

25 A. Yes. She was doing MBAL type of modeling, from my

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17:49 1 understanding.

17:49 2 MR. BRIAN: Let's put up TREX-9330.1.1.T0.

17:49 3 BY MR. BRIAN:

17:49 4 Q. This is an e-mail from -- is it McAughan? How do you
17:49 5 pronounce that?

17:49 6 A. I believe it's McAughan.

17:49 7 Q. This is an e-mail from Ms. McAughan, dated May 6, to
17:49 8 Jasper Peijs and some other people, correct?

17:49 9 A. Yes.

17:49 10 Q. She wrote to Jasper: "Ran the new cases and put them in a
17:49 11 graph with the other six (total of eight cases now). I
17:49 12 attached the Excel file as well so you can edit freely."

17:50 13 That's what she wrote to Jasper, didn't she, sir?

17:50 14 A. Yes.

17:50 15 MR. BRIAN: Let's look at TREX-9330.3.1.T0.

17:50 16 BY MR. BRIAN:

17:50 17 Q. This is the chart that she attached to her e-mail to
17:50 18 Jasper Peijs, which she said he could edit freely, isn't it,
17:50 19 sir?

17:50 20 A. Yes.

17:50 21 Q. This has the eight different cases that she mentioned in
17:50 22 her cover e-mail, doesn't it?

17:50 23 A. It appears to have eight cases on it, yes.

17:50 24 Q. The lowest one is the 5,000 barrels of oil per day,
17:50 25 correct?

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17:50 1 A. It appears that's around 5,000, yes.

17:50 2 Q. The highest one starts at about 162,000, which you
17:50 3 understood was the pre-spill worst-case calculation, correct?

17:50 4 A. Yeah. That would be open hole conditions.

17:50 5 Q. So if you discard that one for a second, the highest
17:50 6 number on the chart that Ms. McAughan sent was approximately
17:51 7 110,000 barrels per day, correct?

17:51 8 A. It starts at 110.

17:51 9 Q. Then goes down from there, correct?

17:51 10 A. Yes, using the MBAL model.

17:51 11 Q. This chart doesn't say anything about a worst-case or a
17:51 12 most likely model, does it, sir? Those words don't appear
17:51 13 there, do they?

17:51 14 A. No. Some of the input assumptions are the upper end of
17:51 15 those uncertain variables that I was talking about, though.

17:51 16 MR. BRIAN: Let's put up Demonstrative 25021.

17:51 17 BY MR. BRIAN:

17:51 18 Q. Now, the chart on the right is the chart that I will
17:51 19 represent to you is the chart that Ms. McAughan sent on May 6,
17:51 20 and the one on the left is the one that Jasper Peijs sent back
17:51 21 on May 10.

17:52 22 Do you have any information, as the Rule 30(b)(6)
17:52 23 witness or BP's expert on hydraulic modeling, how the chart on
17:52 24 the right morphed into the chart on the left?

17:52 25 A. Yeah. Yeah. As I mentioned, I reviewed a communication

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

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

12 A. I can infer that.

13 Q. Have you looked at the electronic metadata?

14 A. To see whether Jasper Peijs had edited it?

15 Q. Yes.

16 A. No.

17 MR. BRIAN: Let's do that. Let's put up
18 TREN-11906.7.1.T0.

19 BY MR. BRIAN:

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

22 A. It seems to be an Excel spreadsheet.

23 MR. BRIAN: Let's put up TREN-11906.6.1.T0.

24 BY MR. BRIAN:

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

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1 17:53 you see in the lower left it says "Jasper WC"? You would agree
2 17:53 with me that that was a typographical error? It should have
3 17:53 been "Jasper"?

4 17:53 A. Yes.

5 17:53 Q. That means that Jasper Peijs has copied the chart over and
6 17:53 started making edits, doesn't it?

7 17:53 A. I can infer that from -- based on that, I could agree with
8 17:53 that.

9 17:54 Q. By the way, you say you interviewed some people. Did you
10 17:54 ever interview Jasper Peijs?

11 17:54 A. No, I didn't.

12 17:54 Q. Did you ever interview Andy Inglis?

13 17:54 A. No, I didn't.

14 17:54 Q. Let's pull up TREN-11906.5.T0. You see where this one is
15 17:54 labeled "Jasper WC (simple)" in the lower left-hand corner?

16 17:54 A. Yes.

17 17:54 Q. It's a lot more simple; it has just two lines on it,
18 17:54 doesn't it?

19 17:54 A. It has two lines on it, yes.

20 17:54 Q. Let's go to TREN-11906.4.1.T0. Now, this is a PowerPoint,
21 17:54 not an Excel spreadsheet, right?

22 17:54 A. Yes.

23 17:54 Q. It looks like the chart we saw has been converted into a
24 17:54 PowerPoint slide entitled "Macondo Reservoir Model"; isn't that
25 17:54 true?

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17:54 1 A. Yes.

17:54 2 Q. You have these boxes that appear in the upper right-hand
17:54 3 and the lower right-hand corners, right?

17:55 4 A. Yes.

17:55 5 Q. Now, you were designated as BP's corporate representative
17:55 6 to testify about, quote, "the manner and/or methodology that BP
17:55 7 used to predict, estimate, characterize, and/or measure the
17:55 8 daily amount of hydrocarbons flowing from the Macondo well from
17:55 9 April 20, 2010, through July 15, 2010."

17:55 10 Right?

17:55 11 A. Yes.

17:55 12 Q. You reviewed -- as part of that work, you reviewed
17:55 13 TREX-9155, which is Mr. Suttle's e-mail to Admiral Landry and
17:55 14 the attachments, didn't you?

17:55 15 A. I'm not sure. I can't recall if I reviewed that one
17:55 16 before or after.

17:55 17 Q. When it came time for you to testify as an expert, you
17:55 18 didn't identify TREX-9155 as one of the documents you
17:56 19 considered in forming your opinions, did you, sir?

17:56 20 A. I don't believe so, but I can't be sure.

17:56 21 Q. Now, when you testified as an expert, did you personally
17:56 22 select the documents you reviewed or did someone else select
17:56 23 the documents for you to review?

17:56 24 A. In regards to my preparation for an expert?

17:56 25 Q. Yeah.

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1 A. Well, based on what I had reviewed in the 30(b)(6), I
2 asked for the documents to review. I knew what the totality
3 looked like, so I knew what I wanted to review for that -- to
4 look at, from an expert opinion, the hydraulic modeling work
5 that was done.

6 Q. Now -- and I take it you never interviewed Doug Suttles,
7 did you, sir?

8 A. No, I didn't.

9 Q. One of the things you did say in your report --

10 **MR. BRIAN:** Let's pull up TREN-11905R.21.1.T0.

11 **BY MR. BRIAN:**

12 Q. You said that one of the things that was done during this
13 time period in connection with the hydraulic modeling were
14 these -- what you called "assumed studies," right?

15 A. Yes.

16 Q. Very simply stated, if you were to determine a flow rate,
17 you would input various factors on pressure and size and
18 orifices and that kind of stuff to determine a flow rate. But
19 if you do an assumed study, it's kind of the opposite: You are
20 told to assume a flow rate and figure out what are the various
21 factors that would lead to that flow rate, right?

22 A. Well, the intent of the assumed studies that I had here
23 was for things in which you would use different type of
24 modeling, such as finite element analysis. You would assume a
25 flow rate and look at, for instance, what the plume looked like

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1 in order to model the BOP being landed on it or something of
2 that sort. You aren't calculating a rate with the finite
3 element analysis; you would be assuming what rate you would
4 use.

5 **MR. BRIAN:** Let's put up TREN-11905R.16.1.

6 **BY MR. BRIAN:**

7 **Q.** You criticize Dr. Wilson's report for not acknowledging
8 BP's effort to provide the federal responders with the data
9 needed to perform hydraulic modeling. That's one of the things
10 you say in your report; isn't that right, sir?

11 **A.** Yes. I say that he doesn't acknowledge BP's effort to
12 provide the data to the federal responders.

13 **Q.** Is it your testimony under oath before Judge Barbier that
14 BP provided the Unified Command and the federal responders with
15 all the data they needed to do their jobs? Is that your
16 testimony under oath?

17 **A.** In regards to hydraulic modeling, I have reviewed all the
18 information or -- not everything under the sun, but I have
19 certainly seen that all the information needed to do hydraulic
20 modeling, I have seen that communicated and transferred to the
21 federal government.

22 **Q.** Not my question.

23 Is it your testimony under oath in this courtroom
24 that BP provided the Unified Command and the federal responders
25 with all the information that BP had that those folks needed to

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17:59 1 do their jobs?

17:59 2 A. I can't speak to what I didn't form my opinion around, and
17:59 3 my opinion was around information -- because I was responding
17:59 4 to Dr. Wilson, it was around information needed to do hydraulic
17:59 5 modeling.

17:59 6 Q. Okay. I'll reframe my question.

17:59 7 Is it your testimony under oath that BP, during this
17:59 8 time period, provided the Unified Command and the federal
17:59 9 responders with all the information relating to flow rate and
17:59 10 hydraulic modeling that the government needed to do its job?
17:59 11 Is that your testimony?

17:59 12 A. So -- there's a lot in there. I'm trying to understand
18:00 13 what you are asking.

18:00 14 Q. I'll reframe it.

18:00 15 Is it your testimony that, in April and May, BP gave
18:00 16 these federal responders all of the information pertaining to
18:00 17 hydraulic modeling and flow rate that they needed to do their
18:00 18 jobs?

18:00 19 A. So it's my testimony that, from what I have reviewed, they
18:00 20 provided the information to the federal government needed to
18:00 21 conduct hydraulic modeling.

18:00 22 I'm unclear what you mean by "flow rate."

18:00 23 Q. The rate by which the oil was flowing from the well.

18:00 24 A. So as I mentioned, from a hydraulic modeling basis, you
18:00 25 could not estimate what the rate flowing from the well was.

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18:00 1 Q. I understand that's your testimony, sir. I got that. My
18:00 2 question is different.

18:00 3 My question is: Is it your testimony -- is it your
18:00 4 opinion that BP, during this period, gave the government
18:01 5 responders all the information they needed pertaining to flow
18:01 6 rate and hydraulic modeling that they needed to do their jobs?

18:01 7 Those two subjects. The subjects you were identified
18:01 8 as BP's corporate representative on, sir.

18:01 9 MS. KARIS: I object. That misstates the scope of
18:01 10 his expertise. It misstates the scope of his corporate
18:01 11 representative testimony. And I think, just to avoid any
18:01 12 confusion, he is talking about data there with respect to what
18:01 13 was provided to federal responders. The issue of what they
18:01 14 needed to do their job, that's beyond the scope of
18:01 15 Mr. Ballard's expertise. I don't know that he could opine to
18:01 16 what they needed to do their job.

18:01 17 MR. BRIAN: He was --

18:01 18 THE COURT: I overrule the objection.

18:01 19 BY MR. BRIAN:

18:01 20 Q. Can you answer the question, sir?

18:01 21 A. Can you repeat it one more time, please?

18:01 22 Q. I will.

18:01 23 Is it your testimony under oath that, during this
18:02 24 time period, BP gave the federal responders all of the
18:02 25 information they needed to do their jobs pertaining to

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1 hydraulic modeling and flow rate?

2 A. So I don't know all the information that they needed to do
3 their jobs, but I can tell you from my review, they have
4 certainly provided the modeling or the data needed for doing
5 hydraulic modeling. In terms of flow rate, I've seen many
6 communications of what the "worst case" was, which is what the
7 hydraulic modeling could inform. I can't speak to any other
8 methods for what the flow rate may be, but from a hydraulic
9 modeling perspective, I have seen where they have provided the
10 government -- as the example we just looked at -- where they
11 are providing to the government what the hydraulic modeling
12 could tell them about flow rate, which was the upper bound
13 could not flow more than this.

14 Q. It's not your testimony, is it, sir, under oath that BP
15 gave the federal responders during this time period every piece
16 of information regarding flow rates, flow rate calculations
17 that BP performed. That's not your testimony, is it, sir?

18 A. I told you what I said I did see them communicate, the
19 upper bounds of flow rate based on the hydraulic modeling. Did
20 they -- I don't know what else they may have actually
21 communicated, because I'm unclear what you mean by "Did they
22 provide them flow rates," what you're talking about.

23 MR. BRIAN: Let's put up TRES-9313.1.1.T0. If we
24 could expand the e-mail in the middle.

25 BY MR. BRIAN:

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1 18:03 Q. This is an e-mail from Tony Liao to Mike Mason, is it not?

2 18:04 A. Yes, it is.

3 18:04 Q. Now, you testified earlier today about Mike Mason, right?

4 18:04 A. Yes.

5 18:04 Q. He was actually the head of one of the teams -- one of the
6 hydraulic modeling teams, was he not?

7 18:04 A. Yes.

8 18:04 Q. Tony Liao worked for him, didn't he?

9 18:04 A. I believe so, yes.

10 18:04 Q. In this e-mail, Tony Liao said to Mike Mason on Sunday
11 May 16, quote: "To get a 700 psi depletion from April 20,
12 2010, to May 15, 2010, the rate required is 86,600 barrels per
13 day."

14 18:05 That's what he wrote, didn't he, sir?

15 18:05 A. Yes, that's what he wrote.

16 18:05 Q. This document was not given to the federal responders, was
17 it, sir?

18 18:05 A. I didn't look at all the communications that went to the
19 government, so I don't know.

20 18:05 Q. So you have no knowledge one way or the other whether this
21 document was given to the federal government, do you, sir?

22 18:05 A. No, I don't have that knowledge.

23 18:05 Q. Were you here when Mr. Dupree testified?

24 18:05 A. No, I wasn't.

25 18:05 Q. You have no reason to believe that he testified falsely

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18:05 1 when he said that this was not provided to the Unified Command,
18:05 2 do you, sir?

18:05 3 A. I have no reason not to believe Mr. Dupree.

18:05 4 MR. BRIAN: Let's pull up TREX-9446.1.1.

18:05 5 BY MR. BRIAN:

18:05 6 Q. Now, you did testify about Mr. Tim Lockett earlier today,
18:06 7 did you not, sir?

18:06 8 A. Yes.

18:06 9 Q. He was another one of the modelers, wasn't he?

18:06 10 A. Yes.

18:06 11 Q. What's the subject line on this May 3, 2010 e-mail from
18:06 12 Mr. Lockett to Trevor Hill?

18:06 13 A. "Best estimate."

18:06 14 Q. "Best estimate."

18:06 15 And he states in this e-mail to Trevor Hill: "Some
18:06 16 of the data from Ian's model has been updated (fluid model,
18:06 17 completion below the end of the drill string) so I reran the
18:06 18 cases to generate the attached xls which then uses that data to
18:06 19 give a flow rate estimate as a function of pressure at the BOP,
18:06 20 temperature, etc."

18:06 21 That's what he wrote, did he not?

18:06 22 A. It is.

18:06 23 MR. BRIAN: Let's put up TREX-9446.1.2, the same
18:06 24 page, next paragraph.

18:06 25 BY MR. BRIAN:

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1 18:06 Q. He wrote -- Mr. Lockett wrote, did he not, and I quote:
2 18:07 "The velocity is very dependent on the riser ID being correct
3 18:07 and the holdup, but is probably the best line of estimation if
4 18:07 we can measure the transport of a dispersion pulse and get
5 18:07 gamma to clarify the holdup."

6 He wrote that as well, did he not?

7 A. Yes, he did.

8 Q. Did you interview Mr. Lockett?

9 A. I did.

10 Q. Did you interview him about this document?

11 A. I'm familiar with this document and talked to him about
12 it, yes.

13 Q. So he just got it wrong when he used the word "best
14 estimate"? He didn't mean that; is that your testimony?

15 A. What he told me --

16 Q. Sir, that's not my question.

17 MS. KARIS: Your Honor --

18 BY MR. BRIAN:

19 Q. My question is: Did he tell you he didn't mean it?

20 MS. KARIS: Your Honor, he asked him whether he told
21 him he didn't mean it. The witness should be allowed to answer
22 what Mr. Lockett told him.

23 MR. BRIAN: I never --

24 MS. KARIS: The question specifically asked about
25 what Mr. Lockett told him.

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1 18:08 MR. BRIAN: I never ask an open question on cross,
2 18:08 Your Honor.

3 18:08 THE COURT: Overruled. Overruled.

4 18:08 MR. BRIAN: Go ahead, sir.

5 18:08 THE COURT: Re-ask the question.

6 18:08 BY MR. BRIAN:

7 18:08 Q. Sir, did Mr. Lockett tell you that, after he sent this
8 18:08 e-mail, he sent an e-mail correcting it saying, "I did not mean
9 18:08 this was probably the best line of estimation"? Did he say
10 18:08 that to you?

11 18:08 A. I don't think so. To what question that I had for him?

12 18:08 Q. Mr. Lockett's modeling showed flow estimates in excess of
13 18:08 20,000 barrels of oil per day, did they not?

14 18:08 A. Can you repeat that?

15 18:08 Q. No, I'll move on.

16 18:09 Isn't it a fact, sir, that at the time this number of
17 18:09 5000 barrels per day was being told to the Unified Command, the
18 18:09 public, various modelers at BP, engineers were expressing
19 18:09 concern that 5,000 barrels per day was not the best estimate?
20 18:09 Isn't that a fact?

21 18:09 A. I've seen some correspondence from Mr. Mason to Andy
22 18:09 Inglis.

23 18:09 MR. BRIAN: Let's pull up TREN-3220.1.1.T0.

24 18:09 BY MR. BRIAN:

25 18:09 Q. This is one of the documents from Mr. Mason you just were

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1 alluding to, is it not?

2 A. Yes, it is.

3 Q. This is Mr. Mason's May 5, 2010 e-mail to Andy Inglis. Do
4 you see that?

5 A. Yes.

6 Q. When you were a modeler, an engineer, in the April and May
7 of 2010 time period, did you ever send an e-mail directly to
8 the CEO?

9 A. No.

10 I do want to correct that. I think it's May 15,
11 actually.

12 Q. You're right, actually. I'm sorry, I misread that.

13 But you never sent an e-mail during that time period
14 to the CEO of BP production and exploration, did you, sir?

15 A. No, I didn't.

16 Q. Mr. Mason said in this e-mail --

17 MR. BRIAN: Your Honor, I know it's a little bit
18 after 6:00.

19 THE COURT: I'm just waiting for a convenient break
20 here unless you are just about finished.

21 MR. BRIAN: No, I have probably 20, 30 minutes at
22 least.

23 THE COURT: Is this a good time? As good as any
24 other time?

25 MR. BRIAN: It's as good as any other.

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955/5 956/3 958/15 958/17 959/8	888/15 888/23 889/4 971/11	23276 [1] 844/14
959/18 962/21	1615 [1] 775/12	23277 [1] 843/1
10 minutes [1] 976/1	162,000 [1] 962/2	237 [1] 959/2
10-CV-02771 [1] 771/7	162,000-barrel [1] 948/3	23766 [1] 849/19
10-CV-4536 [1] 771/9	163 [1] 780/11	23774A [1] 855/3
10-MD-2179 [1] 771/4	164 [1] 780/18	2386 [6] 777/23 778/22 779/1 779/4
100 percent [1] 783/8	1665 [1] 775/9	780/22 783/18
100008 [1] 818/22	17 [1] 959/2	23885 [1] 946/4
10003 [1] 772/11	1700 [1] 775/5	23922 [1] 936/2
1001 [1] 774/16	18 [4] 796/16 824/4 893/20 895/7	23923 [1] 940/23
100203 [1] 796/16	18 3/4-inch [1] 881/24	23934 [2] 865/10 906/12
100231 [2] 780/9 824/1	188 [1] 772/16	24 [1] 780/7
105 [1] 818/22	1885 [1] 772/23	24355 [1] 853/21
10506 [3] 792/13 792/19 793/20	19 [2] 902/21 903/2	25 [4] 780/16 879/24 898/16 903/3
11 [8] 796/16 882/25 896/22 897/15	19575.36.2.TO [1] 884/12	25 feet [1] 880/1
909/25 911/2 940/9 941/12	1978 [1] 836/18	25-1/2-inch [1] 881/20
11-inch [1] 825/14	2	25015C [1] 810/14
110 [1] 962/8	2 inch [2] 825/13 825/15	25021 [1] 962/16
110,000 barrels [1] 962/7	2,500 barrels [1] 953/22	252 [2] 785/25 791/24
1100 [1] 774/13	2,523 [1] 937/22	26 [8] 798/8 800/24 815/16 815/25
114 [1] 824/2	2-ram [4] 855/12 856/24 902/24 905/5	821/20 822/6 823/8 880/1
115 [2] 824/2 824/10	20 [4] 771/5 965/9 971/11 975/21	27 [5] 826/25 827/9 838/4 877/24
11905.1.1 [1] 915/13	20,000 barrels [1] 974/13	906/21
11905R.16.1 [1] 967/5	2000 [1] 837/3	27th [1] 826/17
11905R.21.1.TO [1] 966/10	20004 [1] 774/11	28 [7] 778/16 819/7 819/22 880/14
11906.4.1.TO [1] 964/20	20005 [1] 774/7	880/24 932/13 953/21
11906.5.TO [1] 964/14	20006 [1] 775/16	28th [1] 826/17
11906.6.1.TO [1] 963/23	20044 [2] 773/8 773/16	29 [1] 911/12
11906.7.1.TO [1] 963/18	2005 [1] 778/4	3
11907.1.1.TO [1] 959/22	2010 [93] 771/5 778/2 778/18 779/15	3 inches [1] 868/10
11907.3.1 [1] 963/11	782/16 783/12 784/5 786/1 787/12	3,000 pounds [1] 824/18
11907.3.1.TO [1] 960/4	791/18 791/18 791/25 792/3 795/2	3-inch [2] 805/11 818/1
11:00 a.m [2] 788/8 899/9	795/10 795/22 797/25 798/8 799/17	3-ram [25] 842/3 855/7 855/13 858/6
12 [18] 796/16 796/16 818/23 842/4	800/4 800/14 800/24 801/23 802/2	858/11 858/15 858/16 858/22 858/23
843/20 855/14 858/7 858/11 862/1	802/21 802/25 803/2 805/18 806/12	859/24 860/1 861/19 863/13 863/14
864/25 865/3 893/6 893/11 894/11	808/15 810/10 812/3 815/16 815/25	864/12 864/23 867/16 871/4 885/11
900/8 904/9 905/8 905/14	819/7 822/7 826/4 826/17 826/25 827/9	890/3 890/8 899/12 899/15 900/6 904/8
12 minutes [1] 834/13	862/1 864/25 867/22 885/15 886/1	3.5 [1] 841/18
12-foot [1] 880/20	886/20 887/11 887/18 888/9 888/15	3/4-inch [3] 886/19 893/20 895/7
12-hour [1] 838/14	888/23 889/4 891/14 892/6 892/16	30 [17] 834/14 834/16 834/18 834/19
1201 [2] 774/10 775/5	892/20 893/12 894/16 894/25 896/22	834/20 837/21 860/6 864/22 871/10
120129.1.1.TO [1] 878/11	897/15 898/2 898/4 898/16 898/25	898/25 899/9 899/24 901/10 927/7
120129.7.1.TO [1] 878/20	899/14 899/19 900/2 900/8 900/8	954/13 962/22 966/1
120216 [1] 819/3	901/10 901/16 901/21 902/8 903/10	30 minutes [1] 975/21
12308 [1] 772/4	913/6 917/5 917/25 920/15 924/14	30 percent [1] 943/18
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13 [3] 881/8 884/2 907/3	955/5 965/9 965/9 971/12 971/12	300 golf [1] 825/16
13 feet [1] 879/24	972/11 975/3 975/7	31 [2] 810/10 917/5
1300 [1] 775/12	2011 [2] 780/7 824/23	316 [1] 772/4
1331 [1] 775/9	2013 [3] 771/7 777/2 825/4	31st [1] 826/3
14 [6] 801/23 802/2 802/8 802/21	2020 [1] 775/16	3220.1.1.TO [1] 974/23
802/25 803/2	20K [1] 835/23	32591 [1] 772/5
140342 [2] 791/13 791/22	21 [4] 782/16 795/22 810/10 824/6	333 [1] 774/3
140563.4.1.TO [1] 891/4	21 1/2 [1] 880/8	337 [1] 876/12
142346 [1] 783/11	2179 [1] 771/4	355 [1] 774/21
	22 [2] 808/15 888/6	35th [1] 774/21

<p>3</p> <p>36 [2] 884/11 884/13 36130 [1] 772/20 3668 [1] 771/23 37,000 [1] 950/12 3700 [2] 774/13 774/16 3800 pounds [4] 943/16 947/9 947/23 950/15 3800 psi [3] 942/8 942/10 944/12 3917 [6] 785/9 785/18 785/21 786/8 787/7 788/1 39201 [1] 772/17 3rd [1] 825/4</p>	<p>7/8 balls [1] 822/9 7/8-inch [3] 823/1 823/3 823/9 70 [1] 852/20 70 percent [4] 794/17 815/3 815/7 832/18 700 [1] 772/10 700 psi [1] 971/11 701 [2] 773/4 773/18 70112 [1] 775/13 70113 [1] 771/20 70130 [3] 772/8 773/4 775/19 70139 [1] 773/19 70163 [1] 774/14 70502 [1] 771/24 70601 [1] 772/14 70804 [1] 772/24 75270 [1] 775/6 7611 [1] 773/15 77002 [1] 774/17 77010 [1] 775/9 777 [1] 772/16 7778 [1] 775/19 78 barrels [1] 801/13 7th [1] 867/22</p>	<p>9:00 a.m [1] 892/16</p> <p>A</p> <p>a.m [5] 788/8 795/22 892/16 899/9 976/2 ability [9] 798/14 799/13 805/23 806/19 922/21 924/23 925/9 925/16 976/13 able [14] 863/23 870/20 874/24 891/24 900/12 921/1 921/20 926/19 926/20 938/14 945/16 946/16 951/2 951/5 about [140] 778/3 778/10 778/25 779/3 779/8 779/13 779/14 781/4 782/17 782/23 782/24 783/4 784/14 785/5 788/9 789/25 791/10 791/11 792/1 792/5 792/24 793/21 796/7 796/20 797/5 797/6 798/6 800/16 802/24 803/20 804/3 805/1 805/10 805/18 805/19 807/4 807/23 809/4 809/5 813/8 813/11 813/23 816/19 817/6 817/7 819/25 820/11 824/2 824/2 825/6 826/7 828/7 828/22 828/23 830/14 830/16 832/6 832/22 833/3 834/13 834/16 836/8 836/9 836/21 841/18 852/22 853/19 854/5 854/9 857/16 858/10 859/23 863/6 867/1 868/10 868/14 872/3 872/15 872/23 875/17 877/15 878/4 879/18 879/24 880/4 880/7 884/7 887/5 887/15 888/12 891/3 895/7 895/20 896/9 899/12 908/5 908/13 910/13 910/20 913/23 913/25 916/10 919/1 922/1 922/14 923/1 923/5 923/15 924/23 926/5 926/11 926/12 929/23 931/12 932/5 934/24 937/10 945/14 946/7 947/15 947/16 950/19 951/4 953/9 957/4 957/10 962/2 962/11 962/15 965/6 969/12 970/12 970/22 971/3 972/6 973/10 973/11 973/24 975/20 976/1 about 6 feet [1] 854/5 above [19] 784/21 810/2 838/3 839/20 839/24 840/18 841/5 843/18 844/9 844/18 845/20 845/22 848/6 865/21 867/7 868/6 879/11 949/12 976/15 above-entitled [1] 976/15 absolutely [7] 825/21 828/9 830/10 832/21 918/24 925/19 956/22 access [3] 847/11 847/19 847/21 accessible [1] 847/12 accomplished [1] 796/5 According [3] 793/14 812/24 877/18 accountable [2] 856/10 860/17 accurate [8] 780/5 854/20 854/20 864/17 864/19 871/5 938/5 953/16 accurately [3] 910/25 911/17 925/17 achieve [1] 849/9 achieved [1] 870/22 acknowledge [1] 967/11 acknowledging [1] 967/7 across [1] 936/14 action [6] 779/12 847/15 869/22 869/25 870/24 929/12 actioned [1] 869/5 actions [1] 928/21 activate [1] 781/16 activated [1] 923/23 activities [20] 837/19 838/8 839/12 856/16 865/2 865/7 865/19 865/22 865/24 866/3 872/25 874/2 890/21 890/22 897/22 911/1 911/5 911/11 911/14 918/16 activity [9] 846/5 864/19 865/16 865/16 865/17 890/25 902/19 905/23 906/18 actual [19] 780/2 783/3 788/13 791/10</p>
<p>4</p> <p>40 [1] 871/10 406 [1] 775/18 43,000 [1] 946/10 44 feet [1] 942/4 45 [1] 787/3 4536 [1] 771/9 48 [1] 779/18</p>	<p>8</p> <p>80 percent [1] 815/17 8000 pounds [1] 845/19 820 [1] 771/19 8537 [1] 806/6 86,600 barrels [1] 971/12 87 [1] 888/3 87,000 [1] 950/12 87,000 barrels [1] 946/10 88 feet [4] 925/2 925/8 930/9 941/23 8:00 a.m [1] 976/2</p>	<p>8</p> <p>90 [1] 822/17 90-degree [1] 821/24 90071 [2] 774/4 774/22 91 [1] 879/22 91 feet [1] 879/16 9148 [4] 808/7 808/21 812/10 812/16 9155 [2] 965/13 965/18 9155.1.1.TO [1] 955/2 9155.4.1.TO [2] 955/25 960/11 9156.1.1 [1] 940/5 9156.6.1 [1] 941/9 9156.7.1 [1] 943/9 9266.2.1 [1] 946/25 9313.1.1.TO [1] 970/23 9330.1.1.TO [1] 961/2 9330.3.1.TO [1] 961/15 94005 [1] 772/23 9446.1.1 [1] 972/4 9446.1.2 [1] 972/23 9575 [1] 888/10 9575.1 [1] 867/13 9575.1.2 [1] 867/18 9575.11.1.TO [1] 882/25 9575.160.1 [1] 869/6 9575.175.1 [1] 869/23 9575.175.2 [1] 870/8 9575.457.1.TO [1] 887/21 9575.457.1TO [1] 885/5 9575.512.1.TO [1] 886/13 9575.518.1.TO [1] 887/13 9575.519.1.TO [1] 887/1 9575.520.1.TO [1] 885/18 9800.1.1 [1] 861/22 9800.4.1 [1] 862/11 9800.8.1 [1] 863/9</p>
<p>5</p> <p>5 inches [1] 937/20 5,000 [7] 944/15 945/2 945/3 945/18 957/23 959/17 962/1 5,000 barrels [9] 953/22 954/2 956/7 956/14 957/5 957/7 959/14 961/24 974/19 5,000 feet [1] 795/11 5,000-barrel [1] 945/15 5,000-barrel-a-day [2] 957/14 963/4 5,000-barrel-per-day [1] 944/1 5.1 [1] 779/6 50 [2] 806/10 963/8 50 barrels [3] 801/9 805/24 807/7 50-barrel-per-minute [1] 806/21 500 [4] 771/23 772/20 775/18 868/9 5000 [2] 773/18 944/12 5000 barrels [1] 974/17 5000 feet [2] 846/1 848/9 5000 pounds [1] 845/18 5000 psi [2] 867/8 868/7 501 [1] 772/13 504 [1] 775/19 5063.1.2 [1] 932/7 5063.4.3 [1] 937/14 5063.4.5 [1] 933/4 5063.4.6 [1] 936/25 53 [1] 879/23 5363 [3] 802/15 803/9 803/25 55,000 [2] 957/22 959/17 55,000 barrels [3] 956/7 956/11 959/10 556 [1] 771/23 589-7778 [1] 775/19 5:00 p.m [1] 788/9</p>	<p>9</p> <p>90 [1] 822/17 90-degree [1] 821/24 90071 [2] 774/4 774/22 91 [1] 879/22 91 feet [1] 879/16 9148 [4] 808/7 808/21 812/10 812/16 9155 [2] 965/13 965/18 9155.1.1.TO [1] 955/2 9155.4.1.TO [2] 955/25 960/11 9156.1.1 [1] 940/5 9156.6.1 [1] 941/9 9156.7.1 [1] 943/9 9266.2.1 [1] 946/25 9313.1.1.TO [1] 970/23 9330.1.1.TO [1] 961/2 9330.3.1.TO [1] 961/15 94005 [1] 772/23 9446.1.1 [1] 972/4 9446.1.2 [1] 972/23 9575 [1] 888/10 9575.1 [1] 867/13 9575.1.2 [1] 867/18 9575.11.1.TO [1] 882/25 9575.160.1 [1] 869/6 9575.175.1 [1] 869/23 9575.175.2 [1] 870/8 9575.457.1.TO [1] 887/21 9575.457.1TO [1] 885/5 9575.512.1.TO [1] 886/13 9575.518.1.TO [1] 887/13 9575.519.1.TO [1] 887/1 9575.520.1.TO [1] 885/18 9800.1.1 [1] 861/22 9800.4.1 [1] 862/11 9800.8.1 [1] 863/9</p>	<p>9</p> <p>90 [1] 822/17 90-degree [1] 821/24 90071 [2] 774/4 774/22 91 [1] 879/22 91 feet [1] 879/16 9148 [4] 808/7 808/21 812/10 812/16 9155 [2] 965/13 965/18 9155.1.1.TO [1] 955/2 9155.4.1.TO [2] 955/25 960/11 9156.1.1 [1] 940/5 9156.6.1 [1] 941/9 9156.7.1 [1] 943/9 9266.2.1 [1] 946/25 9313.1.1.TO [1] 970/23 9330.1.1.TO [1] 961/2 9330.3.1.TO [1] 961/15 94005 [1] 772/23 9446.1.1 [1] 972/4 9446.1.2 [1] 972/23 9575 [1] 888/10 9575.1 [1] 867/13 9575.1.2 [1] 867/18 9575.11.1.TO [1] 882/25 9575.160.1 [1] 869/6 9575.175.1 [1] 869/23 9575.175.2 [1] 870/8 9575.457.1.TO [1] 887/21 9575.457.1TO [1] 885/5 9575.512.1.TO [1] 886/13 9575.518.1.TO [1] 887/13 9575.519.1.TO [1] 887/1 9575.520.1.TO [1] 885/18 9800.1.1 [1] 861/22 9800.4.1 [1] 862/11 9800.8.1 [1] 863/9</p>
<p>6</p> <p>6 feet [4] 879/19 880/4 880/7 880/18 6-foot [1] 888/6 60 [4] 794/16 815/3 815/6 832/18 600 [2] 772/4 868/9 60654 [1] 773/24 63,000 [1] 946/10 65,171 [1] 937/22 655 [1] 774/7 6:00 [2] 975/18 976/1 6:00 a.m [1] 795/22 6:00 in [2] 838/15 838/15</p>	<p>6</p> <p>6 feet [4] 879/19 880/4 880/7 880/18 6-foot [1] 888/6 60 [4] 794/16 815/3 815/6 832/18 600 [2] 772/4 868/9 60654 [1] 773/24 63,000 [1] 946/10 65,171 [1] 937/22 655 [1] 774/7 6:00 [2] 975/18 976/1 6:00 a.m [1] 795/22 6:00 in [2] 838/15 838/15</p>	<p>6</p> <p>6 feet [4] 879/19 880/4 880/7 880/18 6-foot [1] 888/6 60 [4] 794/16 815/3 815/6 832/18 600 [2] 772/4 868/9 60654 [1] 773/24 63,000 [1] 946/10 65,171 [1] 937/22 655 [1] 774/7 6:00 [2] 975/18 976/1 6:00 a.m [1] 795/22 6:00 in [2] 838/15 838/15</p>
<p>7</p> <p>7/8 [1] 821/22</p>	<p>7</p> <p>7/8 [1] 821/22</p>	<p>7</p> <p>7/8 [1] 821/22</p>

<p>A</p> <p>actual... [15] 812/11 817/5 818/12 919/8 930/23 931/1 934/18 939/1 939/18 943/22 945/8 949/11 950/17 950/24 960/14</p> <p>actually [53] 781/24 785/17 792/10 792/19 793/20 802/16 805/12 812/25 813/16 816/11 833/24 843/7 844/21 850/10 856/10 857/11 857/18 857/22 860/22 874/18 878/3 880/1 889/17 898/25 905/13 910/22 914/21 916/24 918/4 921/20 922/24 923/12 923/13 924/2 928/19 929/23 929/25 930/14 932/6 940/12 943/13 944/11 949/15 950/8 951/17 951/18 953/17 953/21 963/25 970/20 971/5 975/11 975/12</p> <p>Adam [5] 909/8 909/10 909/14 909/21 915/16</p> <p>Adam L [1] 915/16</p> <p>adamant [1] 832/21</p> <p>Adams [4] 825/3 825/5 825/8 976/4</p> <p>adapted [1] 851/2</p> <p>add [8] 794/22 804/24 820/2 834/16 856/9 862/23 863/3 896/17</p> <p>Add Energy [1] 804/24</p> <p>Add Energy's [1] 834/16</p> <p>add-on [1] 896/17</p> <p>added [10] 808/16 863/22 864/8 864/12 867/5 868/1 900/25 901/2 908/25 909/1</p> <p>adding [5] 814/2 863/5 864/5 907/23 908/22</p> <p>addition [6] 904/13 904/15 910/15 912/10 915/2 954/11</p> <p>additional [12] 802/9 845/10 845/22 850/23 859/18 863/21 867/3 869/22 874/20 896/13 896/16 901/1</p> <p>Additionally [1] 790/10</p> <p>additions [1] 906/3</p> <p>address [4] 845/9 849/5 849/16 897/8</p> <p>addressed [2] 866/25 867/8</p> <p>adjourned [1] 976/7</p> <p>adjusting [2] 944/20 945/3</p> <p>Admiral [10] 834/19 955/5 955/17 956/3 959/20 960/8 960/17 963/1 963/6 965/13</p> <p>Admiral Landry [6] 955/5 955/17 959/20 960/8 960/17 963/6</p> <p>admirals [1] 955/18</p> <p>admitted [1] 777/10</p> <p>advance [1] 797/8</p> <p>advised [1] 802/9</p> <p>adviser [1] 834/17</p> <p>affect [5] 925/9 925/16 932/22 951/5 951/9</p> <p>affects [1] 930/14</p> <p>after [35] 778/10 796/23 827/24 828/21 841/17 841/21 843/9 843/24 845/1 847/14 847/22 850/3 853/14 854/1 854/2 854/15 856/14 856/25 859/7 862/25 864/10 868/25 887/7 888/17 888/20 910/13 911/22 913/25 932/15 935/5 965/16 974/7 975/18 976/1 976/3</p> <p>afternoon [10] 771/14 777/1 835/13 835/14 839/10 871/11 871/18 871/25 872/1 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<p>A</p> <p>authored [1] 911/12 authority [2] 875/19 932/12 authorize [1] 814/9 authorized [3] 813/23 876/5 877/5 available [8] 814/23 842/16 850/24 913/3 918/4 925/5 930/9 946/23 Avenue [4] 771/19 772/20 774/10 774/21 average [2] 831/16 942/18 avoid [1] 969/11 aware [13] 804/8 810/23 811/7 811/11 842/1 865/2 888/2 888/5 889/7 908/21 954/19 960/16 960/19 away [9] 809/17 837/23 844/19 847/14 848/2 848/13 850/11 850/21 866/10</p>	<p>964/7 966/1 970/19 basic [1] 895/21 basically [19] 843/9 846/3 846/4 869/19 893/16 896/17 912/8 914/7 919/14 929/7 929/11 933/17 939/11 941/16 942/22 944/13 944/19 946/14 947/6 basis [7] 815/2 815/15 815/20 815/25 859/25 918/21 968/24 Baton [1] 772/24 Baylen [1] 772/4 be [184] 777/3 782/4 784/22 788/12 788/20 790/11 794/25 796/20 799/1 802/9 804/5 804/15 806/1 807/13 807/17 809/10 812/21 818/25 821/1 821/12 821/22 823/2 824/7 825/21 829/20 829/23 829/25 835/15 840/1 842/14 843/14 843/17 844/2 844/4 845/5 846/6 847/1 848/21 848/25 850/21 853/10 853/14 854/20 855/19 856/12 856/23 858/10 858/11 858/13 859/9 859/9 859/10 859/15 859/25 861/19 862/25 863/23 864/8 864/14 867/5 867/9 870/10 870/18 871/6 871/9 871/16 874/25 875/20 879/1 879/4 879/10 879/19 880/4 881/16 881/19 881/21 881/24 881/25 882/4 883/21 884/12 885/7 885/16 886/4 887/21 889/18 889/20 892/2 892/10 893/17 894/8 894/24 895/16 895/17 897/17 898/3 898/5 898/16 899/15 900/3 900/12 900/25 901/17 901/21 902/7 904/12 904/17 907/8 912/20 912/21 912/24 913/2 913/17 917/4 918/20 919/5 920/4 921/1 921/20 922/2 922/10 922/13 922/16 923/13 924/2 924/4 924/6 924/10 924/12 925/2 925/3 925/5 926/3 926/5 926/7 926/8 926/18 926/19 929/20 929/22 930/3 931/15 931/21 931/23 931/25 938/3 938/14 938/25 939/1 939/23 939/23 939/25 940/7 941/20 942/8 943/22 945/3 945/10 946/16 946/20 947/8 947/23 947/24 948/1 949/18 950/7 950/17 950/20 951/2 951/4 951/5 951/21 953/16 954/8 957/6 959/21 960/9 960/10 962/4 963/22 965/20 967/3 970/8 973/21 Bea [1] 777/7 bear [1] 898/20 beat [1] 805/8 became [6] 778/8 778/10 823/12 836/4 837/16 842/20 because [33] 782/7 799/19 805/6 815/19 822/16 823/15 824/11 824/17 827/11 831/8 832/1 842/14 845/15 848/20 849/7 862/24 868/13 873/18 889/9 905/25 930/5 931/20 934/15 934/22 935/23 938/19 938/19 941/15 951/5 951/8 957/2 968/3 970/21 become [1] 866/19 been [52] 777/12 778/25 781/14 783/10 786/20 786/23 786/24 789/16 797/3 798/24 799/23 800/13 803/19 805/19 807/10 812/6 815/10 815/14 819/14 819/15 820/3 828/24 832/23 835/6 837/4 841/23 845/2 853/16 868/11 874/22 885/10 889/13 890/7 892/8 895/14 895/15 909/11 912/6 920/10 922/5 922/6 925/4 926/18 927/1 935/11 938/13 945/14 948/18 957/24 964/3 964/23 972/16 before [23] 771/14 784/7 798/25 802/25 803/3 806/11 815/14 819/19 836/7 850/24 852/5 865/25 867/12 906/25</p>	<p>910/19 912/3 913/22 914/8 947/22 955/7 959/4 965/16 967/13 began [1] 877/18 begin [4] 779/25 781/12 781/19 864/20 beginning [4] 798/8 800/24 872/4 947/17 behalf [11] 796/24 797/4 799/10 817/21 820/16 820/19 835/16 871/25 876/5 909/15 952/3 behind [1] 786/19 being [25] 803/18 812/7 824/17 828/8 841/8 857/16 863/16 863/19 864/2 869/1 869/20 877/8 894/11 912/10 924/15 928/6 928/8 928/11 930/18 937/12 945/23 954/11 967/1 973/2 974/17 believe [44] 783/3 789/8 791/4 804/14 820/13 824/16 838/4 853/18 871/2 877/22 877/22 877/23 882/16 883/4 884/6 884/10 885/3 895/16 896/19 898/3 903/25 926/21 926/25 939/2 945/10 950/12 950/18 951/11 951/21 952/16 952/18 952/20 952/23 953/24 955/8 957/20 958/10 958/14 961/6 963/5 965/20 971/9 971/25 972/3 believed [1] 943/21 below [8] 813/21 865/22 880/19 881/18 884/3 894/12 895/16 972/17 beneath [1] 847/25 BENSON [1] 773/11 Berwick [5] 857/25 859/9 891/19 906/8 906/22 besides [1] 804/7 best [15] 782/13 787/15 789/17 811/4 923/5 927/5 936/11 953/21 972/13 972/14 973/3 973/13 974/9 974/19 976/13 BETHANY [1] 773/13 better [4] 825/21 831/16 928/20 929/3 between [18] 785/1 786/23 819/15 848/8 855/12 859/13 865/2 879/25 880/17 889/24 893/6 902/23 903/1 903/15 905/12 906/19 921/8 963/1 beyond [6] 830/11 830/12 858/24 908/8 908/19 969/14 bias [2] 930/18 930/22 biased [2] 929/22 930/3 big [17] 817/15 817/15 819/10 819/10 819/16 823/16 824/21 824/24 825/10 825/25 826/1 826/10 833/24 847/16 854/5 920/22 951/4 biggest [2] 825/13 951/3 Bill [1] 791/17 binder [1] 868/10 Bingham [1] 775/14 bird [1] 828/10 bit [18] 782/22 783/4 784/14 785/6 789/25 791/10 792/24 807/23 831/19 836/8 836/21 872/3 873/18 910/20 911/20 925/7 928/23 975/17 bits [1] 852/19 BJ [4] 816/17 816/24 833/13 833/15 BJ Services [1] 816/17 blast [1] 923/12 blew [1] 810/24 block [1] 904/14 blocks [3] 850/5 850/7 851/10 blow [3] 779/5 802/19 803/9 blowing [1] 809/2 blown [1] 781/24 blown-out [1] 781/24 blowout [8] 781/9 782/17 783/15 808/25 811/9 828/14 828/18 829/25</p>
<p>B</p> <p>B-A-L-L-A-R-D [1] 909/14 Bachelor [1] 911/7 back [46] 787/6 787/25 789/20 792/19 793/20 798/9 802/4 804/9 824/23 829/9 847/22 850/14 854/2 854/7 856/15 856/22 861/6 863/21 866/20 873/11 875/1 877/14 883/18 883/22 884/7 887/20 888/9 889/9 889/9 889/10 901/14 902/9 902/12 903/6 922/13 928/14 935/6 935/8 939/19 940/18 949/2 957/21 959/4 960/11 962/20 963/6 background [5] 836/8 836/10 910/21 911/1 948/20 backup [1] 862/6 bad [1] 793/21 balance [4] 957/2 958/19 958/21 958/24 ball [1] 813/4 Ballard [15] 909/9 909/10 909/14 909/15 909/19 909/21 909/22 910/25 911/17 913/15 915/16 916/5 917/20 948/9 952/5 Ballard's [2] 959/1 969/15 balls [19] 813/3 813/6 813/7 813/21 814/2 816/23 820/9 821/21 821/23 822/7 822/8 822/9 822/16 823/1 823/2 823/3 823/6 823/9 825/16 band [1] 866/2 bands [1] 865/15 bar [2] 889/13 906/17 BARBIER [2] 771/15 967/13 Barnett [16] 782/18 795/18 796/7 796/10 797/4 797/18 798/12 798/18 816/7 817/3 817/13 817/19 818/22 819/15 819/24 820/19 BARR [1] 772/3 barrel [6] 806/21 944/1 945/15 948/3 957/14 963/4 barrels [32] 794/22 801/9 801/13 805/24 805/24 806/20 807/5 807/7 810/2 812/4 944/15 946/10 949/12 949/23 953/22 953/22 954/2 956/7 956/7 956/11 956/14 957/5 957/7 957/19 959/10 959/14 961/24 962/7 971/12 974/13 974/17 974/19 BARRY [1] 773/23 base [3] 841/7 843/15 854/6 based [37] 818/4 820/23 830/5 831/24 838/13 839/2 850/5 851/2 852/21 852/23 855/19 858/11 858/13 858/17 865/1 866/11 879/19 887/12 902/24 902/25 907/10 915/24 927/12 930/21 934/18 944/17 947/25 948/18 948/20 949/6 951/20 951/22 957/16 958/19</p>		

<p>B</p> <p>blowouts [1] 834/15 blowup [1] 887/12 Blue [1] 833/13 Blue Dolphin [1] 833/13 blueprint [4] 781/13 781/16 781/19 782/3 blurry [1] 891/18 board [5] 833/24 833/25 844/23 949/19 957/17 Bob [5] 802/10 804/13 804/13 805/15 826/6 body [3] 841/3 841/4 862/3 BOLES [1] 774/3 bolt [5] 847/13 848/3 848/6 848/25 896/1 bolted [4] 847/2 849/4 882/5 896/19 bolts [8] 841/19 847/11 847/18 847/21 848/25 850/14 868/4 881/13 books [1] 804/18 boost [3] 849/6 853/12 904/13 Boots [4] 782/9 782/20 787/14 817/24 BOP [79] 781/16 805/11 809/11 812/21 824/12 825/14 829/19 831/21 834/19 834/19 834/20 834/20 836/4 837/16 837/20 838/5 838/11 838/18 838/23 839/7 839/19 839/23 840/1 840/7 840/19 840/25 842/4 842/9 842/17 842/24 843/4 844/17 846/11 846/22 847/5 849/10 849/15 849/21 850/16 851/16 852/2 852/10 864/2 864/2 870/1 870/5 870/14 870/25 872/8 873/15 873/15 873/17 873/19 873/19 873/20 873/22 873/23 873/23 873/24 873/24 873/24 879/4 879/23 889/25 890/1 914/7 922/9 922/15 923/22 923/22 924/7 929/24 932/19 934/4 940/21 942/9 947/9 959/9 967/1 972/19 BOP-on-BOP [7] 834/19 834/20 864/2 873/15 873/19 873/23 873/24 bopd [1] 806/10 bore [1] 924/10 both [19] 797/4 800/9 801/8 828/16 851/22 859/11 873/24 890/3 890/8 890/11 906/10 911/24 912/18 925/22 926/6 946/24 956/17 957/22 960/12 bottom [23] 781/3 787/7 808/12 808/13 813/15 813/17 814/19 819/7 843/10 843/15 850/6 855/8 866/14 879/1 881/16 883/19 887/17 893/1 895/12 901/3 937/8 942/11 942/14 bound [10] 925/10 927/6 933/3 939/6 939/15 940/3 943/23 945/8 947/12 970/12 boundary [4] 799/6 800/18 801/20 803/5 bounding [1] 939/17 bounds [1] 970/19 Bourgoyne [1] 791/7 BOWMAN [1] 775/4 box [17] 771/23 772/4 772/23 773/7 773/15 786/8 788/5 789/23 791/14 791/22 792/14 802/19 803/9 804/4 806/7 808/13 812/16 boxes [2] 960/12 965/2 BP [156] 771/10 773/17 773/18 773/19 773/20 773/21 773/22 774/2 774/3 774/4 774/5 774/6 774/7 774/9 774/10 774/10 778/2 778/4 778/17 779/9 781/4 781/19 782/18 783/15 785/14 786/12 786/21 786/25 787/12 787/18 787/19 788/16 788/18 788/24 790/17 793/1 793/1 794/3 794/3 795/1 795/2 796/11</p>	<p>796/24 797/5 798/2 799/9 799/10 800/10 801/24 802/2 802/11 802/24 804/7 804/24 810/6 810/9 810/23 811/7 811/19 812/1 812/2 812/12 814/6 815/2 815/15 815/25 817/21 820/16 827/21 828/16 835/16 835/20 835/21 836/18 837/2 860/6 872/3 872/13 872/16 873/6 873/24 875/3 875/18 876/5 876/7 876/18 877/5 877/18 878/4 878/7 880/24 881/4 882/15 882/25 883/22 885/1 885/11 885/19 885/23 886/5 886/16 887/22 888/9 888/23 888/24 889/4 889/5 890/2 890/6 891/10 892/23 893/8 896/21 897/9 897/19 897/23 899/6 903/1 909/15 909/23 909/24 909/25 910/15 911/22 913/24 916/11 917/24 921/3 927/11 940/3 947/20 948/4 949/11 949/14 949/22 952/5 952/24 953/20 954/11 955/11 956/19 958/13 960/23 963/3 965/6 967/14 967/24 967/25 968/7 968/15 969/4 969/24 970/14 970/17 974/18 975/14 BP's [17] 786/17 793/17 795/21 807/16 818/8 825/3 835/1 838/13 910/8 916/13 918/16 949/20 962/23 965/5 967/8 967/11 969/8 bpm [1] 806/10 BRAD [2] 774/19 952/3 Branch [1] 773/6 break [1] 975/19 Brennan [1] 774/15 BRIAN [3] 772/3 774/19 952/3 bridge [4] 800/1 809/10 812/21 824/19 bridged [1] 825/16 BRIDGET [1] 774/10 bridging [18] 801/21 806/25 808/2 808/5 812/11 812/14 812/21 812/23 813/1 813/4 813/23 816/19 821/12 821/15 822/2 826/22 826/23 827/4 brief [1] 797/9 briefings [5] 839/9 839/11 839/16 876/9 876/9 briefly [5] 784/20 836/2 838/11 913/23 924/22 bring [12] 785/9 843/1 844/14 846/16 848/23 853/21 855/3 857/23 865/10 870/8 906/12 909/9 bringing [1] 831/6 Brinker [1] 816/21 British [1] 861/6 broaching [1] 875/5 broad [2] 772/13 874/14 Broadway [1] 772/10 BROCK [21] 774/9 777/22 778/3 779/8 781/5 782/24 783/4 784/14 785/6 789/25 791/12 792/1 792/5 792/10 792/23 800/16 807/23 808/10 828/3 834/10 909/7 brought [12] 779/12 787/10 792/25 794/3 794/11 795/1 796/11 802/11 804/24 817/1 817/2 906/8 BRUCE [1] 775/4 buckets [1] 948/16 build [8] 856/10 865/16 865/17 899/16 902/11 905/19 922/23 922/24 building [3] 856/14 856/23 862/17 builds [1] 825/22 buildup [1] 920/5 built [3] 843/25 863/18 863/19 bulged [1] 847/17 bullet [6] 793/5 809/4 812/19 813/3 814/2 943/15 Bullhead [3] 784/22 790/7 793/3</p>	<p>bunch [4] 817/15 819/10 920/14 926/2 Burling [1] 774/9 burst [2] 875/11 875/14 business [2] 779/10 816/2 busy [1] 865/13 but [93] 781/23 783/2 783/9 784/6 784/15 786/5 786/25 787/3 788/21 789/18 790/1 795/1 796/19 797/9 804/9 805/8 806/16 810/16 811/7 812/6 814/6 814/8 815/20 816/11 817/2 817/18 818/13 820/2 823/11 823/24 825/16 825/21 832/24 841/7 845/3 847/12 849/24 851/3 852/12 857/13 859/3 860/12 865/13 873/6 873/25 874/9 875/15 876/4 879/18 879/21 881/19 882/14 883/4 890/17 890/24 891/2 891/11 892/13 893/13 898/3 898/5 900/20 901/5 901/9 902/15 902/24 908/22 909/1 918/20 923/12 924/19 926/1 927/6 927/14 931/4 931/17 933/16 934/19 936/24 947/10 947/25 950/15 952/23 953/9 958/10 960/10 965/20 966/18 967/18 970/3 970/8 973/3 975/13 button [1] 831/20</p> <p>C</p> <p>CAD [1] 887/22 cake [1] 871/5 calculate [1] 953/1 calculated [4] 813/20 942/2 942/6 953/11 calculating [1] 967/2 calculation [1] 962/3 calculations [2] 802/14 970/16 CALDWELL [1] 772/22 calendar [1] 898/4 California [2] 774/4 774/22 call [13] 777/15 777/21 777/24 782/8 787/17 834/2 835/3 883/19 883/24 886/10 890/16 941/19 941/20 called [17] 782/17 782/20 786/17 795/15 812/25 842/8 842/11 873/8 873/20 875/21 883/23 883/23 936/23 941/16 942/20 958/21 966/14 came [15] 785/15 837/3 839/15 858/14 858/25 869/4 869/21 888/1 901/15 909/1 956/18 957/17 957/23 958/5 965/17 cameras [1] 833/10 Cameron [9] 822/6 822/11 822/12 822/13 822/14 822/18 822/19 839/1 899/3 Cameron's [1] 834/18 camp [2] 773/4 873/11 Campbell [15] 782/18 795/18 795/24 796/3 796/5 796/10 796/16 797/4 797/18 798/18 799/8 799/16 816/7 817/4 819/24 Campbell's [1] 797/13 can [181] 784/12 784/16 787/6 787/15 789/20 789/21 789/22 791/14 791/21 792/13 792/14 792/18 792/19 792/20 793/19 793/22 796/18 797/11 799/14 802/15 802/18 802/19 803/1 803/9 804/9 805/6 805/12 805/16 806/6 808/7 808/12 808/20 809/1 810/11 812/15 818/1 818/21 819/5 819/10 819/19 820/4 821/8 821/10 823/4 824/4 824/9 824/10 825/21 825/23 826/15 829/16 829/20 829/22 830/1 830/22 831/15 831/21 833/5 835/17 836/2 836/9 836/14 836/17 836/21 837/5 838/5</p>
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<p>C</p> <p>can... [115] 838/11 840/7 840/21 841/12 841/14 843/1 843/3 846/16 846/21 847/8 849/21 849/24 851/18 853/21 853/24 855/3 855/12 856/9 858/3 861/8 861/22 862/3 862/11 862/20 863/9 863/11 865/10 865/12 865/13 866/2 866/8 867/18 867/20 869/14 869/23 870/7 870/8 870/13 873/10 875/24 880/17 884/20 884/25 885/21 891/2 900/6 900/15 906/17 906/18 910/22 911/15 911/20 913/8 913/23 915/13 915/25 916/5 918/2 918/20 919/23 920/1 920/4 920/6 920/18 921/6 921/12 923/9 923/11 923/12 924/19 925/24 926/7 926/8 927/13 927/16 927/19 927/21 927/22 928/14 929/18 929/20 931/18 931/23 932/7 933/4 933/20 935/15 936/2 936/16 936/25 937/14 937/23 939/10 940/23 941/9 941/13 941/24 942/7 942/14 943/9 944/24 946/4 946/25 947/9 949/2 953/9 957/21 961/12 963/12 964/7 969/20 969/21 970/3 973/4 974/14</p> <p>can't [24] 788/20 789/18 807/8 815/18 820/5 820/8 831/8 852/12 857/9 858/14 873/11 880/13 882/11 882/13 883/4 892/13 926/7 927/14 931/5 931/6 965/15 965/20 968/2 970/7</p> <p>cannot [4] 806/10 884/19 902/3 939/1</p> 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<p>F</p> <p>feel [2] 832/24 854/8</p> <p>feet [18] 795/11 841/18 846/1 848/9 854/5 879/16 879/19 879/24 880/1 880/4 880/7 880/18 925/2 925/4 925/8 930/9 941/23 942/4</p> <p>fellow [1] 836/15</p> <p>felt [1] 853/13</p> <p>few [8] 819/8 903/23 921/15 923/18 931/19 950/7 954/15 959/25</p> <p>field [3] 804/16 831/4 831/16</p> <p>FIELDS [1] 773/23</p> <p>Fifteenth [1] 774/7</p> <p>figure [9] 813/21 881/8 884/2 893/6 893/11 944/1 945/18 945/19 966/20</p> <p>Figure 13 [1] 881/8</p> <p>figures [3] 935/22 939/5 947/2</p> <p>file [3] 777/9 892/2 961/12</p> <p>filled [1] 952/8</p> <p>final [10] 803/17 832/5 843/16 855/6 882/25 888/9 888/23 889/4 906/21 949/5</p> <p>finalize [2] 852/17 852/21</p> <p>finalized [2] 867/12 901/5</p> <p>finally [4] 849/4 852/14 879/12 881/24</p> <p>find [4] 783/25 831/8 901/19 907/7</p> <p>findings [11] 791/11 791/25 792/4 792/22 792/25 793/5 793/9 793/15 794/1 797/1 869/5</p> <p>finished [2] 788/9 975/20</p> <p>finishing [1] 836/11</p> <p>finite [2] 966/24 967/2</p> <p>firm [5] 772/6 814/13 884/8 884/9 885/23</p> <p>first [39] 778/17 779/6 779/9 779/18 793/23 802/16 804/4 808/2 821/21 823/1 844/19 846/24 849/25 852/6 854/3 866/22 872/2 877/22 877/23 887/20 887/24 895/6 905/20 911/23 917/23 918/2 921/22 928/16 932/10 933/23 937/23 941/13 943/13 943/15 944/6 946/11 949/4 949/6 957/17</p> <p>Firstly [1] 854/15</p> <p>fit [4] 849/8 859/11 906/23 948/15</p> <p>FITCH [1] 775/15</p> <p>fits [1] 945/11</p> <p>fitted [3] 854/20 857/21 859/15</p> <p>five [7] 821/23 822/7 834/12 852/14 890/8 923/25 924/10</p> <p>fix [3] 779/21 780/24 782/2</p> <p>fixed [2] 824/12 840/19</p> <p>flange [67] 840/12 840/21 840/23 841/3 841/7 841/10 841/15 841/18 841/23 841/25 842/15 843/9 843/18 845/15 845/16 846/12 846/23 846/24 847/22 847/25 848/1 848/2 848/7 848/12 848/18 848/22 848/25 849/2 849/4 850/9 850/10 850/11 851/3 851/4 851/21 852/13 854/6 865/8 866/13 867/7 868/3 880/18 881/12 881/18 881/25 882/3 882/5 882/9 882/14 882/21 886/19 887/4 891/21 893/20 893/25 895/7 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<p>G</p> <p>GE/VetcoGray [1] 881/12 gears [1] 782/22 general [5] 852/4 910/6 922/2 946/22 952/23 General's [2] 772/18 772/22 generally [1] 865/1 generate [6] 935/22 935/25 937/22 939/8 945/16 972/18 generated [8] 870/22 937/17 938/13 943/11 946/9 947/2 948/2 953/6 generating [1] 933/10 generic [1] 886/10 geometries [1] 851/5 geometry [1] 826/11 get [50] 782/2 805/16 817/15 817/20 817/22 818/1 818/4 818/5 818/6 819/9 819/17 819/19 820/5 820/8 820/10 820/20 820/20 823/11 825/13 830/24 832/1 832/24 847/11 847/19 847/23 848/24 852/9 852/14 852/17 854/8 857/23 860/12 868/6 873/5 873/10 877/15 891/11 898/21 905/24 919/11 919/13 919/16 926/20 933/7 939/21 944/20 957/6 957/21 971/11 973/4 getting [7] 778/19 811/14 816/15 856/17 857/4 861/10 938/1 Gibson [1] 976/4 give [8] 801/15 852/12 910/20 911/4 911/20 931/1 931/2 972/19 given [11] 810/16 833/16 852/6 861/9 931/24 934/25 935/19 947/24 948/9 971/16 971/21 gives [3] 781/3 782/3 879/24 giving [2] 857/8 876/10 GLADSTEIN [1] 773/14 glide [1] 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923/21 923/22 924/1 924/6 924/7 924/9 931/13 931/15 932/1 932/22 933/16 935/6 939/19</p>	<p>940/18 948/10 951/9 951/9 957/4 golf [2] 820/9 825/16 good [15] 797/25 798/1 800/5 800/8 835/13 835/14 871/18 871/25 872/1 891/1 909/19 975/23 975/23 975/25 976/5 got [18] 800/21 802/4 818/2 822/16 825/16 830/3 831/23 847/21 854/16 857/7 857/21 882/12 893/4 914/1 925/21 947/5 969/1 973/13 gouted [1] 847/13 governance [1] 865/22 government [24] 828/17 839/15 849/11 849/13 854/19 861/2 861/18 862/5 862/9 863/6 864/11 868/18 869/4 869/20 870/1 963/2 967/21 968/10 968/20 969/4 970/10 970/11 971/19 971/21 Grace [4] 802/10 804/13 805/15 826/6 graduate [2] 911/7 911/22 Grand [1] 774/21 GRANT [1] 774/20 graph [2] 951/19 961/11 graphic [1] 842/23 great [1] 926/10 green [1] 896/6 GREENWALD [1] 772/10 grip [2] 843/15 843/17 gripping [2] 841/4 848/15 grips [1] 850/10 ground [1] 893/17 group [7] 787/2 792/25 793/14 794/2 816/8 827/21 833/18 grouped [1] 929/9 groups [5] 793/6 793/10 793/15 914/1 953/12 Guard 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hadn't [4] 800/13 853/19 853/20 868/15 hall [1] 909/9 Halliburton [4] 775/2 775/7 816/17 816/24 Halliburton's [1] 834/17 hand [4] 956/13 964/15 965/2 965/3 handed [1] 850/5 handle [2] 868/6 946/16 hanger [2] 922/6 924/4 happen [16] 821/18 924/4 929/14 930/1 930/2 935/17 936/14 939/20 940/22 941/4 945/24 946/15 948/24 950/5 951/13 957/13 happened [5] 823/4 843/22 848/4 906/4 906/5 happening [2] 873/10 919/5 happens [1] 930/14 happy [1] 898/5 hard [3] 801/15 902/15 907/20 harder [1] 853/5 HARIKLIA [1] 773/21 HARVEY [1] 773/14 has [26] 787/21 789/16 796/19 804/18 804/19 815/10 815/14 826/21 831/2 855/18 858/13 860/4 877/9 882/21 893/1 924/23 925/2 927/1 932/5 947/5 961/21 964/5 964/17 964/19 964/23 972/16 hasn't [2] 797/10 804/18 Hat [1] 874/5 have [229] haven't [6] 792/2 792/3 792/7 792/8 871/23 955/7 having [9] 777/12 828/23 835/6 844/3 847/21 900/10 909/11 932/24 939/25 HAYCRAFT [1] 773/18 hazard [1] 844/1 HB [1] 775/18 HB-406 [1] 775/18 he [166] 783/14 788/24 789/1 789/3 789/3 789/6 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