

Deposition Testimony of:

Paul Tooms

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Page 9:03 to 9:05

00009:03 PAUL TOOMS
04 was called as a witness by the Plaintiffs and, being
05 first duly sworn, testified as follows:

Page 9:08 to 11:02

00009:08 Q. All right. Good morning, Mr. Tooms. My name
09 is Joseph Bruno. I'm here for the PLC.
10 If you wouldn't mind, would you please go to
11 Volume 2 of the set of documents, and then to Tab
12 No. 13.
13 MR. BRUNO: We're going to mark this,
14 John, as exhibit -- the next.
15 Do you have --
16 THE COURT REPORTER: 6172.
17 MR. BRUNO: Oh, you've got some
18 prenumbered? Thank you, sir.
19 This will be marked as 6172. This is the
20 Agreed 30(b)(6) Notice of Deposition.
21 (Exhibit No. 6172 marked.)
22 Q. (By Mr. Bruno) First, Mr. Tooms, have you ever
23 seen this document?
24 A. No, I have not.
25 Q. All right. Let's go to Exhibit No. 14 --
00010:01 THE COURT REPORTER: Exhibit?
02 Q. (By Mr. Bruno) -- which is going to be
03 marked as --
04 THE COURT REPORTER: 6173.
05 MR. PENTON: Tab 14.
06 MR. BRUNO: I'm sorry. Tab 14.
07 THE COURT REPORTER: 6173.
08 MR. BRUNO: And we're marking it as 6173.
09 (Exhibit No. 6173 marked.)
10 Q. (By Mr. Bruno) It is "THE BP PARTIES' RESPONSE
11 AND OBJECTIONS TO PLAINTIFFS' AGREED 30(B)(6)
12 DEPOSITION NOTICE WITH 30(b)" (6) -- 30(b)(6) -- "(5)
13 DOCUMENT REQUESTS."
14 Simple question, sir: Have you ever seen this
15 document?
16 A. (Reviewing document.) No, I have not.
17 Q. (By Mr. Bruno) Okay. And then last in this
18 series at Tab 15 --
19 MR. BRUNO: We're going to mark this as
20 6174.
21 (Exhibit No. 6174 marked.)
22 Q. (By Mr. Bruno) It is "THE BP PARTIES' FIRST
23 AMENDED RESPONSES AND OBJECTIONS TO PLAINTIFFS' AGREED
24 30(B)(6) DEPOSITION NOTICE WITH 30(B)(5) DOCUMENT
25 REQUESTS." And, again, sir, the same question: Have
00011:01 you had any chance to review this document?
02 A. No, I have not.

Page 11:09 to 11:13

00011:09 Q. (By Mr. Bruno) Fair enough. All right. Do
10 you understand that you have been designated by British
11 Petroleum to answer in their place or in their stead
12 with regard to certain topics as outlined in this
13 30(b)(6) Notice?

Page 11:15 to 11:24

00011:15 A. I haven't read the Notice.
16 Q. (By Mr. Bruno) Right.
17 A. But I have been told I -- I'm a 30(b)(6)
18 Witness.
19 Q. All right. Do you -- what is your
20 understanding of what a 30(b)(6) Witness is? Let's --
21 let's try it from that side.
22 A. My understanding is that I answer questions on
23 behalf of the company, in certain areas where the
24 company has asked me to answer them.

Page 13:02 to 13:21

00013:02 Q. Why don't you look at Tab 14 for us. I see
03 your name first there, and so perhaps it may be a
04 better plan. And I apologize. Let's go to Page 2. I
05 just noticed that your name appears there first, so
06 forgive me.
07 All right. You'll see that the No. 4 is the
08 topic. And No. 4 topic is: "Potential costs, risks,
09 benefits and other analyses or evaluations of potential
10 methods to cap, control, contain, shut-in and/or kill
11 the Macondo Well after April 20, 2010."
12 Did I read that correctly, sir?
13 A. You did read that, yes.
14 Q. All right. And then if we look at the
15 response, on the next page, 3, you'll see your name
16 appears by the dot --
17 A. (Nodding.)
18 Q. -- and indicating "well-integrity analysis,"
19 so that would appear to us to be the -- one of the
20 subjects that you have been designated to speak on
21 behalf of British Petroleum, okay?

Page 13:23 to 15:09

00013:23 Q. (By Mr. Bruno) And then if we look at No. 5,
24 which is right below: "Evaluation, study and/or
25 analysis of any potential method or technique to cap,
00014:01 control, contain, shut-in, temporarily abandon, and/or
02 kill the Macondo Well after April 20, 2010, including
03 the possible" risk -- "risks, benefits or other
04 consequences thereof."

05 Did I read that correctly?
 06 A. You did read that correctly.
 07 Q. Thank you, sir. And if you would look under
 08 the "RESPONSE," you'll see, once again, your name
 09 appears under one of the little dots --
 10 A. (Nodding.)
 11 Q. -- and it says, again, "well-integrity
 12 analysis"?
 13 A. (Nodding.)
 14 Q. Okay.
 15 A. Thank you.
 16 Q. And I don't recall any other areas for which
 17 you have been designated, and I think that at Tab 15,
 18 even though there's an amendment, it says the same
 19 thing. All right?
 20 A. (Nodding.)
 21 Q. Does that help you?
 22 A. Thank you, yes.
 23 Q. Okay. Why don't we start with this: Why
 24 don't we get a sense from you, sir, what is Well
 25 Integrity Analysis?
 00015:01 A. Sir, in the context of -- of what you just
 02 read to me, the Well Integrity Analysis was to
 03 understand whether the well was capable of containing
 04 the pressures that it might see when we shut it in.
 05 Q. All right. Does the phrase "Well Integrity
 06 Analysis" have meaning beyond the context of British
 07 Petroleum's response to this catastrophe? In other
 08 words, is that phrase used in your business, with any
 09 regularity or frequency?

Page 15:11 to 15:24

00015:11 A. Not so far as I'm aware. We use the term
 12 "Well Integrity" --
 13 Q. (By Mr. Bruno) I see.
 14 A. -- but not "Well Integrity Analysis."
 15 Q. All right. All right. Fair enough. So let
 16 me -- may I learn from you what is the meaning of the
 17 phrase "Well Integrity"?
 18 A. To me, "Well Integrity" means the ability of
 19 the well to contain the fluids and pressures for which
 20 it was designed.
 21 Q. Does it follow, Mr. Tooms, that you have to
 22 know something about the fluids and pressures at the
 23 location where the well is intended to be placed in
 24 order to design the well?

Page 16:01 to 16:02

00016:01 A. You either have to know or you have to make
 02 reasonable assumptions.

Page 17:23 to 18:01

00017:23 Q. (By Mr. Bruno) Okay. All right. What is the
24 actual name of the BP entity for whom you are employed?
25 A. I work for the BP Exploration and Operating
00018:01 Company Limited.

Page 18:10 to 18:16

00018:10 Q. And I appreciate that very much.
11 All right. So for the purposes of this
12 record, let us agree that when I use the word "BP" that
13 I will be referring to -- to be precise, that's why we
14 have these realtime devices -- BP Exploration and
15 Operating Company Limited. Okay?
16 A. Yes.

Page 19:07 to 29:07

00019:07 (Exhibit No. 6175 marked.)
08 Q. (By Mr. Bruno) Mr. Tooms, are you familiar
09 with this article?
10 A. I have seen it before.
11 Q. All right. Do you recall when it was
12 published?
13 A. Not exactly. Several years ago.
14 Q. All right. Would you turn to the second page
15 of the article, which is, in fact, indicated as Page 7.
16 And on the left-hand side of the page, you'll see the
17 question: "How has subsea technology helped in
18 building the future of this industry."
19 Okay? Do you see that?
20 A. I do see that.
21 Q. All right. Now, before I get there, I'd like
22 to learn a little bit about your employment. What is
23 your current title?
24 A. I have several titles in my role. I am the VP
25 for Engineering for Exploration and Production, which
00020:01 is also -- actually, Exploration and Production is --
02 is now known as Upstream.
03 Q. Forgive me. Let me make sure that I
04 understand it --
05 A. Okay.
06 Q. -- okay?
07 All right. The actual title used to be the
08 Vice President of Engineering for Exploration and
09 Production, and now the new title is Upstream?
10 A. Vice President ex -- Engineering for Upstream.
11 Q. All right. Vice President for Exploration for
12 Upstream.
13 A. You can use the words "Upstream" and eng --
14 "Exploration and Production" interchangeably.
15 Q. All right.
16 A. (Indicating.)

17 Q. May I learn, please, what BP defines as
18 "Exploration"?
19 MS. KARIS: Object to the form.
20 A. I'm not sure I know what BP's definition is.
21 Q. (By Mr. Bruno) Well, let's use yours.
22 A. My definition of Exploration would be what's
23 commonly used in the industry, which is where you are
24 exploring or investigating potential oil fields where
25 you don't have any direct information yet, so such as a
00021:01 well.
02 Q. I understand. Okay. I asked the question
03 because, quite frankly, in a previous deposition that I
04 took of Ms. Skelton, who I believe works for you --
05 does she work for you?
06 A. No, she does not.
07 Q. Did she ever work for you?
08 A. Cindi Skelton?
09 Q. Yes.
10 A. No.
11 Q. Oh. She in the chain of -- report chain to
12 you, perhaps, maybe?
13 A. She's never directly worked for me.
14 Q. Okay. That's fair enough.
15 Anyway, I was confused by her testimony, and I
16 didn't understand whether or not Exploration included
17 Drilling. Does Exploration include Drilling?
18 A. So Drilling is part of -- of the Exploration
19 effort, but I should point out that at the time of
20 Macondo my job did not include anything to do with
21 Drilling.
22 Q. All right. So as the Vice President of
23 Engineering for Exploration and Production, did that
24 job include any responsibility for Drilling?
25 A. No, it did not.
00022:01 Q. It did not?
02 A. (Nodding.)
03 Q. Okay. That's where I got my -- I got
04 confused.
05 What is the name or the title of the person
06 who would have responsibility for the Engineering
07 relative to Drilling? What is that name?
08 A. At the time of Macondo?
09 Q. Well, let's -- no. To keep the context the
10 same -- and you'll forgive me, because I should have
11 made it clear -- I was asking you about your current
12 title. That's where we began. And you told me that
13 you were the Vice President of Engineering for
14 Exploration and Production which is now called
15 Upstream. So that's the time frame that I'd like to
16 stay in so that the record's not confused.
17 We'll talk in a moment about whether those
18 titles were different at the time of the catastrophe.
19 Okay?
20 A. Okay. In my previous answer I gave to you --
21 Q. Yes.

22 A. -- I think you asked the question at the time
 23 of Macondo, so --

24 Q. I did not, but that's -- if it's confusing,
 25 what I -- what I want to know is what was your current
 00023:01 title, today; what is your job title, as you sit here
 02 today, and I think you told me, "I have more than one."
 03 A. I do.

04 Q. And the first one we got out was the Vice
 05 President for Engineering Exploration and Production,
 06 which is now called Upstream Engineering. That's what
 07 I understood. Perhaps, I'm wrong. So tell me if I'm
 08 correct or inaccurate.

09 A. That's correct, my -- my job title today --

10 Q. Okay.

11 A. -- is Vice President of Engineering for
 12 Upstream Division.

13 Q. All right. Now, for how long have you been
 14 Vice President for Upstream Engineering?

15 A. Sorry. I'm -- I'm trying to not to be
 16 confusing here.

17 Q. No, I know. Because the name changed,
 18 obviously, right?

19 A. Correct.

20 Q. When did the name change? Let's do that.

21 A. The name changed 1st of April this year.

22 Q. Okay. Now, so before April 1, 2011, were you
 23 Vice President for Engineering Exploration and
 24 Production?

25 A. Yes, I was.

00024:01 Q. And for how long?

02 A. Since January the 1st, 2010.

03 Q. Okay. All right. So that we can keep this on
 04 the same page, let's use the time frame January 1,
 05 2010 --

06 A. (Nodding.)

07 Q. -- until today. Okay?

08 Now, let me go back to my other question:

09 Who -- I'm sorry.

10 What is the title of the person who would be
 11 in charge of Drilling for this period of time? And if
 12 it changed in April 1, please share that with me.

13 MS. KARIS: Object to form.

14 A. So the title of the person in charge of
 15 Drilling prior to April 1 this year -- and I'm not sure
 16 exactly what date it changed -- was the Technology Vice
 17 President for Drilling & Completions.

18 Q. (By Mr. Bruno) After -- we don't know if it's
 19 April 1, but thereabouts -- there was a name change?

20 A. Correct.

21 Q. What is the new name?

22 A. I'm not entirely sure.

23 Q. Okay.

24 A. I could say I think it is VP of Wells. It may
 25 be Head of Wells.

00025:01 Q. All right. What is the name of the person who

02 was the Technology Vice President for Drilling &
03 Completions?

04 A. That was Barbara Yilmaz.

05 Q. I apologize, Bob --

06 A. Barbara Yilmaz, Y-i-l-m-a-z.

07 Q. Okay. Now, you were going to share with us
08 the other titles that you've held during this period of
09 time. What are those?

10 A. So I'm also known as the Head of Engineering
11 for Upstream, which includes our Upstream Engineering
12 Center, and the other title I have is that I'm the
13 Engineering Authority for Upstream, which includes
14 Wells, which you would know as Drilling. And prior to
15 April the 1st this year, I was Engineering Authority
16 for Exploration and Production, but it did not include
17 anything to do with Drilling & Completions.

18 Q. Okay. I guess I'm easily confused this
19 morning. You'll have to forgive me.

20 You are currently the Engineering Authority
21 for Upstream, which includes Wells. That's the new
22 nomenclature post-April, whatever it is.

23 A. (Nodding.)

24 Q. Okay? So am I understanding you to say that
25 for the first time in your career you are now
00026:01 responsible for Drilling & Completions or what we would
02 now call Wells?

03 A. I'm -- I'm responsible for -- for this -- I --
04 I'm responsible as the Engineering Authority for Wells.
05 I'm not as responsible for -- still not responsible for
06 Drilling & Completions as an overall discipline.

07 Q. Okay. All right. Well, what is the
08 distinction, then, between this Engineering Authority
09 and this other notion of the person being responsible
10 for Drilling & Completions?

11 MS. KARIS: Object to form.

12 A. An Engineering Authority ensures that
13 Standards are set, and if people need to deviate from
14 those Standards, would be required to give Dispensation
15 from those Standards or Practices.

16 Q. (By Mr. Bruno) Okay. Now, the Standards to
17 which you refer, those are BP Standards?

18 A. They are generally BP Standards, yes.

19 Q. All right. Might they include Standards
20 generally accepted within your industry?

21 A. Our Standards are written to -- to include
22 those Industry Standards, yes.

23 Q. All right. Might they also include
24 Governmental Regulation, regardless of the particular
25 Government that may have authority over your
00027:01 activities?

02 MS. KARIS: Object to form. Excuse me.

03 A. They might. Generally, our Standards are
04 written to be universal.

05 Q. (By Mr. Bruno) All right. In your current
06 role as the Engineering Authority, does that role

07 include being knowledgeable about Governmental
08 Regulations that may be applicable to Wells?
09 A. Not entirely. I have appointed an Engineering
10 Authority specifically for Wells so that we can give it
11 the attention, and so that there is somebody who can be
12 focused on things such as the -- the Government
13 Regulations.
14 Q. But that person reports to you currently, at
15 least as of April, again not to be difficult, but I
16 should say April of this year, since we don't know the
17 precise date?
18 A. Well, that is precise, April the 1st this
19 year.
20 Q. Fair enough. So --
21 A. And that person, the Engineering Authority for
22 Wells, reports to me in a functional sense.
23 Q. And what does that mean, "functional sense"?
24 A. So if there was a Dispensation from the --
25 from a Standard or -- or setting of a Standard, then he
00028:01 reports to me for that.
02 Q. What is that person's name?
03 A. That's Jon Turnbull. That's J-o-n, no "h,"
04 Turnbull.
05 THE COURT REPORTER: Last name?
06 A. Turnbull.
07 MS. KARIS: Spell it.
08 A. T-u-r-n-b-u-l-l.
09 THE COURT REPORTER: Thanks. Thanks.
10 Q. (By Mr. Bruno) All right. Mr. Tooms, can you
11 tell us who had that job before you appointed
12 Mr. Turnbull?
13 A. That job in that form did not exist.
14 Q. You said "in that form." And you'll forgive
15 me, because obviously you have far more information
16 about which you're speaking than I do. Was there
17 anyone at BP whose responsibility it was to be
18 knowledgeable about Governmental Regulation in the time
19 frame January 2010 until April 1, 2011?
20 MS. KARIS: Object to form.
21 A. I -- I wasn't -- I didn't have any oversight
22 of Drilling, so I -- I don't know the details of who
23 had quite what responsibility for what.
24 Q. (By Mr. Bruno) All right. I understand. But,
25 obviously, when you took on the role of the Engineering
00029:01 Authority on April 1 of 2011, it occurred to you that
02 it was appropriate to make the appointment that you
03 made for the Engineering Authority that had
04 responsibility for Governmental Regulations; isn't that
05 correct?
06 A. He has a number of responsibilities, but, yes,
07 that's correct.

Page 45:17 to 45:22

00045:17 MS. KARIS: Well, I just wanted to make

18 clear he has not been designated to speak to Well
 19 Integrity pre-Macondo, if you'll --
 20 MR. BRUNO: I didn't --
 21 MS. KARIS: -- let him read the request.
 22 MR. BRUNO: -- I didn't suggest that --

Page 53:16 to 54:03

00053:16 All right. Do you recall whether in 2009 --
 17 and in 2009 -- we haven't quite covered this yet -- but
 18 in 2009 you were also still involved in Engineering on
 19 the Exploration and Production side; is that true?
 20 A. In 2009 I was the Head of the Subsea
 21 Discipline, and I didn't actually report directly to
 22 the Engineering Group.
 23 Q. What is the Subsea Discipline?
 24 A. The Subsea Discipline is a -- it's something
 25 that I was asked to -- to create, which is a -- to --
 00054:01 to collect together the Engineers who -- who were
 02 responsible for designing, building, and operating
 03 subsea production equipment.

Page 81:12 to 82:07

00081:12 Q. All right. So you would agree with me, then,
 13 that when you are thinking about how you want to design
 14 this well, in the back of your mind is putting into
 15 place components of the design that will diminish the
 16 potential for well blowout, correct?
 17 A. Correct.
 18 Q. Do you also agree that in well design, one
 19 should contemplate how one might control the well if
 20 it, in fact, had blown out?
 21 A. In -- in designing a well -- and this is --
 22 this is in general terms, and it's a while since I
 23 designed a well -- I would be designing the well to
 24 prevent a blowout.
 25 Q. I understand that was your testimony, but I
 00082:01 was asking you a different question, and that is
 02 whether the design would include thoughts about if the
 03 well blew out, how best to control the well, if there
 04 were some components that might be put into the design
 05 to make it easier to control the well after a blowout.
 06 A. I haven't done that, no.
 07 Q. Should it be done?

Page 82:09 to 82:10

00082:09 A. I don't know.
 10 Q. (By Mr. Bruno) Who should I ask?

Page 82:12 to 82:24

00082:12 A. It -- it -- it would be better to -- to do
 13 your design to prevent the well's blowing out.
 14 Q. (By Mr. Bruno) In the first instance?
 15 A. (Nodding.) M-h'm.
 16 Q. So are you saying that, in your opinion, it is
 17 not necessary to have design features in a well that
 18 make the well easier to control if it, in fact, blows
 19 out?
 20 A. I -- I didn't say that. I said "I don't
 21 know," and the reason I said "I don't know" is because
 22 such features might actually create a greater
 23 likelihood of the well blowing out. These are
 24 complicated Engineering designs.

Page 85:24 to 86:08

00085:24 Q. Would you agree with me that a -- drilling a
 25 well subsea is one of the most dangerous things that
 00086:01 your company does?
 02 A. I -- I would hope that we try to make it less
 03 dangerous, but it is -- it's -- it's got risk, yes.
 04 Q. It's got high levels of risk with significant
 05 impact to the environment, as well as loss of life;
 06 isn't that true?
 07 A. It's -- it's -- if you have an event, it could
 08 have high impact, absolutely.

Page 86:22 to 87:07

00086:22 Q. And do you count the BOP as a barrier or as a
 23 control device?
 24 A. If the BOP is closed, I'd count that as a
 25 barrier.
 00087:01 Q. And that's true even if you have an open
 02 annulus in the casing?
 03 A. Well, if the BOP is closed, it's closed, and
 04 that's regardless --
 05 Q. Well --
 06 A. -- of whether there's an annulus or not an
 07 annulus. So, yes.

Page 88:06 to 88:14

00088:06 Q. And forgive me. I should have re-asked the
 07 question, anyway. Because in the context of the way I
 08 asked it, you indicated to me BP's procedures today
 09 require two barriers. You indicated to me that one of
 10 those barriers is the BOP in its closed position;
 11 therefore, I asked you the question: In a closed
 12 position, BP is relying on the BOP to perform its
 13 function. It's putting a great deal of emphasis on
 14 that device to perform correctly --

Page 88:16 to 88:21

00088:16 Q. (By Mr. Bruno) -- isn't that true? Even
 17 today, after this catastrophe.
 18 A. So as I said, I would -- for -- for something
 19 to be regarded as a barrier, it needs to be closed and
 20 tested. So -- so, yes, once it's closed and tested, I
 21 would be putting reliance on that as a barrier.

Page 88:24 to 89:03

00088:24 Q. (By Mr. Bruno) Now, do you know, sir, whether
 25 or not that is the standard in the industry; that is,
 00089:01 to use the closed BOP as one of the two barriers to
 02 prevent hydrocarbons from reaching the surface?
 03 A. I don't know.

Page 90:04 to 90:16

00090:04 buck stops with you. You are Head of the Engineering
 05 for Exploration and Production and Wells. There's no
 06 one higher than you in charge of Engineering.
 07 A. There is.
 08 Q. And who is that?
 09 A. John Baxter. He's Group --
 10 Q. John Baxter.
 11 A. -- he's Group Head of Engineering.
 12 Q. So the buck stops there, not with you?
 13 A. So the buck stops there, but I wouldn't expect
 14 him to know the detail of where the industry sits with
 15 regards to its -- its -- its assessment of the BOP in
 16 the closed and tested position as a barrier.

Page 94:08 to 94:12

00094:08 MR. BRUNO: -- 61 -- 6179.
 09 (Exhibit No. 6179 marked.)
 10 Q. (By Mr. Bruno) This is the Chief Counsel's
 11 Report. Mr. Tooms, have you seen this before?
 12 A. No, I haven't.

Page 95:19 to 95:21

00095:19 Q. I -- I -- I missed the last part. I thought
 20 you told me that today it was still two barriers, and
 21 maybe mi -- I misunderstood you. What is it today?

Page 95:24 to 96:04

00095:24 A. It -- I just said. It is two barriers today.
 25 We are rewriting -- so you asked --
 00096:01 Q. Ah.

02 A. -- has it -- has it stayed unchanged, our
 03 policy. No, our policy is being rewritten to be quite
 04 clear, and it is two barriers today.

Page 99:10 to 100:03

00099:10 Q. Let's talk a little bit about the rupture
 11 disks. Do you know when BP first started using rupture
 12 disks in their well design?
 13 A. I do, approximately, yes.
 14 Q. All right. And when was that?
 15 A. It was approximately 2002.
 16 Q. Okay. And why was the rupture disk
 17 incorporated into the well design?
 18 A. It was incorporated because of a phenomenon
 19 known as annular pressure buildup, APB.
 20 Q. And that was the result of a particular
 21 incident that occurred to one of BP's wells; isn't that
 22 accurate?
 23 A. Yes. We first observed it on -- on one of our
 24 wells on the Marlin Platform.
 25 Q. Okay. And because of this event, BP decided
 00100:01 to use this device as a means of avoiding that
 02 circumstance in the future, correct?
 03 A. Correct.

Page 106:24 to 106:25

00106:24 Q. Did BP consider the possibility of broaching
 25 in its design of rupture disks at all, "Yes" or "No"?

Page 107:02 to 108:05

00107:02 A. I don't know.
 03 Q. (By Mr. Bruno) What kind of research and
 04 technology went into the design of the rupture disk, if
 05 you know?
 06 A. So I know in general terms, although I wasn't
 07 in the -- in the Drilling organization for all the
 08 period of -- of the use of rupture disks -- I was there
 09 when they were initially done -- and I learnt more
 10 about them during the Macondo incident. We put
 11 considerable effort into the design of those rupture
 12 disks.
 13 Q. Well, so what did you find out about that
 14 considerable effort?
 15 A. I found out that we test -- tested our rupture
 16 disks from both directions, whether they would rupture
 17 out --
 18 Q. M-h'm.
 19 A. -- or rupture in --
 20 Q. Right.
 21 A. -- because they're designed to go specifically

22 in -- in -- in one direction or the other, and that we
 23 did -- we had significant statistical analysis. So we
 24 understood how precise those rupture disks ruptured.
 25 And then I also found that we tested every single
 00108:01 rupture disk that we installed prior to running it in
 02 the -- in the ground so that we knew a limit, a minimum
 03 limit, of the -- of the value in which the rupture
 04 disks would rupture. So every single disk had a -- we
 05 knew what the value was.

Page 109:25 to 111:06

00109:25 We're going to mark this as 6180. It's two
 00110:01 pages.
 02 Q. (By Mr. Bruno) Would you read over this for
 03 me, please.
 04 A. Is this the one that starts with an E-mail
 05 from David Sims?
 06 Q. I think -- yes, it is.
 07 A. All right. (Reviewing Exhibit 6180.)
 08 Q. Are you done?
 09 A. M-h'm.
 10 Q. Okay. Have you ever seen these E-mails
 11 before?
 12 A. No, I have not.
 13 Q. All right. If we -- start with the -- the
 14 one, the earliest one, which is Friday the 16th at
 15 11:00. It's from Jasper Pei -- Peijs -- am I saying
 16 that correctly? Do you know --
 17 A. I think so.
 18 Q. Do you know who he is?
 19 A. I know -- I know him as "Jasper."
 20 Q. Jasper. Okay. We'll, then, call him Jasper.
 21 Do you -- and so -- and do you know Richard Morrison?
 22 A. I do know Richard Morrison.
 23 Q. All right. Can you tell us who Jasper is?
 24 A. He's a Drilling Engineer.
 25 Q. And who is Richard Morrison?
 00111:01 A. Richard Morrison was a -- at the time I think
 02 he was VP of Operations. I -- I don't recall.
 03 Q. All right. It says that -- that: "...we are
 04 planning to drill this well as a keeper..."
 05 Do I gather that there are wells that BP knows
 06 will be producing wells before they even drill them?

Page 111:08 to 111:17

00111:08 A. There are wells where -- there -- there's
 09 always uncertainty when you drill into a reservoir, but
 10 there's wells that we drill without design to be
 11 producing wells before we drill them, yes.
 12 Q. (By Mr. Bruno) In other words, the likelihood
 13 that this was to be a producing well was extremely
 14 high, do I gather that from this E-mail?

15 A. From -- from what I've learned since, yes,
16 the -- the Macondo reservoir was -- was quite well
17 understood.

Page 113:15 to 113:16

00113:15 Q. (By Mr. Bruno) All right. All right. So
16 apparently he's got three options he's considering?

Page 113:18 to 113:18

00113:18 Q. (By Mr. Bruno) Is that correct?

Page 113:20 to 113:23

00113:20 A. He's -- he's listing three options, yeah.
21 Q. (By Mr. Bruno) Okay. So "We can add rupture
22 discs, but cement back the open hole," what does he
23 mean by that?

Page 113:25 to 114:12

00113:25 A. I understand what he means by "We can add
00114:01 rupture discs," which is the -- because -- because
02 you -- as we discussed earlier, if you're going to
03 convert this into a production well, you would have --
04 have rupture disks in your external casings to prevent
05 pressure buildup damaging the structure of the well
06 and -- and maintaining integrity of the well.
07 Q. (By Mr. Bruno) Why does -- why does he say
08 "but cement back the open hole"?
09 A. I don't know. I don't know what that means.
10 Q. Okay. All right. Then he says: "No capital
11 implication for you in 2009." Do you know what that
12 means?

Page 114:14 to 114:15

00114:14 A. It means exactly what it says, I presume. "No
15 capital implication for you in 2009."

Page 115:11 to 116:08

00115:11 Q. All right. Well, in the second option, it
12 says: "We can run a 9-7/8 production line." What is
13 that?
14 A. It's a -- I mean, I don't know what is --
15 where it's over in this case. I don't know which --
16 which part of -- of the reservoir it's over. I don't
17 know if this is even over the reservoir itself, but a
18 nine and seven-eighths production liner, that would be
19 something that's nine -- it's casing that's nine and

20 seven-eighth inch outside diameter. It would be
 21 approximately eight and three-quarter inch inside
 22 diameter, depending on the -- the weight and grade of
 23 it.

24 Q. M-h'm.

25 A. The top of the casing would stop somewhere
 00116:01 below the wellhead, which is why it's called the
 02 "liner."

03 Q. M-h'm.

04 A. And -- and it would be -- it would be the --
 05 the first casing outside of the production tubing. So
 06 this casing would have to contain the -- the production
 07 fluids in the event that you lost containment of your
 08 tubing.

Page 117:06 to 117:08

00117:06 Q. Now, here it says: "Ball-park capital request
 07 would be" eight million, so apparently it's going to
 08 cost \$8 million to put this production liner in, right?

Page 117:10 to 117:11

00117:10 A. I -- I don't know how much it would cost to
 11 put the production liner in.

Page 117:20 to 118:11

00117:20 Q. All right. The third option, it says:
 21 "9 7/8...production liner and" a tieback "to" the
 22 "surface."

23 So that's kind of addressing what you just
 24 suggested, that this -- that is, that it was in Option
 25 No. 2, we don't know what's happening from the top of
 00118:01 the liner to the -- to the wellhead, and this option
 02 actually does tie it back all the way to the wellhead,
 03 right?

04 A. It does.

05 Q. Okay. And he says: "...same capital request"
 06 of \$8 million," he says: "...just don't know whether
 07 we can pull this off logistically in the short time
 08 frame." So apparently he's concerned about the time
 09 that he has available in order to install a -- a
 10 production with a tieback. Is that what he's saying
 11 here?

Page 118:13 to 118:14

00118:13 A. I -- I -- I -- I don't know what he's saying
 14 here.

Page 121:06 to 121:10

00121:06 Morrison writes back, and he says: "Today's
 07 reality with other pressures is that option (1) is all
 08 we can fund..."
 09 Now, he's saying that all he's got money for
 10 is the first option, right?

Page 121:12 to 121:13

00121:12 Q. (By Mr. Bruno) It says what it says.
 13 A. It says what it says, yeah.

Page 123:07 to 123:13

00123:07 Q. (By Mr. Bruno) All right. Now, the last --
 08 let's see. Then we -- Jasper responds, he says:
 09 "Thanks Richard. Thought this would be the case. This
 10 will simplify our planning. Please call if your
 11 capital situation changes and we could do the right
 12 thing."
 13 What on earth is he saying there?

Page 123:16 to 123:18

00123:16 Q. (By Mr. Bruno) If you know?
 17 A. I don't know.
 18 Q. No idea what the "right thing" might mean?

Page 123:20 to 123:25

00123:20 A. I have ideas, but it would just be
 21 speculation.
 22 Q. (By Mr. Bruno) M-h'm. And if you -- well, let
 23 me ask you to speculate. Isn't what he is really
 24 saying here that the right thing to do would be to use
 25 a production liner or a production liner with tieback?

Page 124:02 to 124:14

00124:02 A. So if you're asking me to speculate, which
 03 I'm -- I'm not sure that it's terribly helpful because
 04 it's --
 05 (Phone ringing.)
 06 A. -- not any --
 07 Q. (By Mr. Bruno) It -- it's what it is.
 08 A. It's -- it's -- it's -- it's just speculation,
 09 then --
 10 (Discussion off the record.)
 11 A. -- it -- it could be the right thing in terms
 12 of doing things in the most sufficient manner, it
 13 certainly -- I wouldn't take it to mean that it's not
 14 doing the safe thing.

Page 126:16 to 127:08

00126:16 Q. Okay. All right. Just a few questions.
 17 At Bates Page No. 28844, I think you have it
 18 open, there is a description of the safety features on
 19 the MODU, and it says they "...include well control,
 20 pollution prevention, welding procedure, and blowout
 21 prevention equipment as described..." Do you see that?
 22 Do you know what well control equipment was on
 23 the DEEPWATER HORIZON at the time of the catastrophe?
 24 A. Not in totality, no.
 25 Q. Do you know of any well control equipment that
 00127:01 was onboard that vessel?
 02 A. I know some, yes.
 03 Q. What was that?
 04 A. Well, actually not onboard, on the seabed, it
 05 had the BOP stack, and on surface, it had the internal
 06 BOPs in the top drive.
 07 Q. M-h'm. All right. Those were the only two
 08 well control devices on the HORIZON; isn't that true?

Page 127:10 to 128:01

00127:10 A. I just said I don't know what was on the
 11 HORIZON.
 12 Q. (By Mr. Bruno) Okay.
 13 A. That --
 14 Q. All right. How about blowout prevention
 15 equipment, do you know what blowout prevention
 16 equipment was on the HORIZON?
 17 A. Well, I just --
 18 Q. And --
 19 A. -- just -- I just said blowout prevention
 20 equipment is similar to well control equipment --
 21 Q. Okay.
 22 A. -- but --
 23 Q. So --
 24 A. Or sim -- sorry. Blowout prevention
 25 equipment, I would include in my total well control
 00128:01 equipment.

Page 128:04 to 128:08

00128:04 Q. All right. So as far as you know, the only
 05 blowout prevention equipment would be the BOP on the
 06 sur -- on the -- on the -- the floor of the -- of the
 07 Gulf and the -- the one above?
 08 A. The IBOPs --

Page 128:10 to 128:10

00128:10 A. -- no, I didn't say that.

Page 128:12 to 128:16

00128:12 A. I actually said those are the ones --
 13 examples -- you asked me for examples of what I knew
 14 about, and those are examples of -- of ones I knew
 15 about. And I know that there was also a diverter
 16 onboard.

Page 133:03 to 133:23

00133:03 Q. (By Mr. Bruno) Now, Mr. Tooms, you had some
 04 involvement in the attempts to cap the well, did you
 05 not?
 06 A. I did.
 07 Q. Okay. Can you recall any discussions about --
 08 withdraw.
 09 Were you a part of any discussions that dealt
 10 with attempts to control the public perception of this
 11 event?
 12 MS. KARIS: Object to form.
 13 A. No.
 14 Q. (By Mr. Bruno) Were you a part of any
 15 discussions that dealt with any attempts by BP to --
 16 A. Sorry, can I -- can I --
 17 Q. -- yeah, I'm --
 18 A. -- come --
 19 Q. -- sorry.
 20 A. -- back on that -- that question? Thinking
 21 about it, I did provide factual information to Kent
 22 Wells, who was briefing the -- the -- the press and so
 23 on.

Page 135:14 to 136:20

00135:14 Q. (By Mr. Bruno) Now, Kent Wells was in charge
 15 of a Team whose purpose it was to share "Lessons
 16 Learned," with Governments all over the world. Are --
 17 are you familiar with that?
 18 A. This is post -- post the Macondo --
 19 Q. Yes.
 20 A. -- incident --
 21 Q. Yes.
 22 A. -- finishing.
 23 Q. Yes.
 24 A. Vaguely I'm aware of it, yes.
 25 Q. All right. If you look at this document, you
 00136:01 will see that -- from the cover page, that Mr. Kevin
 02 Devers says he's attaching pdf versions of
 03 presentations made at a workshop. And if you go on
 04 below, you'll see that the workshop was held in Angola.
 05 Just to --
 06 A. I --
 07 Q. -- verify. And then if we go through the

08 presentation, and if you could find 964751, it's
09 entitled "Summary of Findings and Recommendations"?
10 A. Yeah, I have it.
11 Q. Okay. So we see here that this is the portion
12 of the program which describes the recommendations and
13 findings.
14 Then if we could go to 964765, and you see
15 there it says, "Deepwater" Horizon's "Containment and
16 Response: Harnessing Capabilities and Lessons Learned
17 Response." And in the center, the second dot, it says,
18 "Oil Spill Response of scale is much more a social
19 problem than it is a technical problem."
20 Do you agree with that?

Page 136:22 to 137:01

00136:22 A. I -- I don't know what he -- I actually don't
23 know what he means by that. I'd actually have to
24 understand the context. I suspect that this is a
25 summary bullet from -- from earlier in the
00137:01 presentation.

Page 139:06 to 139:08

00139:06 Q. (By Mr. Bruno) Based upon that assumption, I
07 want to know whether or not you agree that that is a
08 true statement or a false statement.

Page 139:11 to 139:24

00139:11 A. Okay. So I think I already answered this,
12 but -- but if -- if we're talking about an oil spill
13 response that includes the -- the surface response,
14 which is where, I -- I guess, most of the social stuff
15 happens, I don't know. I did not have any involvement
16 in the -- dealing with the surface cleanup efforts.
17 Q. (By Mr. Bruno) Well, I'm not asking you
18 whether you know. I'm asking you whether, in your
19 opinion, this is a true statement. This is a -- this
20 is not a factual. This is a -- this is a "Lessons
21 Learned" here. It -- they're talking about the fact
22 that large oil spills are more of a social problem than
23 a technical problem. So it's not a -- it's an
24 opinion --

Page 140:01 to 140:02

00140:01 Q. (By Mr. Bruno) -- that's being offered here.
02 So I'm asking you whether you agree with this opinion.

Page 140:04 to 140:06

00140:04 A. And I'm saying that I don't disagree with
 05 Mister -- Mr. Wells' opinion. He's a -- he -- he knows
 06 a lot about the oil spill response.

Page 140:12 to 140:18

00140:12 Q. (By Mr. Bruno) M-h'm.
 13 A. -- I -- I can't have an opinion on it.
 14 Q. Well --
 15 A. Or not a valid opinion on it.
 16 Q. I see. And so would you agree that public
 17 perception about pollution could implicate the stock
 18 price of BP?

Page 140:20 to 140:22

00140:20 A. Public perception. So if -- all sorts of
 21 things could in -- influence the stock price of BP, and
 22 pollution and an oil spill would be one of those.

Page 141:01 to 141:09

00141:01 MR. BRUNO: Volume 2 at Tab 12. We're
 02 going to mark this as Exhibit 6184.
 03 (Exhibit No. 6184 marked.)
 04 Q. (By Mr. Bruno) And you'll see this is a -- an
 05 E-mail from Cindy Bailey to a variety of folks, and
 06 it's the "Daily Media Plan and Approved Talking
 07 Points." And if we could turn to 102298 -- and, again,
 08 it's highlighted for you, so you should -- it's past
 09 there.

Page 141:18 to 143:02

00141:18 Q. And do you see there -- again, this is --
 19 these are Talking Points for press relations, and
 20 there's a caption "Measuring the flow rate."
 21 And it says: "BP has, and will continue, to
 22 support the government's work to determine the rate of
 23 flow from the well. Since the Deepwater Horizon
 24 accident, the flow rate estimate has been established
 25 by the "United Command." Excuse me.
 00142:01 "Throughout the process, BP has made it a
 02 priority to quickly and consistently provide the
 03 National Oceanic and Atmospheric Administration (NOAA)
 04 and the Coast Guard with requested information for the
 05 joint command structure to make as accurate an
 06 assessment as possible of the rate of flow.
 07 "The rate of flow from the riser is determined
 08 in a number of ways and by a number of variables. For
 09 instance, while the original riser was 19.5 inches in
 10 diameter prior to the Deepwater Horizon accident,
 11 damage sustained during the accident distorted the

12 diameter at the end of the pipe by about 30 percent.
 13 In addition, a drill pipe currently trapped inside the
 14 riser has reduced the flow area by an additional 10
 15 percent. Thus, some third party estimates of flow,
 16 which assume a 19.5 inch diameter, are inaccurate.
 17 "As well, there is natural gas in the riser.
 18 Data on the hydrocarbons recovered to date suggests
 19 that the proportion of gas in the plume exiting the
 20 riser is, on average, approximately 50 percent."
 21 Do you see that?
 22 A. I do see all of that, yes.
 23 Q. And did I read that accurately?
 24 A. Yes, you did.
 25 Q. All right. Now, in fact, BP made a conscious
 00143:01 decision not to disclose to the public its own
 02 calculations of flow rate; isn't that accurate?

Page 143:05 to 143:06

00143:05 A. No, it's not accurate.
 06 Q. (By Mr. Bruno) What is accurate?

Page 143:08 to 144:02

00143:08 Q. (By Mr. Bruno) On that subject?
 09 A. You -- you -- you're asking what is accurate?
 10 Q. Yes. You said, "It's not accurate."
 11 I said, "Okay. What is accurate?"
 12 What is -- what is -- what is the accurate
 13 statement about BP's decision to disclose or not
 14 disclose its own calculations of flow rate?
 15 A. So far as I'm aware -- and -- and -- and I can
 16 only speak from my end of the -- of the event, which
 17 was looking at the source control, so sort of what was
 18 happening at the -- at the well. We didn't have any
 19 calculations as to flow rate.
 20 Q. You had no calculations as to flow rate. Why
 21 not?
 22 A. Because we didn't know how to calculate the
 23 flow rate.
 24 Q. And that's, in part, because the well design
 25 didn't contain features in it to allow for devices that
 00144:01 would assist in the measurement of velocity and flow,
 02 pressures, and the like.

Page 144:04 to 144:16

00144:04 Q. (By Mr. Bruno) Isn't that true?
 05 A. I -- I don't know of wells that generally have
 06 those features in it, and -- and even had it had those
 07 features in it, one would have needed to have been able
 08 to access those features to have measured flow rate,
 09 but it -- so far as I'm aware, the well didn't have

10 those features in it anyway.

11 Q. All right. Now, your testimony is that BP did
12 not know how to calculate flow rate, right?

13 A. That's what I said, yes.

14 Q. But BP did know how to demonstrate that other
15 people's calculations of flow rate was incorrect; isn't
16 that true?

Page 144:18 to 145:03

00144:18 A. We understood how complex multiphase flow was,
19 and we could point out to other people who had assumed
20 that they could do a simplistic calculation where their
21 inaccuracies were, yes.

22 Q. (By Mr. Bruno) Right. So I'm -- and I'm just
23 trying to get my -- wrap my -- my head around this, is
24 that, on the one hand, BP is saying that they didn't
25 know how to calculate flow rate, but, on the other
00145:01 hand, they knew how to discredit other people's
02 calculations of flow rate, right? That's essentially
03 what you're saying.

Page 145:05 to 145:15

00145:05 A. No, it's not what I'm saying. I'm saying that
06 BP understood the complexity of the calculations
07 required to calculate flow rate, and we were unable to
08 calculate flow rate, and we shared some of those
09 complexities with the people that made simplistic
10 calculations of flow rate.

11 Q. (By Mr. Bruno) Well, you say, "you" being BP,
12 "...some third party estimates of flow, which assume a
13 19.5 inch diameter, are inaccurate." That's pretty
14 direct, don't you agree? They're wrong. That's what
15 you're saying there?

Page 145:18 to 146:17

00145:18 A. What we're saying there is that the -- is --
19 is that if they use a -- as a basis for their
20 calculations a 19.5-inch diameter, then they would have
21 inaccuracies in their flow rate, because the pipe was
22 not 19.5 inches in diameter where they assumed it was.

23 Q. (By Mr. Bruno) Okay. Now, let's go, please,
24 if you don't mind, to Volume 3, and just leave that
25 open on the table, just to -- for reference.

00146:01 A. Volume 3, you're --

02 Q. Volume 3?

03 A. That's Volume 1, isn't it?

04 Q. At Tab No. 64?

05 MS. KARIS: (Tendering.)

06 A. Tab 64. That's the E-mail starting from
07 Graham McNeillie --

08 Q. (By Mr. Bruno) Yes, it is.
09 A. -- on the first page.
10 MR. BRUNO: And we're going to mark this
11 as 6185.
12 (Exhibit No. 6185 marked.)
13 Q. (By Mr. Bruno) Now, isn't it a true statement
14 that because you had no way to calculate flow, that
15 there was absolutely no way for you to understand
16 whether or not the cofferdam was actually going to work
17 as a containment device?

Page 146:19 to 146:23

00146:19 A. No, that's not a true statement.
20 Q. (By Mr. Bruno) Well, if you didn't know how
21 much flow there was, then you had no idea as to whether
22 or not the flow would overwhelm the cofferdam; isn't
23 that correct?

Page 146:25 to 147:02

00146:25 A. We -- the cofferdam was the first device that
00147:01 we could put into the water to contain as much of the
02 flow as it could contain.

Page 147:07 to 147:16

00147:07 Q. I said: The inability to calculate flow made
08 it impossible for you to ascertain whether or not the
09 cofferdam would work?
10 A. No. So that's incorrect, because cofferdam --
11 the definition of "cofferdam working" would be that
12 cofferdam could collect --
13 Q. M-h'm.
14 A. -- the amount of flow that could be handled on
15 the vessel above, which was, if I remember rightly,
16 about 7,000 barrels a day.

Page 147:22 to 149:07

00147:22 Q. (By Mr. Bruno) All right. And then the top
23 kill. The top kill -- again, another method -- you had
24 no way of ascertaining whether or not that was going to
25 work, because you had no idea about the flow; isn't
00148:01 that true?
02 A. No, that's not entirely true.
03 Q. Well, explain for us, then, how the top kill
04 was supposed to work.
05 A. Okay. So this is quite -- quite a long topic,
06 I guess, but the top kill was supposed to work by
07 pumping in heavy fluid at a rate that would outrun the
08 fluid coming out of the well and with -- with some back
09 pressure on it provided by whether it was the BOP rams

10 or the kink or -- or the drill pipe in it, and -- and
 11 the higher the rate that you could pump into the well,
 12 the higher the rate of the well flow it would -- it
 13 would kill.

14 So broadly speaking, you're trying to pump
 15 fluid in -- in -- into the well at such a rate that
 16 will create back pressure to arrest the flow of
 17 hydrocarbons coming out of it and push the -- push the
 18 fluid, your heavy fluid back into the well.

19 Q. Well, didn't you hire a Norwegian company to
 20 model the outcomes depending upon the flow rates of
 21 hydrocarbons?

22 A. We did.

23 Q. And --

24 A. Sorry. Should I -- I should say BP did. I --

25 Q. BP.

00149:01 A. -- I -- I didn't personally.

02 Q. No. That's fine. That's fine. We understand
 03 that.

04 A. (Nodding.)

05 Q. And you knew that the top kill was unlikely to
 06 succeed with flow rates greater than 15,000 barrels a
 07 day; isn't that true?

Page 149:09 to 151:09

00149:09 A. No. We knew that at -- at a given pumping-in
 10 limit, which I -- and, again, I can't remember the
 11 exact -- exact number, but around 45 barrels an hour --
 12 sorry, 45 barrels a -- an hour, a minute, I don't
 13 know -- at a certain pump rate that we're pumping in,
 14 that the -- that that should kill a flow of
 15 approximately up to 15,000 barrels a day. That was
 16 just one variable from modeling.

17 And we also were aware if you increased the
 18 flow rate of what you were pumping in at, then it would
 19 kill a high flow rate coming out. And all this was
 20 based on modeling assumptions about the -- a certain
 21 arrangement of plumbing in the well.

22 Q. (By Mr. Bruno) Well, if you look at Page 16 of
 23 this article and the first -- I'm sorry, the second
 24 full paragraph, and it's at 2207144.

25 A. Where?

00150:01 Q. The last digit's a is 44.

02 MR. KRAKOFF: This right here
 03 (indicating).

04 Q. (By Mr. Bruno) Okay?

05 A. So can I just -- or so this is the --

06 Q. You see where it says "Top Kill and Junk
 07 Shot"?

08 A. This is the staff -- the staff working papers
 09 from the -- yeah.

10 Q. Okay. Well, first of all, have you seen this
 11 document before? I know you have. It's a -- it's an
 12 E-mail that --

13 A. I've -- I've seen it and I've skimmed it
14 and -- but I'm not overly familiar with it.

15 Q. All right. Well, let's just read it together,
16 then. It says: "BP's top kill team began its work in
17 the immediate aftermath of the initial failed efforts
18 to actuate the BOP stack.¹²⁵ Leading up to the
19 operation, both BP and federal engineers modeled
20 different scenarios based on different rates at which
21 oil might be flowing from the Macondo well." It says:
22 "Paul Tooms, BP's Vice President of Engineering" -- is
23 that an accurate description of your title, by the way?

24 A. Well, it's not entirely accurate because I'm
25 Vice President of Engineering for Exploration and
00151:01 Production.
02 Q. Right.
03 -- "told Commission staff that BP hired a
04 Norwegian company to model different outcomes depending
05 on the flow rate of hydrocarbons.¹²⁶ He recalled that,
06 given the plan pumping rates, the top kill was unlikely
07 to succeed with oil flow rates greater than 15,000
08 bbls/day.¹²⁷"
09 Is that a true statement or a false statement?

Page 151:11 to 151:16

00151:11 A. That's what I said, yes, as far as I recall.
12 Q. (By Mr. Bruno) Okay. All right. So once
13 again, we know that because there was not any ability
14 to calculate flow rates there was really no ability to
15 ascertain whether or not the top kill was going to
16 work?

Page 151:18 to 151:22

00151:18 A. Sorry, can you -- can you actually state the
19 question again?
20 Q. (By Mr. Bruno) Sure. Because BP had no way of
21 calculating flow rates, it had no way of ascertaining
22 whether or not the top kill was going to work?

Page 151:24 to 153:02

00151:24 Q. (By Mr. Bruno) Is that true?
25 A. We had -- we thought we had an idea of flow
00152:01 rates. So we had some idea of whether we thought top
02 kill would -- would work or not.
03 Q. Sorry, Mr. Tooms. I thought you told me a few
04 moments ago that you had no idea of flow rate --
05 A. I said --
06 Q. -- and you couldn't calculate flow rate. So
07 how did you get a flow rate if you couldn't calculate
08 flow rate?
09 A. I said -- I said we couldn't calculate flow

10 rate. We had NOAA and Unified Command, which we were a
 11 part, telling us the flow rate was initially a thousand
 12 barrels a day and then 5,000 barrels a day. So we had
 13 some idea from that.

14 And we had some idea from when we were
 15 collecting oil with the riser insertion test tool,
 16 known as the RIT. But when we were collecting it, the
 17 maximum rates on that, the -- the -- the flow looked
 18 like it was seriously diminished coming out of the --
 19 into the riser. So we have an idea. We didn't -- we
 20 couldn't say what the flow rate was, but we had an
 21 idea.

22 Q. What were your ideas?

23 A. Our idea was that it was less than the -- the
 24 number we put in here, 15,000 a day.

25 Q. Sure. In fact, BP knew that the likelihood of
 00153:01 success of the top kill was -- was -- was not good;
 02 isn't that true?

Page 153:04 to 153:06

00153:04 A. I think that if -- if BP had thought the top
 05 kill was unlikely to succeed we wouldn't have proceeded
 06 with it in the way that we did.

Page 154:17 to 154:21

00154:17 At Page 5, "Early Containment Efforts":
 18 "Other than the lengthy process of drilling a relief
 19 well, BP had no available, tested technique to stop a
 20 deepwater blowout."
 21 Is that a true statement, sir?

Page 154:23 to 155:07

00154:23 A. Can I actually just read around that to
 24 understand the context better?

25 Q. (By Mr. Bruno) Oh, please do. Yeah, read
 00155:01 the -- around, above, below, whatever you need to.

02 A. (Reviewing Exhibit 6185.)

03 I think it's -- I think it's an accurate
 04 statement that we didn't have a -- a variable tested
 05 technique to stop the deepwater blowout of this size of
 06 this one with the configuration of the -- the -- the
 07 way that the -- the well had -- had failed.

Page 156:02 to 156:09

00156:02 Q. (By Mr. Bruno) Do you believe it should be
 03 done?

04 A. Do I believe that the industry should have
 05 ways of controlling deepwater wells in the -- in the
 06 light of the Macondo incident, yes.

07 Q. Well, do you believe that you shouldn't be
 08 permitted to drill a deepwater well without having the
 09 technology to deal with a deepwater blowout?

Page 156:11 to 156:12

00156:11 A. I -- I don't really have an opinion on that.

12 Q. (By Mr. Bruno) If you go to Page 4, and

Page 156:14 to 156:22

00156:14 to give it some chronology that makes some sense. But
 15 on Page 4, top of the -- top paragraph, it says:
 16 "According to Billy Stringfellow, a Transocean Subsea
 17 Superintendent, BP delayed interventions with remotely
 18 operated vehicles for approximately 20 hours because it
 19 was concerned that the pressure created by closing the
 20 BOP stack and shutting in the well might force
 21 hydrocarbons into the surrounding rock and 'create an
 22 underground blowout.'" Is that a true statement?

Page 156:24 to 158:13

00156:24 A. (Reviewing document.)

25 So I -- the answer is I don't know. It's --
 00157:01 it's clearly his testimony.

02 Q. (By Mr. Bruno) M-h'm.

03 A. I -- I -- I'm trying to read this to
 04 understand when -- what period he's talking about.
 05 But, no, I don't -- I don't know whether it's true or
 06 not true.

07 Q. Well, at what point were you concerned about
 08 well integrity?

09 A. I was concerned about well integrity I think
 10 on April the 25th or 26th, when I -- when I actually
 11 arrived in Houston and learned about the possible -- or
 12 possibilities of the -- of the arrangement inside the
 13 well.

14 Q. All right. Now, why were you concerned about
 15 Well Integrity at that point in time?

16 A. Well, I'm always concerned about Well
 17 Integrity. The -- why did I become concerned? Because
 18 now I was involved in source control, I was leading the
 19 Engineering Department, and I was aware, as we've
 20 already discussed, the well had rupture disks in it.
 21 There was a theory that the hanger might have lifted
 22 off the -- off the wellhead housing, which would expose
 23 those rupture disks to whatever pressure we shut that
 24 well in at, so it was at -- it was only at that point
 25 that -- that I became concerned about Well Integrity.

00158:01 Q. M-h'm. Was it only the potential for the lift
 02 that gave you concerns about the rupture disks?

03 A. Yes. If the hanger hadn't lifted off the --

04 off its seat, which -- which I -- I believe it hadn't,
 05 then the rupture disks couldn't be exposed to the
 06 pressure, and, therefore, the integ -- the rest of the
 07 integrity of the well should have been good.

08 Q. And that's based upon the explanation that you
 09 gave us earlier today, that hydrocarbons would have to
 10 breach the three barriers or four barriers, depending
 11 upon whether it came up through the production piping
 12 as opposed to outside the production piping in order to
 13 access the rupture disks; isn't that accurate?

Page 158:15 to 160:18

00158:15 A. No. So the -- the -- the -- the testimony I
 16 was giving earlier was, as we agreed, was in general
 17 arrangements of production wells. In -- in this well
 18 we didn't have production tubing, and so this well had
 19 hydrocarbons flowing in an unplanned arrangement up the
 20 inside of the casing so they were directly against the
 21 production casing.

22 So if the well had -- barrier had been
 23 breached, then the hydrocarbons and -- and pressure
 24 would have been acting on the -- the -- the rupture
 25 disks. That's -- and that's why I was concerned,
 00159:01 that's why we did a considerable amount of work to
 02 understand whether that was a -- a valid concern or
 03 not.

04 Q. (By Mr. Bruno) Well, I'm confused because I
 05 asked you this morning whether or not if the
 06 hydrocarbons in the ordinary well setting entered into
 07 the casing outside of the production tubing, as you
 08 called it --

09 A. M-h'm.

10 Q. -- now you tell me that there was really three
 11 or four barriers that would prevent the hydrocarbons
 12 from ever impacting the rupture disks. Do you recall
 13 that testimony?

14 A. No, you -- you -- you decided that there was
 15 three or four barriers in total, which the rupture
 16 disks were one of the barriers.

17 Q. Right.

18 A. I said that there were at least two barriers
 19 before it could get to the rupture disks.

20 Q. All right. Well, however many --

21 A. In a -- in a production well. Sorry.

22 Q. However many barriers one counts, you've just
 23 told us that in this scenario with hydrocarbons
 24 entering the casing, outside of the drill pipe, that
 25 those hydrocarbons could access the rupture disks;
 00160:01 isn't that what you just told us?

02 A. I told you that if the -- in this case,
 03 because this is not a normal production well, it didn't
 04 have production tubing, and it hadn't been completed.

05 Q. Is this --

06 A. In this case we had wells -- oil flowing up

07 the production casing, which is not what you would
 08 normally choose to have in a normal production well,
 09 and in this case there would have been a single barrier
 10 between the production casing and the rupture disks,
 11 which would have either been the production casing
 12 itself or the wellhead seals.

13 Q. I thought I had asked you to consider that
 14 potential. If you remove the production tubing and you
 15 put drill pipe in its place, and you allow hydrocarbons
 16 to go on the outside of the production tubing, or in
 17 this case, the drill pipe, you still have hydrocarbons
 18 inside the production casing, don't you?

Page 160:20 to 162:22

00160:20 A. So if you allow the pro -- the hydrocarbons
 21 to -- to get inside the production casing, then you
 22 have hydrocarbons inside the production casing. If you
 23 switch --

24 Q. (By Mr. Bruno) I'm sorry.

25 A. And we were discussing earlier --

00161:01 Q. I meant -- I meant --

02 A. Sorry, can I finish?

03 Q. I made a mistake there. I'm -- I'm -- I'm --
 04 I'm -- I'm getting confused with the terminology.

05 You told me that the tubing, you called it
 06 production tubing, that is the tube through which the
 07 hydrocarbons pass from the reservoir into a container
 08 so that the hydrocarbons can be sold, right?

09 A. (Nodding.)

10 Q. Okay. And I suggested to you that if there
 11 was the possibility of the hydrocarbons getting outside
 12 of the tube, okay?

13 A. (Nodding.)

14 Q. And, therefore, between the tube and the
 15 outside wall of the casing, they would have access to
 16 the rupture disks. And you told me "No."

17 And now I'm hearing, that in the context of
 18 Macondo, one of the thoughts that you had was that the
 19 hydrocarbons, because they were going outside of the
 20 drill pipe and inside of the casing, they had access to
 21 the rupture disks, which seems to be, to me, to be the
 22 same scenario.

23 A. No. I -- I think I answered you accurately in
 24 the earlier testimony. We can go through it again, if
 25 you -- if you -- if you wish.

00162:01 But we were specifically, then, at your
 02 request, talking about general production wells.

03 Q. M-h'm.

04 A. This is not a general production well. This
 05 was a well that was still effectively under
 06 construction and had not got completion tubing in it.

07 So on this well, we did already have
 08 hydrocarbons in the production casing, so -- because
 09 there was no production tubing for them to be in.

10 And so, therefore, there was only a single
 11 barrier left to breach before they would contact the
 12 rupture disks, and I should add the casing -- the --
 13 the intermediate casing that the rupture disks were
 14 contained in. And if I can add further, on a -- on a
 15 normal well, other than Macondo, whether you had
 16 rupture disks or not, that would be of concern, as to
 17 whether the casing had the integrity to withstand
 18 the -- the pressure of -- of oil.
 19 Q. M-h'm. And so what you're telling me is that
 20 if there had been a liner with a tieback, then there
 21 would have been no way for the hydrocarbons to come
 22 into contact with the rupture disks?

Page 162:24 to 163:18

00162:24 A. No. I -- I'm not saying that at all. If you
 25 had designed the well completely differently, with a
 00163:01 liner and tieback, and that was intended to be your
 02 production casing, then there would have been no reason
 03 to have designed the next string of casing to the same
 04 strength as we had in Macondo.
 05 So you would have had actually, possibly, a
 06 greater possibility, if the hydrocarbon had breached
 07 the production casing, which the -- the tieback would
 08 have become of -- of it breaching the next string of
 09 casing.
 10 But we're talking very hypothetically here --
 11 Q. (By Mr. Bruno) M-h'm.
 12 A. -- and that wasn't the arrangement of this
 13 well.
 14 Q. Well, in the context of drilling, and maybe I
 15 didn't ask the question properly, what study or
 16 research did BP do to ascertain whether or not the
 17 rupture disk was an appropriate device to be used
 18 during drilling?

Page 163:20 to 164:22

00163:20 A. I think we -- the same -- the same research.
 21 We -- we made sure that we were absolutely certain as
 22 to the capacity of those rupture disks, the point at
 23 which that they would fail, including a statistical
 24 analysis --
 25 Q. (By Mr. Bruno) M-h'm.
 00164:01 A. -- of -- of -- of a large number of rupture
 02 disks that were tested to failure.
 03 And then, in addition to that, we had a
 04 program where every single rupture disk, before it was
 05 installed, was tested to a known value. And so,
 06 therefore, we knew, much better than you would normally
 07 know, exactly what the integrity of our casing string
 08 was.
 09 Q. Well, did you know that in the case of a

10 blowout, during Drilling Operations, that the rupture
11 disks could be dislodged?

12 A. No, and if the inference is your -- of your
13 question is that -- that do I think the rupture disks
14 were dislodged in -- in this well, I don't think the
15 rupture disks were dislodged either.

16 Q. M-h'm. Wasn't that a major concern at the
17 time that the parties were considering installing the
18 capping stack and closing it?

19 A. It was a -- yes, it was a concern for various
20 parties, yes.

21 Q. Right. And your testimony is that it wasn't a
22 concern to BP at that time?

Page 164:24 to 165:06

00164:24 A. It wasn't -- it was something I was satisfied
25 that we hadn't ruptured the rupture disks, and that the
00165:01 pressures that we were experiencing were well within
02 the capability of the rupture disks, even were they
03 exposed, which I didn't believe them to be exposed.

04 Q. (By Mr. Bruno) So I understand from your
05 testimony that at no time did you believe the rupture
06 disks had been dislodged?

Page 165:08 to 165:21

00165:08 A. I always considered that there was a
09 possibility that the rupture disks might have been
10 dislodged. This is -- this was a most unusual event.
11 So if the hanger had come off its seat, although I
12 couldn't explain how they might have become dislodged,
13 I considered the possibility that they might have
14 become dislodged.

15 Q. (By Mr. Bruno) Well, you considered it, but
16 you concluded that they hadn't been dislodged?

17 A. Correct.

18 Q. I thought that's what you told me?

19 A. Yes.

20 Q. All right. So then at no time did you ever
21 believe that the rupture disks had been dislodged?

Page 165:23 to 167:09

00165:23 A. Belief? There were times during the event,
24 because we had difficulty explaining what was going on,
25 I did have times when I certainly considered that they
00166:01 might have been dislodged.

02 Q. (By Mr. Bruno) And what --

03 A. I couldn't -- I couldn't explain how they
04 might have become dislodged. You say "dislodged,"
05 but -- but -- but ruptured.

06 Q. Ruptured. Well, what were those

07 circumstances? Please share with us when you had that
08 feeling or that thought.

09 A. The -- it is the only time I had that thought
10 was that they had already become dislodged was -- or
11 they already might have become dislodged was when we
12 were trying to understand why top kill had not worked.

13 Q. So you thought that was an explanation as to
14 why top kill didn't work?

15 A. I had a Team and we actually wrote a paper on
16 that, yes. So it was a -- it was, to our minds, a
17 plausible explanation as to why top kill had not
18 worked, even though we couldn't explain why the rupture
19 disks had ruptured.

20 Q. Right. And -- and you were able to exclude
21 a -- a higher flow than anticipated before you reached
22 the conclusion that that might be the rupture disks?

23 A. I didn't exclude any explan -- explanations, I
24 just included ones that I considered plausible.

25 Q. Well, isn't that the most obvious one; that
00167:01 is, that the flow was higher than you anticipated?

02 A. H'm --

03 Q. I mean, that's why you hired the guy to do the
04 models.

05 A. No.

06 Q. Okay.

07 A. There were a number of -- a -- a number of
08 other issues that were very difficult to explain.

09 H'm --

Page 172:02 to 172:05

00172:02 Q. Okay. Were you familiar, Mister -- Mr. Tooms,
03 with how the -- the Teams were organized with regard to
04 the various well control methods that were being
05 contemplated?

Page 172:07 to 173:05

00172:07 A. Could you be specific about what -- whether --
08 whether you're talking about the response to the
09 Macondo incident or -- or --

10 Q. (By Mr. Bruno) You --

11 A. -- what you're talking about?

12 Q. I was referring to the response of the Macondo
13 incident.

14 A. So, yes, I was -- I was familiar with how
15 the -- the -- the various work streams and Teams that
16 were -- were ongoing.

17 Q. When is the first time that the capping stack
18 was considered?

19 A. Around about May -- actually, I -- in the form
20 of a capping stack, it would have been considered
21 around about May 30th it -- sorry, April 30th in the
22 form of a -- what we call the swing valve, a few days

23 earlier than that, May -- May -- April 26th, maybe.
24 Q. And why was not the swing valve employed?
25 A. Ultimately, because we thought the capping
00173:01 stack was better, but the swing valve was kept as a --
02 as an option for a long time.
03 Q. All right. Well, sir, I'm -- I'm confused.
04 You -- you -- you're calling the swing valve a capping
05 stack?

Page 173:07 to 173:13

00173:07 A. No, I'm not.
08 Q. (By Mr. Bruno) Okay. Well, when was the first
09 time that the capping stack was considered as an
10 option?
11 A. Approximately April 30th.
12 Q. Okay. Why did it take so long to actually
13 install it, then?

Page 173:15 to 175:18

00173:15 A. There were concerns over -- that the risks and
16 so on, of in -- installing a capping stack, and
17 not that -- we -- we -- we didn't want to make the
18 situation worse.
19 Q. (By Mr. Bruno) All right. Well, were you part
20 of that Team?
21 A. Which Team?
22 Q. The Team that was considering the capping
23 stack.
24 A. It was my Team that initially considered the
25 capping stack, yes.
00174:01 Q. All right. It's your Team. So tell us, then,
02 what were the concerns that you had about utilizing the
03 capping stack?
04 A. I had a number of concerns of utilizing the --
05 the -- the -- the -- the -- the capping stack, if -- if
06 you're referring to the final device that we used, in
07 that it required some very difficult operational
08 techniques such as unbolting the flange on top of the
09 flex joint.
10 There's a seal on top of the flex joint that
11 we -- we thought was quite prone to getting washed out
12 if we tried to install a capping stack on it at the
13 time.
14 The flex joint itself, if I remember
15 rightly -- or -- or -- or aspects of it, was only rated
16 to 5,000 psi, and we knew our shut-in pressures would
17 exceed that. And then there was the whole issue of
18 placement of -- of the capping stack.
19 So there were a number of -- of -- of -- of --
20 of issues.
21 And then others were particularly concerned
22 that if we took out a restriction to flow in terms of

23 the riser kink, that the -- that the flow might become
 24 much greater. And that if that happened, and we were
 25 unable to install the stack, that we would be in a
 00175:01 worse situation.
 02 Q. How did you know what the shut-in pressure
 03 was?
 04 A. We didn't absolutely know what the shut-in
 05 pressure was, but we knew accurately what the various
 06 reservoir pressures were. There's multiple sands down
 07 there, and we had measured -- well, the -- the Team who
 08 had drilled the well had measured those pressures
 09 accurately when they drilled the well.
 10 Q. Well, wouldn't those shut-in pressures assist
 11 you with determining flow rates?
 12 A. No, I don't think so. The reservoir pressure,
 13 yes, but the shut-in pressure, no.
 14 Q. Well, you had the reservoir pressure, didn't
 15 you?
 16 A. I did.
 17 Q. And why wouldn't the reservoir pressure assist
 18 you with flow rates?

Page 175:20 to 176:07

00175:20 A. Well, I as -- it -- it -- it would assist, but
 21 it -- it wouldn't enable you on its own. There are
 22 many other -- many, many other variables that you need
 23 to know, other than the reservoir pressure to determine
 24 the flow rate.
 25 Q. (By Mr. Bruno) Well, I understand that. But
 00176:01 it was certainly a piece of information that could be
 02 utilized in order to estimate the flow rate.
 03 A. I don't know of a single person who would be
 04 able to, with the reservoir pressure, estimate flow
 05 rate.
 06 Q. Well, did your Team ever, in fact, estimate
 07 flow rates? In other words, come up with a number?

Page 176:09 to 176:11

00176:09 A. Not during the event, no.
 10 Q. (By Mr. Bruno) Not even an estimate?
 11 A. No.

Page 194:18 to 195:08

00194:18 Q. We're in number -- we're in No. 2.
 19 (Exhibit No. 6187 marked.)
 20 Q. (By Mr. Bruno) It's 6187. This is how it will
 21 be marked.
 22 A. Tab 16?
 23 Q. Tab 16. It's an E-mail from W. Leith McDonald
 24 to you, update on the options and data requirements

25 spreadsheet.
 00195:01 A. M-h'm. I have it.
 02 Q. All right. Now, if we look at the
 03 spreadsheet, there's a -- a description of options.
 04 Were groups of individuals organized around these
 05 options?
 06 A. (Reviewing document.) Yes.
 07 Q. All right. So who was involved with regard to
 08 the installation of the cofferdam?

Page 195:12 to 195:13

00195:12 A. So the inspection of the cofferdam was Richard
 13 Lynch.

Page 196:06 to 196:09

00196:06 Q. The Group did contemplate the formation of
 07 hydrates, though, didn't they?
 08 A. The Group did contemplate the formation of
 09 hydrates, indeed.

Page 198:03 to 203:08

00198:03 Q. Okay. Fair enough.
 04 Insofar as "Lessons Learned," with regard
 05 to -- and I neglected to ask this before -- for the
 06 future do you believe that there should be some gauges
 07 or devices which would allow the calculation of flow in
 08 the event of a blowout, obviously at the sea bottom?
 09 A. I think I would refer back to my earlier
 10 answer, that it would be useful if one could know
 11 particularly pressures, and it would also be useful if
 12 you could know flow. But if that was to compromise the
 13 integrity of the system, then that would have to be
 14 evaluated.
 15 Q. Well, how would the installation of such
 16 gauges compromise the integrity of the system?
 17 A. Very easily. To -- to stick a gauge on a BOP
 18 stack, or -- or anything else of that matter, that's
 19 meant to contain high pressure requires a great deal of
 20 engineering, and we try and avoid penetrations into the
 21 BOP stack as much as possible. Any pen -- any
 22 penetration has the potential to become a leak path
 23 which may happen during normal operations, and we
 24 wish -- wish to avoid that.
 25 Q. M-h'm. All right. And who was involved in
 00199:01 closing the VBR to seal on the drill pipe?
 02 A. A number of people, but from BP's side James
 03 Dupree and Harry Thierens, to -- to my knowledge.
 04 Q. Okay. Was it ever done?
 05 A. We -- yes, we did close VBRs. In fact,
 06 initially we closed them inadvertently because the BOP

07 stack was -- was wired up wrong; so, yes.

08 Q. Now, the top kill junk shot, I believe you
09 made a comment later on in the documents in your
10 handwriting, "Ball bearings is close to insanity." Do
11 you recall that?

12 A. I -- now you've mentioned it, I do recall it,
13 yes.

14 Q. All right. Did that have to do with the
15 junk -- with the top kill?

16 A. No.

17 Q. I'm sorry. It says well -- "Top kill-junk
18 shot." It had to do with the junk shot?

19 A. No.

20 Q. No? What was the ball bearing discussion?

21 A. It was an idea that was promoted by Dick
22 Garwin, who is one of the Science Team. He's a very
23 intelligent Scientist. He suggested quite strongly,
24 actually, that we should pour ball bearings into the
25 well in order to try and seal the flow, or stem the
00200:01 flow of the well, and it would have been a strange
02 thing to do.

03 Q. Of course. Now, the top kill junk -- junk
04 shot, who was in charge of that?

05 A. I can't recall exactly who was in charge of
06 it. I can recall that I think Bill Kirton was involved
07 in it, and Mark Mazzella had an involvement. There may
08 have been others.

09 Q. Okay.

10 A. There may have been somebody else actually in
11 charge.

12 Q. All right. How about top kill well kill?

13 A. So top kill was initially Mark Patterson and
14 then I think Harry Thierens got involved in that, too,
15 and others may have been involved.

16 Q. Now, under the column which is entitled "Data
17 which would increase the probability of success," we
18 see pressure downstream of BOP. And what they're
19 referring to, of course, we talked about this morning
20 and that is it would be extremely helpful to know the
21 flow out of the -- out of the leak in order to
22 ascertain the likelihood of success for a top kill well
23 kill; is that correct?

24 A. Actually, what I -- what I wanted to -- to
25 measure that -- I think -- I think this is my document.
00201:01 I think that actually says on there, on the bottom of
02 it --

03 Q. M-h'm.

04 A. -- "Paul Tooms."

05 What I wanted to know there was actually what
06 it says was the pressures.

07 Q. Oh. So you weren't interested in flow?

08 A. The -- at this stage knowing the pressures at
09 various points in the system, given that all we were
10 trying to do was get this well closed in and -- and
11 evaluate the best option for getting the well closed

12 in, the -- the major issue is to understand pressures
 13 and the -- therefore, the -- where the restrictions to
 14 flow were in the system.

15 Q. All right. And then "Riser hot tap," who was
 16 in charge of that?

17 A. I think that came under my Team, and I had my
 18 Pipeline Technical Authority, who's Les Owen, in -- in
 19 charge of that.

20 Q. Okay. The next one is "Drill pipe capping."
 21 Who would have been in charge of that?

22 A. I don't know. It was -- that was the -- the
 23 piece of drill pipe that was sticking out of the seabed
 24 with a little bit of oil dripping out of it.

25 Q. All right. "Riser removal"?

00202:01 A. That was within my Team, and -- and I had
 02 various people assigned to it. I can't remember who it
 03 was.

04 Q. And then last is "LMRP removal" and the "BOP
 05 installation."

06 A. At this stage, I was the proponent of that.

07 Q. Now, is -- which one of these would
 08 characterize the capping stack?

09 A. So the -- the one that's close -- the most
 10 closely related to capping stack -- well, two of them,
 11 really -- is the No. 7 and 8. So in order to install
 12 anything, we had to do the riser removal first, and
 13 No. 8 were the -- had to do with the removing the
 14 levering riser package and installing a BOP or
 15 installing a capping stack on top. They were closely
 16 related.

17 Q. At this time, when this document was written,
 18 in May -- it's May 5 -- let me just verify that --
 19 May 5, were you contemplating developing a new capping
 20 stack?

21 A. We were. I mean, there are -- there are
 22 options on -- that were being considered that aren't on
 23 my list here.

24 Q. Okay.

25 A. So we had -- which we already discussed, we
 00203:01 had a concept called the "swing valve," we had the
 02 con -- concept called the "capping stack," and later we
 03 had -- I don't remember quite when it was developed,
 04 something called the "Slocum overshot." And I didn't
 05 include the ball bearings.

06 Q. Okay.

07 A. Nor have I -- sorry. Nor have I included the
 08 relief wells in here.

Page 203:24 to 204:14

00203:24 Q. (By Mr. Bruno) All right. We're at Tab 65,
 25 and we've learned that there are three documents under
 00204:01 this Tab. So the first document is the first set of
 02 Bates numbers. And it will begin with 02206040 and it
 03 will end with 02206053. We're going to mark that as

04 6188.
 05 The second document in the Group starts with
 06 Bates num --
 07 A. That one.
 08 Q. Okay. This is one of those natively produced
 09 things, and it's the same version, we'll just mark this
 10 one as 6189.
 11 (Exhibit No. 6189 marked.)
 12 Q. (By Mr. Bruno) And the third one is 2206054 in
 13 seriatim to 22206071, we're marking that as 6190.
 14 (Exhibit No. 6190 marked.)

Page 210:14 to 211:07

00210:14 Q. Okay. The next slide, which discusses
 15 containment, I know it's a little tiny slide, are you
 16 able to tell us what you intended to convey here?
 17 A. I think this was a -- a slide taken from a
 18 presenta -- a general presentation on -- on what
 19 happened during Macondo, and I can't recall exactly
 20 which time I used this, but what I believe I would have
 21 been trying to convey with this is this is an example
 22 of where things get very, very complex.
 23 Q. All right. The next slide, it's entitled
 24 "Decomplexifying the capping stack."
 25 A. Correct.
 00211:01 Q. All right. Were -- and this -- we have a date
 02 on this one it looks like. Maybe January 24, 2010?
 03 A. (Reviewing document.) I -- I can't see a date
 04 on my copy.
 05 Q. Okay.
 06 A. Is that the same slide pack? That's a
 07 different slide pack. You're in -- you're in the --

Page 211:09 to 214:03

00211:09 Q. (By Mr. Bruno) They are the same photo,
 10 though.
 11 A. They -- they would be -- the -- it's a
 12 commonly reproduced photo that --
 13 Q. Sure.
 14 A. -- yeah.
 15 Q. So if you look in the other version --
 16 A. Yeah.
 17 Q. -- Boston, January 24, 2010.
 18 A. So in -- so in this second document, this one,
 19 I -- I -- I do know where I presented this. This was
 20 to the Academy that we've run with MIT in Boston.
 21 Q. And when was that?
 22 A. In January.
 23 MR. KRAKOFF: I think just for the
 24 record, he's referring then to Exhibit 6189.
 25 A. The one -- the one that you're holding at the
 00212:01 moment.

02 Q. (By Mr. Bruno) They're -- they're both the
03 same. The pictures are identical.
04 MS. KARIS: Except one has a date on the
05 bottom and one doesn't.
06 MR. BRUNO: I understand.
07 Q. (By Mr. Bruno) But they're both identical
08 pictures.
09 And what's curious is that you -- you
10 think this was -- well, is -- is it possible -- this
11 picture, is that a picture of a capping stack?
12 A. The picture on the right is a picture of the
13 capping stack. The picture on the left -- I -- I --
14 which document are you looking at? Sorry, I --
15 Q. Well, again, it's -- and -- and I'm sure
16 it's -- it's just an incorrectly dated document,
17 because obviously, there was no capping stack in
18 existence in January of 2010, correct? Unless y'all
19 had one and we didn't know about it.
20 A. No, I would say it must be January 2011, I
21 guess.
22 Q. H'm --
23 A. Okay.
24 Q. -- well, that's why I was asking you if you
25 can recall what -- the presentation that you made in
00213:01 Boston, was it post-catastrophe or pre-catastrophe?
02 A. Well, clearly it was post-Macondo.
03 Q. Well, the dates could be in error. I mean,
04 it -- someone could have typed a zero or 1, or God
05 knows what. I'm just trying to see if you can help us
06 remember.
07 You think you gave the presentation after the
08 catastrophe?
09 A. I know that I gave a --
10 Q. Okay.
11 A. -- presentation -- several presentations after
12 the catastrophe.
13 Q. All right. So what are you trying to convey
14 here? What are we decomplexifying?
15 A. So the picture on the left is a -- what the
16 top of the riser looked like after we cut it off. So
17 the picture on the left is -- is what the riser looked
18 like after we cut it off. The picture on the right is
19 the -- the capping stack.
20 And the picture before is the -- so on the
21 slide before that, is the -- the arrangement of vessels
22 that we had to try and collect the hydrocarbon. And my
23 point in this slide was that capping the well was a
24 hugely less complex way of dealing with an incident
25 such as this, compared to containing it. That was the
00214:01 simply the point. It was --
02 Q. M-h'm. Okay. What's the next slide intend to
03 convey?

00214:17 A. The message I was trying to convey here is, in
 18 order to go from the arrangement of ever increasing
 19 collection vessels in a -- in a very narrow area to a
 20 much simpler solution, such as capping the well,
 21 required Engineers, BP Engineers, to have good skills
 22 at the -- at -- at -- at -- good interpersonal skills
 23 in order to achieve this objective of simplifying.
 24 Q. What interpersonal skills are you referring
 25 to? That would be dealing with the Government?

00215:01 A. There was a very strong body of opinion that
 02 wanted to keep us flowing the well rather than putting
 03 the capping stack on, and it required quite a deal of
 04 persuasion. And --
 05 Q. That's because of the concern for broaching?
 06 A. I don't know what the concern was.
 07 Q. They didn't share it with you?
 08 A. There seemed to be several concerns.
 09 Q. Was broaching one of them?
 10 A. Broaching could only occur once you shut the
 11 capping stack in.
 12 Q. Right. And they were threatening to make you
 13 reopen it, weren't they?
 14 A. The -- there -- there was an approach,
 15 certainly, from Thad Allen to ask us if we would
 16 consider reopening the well after --

Page 215:18 to 216:05

00215:18 A. -- we'd shut it in.
 19 Q. Because they were concerned about the
 20 potential for broaching; isn't that --
 21 A. I --
 22 Q. -- accurate?
 23 A. -- I never really understood why they wanted
 24 us to reopen it.
 25 Q. Okay. Because you had satisfied yourself that
 00216:01 the risk of broaching was small and nonexistent, right?
 02 A. We had satisfied ourselves that the well
 03 appeared to have integrity, and in the event that it
 04 didn't have integrity, that we could deal with that,
 05 too.

Page 216:19 to 216:20

00216:19 Q. Okay. And the next document, which is
 20 entitled "2010 Production Division - S&O Risk Summary."

Page 216:23 to 217:08

00216:23 A. I'm not sure I actually particularly used this
 24 document, but it's -- it's -- it's what it says it is.
 25 Q. (By Mr. Bruno) Do you understand it?
 00217:01 A. I understand an eight by eight risk matrix.

02 Q. M-h'm. And where does an event like this fall
03 on this matrix?
04 A. An event like --
05 Q. Macondo.
06 A. H'm -- I -- it -- it's clearly very high
07 severity, and I'm not sure where -- where the frequency
08 would -- would lie.

Page 218:06 to 218:25

00218:06 Q. All right. Next slide. It's described as
07 "Simple, reliable, effective Engineering in BP." It
08 says, "Reduce / Avoid complexity."
09 What are you conveying there?
10 A. We have a requirement for -- it -- it -- for
11 our continuous improvement, we have a requirement to
12 have a -- strive for inherently safer design. And what
13 I'm conveying there is simple solutions are often
14 inherently safer than complex solutions, even though
15 complex solutions may at first sign give you the
16 impression they're safe with lots of bells and
17 whistles. But "Simple elegant solutions are generally
18 inherently safer."
19 Q. Well, did you have a view that, before the
20 catastrophe, that there was some tendency not to use
21 simple, elegant solutions?
22 A. I -- I had a view that there's -- there's
23 times when Engineers, particularly Engineers external
24 to BP, like using -- or -- or tend to use complex
25 solutions, yeah.

Page 229:02 to 229:02

00229:02 QUESTIONS BY MR. CERNICH:

Page 229:08 to 229:22

00229:08 Could you -- could we start by telling me
09 where you were on April 20th, 2010?
10 A. Yes. April 20th, I would have been finding my
11 way back from Madrid, and I got stuck in the volcanic
12 ash event that we had in Europe about that time, and I
13 would, I think, overnight been crossing the -- the --
14 the Channel from France to England.
15 Q. And then how did you become involved in the
16 Macondo response?
17 A. I learned of the -- of the incident on the --
18 on the news, and as soon as I got back home, I -- I
19 can't remember that I E-mailed, but I contacted my --
20 my boss, Gordon Birrell, and offered my services.
21 Q. And could you describe -- describe your -- or
22 what happened from there?

Page 229:24 to 236:01

00229:24 A. So that -- at that point, having offered my
25 services, we weren't sure of the extent of the event,
00230:01 the -- it -- it wasn't possible for me to fly across to
02 the U.S. because of the volcanic ash, and I had
03 anticipated that I might get called in because of my
04 former drilling knowledge, and we decided at -- at that
05 point I would remain in the U.K. and help from the U.K.
06 end.

07 Q. (By Mr. Cernich) And what -- what was your
08 role from the U.K.?

09 A. So as we discussed in my earlier testimony,
10 I've had various titles, but I was Head of the Upstream
11 Engineering Center, which actually at the time was the
12 EPT Engineering Group. I was there to provide
13 Engineers, get -- and get them connected to the event
14 as they were needed.

15 Q. And at some point you went to Houston; is that
16 correct?

17 A. Yes. I think it was on -- I think it was on
18 the Sunday, which would have been about the 25th, I
19 flew across to Houston.

20 Q. And did you stay in Houston the remainder of
21 the Summer?

22 A. I -- I was in Houston through October,
23 although I did come out for short breaks from time to
24 time.

25 Q. Did you have a title on the Response Team?

00231:01 A. I don't know if I ever had a formal title. I
02 was -- I headed up the Engineering Group.

03 Q. But at some point you became the Leader of
04 BP's Technical Flow Assessment Team; is that correct?

05 A. After the response, I was nominated as the
06 Leader of the Flow Assessment Team, and that was at --
07 at the request by my lawyer friends in BP.

08 Q. And how long after the response was that?

09 A. It was certainly after the well was shut-in
10 and -- and cemented, but I can't remember when.

11 Q. It was after the relief well had intersected
12 the -- the Macondo Well?

13 A. I can't be sure exactly when it was. It
14 was -- there -- there was a -- a duration between the
15 cementing of the -- of the well, when I think everybody
16 was fairly sure the well was dead, and then there was
17 the formality of tagging it with the relief well, and
18 I -- I don't remember exactly when in that period.

19 Q. And who were the lawyer friends you mentioned?

20 A. The -- I'm just trying to think of his name
21 now. Bob Stout.

22 Q. Is he a BP attorney?

23 A. Yes.

24 Q. In-house?

25 A. Yes.

00232:01 Q. Were there any other lawyer friends?

02 A. I -- yes. I mean, there are a multitude of --
03 of lawyers involved post-Macondo.
04 Q. Other BP lawyers?
05 A. There would have been other BP lawyers. I --
06 I can't remember which ones.
07 Q. Outside counsel?
08 A. Outside lawyers, as well, yes.
09 Q. And who were those outside counsel?
10 A. I can't remember all the names. The -- the
11 name I remember is Steven Palmer.
12 Q. Do you recall the name of his firm?
13 A. No, I don't know which firm it was exactly.
14 Q. And as Leader of the Technical Flow Assessment
15 Team, who did you report to?
16 A. At -- at that time, I reported to Bob Stout.
17 Q. And as -- and as of November 22nd, 2010, you
18 still had responsibilities for flow evaluation and flow
19 assessment; is that correct?
20 A. I still did, although my involvement was
21 becoming much more limited.
22 Q. And what were your responsibilities at that
23 time?
24 MS. KARIS: With respect to flow
25 assessment?
00233:01 MR. CERNICH: Correct.
02 MS. KARIS: I'm going to assert privilege
03 at this point. I think the witness has adequately
04 established that was done at the request of counsel,
05 and so we would instruct him to not answer, in light of
06 privilege.
07 Q. (By Mr. Cernich) Were you preparing flow
08 estimates --
09 MS. KARIS: Objection.
10 Q. (By Mr. Cernich) -- at that time?
11 MS. KARIS: Objection. Instruct the
12 witness not to answer.
13 MR. CERNICH: I'm not asking for
14 communications with counsel. I'm just asking what the
15 witness was doing.
16 MS. KARIS: He wa -- anything he was
17 doing that was at the request of counsel, we would
18 assert privilege over.
19 Q. (By Mr. Cernich) Who else was on the Technical
20 Flow Assessment Team?
21 A. Well, that -- that -- Trevor Hill was -- was
22 on the Team.
23 Q. And who is Mr. Hill?
24 A. He's my Flow Assurance Technical Authority.
25 Q. Is he still employed by BP?
00234:01 A. Yes, he is.
02 Q. And Mr. Hill worked with you during the
03 response, as well, correct?
04 A. He did.
05 Q. And he performed flow -- flow rate estimates
06 during the response, did he not?

07 A. No, he did not.
 08 Q. Who -- who else was on the Technical Flow
 09 Assessment Team?
 10 A. Andy Hill, I think is on it.
 11 Q. And who is Mr. Hill?
 12 A. He has specialities in -- in geomechanics and
 13 surveying.
 14 Q. He's a BP employee?
 15 A. He's a BP employee.
 16 Q. And what was he doing before he became a
 17 member of the Technical Flow Assessment Team?
 18 A. He was assisting with the surveillance of the
 19 well after it was shut-in.
 20 Q. From a geophysics perspective?
 21 A. From a geophysics perspective and from
 22 acoustic monitoring to look for any signs of gas
 23 release and -- and so forth, yeah.
 24 Q. Did BP perform any seismic surveys of the well
 25 area after the well was shut-in?
 00235:01 A. Yes, we did. We performed an unprecedented
 02 number of seismic surveys after the well was shut-in.
 03 Q. And did you contract with someone for those
 04 services?
 05 A. Yes.
 06 Q. And who did you contract with?
 07 A. I don't recall. Andy Hill would have --
 08 would -- would have organized it. If -- if I spend
 09 long enough thinking about it, I might be able to drag
 10 up the name, but I -- I can't recall at the moment.
 11 Q. Do you know who -- who maintains the data from
 12 those seismic surveys?
 13 A. Who -- what, who keeps the data or who --
 14 Q. Correct.
 15 A. No.
 16 Q. Would Mr. Hill know?
 17 A. Yes, he would know.
 18 Q. Was there anyone else on the Technical Flow
 19 Assessment Team?
 20 A. Yes, there was. There was Cindy -- and I
 21 can't remember her second name at the moment, which is
 22 embarrassing, who was the -- look -- looks after
 23 Explor -- is the Exploration VP for Gulf of Mexico.
 24 Q. Cindy Yeilding?
 25 A. Cindy Yeilding. Thank you.
 00236:01 Q. And is she a Geologist?

Page 236:03 to 236:24

00236:03 A. I think she is a Geologist, yes. I think.
 04 Q. (By Mr. Cernich) Anyone else on that Team?
 05 A. There may have been. I don't recall any
 06 others at the moment, but --
 07 Q. Okay.
 08 A. -- I mean, they were working for Bob Stout,
 09 not for me.

10 Q. Okay. But you were the Leader of the Team?
 11 A. I was designated the Leader, insomuch as I was
 12 requested to make sure people were made available.
 13 Q. But you don't recall anyone else who was on
 14 the Team?
 15 A. H'm, I -- I -- I can -- I recall other names.
 16 I can't recall now whether they were actually on the
 17 Team or not on the Team.
 18 Q. Okay. So we've got Travor Hill, Andy Hill,
 19 and Cindy Yeilding and yourself, is what you can
 20 recall?
 21 A. Correct.
 22 Q. And --
 23 A. Actually, I can re -- recall another one. Bob
 24 Merrill, M-e double r -i- double l, I think.

Page 237:01 to 237:10

00237:01 Q. (By Mr. Cernich) And Mr. Merrill is a
 02 Reservoir Engineer; is that correct?
 03 A. He certainly looks after Reservoir
 04 Engineering. I believe him to be a Reservoir Engineer.
 05 Q. And you mentioned earlier making people
 06 available for that Team. Did you make the decision as
 07 to who would serve on that Team?
 08 A. No.
 09 Q. Was that decision made by attorneys?
 10 A. Yes.

Page 237:12 to 240:24

00237:12 Q. (By Mr. Cernich) Does the Team still exist?
 13 A. Yes, as far as I know.
 14 Q. And are you still a member?
 15 A. I believe I would be regarded as a member, but
 16 I haven't actually taken part in it for some time.
 17 Q. When -- when was the last time you took part
 18 in it?
 19 A. I would estimate around about February this
 20 year.
 21 Q. And so is it your testimony that the only --
 22 the only estimates of flow that this Flow Assessment
 23 Team prepared were at request of counsel?
 24 MS. KARIS: Object to form. I'm going to
 25 instruct the witness not to answer with respect to what
 00238:01 work the Team has done, under privilege.
 02 Q. (By Mr. Cernich) Well, you're Head of -- you
 03 were the Leader of the Flow Assessment Team, correct?
 04 MS. KARIS: Same -- well, he can answer
 05 that question.
 06 A. Yes.
 07 Q. Okay.
 08 MR. CERNICH: But he can't answer whether
 09 the Flow Assessment Team assessed flow?

10 MS. KARIS: That would disclose the scope
11 of privileged work.

12 MR. CERNICH: Okay.

13 Q. (By Mr. Cernich) And prior to being engaged by
14 counsel to do flow assessment work, it's your
15 testimony -- testimony that you never prepared any flow
16 estimates?

17 A. I never prepared any flow estimates.

18 Q. Did anyone that you were working with on the
19 response to the Macondo Well prepare any flow
20 estimates?

21 MS. KARIS: Counsel, just so we're clear,
22 we're now asking outside the scope of privileged work?

23 MR. CERNICH: Well, it's my understanding
24 from the testimony we've heard so far that the
25 privileged work started after the response effort.

00239:01 MS. KARIS: I -- I -- I agree with you.
02 I just want to make clear that your questions then
03 pertain to work that was done pri -- prior to the
04 formation of the Assessment Team.

05 MR. CERNICH: Okay.

06 MS. KARIS: And so that the witness
07 understands in responding to these questions, the
08 responses should be limited to work that was done prior
09 to the formation of the Assessment Team or work done at
10 the request of counsel.

11 A. So the only -- in answer to your question, the
12 only flow rate assessment that I can recall being done
13 prior to the formation of this Team was a single
14 estimate that was done after the -- well, at the point
15 of shutting-in the capping stack, and an estimate was
16 done at that stage.

17 Q. (By Mr. Cernich) And who prepared that
18 estimate?

19 A. That was Farah Saidi, and it was a very
20 approximate, back-of-the-envelope calculation, based on
21 broad-based assumptions.

22 Q. Okay. And what were those assumptions?

23 A. She made assumptions about K factor, about the
24 geometry of the -- of the capping stack, which she
25 didn't know for certain. Temperatures. Those -- those
00240:01 are the types of assumptions that I remember her
02 making. She would also have made assumptions about
03 gas/oil ratio and so forth, but they were probably
04 better defined.

05 Q. And what was that estimate?

06 A. I can't recall absolutely what the estimate
07 was, but she gave me a range as an indicator, and I
08 think that that range at the time was 35- to
09 40-something-thousand barrels a day, but it came from
10 her with a lot of caveats about the fact that she --
11 this was a ballpark figure that had no bearing and that
12 I shouldn't use it for any substantive calculation.

13 Q. And the -- you -- you just mentioned a range
14 of 35,000- to 40-something-thousand; is that --

15 A. M-h'm.
16 Q. -- right? And that number doesn't stick in
17 your mind, what the "40-something" was?
18 A. No. Why would it?
19 Q. It seems like a pretty important number,
20 considering all of the discussions at the time
21 regarding flow rate, the discussions between your
22 Engineering Team, and the discussion -- and the --
23 the -- the DOE Science Teams, and various
24 representatives in the United States Government.

Page 241:02 to 241:07

00241:02 A. (Nodding.)
03 Q. (By Mr. Cernich) And so I guess I'm wondering
04 why that -- why it's 40-something and you can't recall
05 a -- a -- a better -- you don't have a better
06 recollection of the -- the high end of that -- of that
07 range.

Page 241:09 to 241:22

00241:09 A. I -- I just don't have a recollection because,
10 as I said to you, it was given to me as a
11 back-of-the-envelope conversation -- calculation --
12 that was full of assumptions, and I knew that we were
13 going to do better work and more -- more detailed work
14 later.
15 Q. (By Mr. Cernich) So you knew that you were
16 going to do more work later on that?
17 A. Yes.
18 Q. And were you going to -- to do that work
19 later?
20 A. No. I'm not a flow rate expert.
21 Q. Well, who was going to do that additional work
22 later?

Page 241:24 to 242:11

00241:24 A. So at that time?
25 Q. (By Mr. Cernich) (Nodding.)
00242:01 A. I didn't know who -- who specifically would do
02 that work later.
03 Q. How did you know there would be additional
04 work done later?
05 A. Because I talked to my flow rate experts and
06 they -- or flow assurance experts, and they told me
07 that -- that once we got the capping stack back, we'd
08 be able to make a better assessment of K factors and so
09 forth.
10 Q. Okay. And why were they going to -- why were
11 they going to do that work later?

Page 242:13 to 242:21

00242:13 A. I -- I can't -- I can't really answer the
14 specifically why.
15 Q. Well, the well was shut in at that point, and
16 you said that the flow rate -- I believe you testified
17 earlier that the -- the flow rate wouldn't have been
18 useful to you in your response efforts in shutting in
19 the well or responding to the well. So why would they
20 want to know the -- the number after the well was shut
21 in?

Page 242:25 to 243:14

00242:25 A. Why would BP want to know the number after the
00243:01 well was shut in?
02 Q. (By Mr. Cernich) (Nodding.)
03 A. Why -- why would the Government want to know
04 the well -- the flow rate after the well was shut in?
05 I guess for the same reasons.
06 Q. And that's the only flow rate estimate that
07 you're aware of, the one that was done by Farah Saidi
08 at the time of the shut-in with the capping stack prior
09 to the formation of the Flow Assessment Team?
10 A. That was the first time that we felt that we
11 had a way of making a -- a reasonable estimate of flow
12 rate.
13 Q. So you thought that that was a -- that was a
14 way to make a reasonable estimate of flow rate?

Page 243:16 to 244:01

00243:16 A. It -- it -- I thought that it was a way of
17 making an estimate of flow rate. It would still have a
18 lot of uncertainties around it. This is two-phase
19 flow, which is -- it's extraordinarily difficult to
20 measure two-rate flow, even under perfect conditions.
21 Even if I put flow in a pipeline where I know the size
22 of everything and have a multimillion dollar flow
23 meter, I still have a great deal of uncertainty of what
24 that flow rate is.
25 Q. (By Mr. Cernich) And that's why BP employs
00244:01 Flow Rate Engineers like Mr. Hill?

Page 244:03 to 245:10

00244:03 A. Mr. Hill is actually a Flow Assurance Engineer
04 which part of his expertise includes flow rate.
05 Q. (By Mr. Cernich) I -- I meant to say Flow
06 Assurance Engineers. And flow -- flow -- correct me if
07 I'm wrong, but Flow Assurance Engineers, their -- their
08 jobs are to essentially keep -- keep the oil flowing
09 through the pipes for BP; is that right?

10 A. The -- the major component of their work is --
 11 is to ensure that the -- the pipe -- the oil keeps
 12 flowing and doesn't get hydrates and wax and those sort
 13 of things, yeah.

14 Q. And they are -- and in order to do that job,
 15 they have to have some significant expertise in
 16 multiphase flow; is that correct?

17 A. That's correct.

18 Q. Do you have any sense of how many Flow
 19 Assurance Engineers are employed by BP worldwide?

20 A. It's -- I have -- I have the numbers written
 21 down. I -- I don't recall exactly the number at the
 22 moment. It's -- it's -- it is tens of them rather than
 23 hundreds of them.

24 Q. Okay. And how many -- how many of these Flow
 25 Assurance Engineers were involved in the response to
 00245:01 the Macondo Well?

02 A. I know of -- and this is thinking quickly, I
 03 know of six. There may be more.

04 Q. And one of those was Mr. Tavor Hill; is
 05 that --

06 A. Correct.

07 Q. -- correct?

08 And do you recall any of the other Flow
 09 Assurance Engineers?

10 A. Farah Saidi, Norm McMullen --

Page 245:20 to 245:21

00245:20 A. Adam Ballard, he was on the -- looking at the
 21 collection devices.

Page 246:01 to 246:02

00246:01 A. There's -- then there was one other one. I
 02 just can't remember his name at the moment.

Page 246:16 to 247:02

00246:16 Q. Okay. You mentioned some assumptions that
 17 were made by Ms. Saidi, temperature assumptions. Do
 18 you know what temperature of the fluid she assumed?

19 A. No, I don't.

20 Q. And do you know what the K factors she assumed
 21 were?

22 A. No, I don't.

23 Q. So I should probably ask Ms. Saidi those
 24 questions?

25 A. Correct.

00247:01 Q. You mentioned back of the envelope
 02 calculations. Does that envelope exist?

Page 247:04 to 247:19

00247:04 A. The -- we kept any -- any information that
05 we -- anything we wrote down, we -- we kept.
06 Q. (By Mr. Cernich) Did you share any of those
07 with the -- with the Government Scientist you were
08 working with?
09 A. I do remember talking to Tom Hunter, and he
10 worked for -- well, he's -- he was formerly in charge
11 of the national labs and then was -- had left the
12 Government's employee and was then a consultant, I
13 think, for Doug Chu, and -- and he had done a similar
14 calculation. So we just discussed and said the numbers
15 were approximately the same. They overlapped.
16 Q. They -- they overlapped? If I remember
17 correctly, the Government estimate from the capping
18 stack shut-in was 53,000 barrels per day. So did your
19 calculations overlap with the Government estimates?

Page 247:21 to 248:08

00247:21 A. The estimates that I was talking about were
22 the ones that Tom Hunter had done on the back of an
23 envelope, which I hope still exists, which he came up
24 and had a number that was lower than the 53,000 barrels
25 a day. I don't remember what it was, but all I
00248:01 remember is -- and that was the -- the point in which I
02 stopped worrying about the precise numbers, was that
03 Ms. Saidi's number and Tom Hunter's number were in the
04 same ballpark.
05 Q. (By Mr. Cernich) You said they overlapped.
06 A. I did.
07 Q. So that means the number that Mister -- that
08 Dr. Hunter gave you was 40 something thousand?

Page 248:10 to 248:17

00248:10 A. I don't recall. I recall that Doc -- Dr. Tom
11 Hunter had a range on his numbers and Farah had a range
12 on her numbers, and those two ranges overlapped. And
13 I -- and as I said, I don't believe that Farah's range
14 was above 40 something thousand barrels a day.
15 Q. Right. So if they overlapped, then they would
16 have had to have overlapped in the 40 something
17 thousand range?

Page 248:19 to 249:07

00248:19 A. They may have overlapped in the 30 something
20 thousand range. I don't recall.
21 Q. (By Mr. Cernich) But you have no recollection?
22 A. These were known to be quick estimates done
23 within hours of shutting in the -- the capping stack.
24 Q. And the only person from the Government you
25 discussed those were -- with were Mr. Hunter?

00249:01 A. The only person I recall discussing that with
02 was Mr. Hunter, yes.
03 Q. And do you know where Ms. Saidi's calculations
04 reside now?
05 A. No.
06 Q. Did you have a copy of those after she
07 provided them to you?

Page 249:09 to 249:16

00249:09 A. No. She just told me what she worked out.
10 Q. (By Mr. Cernich) So she didn't show you any
11 actual calculations?
12 A. No. It would have been no point really,
13 because I'm not a flow assurance expert.
14 Q. But you were the -- you were made the Leader
15 of BP's Technical Flow Assessment Team, correct?
16 A. Correct.

Page 249:18 to 249:19

00249:18 Q. (By Mr. Cernich) Did you have any experience
19 estimating flow rates prior to the Macondo incident?

Page 249:21 to 251:10

00249:21 A. Possibly, but certainly not in multiphase flow
22 or -- or -- this -- this -- I have no experience in
23 this type of flow measurement, no.
24 Q. (By Mr. Cernich) What kind of flow measurement
25 did you have experience in?
00250:01 A. In terms of drilling, the rate at which we're
02 pumping drilling fluid and how fast it's coming out of
03 the well, those sort of measurements.
04 Q. So only with regard to drilling fluid?
05 A. Yes.
06 Q. Do you know Doug Suttles?
07 A. I do know Doug Suttles, yes.
08 Q. And how do you know Mr. Suttles?
09 A. I know Doug Suttles because he's the -- or was
10 the -- I forget his exact title, but he was Head of the
11 last part of the Upstream business.
12 Q. Did you ever discuss flow rates with
13 Mr. Suttles?
14 A. I don't believe I did.
15 Q. Did you participate in the -- the daily calls
16 that I understand occurred between the Unified Command
17 and the Engineering Team in Houston?
18 A. The -- the daily calls that I think you're
19 referring to, the daily calls that were between Unified
20 Command in Houston and Unified Command in Robert, or
21 New Orleans.
22 Q. Okay. Did you participate in those?

23 A. I did in some of them, yes.
 24 Q. Did you discuss flow rate on any of those
 25 calls?
 00251:01 A. We certainly would have discussed the --
 02 the -- the flow rate estimates from -- that were being
 03 given to us by NOAA and so forth.
 04 Q. Do you know David Rainey?
 05 A. I do know David Rainey.
 06 Q. And how do you know Mr. Rainey?
 07 A. Largely as -- as an acquaintance in BP.
 08 Q. Did you ever discuss flow rates with
 09 Mr. Rainey?
 10 A. Not to my recollection, no.

Page 251:16 to 252:18

00251:16 Q. (By Mr. Cernich) Are you aware that Mr. Rainey
 17 was performing flow rate calculations in April and May
 18 of 2010?
 19 A. I certainly wasn't at the time.
 20 Q. But you're aware now?
 21 A. I've heard since that he was doing some work
 22 on flow rate.
 23 Q. Have you seen any of those calculations?
 24 A. No, I have not.
 25 Q. Are you aware that Mr. Rainey prepared flow
 00252:01 rate estimates that range from a thousand barrels per
 02 day to over a hundred thousand barrels per day?
 03 A. I -- I didn't see any of Mr. Rainey's work.
 04 So I don't know what he -- what he was producing.
 05 Q. So you never heard anything about the -- after
 06 the fact, you never heard anything about the flow rate
 07 calculations that Mr. Rainey performed?
 08 A. As I said, I heard that he had been performing
 09 some flow rate since --
 10 Q. (Nodding.)
 11 A. -- and I didn't get to see any of the flow
 12 rate calculations that he'd done.
 13 Q. But my question is: Did you ever hear that he
 14 had prepared flow rate estimates in excess of a hundred
 15 thousand barrels per day?
 16 A. I don't -- I don't believe I did, no.
 17 Q. You can't answer the question "Yes" or "No"?
 18 A. Well --

Page 252:25 to 253:23

00252:25 Q. (By Mr. Cernich) You can answer the question.
 00253:01 He can't tell you not to answer that question.
 02 A. If you want to restate the question, I'll
 03 answer it.
 04 Q. Okay. "Yes" or "No," did you ever hear that
 05 Mr. Rainey or anyone else within BP had prepared a flow
 06 rate estimate that exceeded a hundred thousand barrels

07 per day?

08 A. So I can't answer -- I find it difficult to
09 answer "Yes" or "No" to that -- that question, because
10 I don't know quite what you're referring to when you
11 say "flow rate estimate," if you are meaning flow rate
12 of the -- what we were estimating the flow to be coming
13 out of the well.

14 Q. Yes, I'm talking about estimates of the flow
15 coming out of the well.

16 A. Right. So in that case, the answer is, no, I
17 didn't come across anybody in BP who estimated the flow
18 coming out of the well at over a hundred thousand
19 barrels a day.

20 Q. Did you hear from someone that someone
21 estimated some other flow, aside from the flow coming
22 out of the well that was a hundred thousand barrels per
23 day?

Page 253:25 to 254:09

00253:25 A. So I -- I did hear that people had given
00254:01 various estimates of what unconstrained flow could be
02 from the well, not -- not what it was but what it --
03 what potentially it could be.

04 Q. (By Mr. Cernich) But you had no knowledge of
05 Mr. Rainey's calculations based on something called a
06 "Mass Balance" or a "Surface Expression Method" of
07 calculating the flow rate from the well?

08 A. I wasn't aware that Mr. Rainey was doing those
09 calculations.

Page 254:17 to 255:05

00254:17 Q. (By Mr. Cernich) Did you know that Mr. Rainey
18 headed up the -- the science efforts at the Unified
19 Command?

20 A. I -- not explicitly, no.

21 Q. What do you mean by "not explicitly"?

22 A. I didn't have any direct knowledge of what was
23 happening in Unified Command in -- in Robert compared
24 to what was happening in Unified Command in -- in
25 Houston. So I was aware that Mr. Rainey had some
00255:01 connection with technology in -- in -- in Robert, but
02 that was the limit of it. I didn't know he was, as you
03 say, heading up the science department.

04 Q. But you did know that he was doing flow rate
05 calculations?

Page 255:07 to 255:08

00255:07 A. No. I said I didn't know that he was doing
08 flow rate calculations.

Page 255:20 to 255:20

00255:20 (Exhibit No. 6191 marked.)

Page 255:23 to 256:17

00255:23 Q. (By Mr. Cernich) And this is an E-mail from a
24 Mr. Proegler, Mark Proegler, dated September 23rd,
25 2010, to yourself and David Rainey called "New Flow
00256:01 Estimate: BP Media Clips - September 23rd, 2010."
02 Do you recall seeing this E-mail?
03 A. Actually, I -- I don't recall it.
04 Q. Do you know who Mr. Proegler is?
05 A. No, I don't know who Mr. Proegler is.
06 Q. Do you have any idea why Mr. Proegler would be
07 sending this E-mail to you and to Mr. Rainey?
08 A. Well, since I don't know who Mr. Proegler is,
09 no, I don't.
10 Q. He's -- he addresses you by as -- by your
11 first name, "Paul," and -- and Mr. Rainey as -- as
12 "Dave," but you have no idea who Mr. Proegler is?
13 A. I -- I certainly don't recall an -- an --
14 anybody named Mr. Mark -- Mark Proegler.
15 Q. And you have no recollection of seeing this
16 E-mail?
17 A. No, I -- I -- I don't.

Page 257:24 to 258:02

00257:24 Q. (By Mr. Cernich) In the first week of July,
25 would you have wanted to know if someone within BP had
00258:01 calculated a flow rate est -- flow rate estimate of
02 53,000 barrels per day?

Page 258:04 to 258:10

00258:04 A. So in the first week of July, that was before,
05 I believe we -- we shut-in the capping stack. I wasn't
06 aware that anybody in BP had come up with a flow rate
07 of 53,000 barrels a day.
08 Q. (By Mr. Cernich) But if someone had, would you
09 have wanted to know that number? Would it have been
10 useful in your response efforts?

Page 258:12 to 258:14

00258:12 A. If somebody had, and I have no idea whether
13 they had or not, it would not at that stage have made
14 any significant difference to my response efforts.

Page 259:01 to 259:23

00259:01 Q. Now, I'm trying to recall earlier, we talked
02 about -- or you talked about, with Mr. Bruno, flow rate
03 as it related to the planning of the -- the top kill.
04 And I -- I just want to make sure I understand. Is
05 it -- is it your position that flow rate estimates
06 would -- would have been of no use in planning the top
07 kill effort?
08 A. Not at all.
09 Q. So they would have -- so accurate flow rate
10 estimates would have been helpful?
11 A. Accurate flow rate estimates would have been
12 helpful in planning top kill.
13 Q. And a -- a -- a flow rate estimate above a --
14 a certain threshold may have -- may have convinced you
15 that the -- the top kill effort would have been
16 fruitless; is that correct?
17 A. That's a -- kind of a -- kind of a theoretical
18 deal. We -- we had no way at that stage, beyond what
19 we were getting from NOAA, of making any accurate
20 assessment or, in our opinion, accurate assessment of
21 flow rate in the -- in -- in the subsea arena.
22 Q. But at that time, Mr. Rainey had been making
23 flow rate estimates, and those weren't shared with you?

Page 260:01 to 261:10

00260:01 A. I've already said I wasn't aware of -- that
02 Mr. Rainey was making flow rate estimates.
03 Q. (By Mr. Cernich) Okay.
04 A. If you have a copy of them?
05 Q. No, I don't. But since you haven't -- you
06 didn't see them at the time, it's not helpful now.
07 A. (Nodding.)
08 Q. Isn't it correct that you went over a chart of
09 flow rates with Mr. Lynch prior to the top kill?
10 A. I would expect that I -- that -- that -- it's
11 quite possible I went over a chart with Mr. Lynch of
12 flow rates prior to top kill, yeah.
13 Q. And what were the -- do you recall what the --
14 the flow rates on that chart were?
15 A. Can you be a bit more specific in your
16 question?
17 Q. What were the -- there were flow rates on a
18 chart; is that correct?
19 A. There were various charts being -- being --
20 being produced. I can recall one chart with -- with
21 flow rates on it, which was produced by Ole Rygg, which
22 was flow rate versus pumping in rate.
23 Q. And do you know where those charts are now?
24 A. No, I do not.
25 Q. Now, as -- as a -- I think we talked a -- a
00261:01 moment ago, a -- a -- a flow rate would be helpful in
02 determining the shut-in -- shut-in wellhead pressure,
03 correct?
04 A. You had said it would be helpful. I said it

05 was -- it would provide a point that I would need to
06 know the -- the entire flow history, because the --
07 the -- the volume would be more important than the
08 rate.

09 Q. But knowing that rate would assist in
10 examining the reservoir depletion, correct?

Page 261:12 to 261:21

00261:12 A. Well, like I just said, knowing -- knowing a
13 single rate wouldn't really help me in this --
14 assessing reservoir depletion.
15 Q. (By Mr. Cernich) What do you mean by a "single
16 rate"?
17 A. So if I knew a rate at a time, I don't know --
18 it doesn't inform me as to what the volume that is
19 flowed out the well is.
20 Q. But it's not a datapoint that would be useful
21 in your analysis?

Page 261:23 to 262:08

00261:23 A. I think I've already answered, and said that
24 it would be useful, but it wouldn't be -- it -- it
25 wouldn't solve the conundrum for me.
00262:01 Q. (By Mr. Cernich) All right. Did you ever
02 share any of the flow rates that were on the -- the
03 chart that was prepared for the top kill effort with
04 Mr. Suttles or Mr. Rainey?
05 A. I -- I personally don't recall sharing them.
06 Q. And how were those -- those flow rates in
07 the -- the chart, how were those -- how were those
08 prepared? How were those calculated?

Page 262:10 to 263:08

00262:10 A. I -- I don't know for sure, because I didn't
11 calculate them. I -- I think they were a range of flow
12 rates that -- with no calculation behind them, just --
13 just a -- just a range of numbers assumed.
14 Q. (By Mr. Cernich) And the numbers assumed by
15 whom?
16 A. Well, since it was all Ole Rygg who had, it --
17 it -- the chart that I'm thinking of, prepared the
18 chart, either they've assumed a -- a range of flow
19 rates to assess how effective top kill would be against
20 individual flow rates.
21 Q. And you engaged Mr. Rygg specifically for that
22 purpose?
23 A. I didn't engage Mr. Rygg at all.
24 Q. Who did engage Mr. Rygg?
25 A. The people in charge of the Top Kill Team.
00263:01 Q. And I believe you testified that that was

02 Mr. Patteson?
03 A. Certainly Mr. Patteson was leading the Top
04 Kill Team when I arrived. I don't know if he was the
05 actual person that engaged Mr. Rygg.
06 Q. Okay. I'm trying to recall if I asked this:
07 Did you -- did you share those -- any of those
08 estimates with Mr. Rainey or Mr. Suttles?

Page 263:10 to 263:17

00263:10 A. You asked me if I showed the chart to -- to
11 Mr. Rainey or Mr. Suttles, and I said, "No," and
12 I've -- I've also said that I don't think they were
13 flow rate estimates. I think they were just -- a range
14 of flow rates.
15 Q. (By Mr. Cernich) But -- so someone just put a
16 range of flow rates on a piece of paper? They weren't
17 estimates of anything?

Page 263:19 to 264:17

00263:19 A. That's what I just said, is that they show the
20 range of flow rates to assess whether the top kill --
21 at what range top kill would be effective or not
22 effective.
23 Q. (By Mr. Cernich) Okay. Okay. And do you
24 recall at what -- at what flow rate the top kill would
25 not be effective?
00264:01 A. It -- it -- it -- it's been a while since I
02 saw those charts. The -- a -- a -- the -- what I do
03 recall is that the modeling, again, it was the -- the
04 whole top kill effort had to be modeled using two-phase
05 flow models, which is quite difficult and has quite
06 a -- a range on it.
07 So there wasn't a -- it wasn't a black and
08 white picture as to where -- or a cut and dry picture
09 as to where it would or wouldn't work.
10 But what I do recall is that somewhere around
11 the 15,000 barrels a day flowing rate versus the
12 pumping-in rate that Ole had assumed that we might
13 achieve. It was something around 15,000 barrels a day
14 was the -- the break over point.
15 Q. Okay. And so could you assume that if the top
16 kill didn't work, that the flow from the well at that
17 point was approximately 15,000 barrels per day?

Page 264:20 to 265:18

00264:20 A. No.
21 Q. (By Mr. Cernich) And why not?
22 A. Because the -- there were so many variables in
23 the well, Ole's modeling, again, had made a lot of
24 assumptions. All these models have to make a huge

25 number of assumptions, they're -- they're extremely
00265:01 complex, there's inaccuracies even -- even if they get
02 the assumptions right.
03 And he had assumed a very straightforward
04 geometry for the -- for the -- the well condition. And
05 we know that the geometry -- we -- we've learned since,
06 when we cut the riser off, that the geometry was very,
07 very different.
08 Q. And what -- what geometry specifically are you
09 talking about?
10 A. I'm talking about the arrangement of drill
11 pipes through the BOP stack, the arrangement of the BOP
12 rams in the BOP stack, and so forth.
13 Q. And you mentioned the -- the complications of
14 mod -- of modeling the multiphase flow.
15 A. (Nodding.)
16 Q. But doesn't the -- the industry have multiple
17 models that it uses all the time to model multiphase
18 flow?

Page 265:20 to 266:23

00265:20 A. We have -- we have some models that model
21 multiphase flow, and -- and they are -- I wouldn't say
22 imprecise, but they -- but they -- they have -- they
23 give you a very variable answer, and they are difficult
24 to -- to use. There's not very many people that are
25 capable of actually running the models. And they can
00266:01 give you a wide range of answers, depending upon the
02 exact assumptions you've put in.
03 Q. (By Mr. Cernich) But BP has people in-house to
04 run those models, correct?
05 A. We have one or two, not very many.
06 Q. And some of those models would -- are PROSPER?
07 Is that one?
08 A. I don't think PROSPER is a multiphase model.
09 OLGA would be the --
10 Q. OLGA?
11 A. -- the primary one that we would use.
12 Q. Is ECLIPS one?
13 A. I don't think so, but I don't know. I'm --
14 again, I'm not an -- I'm -- I know generally about flow
15 assurance, I'm not an expert in it.
16 Q. Can I ask you to turn to Tab 49 in your
17 binder, please?
18 This is a document titled "BP'S PRELIMINARY
19 RESPONSE TO THE FLOW RATE AND VOLUME ESTIMATES
20 CONTAINED IN STAFF WORKING PAPER NO. 3."
21 Have you seen this document before --
22 A. Yes, I have.
23 Q. -- Mr. Tooms?

Page 266:25 to 267:13

00266:25 MR. CERNICH: I -- I will mark this as
 00267:01 Exhibit 6192.
 02 (Exhibit No. 6192 marked.)
 03 Q. (By Mr. Cernich) Do you know what it is?
 04 A. It's BP's Preliminary Response to Flow Rate
 05 and Volume Estimates that -- that -- that were issued
 06 by the Government, in the -- as it says, in the Staff
 07 Working Paper No. 3.
 08 Q. Did you prepare this document?
 09 A. I did not.
 10 Q. Do you know who did?
 11 A. It was prepared, I think, by the -- well, it
 12 was prepared by members of the Privilege Flow Rate
 13 Team.

Page 267:15 to 269:10

00267:15 Q. (By Mr. Cernich) And you were the --
 16 MS. KARIS: Counsel, just for the record,
 17 if this is a document that was inadvertently
 18 produced -- I'm not saying that it -- that it is, I
 19 just don't know, but it sounds like, from Mr. Tooms'
 20 answer, it might -- may have been.
 21 MR. CERNICH: This was a document that BP
 22 submitted to the Presidential Oil Spill Commission in
 23 October of 2010.
 24 MS. KARIS: Then obviously, it's been
 25 submitted. I'm not going to assert privilege over it,
 00268:01 but just for the record, in the event that it is a
 02 privileged document --
 03 MR. CERNICH: Okay.
 04 Q. (By Mr. Cernich) It's --
 05 MS. KARIS: -- that we'll agree --
 06 Q. (By Mr. Cernich) -- you can find it on the Web
 07 right now.
 08 A. Yeah, we submitted it to the Presidential
 09 Commission and asked them to keep it confidential.
 10 Q. Did you -- did you assist in preparing this
 11 document?
 12 A. Only in I was asked to read it, and -- and
 13 assess whether it made sense.
 14 Q. And did you think it made sense?
 15 A. Yes, I did.
 16 Q. Okay. I'd like to direct you to the -- to the
 17 fourth paragraph there that starts, "BP has
 18 reviewed..." And if we move a couple of sentence in,
 19 it says, "As discussed below, the August 2nd, DOE/FRTG
 20 Estimate" -- and the FRTG is the -- the Flow Rate
 21 Technical Group; is that correct?
 22 A. That's the acronym, I think, that was used by
 23 the -- the -- for the -- for the Government organized
 24 Flow Rate Technical Group.
 25 Q. And so it says, "...the August 2nd DOE/FTRG
 00269:01 Estimate and other similar" est -- "estimates are
 02 flawed. They rely on incomplete or inaccurate

03 information..."

04 Do you -- do you know what "incomplete or

05 inaccurate information" that refers to?

06 A. I think the document goes to actually explain

07 what some of the incomplete and in -- in -- in --

08 inaccurate information is. I -- I'd kind of need to

09 read through the -- the -- the -- the document to

10 refresh myself.

Page 269:19 to 270:10

00269:19 Q. (By Mr. Cernich) So, Mr. Tooms, going back to

20 the flow paper that we were discussing before the

21 break, I had directed you to a reference to an

22 allegation that the DOE and FRTG estimates and es --

23 estimates are flawed and that they rely on incomplete

24 or inaccurate information. And I asked what inaccurate

25 or incomplete information does that refer to?

00270:01 A. And I said that I -- I would need to just

02 refresh myself on this document.

03 Q. Well, we can -- we -- I -- I plan on actually

04 walking through the -- the document, but just a -- a

05 couple of questions. Are -- are you aware of any --

06 aside from the certain field samples that were

07 collected and observations that were made by the Woods

08 Hole Oceanographic Institute, didn't all of the data

09 that was used by the FRTG and the DOE Teams come from

10 BP?

Page 270:12 to 270:23

00270:12 A. I believe that most of the data must have come

13 from -- from us, because we supplied the data on the

14 well. I don't know that they used all the data that we

15 supplied them.

16 Q. (By Mr. Cernich) Are you aware of any data in

17 particular that they didn't use?

18 A. I don't -- well, I -- I can see from the --

19 the headings we got in here that they didn't consider

20 the effects of two phase flow, they didn't use the

21 temperature of the flow, but they --

22 Q. Did you give them a model for a multiphase

23 flow?

Page 271:01 to 271:19

00271:01 A. I -- I believe that the -- that we gave

02 them -- different bits of data for reservoir

03 conditions, and they -- they chose which bits of data

04 to use, and so on, so -- so there were -- there's

05 numerous pieces of data that -- where -- where we gave

06 them information that they didn't necessarily choose to

07 use.

08 Q. Okay. Great. Well, then let's -- let's go
09 through that. You mentioned multiphase flow. Did --
10 did BP provide the DOE or the FRTG Teams with a
11 multiphase flow model?

12 A. I don't believe we did, but I -- I can't be
13 certain.

14 Q. Has BP done work on multiphase flow models
15 from the Macondo Well?

16 A. We've -- we've done mult -- multiphase flow
17 modeling, absolutely, yes.

18 Q. But you didn't provide that -- any of that to
19 the -- to the Government Teams?

Page 271:25 to 272:11

00271:25 A. Well, I -- I can answer in that we gave the
00272:01 Government during the event the modeling -- the -- the
02 results of the modeling that -- that -- that we'd made
03 during the event. And certainly before it was
04 privileged. You asked whether I gave them -- whether
05 we supplied them with models, I think we would expect
06 the Government would use their own multiphase flow
07 models.

08 Q. (By Mr. Cernich) Are you talking about the --
09 when you mention the -- the model that was run during
10 the event, are you talking about the modeling of the --
11 the choke line at the well shut-in?

Page 272:13 to 273:02

00272:13 A. The model of the choke line at the well
14 shut-in. Sir, I don't -- I don't understand.

15 Q. (By Mr. Cernich) Well, okay. Then -- then
16 what modeling were you referring to that you provided
17 to them?

18 A. We gave them information on the -- the
19 modeling that we did of what flow could look like up
20 the wellbore, and -- and modeling of flow coming out of
21 the reservoir. We -- we -- we shared that with the
22 Government scientists.

23 Q. All of it?

24 A. Before the -- before the event, we gave them
25 whatever information they asked for.

00273:01 Q. Right. You gave them what they asked for.
02 But nothing more, correct?

Page 273:04 to 273:09

00273:04 A. No, that's not correct. We frequently shared
05 information with them even though they hadn't asked for
06 them.

07 Q. (By Mr. Cernich) Did you provide every piece
08 of information that was relevant even if it wasn't

09 asked for?

Page 273:12 to 274:16

00273:12 A. I -- I can't know that we gave them every
13 piece of information that -- that -- that might at the
14 time have been relevant or -- or -- or subsequently
15 become relevant. All I know is that we were very open
16 with the -- with the -- the members the national labs
17 and the -- and the people who came from the Government
18 to -- to speak with us. And -- and -- sorry, I'll --
19 I'll continue. And not forgetting, of course, that we
20 were members of the Unified Command, and -- and Unified
21 Command had access to everything that we did.

22 Q. (By Mr. Cernich) Okay. If -- I'd like to
23 direct you to Page 2 of the document, please. And at
24 the top of the page, the -- the first full sentence
25 there that begins "BP fully..." It says: "BP fully
00274:01 intends to present its own estimate as soon as the
02 information is available to get the science right."

03 Do you know whether the information is
04 available to get the science right?

05 MS. KARIS: Object to form and instruct
06 the witness not to answer with respect to any work done
07 in connection with privileged work.

08 A. If you'll restate the question, I'll --
09 I'll -- I think I have an answer, but I just forgot
10 what the question was.

11 Q. (By Mr. Cernich) This says: "BP fully intends
12 to present its own estimate as soon as the information
13 is available to get the science right." And I was just
14 asking whether the information is available currently
15 to get the science right.

16 A. I don't know the answer.

Page 274:18 to 275:24

00274:18 Q. (By Mr. Cernich) okay. Now, I'll take you to
19 the next paragraph, which says: "As part of BP's work
20 to estimate reliably how much oil was discharged, it
21 would be useful to understand the bases for the
22 estimates and analyses already in the public record.
23 Even though BP and other parties have requested this
24 information, many of the important details underlying
25 those estimates and analyses have not" made -- "been
00275:01 made public. For example, neither the" under -- "for
02 example, neither the DOE nor the FRTG has released all
03 of the data and calculations" necessarily -- "necessary
04 to understand and evaluate the bases for the August"
05 2nd "DOE/FRTG Estimate."

06 Has BP released all of the data and
07 calculations necessary -- necessary to understand and
08 evaluate the bases of its estimates?

09 MS. KARIS: Object to form. Instruct the

10 witness not to answer with respect to any privileged
11 work.

12 A. I can't answer.

13 Q. (By Mr. Cernich) Has BP released any
14 information required to understand the calculation
15 underlining any of BP's estimates?

16 MS. KARIS: Again, instruct the witness
17 not to answer with respect to any privileged work.

18 A. So I think this -- this -- this document is --
19 is -- is helpful in that it shows some of the -- BP's
20 understanding.

21 Q. (By Mr. Cernich) But not all of the
22 information that someone outside of BP would need to
23 understand any calculations that BP has made or will be
24 making?

Page 276:01 to 277:24

00276:01 MS. KARIS: Object.

02 THE WITNESS: Are you instructing me not
03 to answer?

04 MS. KARIS: Do not answer with respect to
05 any privileged work that is being done.

06 A. I can't answer that.

07 Q. (By Mr. Cernich) Has BP suggest -- subjected
08 it's estimates and calculations to peer review and
09 critique by those with a full understanding of the
10 technical aspects of hydrocarbon flow through oil
11 reservoirs, wells, and surface pipes?

12 MS. KARIS: Counsel, just so I'm clear,
13 are you asking him for work outside of privilege, or
14 are you continuing to ask it out of privilege?

15 MR. CERNICH: I'm asking about this
16 document. That's what I'm asking him about.

17 MS. KARIS: Okay, so --

18 MR. CERNICH: He doesn't have to tell me
19 any privileged information, but this is a public
20 document, and I'm -- I'm entitled to ask questions
21 about this document and understand the facts and
22 information that underlie this document.

23 MS. KARIS: So just so I'm clear, if
24 you're asking him about what information went into this
25 document, that's separate from any privileged work,

00277:01 absolutely, I'm -- he can answer those questions. But
02 your questions appear to be broader, and I want to make
03 sure that they're not eliciting privileged
04 communications and information.

05 Q. (By Mr. Cernich) Well, that last question is
06 simply based on the fact that this document says:
07 "Nor, to the best of BP's knowledge, have any of the"
08 DOG -- "DOE or FRTG estimates and analyses been subject
09 to peer review and critique by those with a full
10 understanding of the technical aspects of hydrocarbon
11 flow through oil reservoirs, wells, and surface pipes."

12 And it says: "These are serious impediments

13 to a reasoned scientific estimate that would be broadly
14 credible."

15 And what I'm asking is: Whether BP has
16 subjected any of its work to peer review and critique
17 by those with a full understanding of the technical
18 aspects of hydrocarbon fluid through reservoirs, wells,
19 and surface pipes?

20 MS. KARIS: I'm going to instruct the
21 witness not to answer with respect to any work that was
22 done in connection with privileged work.

23 A. So I can't answer.

24 Q. (By Mr. Cernich) Okay.

Page 284:10 to 284:14

00284:10 A. Can I clarify a comment that was made? It
11 sounded like an allegation. But I believe I said in my
12 earlier testimony that no flow rate calculations had
13 been made during the incident while the well was
14 flowing.

Page 285:04 to 285:09

00285:04 THE WITNESS: I believe, and I certain --
05 I certainly intended to say that to my knowledge no
06 flow rate calculations were done for me while the
07 well -- during the incident while the well was flowing.
08 I've clarified that a calculation was done after the
09 well was shut in.

Page 285:11 to 286:04

00285:11 Q. (By Mr. Cernich) And just so I understand,
12 that's in addition to the calculations that were made
13 by Ole Rygg before the top kill effort?

14 A. The -- I'm -- I'm not aware that Ole Rygg made
15 any calculations or estimates of flow rate before the
16 top kill effort.

17 Q. So I'm trying -- again, I'm trying to
18 understand. So he just put some numbers down on paper
19 that weren't based in any -- on any facts or any
20 calculations or any estimates?

21 A. Correct. I've already testified that we
22 couldn't find a way to make any sort of reasonably
23 accurate estimate of the flow rate and that -- I also
24 testified, as far as I'm aware, Ole Rygg was doing a
25 modeling exercise and chose a range of numbers.

00286:01 Q. But you did know at that point before the top
02 kill, you did know that the flow rate was at least what
03 you were collecting through the riser insertion tube;
04 is that correct?

Page 286:06 to 286:21

00286:06 A. We -- we knew how much we were collecting. We
07 also knew that the well was slugging. So if I
08 collect -- if we collected a certain amount of oil over
09 a 24-hour period and if the measurements of that
10 collection were accurate, we -- we could assume that
11 we -- the well was flowing that much.
12 Q. (By Mr. Cernich) Okay. If we can turn back to
13 the document. Now -- the same paragraph we were
14 looking at -- I'll direct you to the last sentence in
15 that paragraph. It says: "These are serious
16 impediments to a reasoned scientific estimate that
17 would be broadly" credible -- "credible."
18 And my question is: Is -- is one of the
19 impediments to the -- to the DOE/FRTG work the fact
20 that they didn't have all of the data that was
21 available to BP in order to do their calculations?

Page 286:23 to 287:18

00286:23 A. So I read this document, made sure that it
24 made sense. The document was -- was prepared at the
25 request of our counsel, and we shared the document.
00287:01 I'm not sure to what extent I'm allowed to share
02 what -- what the background to going -- the
03 calculations going or statements going into the
04 document are.
05 But to answer your -- your question, which I
06 think was how we -- they didn't use information because
07 we didn't make it available. No, I think we're saying
08 that they ignored a lot of data and issued an estimate
09 before they had evaluated all the data.
10 Q. (By Mr. Cernich) And --
11 A. So I think we could go through in this
12 document to -- to substantiate why we say that.
13 Q. So is it your testimony that all data in BP's
14 possession that might be relevant to calculating flow
15 rates from the Macondo Well have been provided to the
16 DOE or the FRTG Teams?
17 A. No. I've already said I -- I couldn't know
18 that.

Page 288:02 to 288:05

00288:02 Q. Okay. And do you think the DOE Science Team
03 might have been able to move more quickly if it had had
04 every piece of data, even the data that it didn't
05 specifically request from BP during the response?

Page 288:08 to 288:14

00288:08 A. So far as I'm aware, we gave the -- the
09 Science Team -- which consisted of two groups, one was
10 scientists that were largely reporting to Secretary

11 Chu, and the other group was the National Labs, who
12 were largely Engineers -- we gave them full access to
13 information that they needed to assess whether you
14 could shut the well in.

Page 289:24 to 290:02

00289:24 Q. Okay. And then in A.2., the critique is that
25 the DOE/FRTG Teams failed to consider the effects of
00290:01 two-phase flow. Can you tell me how BP considered
02 two-phase flow in its analysis?

Page 290:06 to 291:25

00290:06 A. And I can tell -- tell you in general that --
07 that all of our calculations that we did used --
08 considered two-phase flow.

09 Q. (By Mr. Cernich) Did any of the -- go ahead.

10 A. I was going to say, it has a -- a large
11 bearing on how you calculate flow rates. If it was
12 single-phase flow, it would have been much easier to
13 have estimated a flow rate.

14 Q. And -- and can you explain to me, how it has
15 that large bearing?

16 A. Because in two-phase flow, you have gas and
17 oil flowing at the same time, and they mix and un --
18 unmix. The gas flows at a different rate to the oil,
19 and it just becomes extremely complicated. I think
20 that -- as I said earlier, we -- even with --
21 we spend -- we spend many, many millions on trying to
22 develop multiphase flow meters for our subsea wells.
23 Even then, when we know the range of flow that we're
24 dealing with and we know the fluid properties and we
25 know the size of the pipe, we still find it difficult
00291:01 to get an accurate and reliable measurement of flow.
02 So it's a -- it's very complex once it gets into the
03 multiphase.

04 Q. And does that -- that multiphase flow tend to
05 increase the flow, or does it tend to decrease the
06 flow?

07 A. It is just complex.

08 Q. So there's no trend in multiphase flow, as far
09 as an increase or decrease in flow?

10 A. Well, it's too complex for me to -- to be able
11 to answer that because to answer something complex like
12 that in a simple way, I'd have to be a real expert in
13 flow measurement, and I'm not at that level.

14 Q. And I think earlier you said that there were
15 only a couple of people in BP who were capable of doing
16 this multiphase flow modeling; is that correct?

17 A. Certainly during my experience during Macondo
18 we -- we only had a handful of people who could run,
19 for instance, the OLGA model.

20 Q. And who were those people?

21 A. Farah Saidi, I think, was one. I think Adam
22 Ballard was -- was another.
23 Q. And so Adam Ballard and Farah Saidi were
24 running OLGA multiphase flow models during the
25 response?

Page 292:02 to 292:03

00292:02 A. Farah Saidi certainly was running multiphase
03 flow levels for us during -- during the response.

Page 293:03 to 293:10

00293:03 Q. Okay. We'll move on to the -- to No. 3, the
04 temperature. And this paper suggests that the likely
05 temperature was at least 200 degrees. Do you know
06 where that 200-degree number comes from?
07 A. It comes from we know what the reservoir
08 temperature was, and they had done thermal modeling
09 of -- of the well. I don't recall exactly which model
10 we used to -- to account for that temperature.

Page 294:03 to 294:16

00294:03 Q. Did you provide that modeling to the
04 Government Teams?
05 A. I don't know whether we provided the modeling.
06 We certainly provided the -- the temperatures to the
07 Government Teams, and we would have given them our
08 findings.
09 Q. And you communicated this 200-degree number to
10 them during the response?
11 A. So during -- so you asked me if we did do
12 thermal modeling. As I said, we did it early on. I --
13 I don't know what numbers we communicated. We -- we --
14 what we would have communicated were the numbers that
15 we measured on the top of the riser during the
16 response.

Page 297:02 to 297:10

00297:02 Q. Before the -- before the -- the riser was cut
03 off of the -- the top of the LMRP, did you do any sort
04 of estimates to determine what you thought the increase
05 in flow would be when the -- when the riser was cut off
06 of the top of the LMRP?
07 A. Yes. There was considerable work on -- on
08 estimating what flow increase might happen if we remove
09 various elements of the -- the riser, the BOP, and so
10 forth.

Page 297:20 to 299:02

00297:20 (Exhibit No. 6193 marked.)
 21 MR. CERNICH: I'm going to mark this as
 22 Exhibit 6193.
 23 Q. (By Mr. Cernich) This is an E-mail from a
 24 Ms. Cindy Yeilding, who you -- you mentioned earlier as
 25 being someone who was on your -- your Flow Assessment
 00298:01 Team. You're not a recipient of this -- this E-mail,
 02 but what I'd like to do is direct you to the -- the
 03 second attachment here. It's two blue sheets back.
 04 A. Two blue sheets back.
 05 Q. And this is a BP Technical Note, titled
 06 "Macondo SIWHP" -- and I take that to be "shut-in
 07 wellhead pressure." Is that correct?
 08 A. That's correct.
 09 Q. -- "and Build-up Times." And this was
 10 prepared by Mike Levitan, Debbie Kercho, Farah Saidi,
 11 Simon Bishop, Tony Liao, Thomas von Schroeter -- is
 12 that correct?
 13 A. M-h'm. Well, I -- I presume so. I don't know
 14 him.
 15 Q. You don't know him?
 16 A. I -- I don't know that I don't know him, and I
 17 don't know that I do know him.
 18 Q. Okay -- Kelly McAughan and Chris Cecil, and
 19 it's issued by Debbie Kercho and Chris Cecil.
 20 Do you recall seeing this -- this document,
 21 Mister -- Mr. Tooms?
 22 A. Can I just refresh myself on it, and I'll --
 23 Q. Certainly.
 24 A. -- tell you. (Reviewing Exhibit No. 6193.)
 25 I -- I -- I can't be certain I saw this exact
 00299:01 document. I saw documents like this, and I may well
 02 have seen this document.

Page 299:09 to 302:04

00299:09 (Exhibit No. 6194 marked.)
 10 Q. (By Mr. Cernich) And this is an E-mail from
 11 Mike Mason, dated Saturday, May 15th, 2010, to John
 12 Turnbull, copied to Patrick O'Bryan, yourself, and a
 13 couple of other people, "Subject: "Macondo SIWHP &
 14 Build-up Rate Final Report.doc." And -- excuse me --
 15 it says: "This is version A of the above referenced
 16 report it will be updated as version B after we get
 17 SIWHP conclusions from the National Laboratories and
 18 additional data from one of the contributors."
 19 Do you know who the -- who that "one of the
 20 contributors" Mr. Mason is referring to might be?
 21 A. H'm, no.
 22 Q. Okay. And then the attachment is a -- is an
 23 earl -- what appears to be an earlier version of the --
 24 of the memo that we were looking at a moment ago.
 25 And -- and I turn to this one because this one, you --
 00300:01 you definitely did receive by E-mail, at least

02 according to the -- the E-mail.

03 And I as -- I would imagine your -- your
04 response would be similar, that you -- you've seen
05 this -- you've seen this before. There are multiple
06 drafts, it appears -- or at least I've seen multiple
07 drafts. But do you recall seeing this -- this
08 document?

09 A. As -- as I said before, I -- I -- I've
10 certainly seen either this document or the other
11 document. I don't know which one.

12 Q. Okay. And if I could please direct you to
13 Page 5 of 8, and at the bottom of that page is
14 "Current" -- "Current Available Pressure Measurements
15 and" -- "and Well Conditions," and there's a diagram
16 there of what appears to be a -- a -- or at least a --
17 a very sim -- simplified diagram of the -- the well,
18 with the -- the BOP and the LMRP on top and the -- and
19 the kinked riser.

20 And it says that the -- next to the -- the
21 riser there's an arrow, and above that it says: "By
22 removing the approximately 400 psi restriction, flow
23 rate will increase by approximately 5 to 10 percent."

24 Does that refresh your memory as to what you
25 had predicted as the increasing flow rate upon removal
00301:01 of the riser pipe?

02 A. Yes. We -- in -- another place, we did -- we
03 did a considerable amount of work on trying to estimate
04 the ratio of increasing flow rate versus -- versus
05 pressure, with some very extensive modeling over wide
06 ranges of -- of flow rate and -- and assumptions, to
07 see if we could -- because we couldn't measure flow --
08 whether we could measure the proportion -- or whether
09 we could predict, within a reasonable bound, the
10 proportional increase in flow.

11 So this -- this looks like this is taken from
12 that work. I don't know whether it's final or not, but
13 it's in the range I said, so that's that same 5 to 10
14 percent.

15 Q. Okay. But -- so it's not -- it's not 30
16 percent?

17 A. Well, I said it's between -- I -- I said it
18 was certainly, to my recollection, between 5 and 30
19 percent.

20 Q. That -- that -- that modeling you were
21 describing earlier, was -- was all of that information
22 provided to the -- to the Government Teams that were
23 working on flow?

24 A. I know the findings were. I -- I don't recall
25 whether we -- whether we shared with them all of our
00302:01 models.

02 Q. Which would mean you -- you may not have also
03 shared your assumptions that went into those models,
04 correct?

00302:06 A. I -- it -- it's simply I don't recall. We --
07 we discussed very openly with the -- with the National
08 Labs what we were doing. In fact, actually, as you can
09 see from this, we -- we involved them -- I think this
10 is one of the first involvements with the National
11 Labs. We -- we involved the National Labs in doing
12 calculations.
13 Quite often they preferred to organize
14 themselves and -- and -- and be very independent, and
15 so even if they had three labs working on the -- on,
16 for instance, the shut-in wellhead pressure prediction,
17 which you would think was a simple thing to do, but
18 proved to actually be quite complicated -- they -- they
19 ran -- to my knowledge, they -- they ran those
20 calculations entirely independently, so they may not
21 have wanted to see the data from us at this point.
22 Q. (By Mr. Cernich) Do you recall anyone telling
23 you that they didn't want to receive data from you?
24 A. I -- I recall -- and I can't remember her
25 name. She was the alternate to Tom Hunter. And I
00303:01 recall her telling me that they wanted to -- to do
02 their work in strict compartments and not to share
03 their work even between the National Labs. They wanted
04 to have three independent analyses.

Page 303:10 to 304:23

00303:10 Q. (By Mr. Cernich) I'll move on.
11 Could I -- could you turn to Tab 21, please?
12 Now, it's my understanding that you all did
13 certain diagnostic work before the -- the top kill,
14 with some pumping and closing various lines and
15 pressure meters, to try to get a sense of the
16 restrictions across the -- the BOP and what you were --
17 what your -- your plan for the -- the top kill might
18 be; is that correct?
19 Or if I'm not characterizing that correctly,
20 could you -- could you enlighten me?
21 A. So we're on the -- on -- on the same page,
22 we -- bef -- before starting top kill, we took pressure
23 measurements. It was the first opportunity we had to
24 get pressure measurements at various points in the BOP
25 stack with any degree of accuracy, and so we -- we --
00304:01 using, I think, two gauges, used -- took a variety of
02 pressures at different points in the BOP stack.
03 Q. Okay. And then during the -- the top kill
04 method, the top kill operation itself, you collected
05 additional data, correct?
06 A. During top kill itself, we -- we -- we
07 recorded pressure data full-time, yes.
08 Q. Can you -- I -- I'd like to direct you to
09 this -- this E-mail that's Tab 21.
10 MR. CERNICH: And I'm going to mark this
11 as Exhibit 6195.

12 (Exhibit No. 6195 marked.)
 13 Q. (By Mr. Cernich) And this is an E-mail from
 14 someone named Rupen Doshi, dated Thursday, May 27,
 15 2010, to various -- various people, some people at BJ
 16 Services, and then there's a copy to you, and it says:
 17 "Gentleman, Just want to make it clear that NO ONE is
 18 to get the data files from the Top Kill method that is
 19 being pumped from yesterday or today except for Paul
 20 Toom's group. This order comes directly from Bill
 21 Kirton and Charles Holt. Any requests for this data
 22 has to go to Paul Tooms." And can you explain to me
 23 why Mr. Rupen is -- is providing that instruction?

Page 304:25 to 306:04

00304:25 A. I -- I can explain to you why I think he's
 00305:01 providing that instruction, and you -- you may need to
 02 ask Rupen Doshi or Bill Kirton and Charl -- Charlie
 03 Holt. But collecting data, even -- even something as
 04 straightforward as pressure data, in 5,000 feet of
 05 water isn't -- isn't actually straightforward. There
 06 can be various reasons why you actually have to add
 07 corrections to the data, validate that the gauges are
 08 reading correctly, and so on.
 09 And so the -- the decision was made quite
 10 clearly that what we wanted to do here was, because I
 11 had the gauge experts in my Group, was that the whole
 12 data would come through a single point to be validated
 13 before it was reissued out, because if we had people on
 14 the vessels that were pumping and -- and making
 15 decisions, if they were to use unvalidated data, in
 16 fact, uncorrected data, we could get ourselves in a --
 17 in a bad place.
 18 Q. (By Mr. Cernich) So did you instruct Mister --
 19 Mr. Rupen to -- to provide this -- this instruction?
 20 A. No. Actually Bill Kirton instructed Rupen
 21 to -- to do it this way.
 22 Q. And was this data eventually -- eventually
 23 distributed outside of BP?
 24 A. If I recall correctly, and -- and certainly
 25 during the top kill, the data was -- was provided live
 00306:01 to the Government even before we validated it. So --
 02 so, yes, it was -- this -- this was maintaining
 03 operational control. It wasn't trying to keep data
 04 secret.

Page 311:19 to 312:09

00311:19 Q. Did -- did you provide all of the underlying
 20 geological and reservoir data to the DOE or FRTG Teams
 21 that would have allowed them to calculate a more --
 22 more realistic productivity index, if it's BP's con --
 23 contention that this productivity index is not
 24 realistic?

25 A. So far as I am aware, we tried to be as
00312:01 helpful as possible to the -- the -- the -- the -- the
02 Government Teams -- and I don't know quite which
03 Government Team, but the -- the Government Teams, in
04 providing them the data so they could understand the
05 reservoir, and to help them come to the conclusion that
06 the -- the well was -- had integrity.
07 So it was in our interest to give them as much
08 data as we could, and as far as I'm aware, we gave them
09 the full data.