UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF LOUISIANA

IN RE: OIL SPILL BY THE OIL RIG *DEEPWATER HORIZON* IN THE GULF OF MEXICO ON APRIL 20, 2010	*	Docket 10-MD-2179
	*	Section J
Applies to:	*	New Orleans, Louisiana
	*	
Docket 10-CV-02771, *IN RE: THE COMPLAINT AND PETITION OF TRITON ASSET LEASING GmbH, et al*	*	February 27, 2013
Docket 10-CV-4536, *UNITED STATES OF AMERICA v. BP EXPLORATION & PRODUCTION, INC., et al*	*	

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

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I N D E X

AFTERNOON SESSION

12:47 **(February 27, 2013)**

01:05 **THE COURT:** Please be seated, everyone.

01:05 Mr. Miller, you are up.

ALAN HUFFMAN,

01:22 having been duly sworn, testified as follows:

01:05 **CROSS-EXAMINATION**

01:05 **BY MR. MILLER:**

01:05 **Q.** Kerry Miller for Transocean, and I have you on

01:05 cross-examination.

01:05 Dr. Huffman, during your testimony before lunch right

01:05 at the beginning --

01:05 **THE COURT:** You might want to move that thing a

01:05 little bit.

01:05 **BY MR. MILLER:**

01:05 **Q.** During the beginning of your testimony before lunch, I

01:05 wrote down one of your opinions, and I think I got it right. I

01:06 want to make sure.

01:06 What I wrote down is you stated -- you testified that

01:06 in your opinion, the most critical aspect of well control is

01:06 maintaining a safe drilling margin.

01:06 Did I get that right, Dr. Huffman?

01:06 **A.** That is essentially correct. I think I made a more

01:06 general statement that keeping the mud balanced so that you're

01:06 maintaining that margin but also protecting for the kicks on

01:06 the low side is the basic principle.
01:06 **Q.** You think that's the most critical principle of well control, correct?
01:06 **A.** Absolutely. It's your first line of defense.
01:06 **Q.** In terms of that critical principle of well control, maintaining a safe drilling margin, that is the responsibility of the operator, correct, Dr. Huffman?
01:06 **A.** It is the responsibility of the operator to determine those parameters and tell the drilling people what to do.
01:06 **Q.** And the parameters that we are talking about -- let me see if I have them right based upon your earlier testimony. The parameters are predictions of pore pressure, correct?
01:07 **A.** That would be the lower boundary, yes.
01:07 **Q.** And the predictions of pore pressure is a job for the operator, correct?
01:07 **A.** That is correct. They usually do the predrill prediction.
01:07 **Q.** Another parameter is the frac gradient, correct?
01:07 **A.** Correct.
01:07 **Q.** The operator is also responsible for predictions in testing of the frac gradient, correct?
01:07 **A.** That is correct. And those are usually in their APDs. They are showing them in the permit.
01:07 **Q.** In terms of the third parameter, the one in the middle, is the mud weight, correct?
01:07 **A.** That is correct.

01:07 **Q.** It is also the responsibility of the operator to decide an appropriate mud weight based upon the other parameters, correct?

01:07 **A.** That is correct.

01:07 **Q.** Dr. Huffman, I know you submitted a CV with your report, and you testified a lot about prudent operator standard.

01:07 In terms of the basis for your testimony on that, as I understand your background, Dr. Huffman, you worked for a dozen years at Exxon and at Conoco, correct?

01:07 **A.** That is correct.

01:07 **Q.** Those are two large operators, correct?

01:07 **A.** That is correct.

01:07 **Q.** They operate in the Gulf of Mexico, correct?

01:07 **A.** They do.

01:08 **Q.** In addition to your time as an employee of Exxon and Conoco, since 2003 you have operated your own company, correct?

01:08 **A.** That is correct.

01:08 **Q.** And since 2003 operating Fusion Geophysical, you have worked for operators as well, correct?

01:08 **A.** That is correct. Large numbers of them around the world.

01:08 **Q.** So based upon the last 22 years, in addition to your education, you believe that you can adequately define what a prudent operator is, correct?

01:08 **A.** Yes. I work with enough companies that I see the industry practices across that group of companies.

01:08 **MR. MILLER:** Let's pull up Dr. Huffman's rebuttal report.

BY MR. MILLER:

Q. Dr. Huffman, I put on the screen the cover page to your rebuttal report. Do you see that, sir?

A. Yes, I do.

Q. Let's go to page 17 of your rebuttal report.

Sir, you have identified for me that the operator was responsible for pore pressure, frac gradient, and mud weight issues, correct?

A. Yes.

Q. I want to be a little more specific with respect to this operator and this well, Macondo.

In your rebuttal report, sir, you identified two BP engineers, Brian Morel and Mark Hafle, as being the most responsible individuals within BP, the operator, for safe drilling margin issues.

Do you see that, Dr. Huffman?

MR. REGAN: Objection, Your Honor. You may not have meant to do it, but it's not what the document says in terms of the question. You said "most responsible."

BY MR. MILLER:

Q. Can you answer my question, Dr. Huffman?

A. I --

THE COURT: Wait, wait, wait. So what's the

objection? That he is misstating the document?

MR. REGAN: I just want to make sure. I think you changed the phrase in the document on there, Kerry.

THE COURT: Why don't you read it again.

MR. MILLER: Let me rephrase my question.

THE COURT: Okay.

BY MR. MILLER:

Q. Dr. Huffman, do you have an opinion, with respect to engineers at BP, which engineers had the most critical roles in BP's drilling margin decisions?

A. I believe it was two of them, and two of them included Mark Hafle and Brian Morel. And the reason I put this statement in the report is that as an expert reviewing after the fact what had happened in the well, their views would be critical to my analysis of that well and why things went the way they did. And I had no information from them, and I felt that was a serious issue. I would like to know what they thought and what they were seeing at the time.

Q. Dr. Huffman, this opinion that Brian Morel and Mark Hafle held the most critical roles in BP's drilling margin decisions, is that based upon your reviews of the depositions and documents in this case?

A. Yes. I --

MR. REGAN: I object to the question. The sentence says "who may have played." It doesn't say it's my opinion

that these individuals held the most critical roles. It says "may have." I know it's a small point, but it is a difference.

THE COURT: Well, I think Mr. Miller was asking him if he agreed with his statement. Whether that's the exact statement that's in that document is another issue.

MR. MILLER: That's another issue. This was a point of reference, Your Honor; but I think my question stands.

THE COURT: Okay. Go ahead.

THE WITNESS: And the way I would respond to that, Counselor, is that having the contemporaneous views of critical people like Mr. Hafle and Mr. Morel are important. And in direct this morning we cited some examples of e-mails from Mr. Morel that were very important to my analysis.

I would like to have heard a lot more from both of those gentlemen in deposition, which we did not have available to us. That was my point.

BY MR. MILLER:

Q. Dr. Huffman, I would like to turn to the TREX that we looked at this morning.

MR. MILLER: Let's pull up TREX-4411, please.

Let's go to the next slide. You can see this one better.

BY MR. MILLER:

Q. Do you recognize this document, Dr. Huffman?

A. Could you zoom in at the top? It's very hard to read

here.
Q. Yes. It's still a little blurry.
A. Yes. It's the revised casing program in March 2010. I recognize it.
Q. I think the date of this document is March 26, 2010?
A. That is correct.
Q. This would have been a document that BP, as the operator, submitted to MMS?
A. That is correct.
Q. This document contained -- hold on. This document, it pertained to -- I'm right here, if you can read that.
A. Yes. It says: "Revised casing program to include running a 9 7/8 liner."
Q. This was a particular application BP filed with the MMS prior to running the casing for the production interval, correct?
A. That is correct.
Q. The production interval, just to go back to one of the demonstratives counsel for the Department of Justice showed you before lunch, you had that picture of the well and you had the blue zone at the bottom, correct? Do you remember that?
A. That is the subject interval, yes.
Q. The subject interval, the production interval, the production casing, would have occurred within the blue zone on that previous demonstrative, correct?

01:13 **A.** Correct.
01:13 **Q.** Let's look at Attachment 2 to the March 26 BP MMS submission.
01:13 Are you familiar with this particular graph, Dr. Huffman?
01:13 **A.** Yes. This is what they refer to as the PPFG diagram that's included in the application.
01:13 **Q.** If you look at the bottom, whose name appears on the bottom of the page?
01:13 **A.** I believe it says Brian Morel, if I'm reading it correctly.
01:13 **Q.** Is there any other name of any other BP individual on this page?
01:13 **A.** I do not see one, no.
01:13 **Q.** Is there any name of any individual outside of Mr. Morel on this page?
01:13 **A.** Not that I can see.
01:14 **Q.** Let's focus in on the bottom of this. I can better relate to this one. I call this one the *driving between the lines*.
01:14 Let's look at what this indicates. You'll see here there's a little triangle and an indication for 9 7/8. Do you see that, Dr. Huffman?
01:14 **A.** Yes.
01:14 **Q.** What does this portion -- you see I've colored in some lines here. Vertically going down from this point here where

it says 9 7/8 and over here on this side -- I guess this would be the Y axis -- those are depth indications, correct?

A. That is correct.

Q. Go ahead and explain to Judge Barbier and the rest of the people gathered here today what this indicates, what this represents.

A. First we have -- on the left here, that is their estimated pore pressure, so that's the fluid pressures in the rocks. Then you have the fracture gradiant here on the right.

Q. That's what we have in the yellow, right?

A. In the yellow.

Then the orange is the safe drilling margin. Notice it says here, "frac gradient minus .5." So they are using that as their drilling margin boundary. And then the black -- the dark black line here is their -- which is green at the bottom of the diagram -- is their mud weight that they intend to drill with in that part of the open hole.

Q. This would be the pore pressure?

A. Yes, this line to the left is the pore pressure.

There's another dashed line here, which is what we would call their *trip margin*, which is their offset for being overbalanced with their mud.

Q. Sure, Dr. Huffman. And like I said, I call this document driving between the lines. I'm going to ask you some questions based upon that term.

01:15 **A.** Understood.
01:15 **Q.** As I appreciate it, what a safe drilling margin is for any particular interval is you have to maintain your mud weight between the dotted lines. Is that correct, Dr. Huffman?
01:16 **A.** That is essentially correct, yes.
01:16 We have lost the video input, I think.
01:16 **Q.** It's the after-lunch technical error.
01:16 **THE COURT:** Wait a minute.
01:16 **THE WITNESS:** It's back up here.
01:16 **THE COURT:** It's back up?
01:16 **THE WITNESS:** Yes, I have it.
01:16 **THE COURT:** That was not a technology problem. That was my hand problem. I accidentally hit the button to shut it off.
01:16 **MR. MILLER:** I know how much you love these geologic lines, Judge. I will be quick, I promise. I get the message.
01:16 **BY MR. MILLER:**
01:16 **Q.** So again, Dr. Huffman, you talked a lot about maintaining a safe drilling margin.
01:16 **A.** Yes.
01:16 **Q.** What line and what color for this production interval, this 9 7/8-inch casing interval, represents a safe drilling margin?
01:16 **A.** It would be the orange line right here. That would be the
01:17 upper boundary that you cannot infringe on with your mud weight

as you drill deeper.
Q. That's one line you got to be in between?
A. Right. You have to stay below that line with your mud weight.
Q. The mud weight is in green, right?
A. That's right. The mud weight is the dark black curve that has the green segment on it at the bottom. That curve cannot go to the right of the dashed curve with the orange marking on it.
Q. This other dotted line is your other boundary, right?
A. That is correct.
Q. So you have to be in between the dotted lines to maintain that safe drilling margin, correct?
A. Essentially, yes.
Q. Let me ask you: Based upon all the information you reviewed in this case, when BP drilled the safe drilling margin -- I'm sorry -- drilled the production interval and then laid the casing down for the production interval and then moved into cementing the well, did BP maintain this safe kick interval or safe drilling interval, as you called it before lunch?
A. No, they did not.
Q. Can you elaborate where these lines would have been at various points in time in late March and in April of 2010?
A. Yes. Essentially the orange line, which we see here on

the diagram, was what they were proffering as their first estimate from their casing at the top of the interval. But during the drilling of that open hole, they encountered with their Geo Taps calculated fracture gradients that were significantly lower, which means, if I can point on this at right about here -- it's hard to do this on the screen. I apologize.

In this interval right here where I'm showing, their fracture gradients were significantly to the left of that orange line. So they lost their margin because the fracture gradients had declined in that interval.

Q. Basically, Dr. Huffman, at certain points in time during this interval, based upon the data that you reviewed, the testing data, were the orange and green lines basically on top of each other?

A. They were within 1 to 2/10 of a pound per gallon from each other. They're very close.

Q. Is that a safe drilling margin?

A. It is not.

Q. Is that evidence of a prudent operator?

A. It is not.

Q. Let's look again at one of the exhibits Mr. Spiro showed you this morning. It's TREX-01241. This is the April 13 e-mail from Bobby Bodek. I'm going to focus in on the bottom section that Mr. Spiro didn't show you.

01:19 **MR. MILLER:** Let's go ahead and stop there.
01:19 **BY MR. MILLER:**
01:19 **Q.** Again, this e-mail is dated April 13, 2010. Do you see
01:19 that, Dr. Huffman?
01:19 **A.** I do.
01:19 **Q.** So this would have been exactly one week before the
01:19 catastrophic blowout?
01:19 **A.** Correct.
01:19 **Q.** Bobby Bodek was a BP geologist, correct?
01:19 **A.** Yes, he was an operations geologist on the well.
01:19 **Q.** He was the person who was assigned to provide information
01:19 to the BP wells team on pore pressure, fracture gradient, and
01:20 mud weight issues, correct?
01:20 **A.** Yes.
01:20 **Q.** And he writes -- one of the recipients of this e-mail is
01:20 Mark Hafle, correct?
01:20 **A.** Correct.
01:20 **Q.** Mark Hafle was a senior drilling engineer at BP, correct?
01:20 **A.** That is correct.
01:20 **Q.** He was Brian Morel's direct boss, correct?
01:20 **A.** I don't recall their reporting relationship. I know they
01:20 were both drilling engineers employed by BP.
01:20 **Q.** Both drilling engineers assigned to the Macondo well,
01:20 correct?
01:20 **A.** That is my understanding, yes.

01:20 **Q.** Mark Hafle is one of the individuals who you say had a very critical role in safe drilling margin issues, correct?
01:20 **A.** That is my understanding, yes.
01:20 **Q.** Let me go ahead and read this statement. This is coming from a geologist to an engineer, correct?
01:20 **A.** That is correct.
01:20 **Q.** "We already experienced static losses of 14.5 ppg ESD."
01:20 "ESD" is mud weight, correct?
01:20 **A.** That is the downhole mud weight when they are not pumping the mud, so it's -- still, it's static.
01:20 **Q.** That's what the S stands for?
01:20 **A.** Right. Static --
01:20 **Q.** Equivalent static density, correct?
01:20 **A.** Correct.
01:20 **Q.** But that is mud weight?
01:21 **A.** That is right.
01:21 **Q.** When you go back to the earlier demonstrative we showed, that would be the line in the middle. That's what you need to have between the lines of pore pressure and frac gradient, correct?
01:21 **A.** That is correct.
01:21 **Q.** Mr. Bodek, the geologist, tells the drilling engineers that: "It appears as if we had a minimal, if any, drilling margin."
01:21 Now, "if any, drilling margin" means zero, correct?

01:21 **A.** That is correct.
01:21 **Q.** And in order to be safe, you need to be at .5, correct?
01:21 **A.** That is correct.
01:21 **Q.** So they were between .2 and zero drilling margin according to the BP lead geologist, correct?
01:21 **A.** That is correct.
01:21 **Q.** Let's look at the last sentence in this e-mail. Again, this is Mr. Bodek, the lead geologist, talking to Mr. Hafle, correct?
01:21 **A.** Yes.
01:21 **Q.** "We had simply run out of drilling margin. At this point it became a well integrity and safety issue."
01:21 The point in time he is talking about was during the critical drilling of the production interval, correct?
01:22 **A.** That is correct.
01:22 **Q.** That was at the point at which total depth was declared in the well, correct?
01:22 **A.** That is true.
01:22 **Q.** "At this point it became a well integrity safety issue."
01:22 Do you know if anybody shared Mr. Bodek's e-mail with the MMS?
01:22 **A.** I have no evidence that that was shared. I didn't see any documentation of it.
01:22 **Q.** The fact that -- let me ask you this, Dr. Huffman: After April 13, 2010, when Mr. Bodek sent this e-mail, do you know,

sir, that BP, in fact, went ahead and cased the production interval on April 19 and then cemented this well on April 20?

A. I am aware of that from the daily log of operations, which describes everything that happened on the rig, yes.

Q. They did this at a point in time when there was a well integrity and safety issue, correct?

A. That is correct.

Q. Let's move on.

MR. MILLER: Let's put a portion of Dr. Huffman's rebuttal report back up, page 16 of Dr. Huffman's rebuttal report.

BY MR. MILLER:

Q. I'm going to go ahead and read this language and ask you some questions about this in terms of timing and what was going on in terms of these comments that you are making.

You say in your rebuttal report: "BP had a choice of plugging up the bottom of its hole with cement and attempting to find a higher, stable point at which to set casing that would isolate the high pressure sand behind pipe and protect the hydrocarbon-bearing reservoirs below it."

Do you see that, Mr. Bodek [verbatim]?

A. Yes, I do.

Q. I think you described that before lunch as one option BP had, correct?

A. That would have been my recommendation to them at that

point, yes.
Q. And the point in time we are talking about basically equates to when Mr. Bodek was writing his e-mail to Mr. Hafle, correct?
A. I believe this would have actually been a little earlier than the 13th.
Q. But it's during the time in which BP is drilling the production interval?
A. Yes. It's in the first couple weeks of April, yes.
Q. Nevertheless, you say: "Despite that option" -- that is, this option that you suggested that BP should have done -- "Despite the possibility of encountering sands with even higher pore pressure than what it had already encountered and despite the staff's understanding of the regulations, when BP had drilled to a depth of 18,260, it elected to drill an additional 100 further feet without obtaining MMS prior approval in doing so."

Do you see that statement, Dr. Huffman?
A. Yes, I do.
Q. You set forth two options that BP had in April of 2010, correct?
A. Yes.
Q. The first option of plugging up the bottom of the hole with cement and attempting to find a higher stable point in protecting the hydrocarbon-bearing reservoirs, in terms of the

01:25 language that you used in your direct testimony, would that
01:25 have been the most prudent option, Dr. Huffman?
01:25 **A.** I believe it would have been, yes.
01:25 **Q.** Would it have also been the safest option?
01:25 **A.** Yes.
01:25 **Q.** Did BP choose that option?
01:25 **A.** They did not.
01:25 **Q.** Was it BP's responsibility to make that decision at that
01:25 point in time?
01:25 **A.** Once they had determined that their margin was gone,
01:25 they -- if they planned to drill forward, they had to talk to
01:26 MMS first because they didn't have the margin that MMS had
01:26 approved prior to that decision to drill forward. So they had
01:26 to go to MMS at that point if they drilled another foot of the
01:26 subsurface.
01:26 **MR. REGAN:** Your Honor, before Mr. Miller asks
01:26 another question, we are just doing a repeat of the direct exam
01:26 at this point in time. I think, in terms of the alignment of
01:26 the parties on this issue, Transocean is clearly aligned with
01:26 the testimony that was elicited on direct. We are using the
01:26 same documents to do the same questions. I just ask that from
01:26 an efficiency standpoint and also from the standpoint of how
01:26 many witnesses we have to get through --
01:26 **MR. MILLER:** I will be real quick. I have about five
01:26 minutes left.

01:26 **THE COURT:** There's some validity to what you say, but it's not exactly a repeat of the direct examination, at least not from what I have taken from it. We talked about who is aligned with who in this case. I'm going to give Mr. Miller some leeway here.

01:27 **MR. MILLER:** I would point out, too, that Dr. Huffman is a joint PSC/DOJ expert, Your Honor. He's not just a DOJ expert, but certainly our interests are not aligned with the PSC.

BY MR. MILLER:

Q. Dr. Huffman, this second option, which was moving forward and drilling an additional 100 feet when they had these drilling margin issues that we previously identified, I think you called that this morning *totally unsafe*. Is that correct, Dr. Huffman?

A. Yes, it was unsafe and dangerous.

Q. In fact, I think you said one of the most dangerous things you have ever seen in your 20 years' experience?

A. That is correct.

Q. But, in fact, sir, the second option, moving ahead, is the option BP chose, correct?

A. It was.

Q. The second option of moving ahead when they were faced with these two choices was also the cheapest option, wasn't it, Dr. Huffman, at the time?

01:27 **A.** Yeah. Counselor, I did not look at nor opine on the
01:28 casing cost options that are involved here, so it is a bit
01:28 beyond my expertise to discuss how much casing costs and
01:28 production liner versus --
01:28 **Q.** Thank you. I withdraw the question. Thank you, Doctor.
01:28 **MR. REGAN:** I adopt the witness's objection.
01:28 **MR. MILLER:** I withdraw the question.
01:28 **THE COURT:** I'll sustain you and the witness.
01:28 **BY MR. MILLER:**
01:28 **Q.** Let's look at another snippet from page 16 of your
01:28 rebuttal report. You state -- and again, you are talking about
01:28 the production interval time, the time that was in blue on the
01:28 diagram we looked at this morning.
01:28 **A.** Correct.
01:28 **Q.** You say: "In any event, it left its well" -- you mean BP
01:28 left the Macondo well by these terms, correct?
01:28 **A.** Yes.
01:28 **Q.** -- "in a position where it had but a tiny margin available
01:28 to cement the well's final interval."
01:28 The final interval is the production interval,
01:28 correct, Dr. Huffman?
01:28 **A.** That is correct.
01:28 **Q.** The cement job that you're talking about is the cement
01:29 that was pumped on April 19 and April 20, correct?
01:29 **A.** That is correct.

01:29 **Q.** I think I understood your testimony correct -- and correct me if I'm wrong. But as I understand it, Dr. Huffman, it is the responsibility of the operator to maintain a safe drilling margin and/or a safe kick margin at all times, including at the point in time after drilling is done, when total depth is declared and they are laying down the production casing, correct?

MR. REGAN: Object, outside the scope.

MR. MILLER: I think it's completely within the scope.

THE COURT: Overruled.

Go ahead.

THE WITNESS: I think it's important to clarify something because this is a very good question.

BY MR. MILLER:

Q. Thank you.

A. The safe drilling margin is called the safe drilling margin for a reason. When you stop drilling, that .5 margin is no longer applicable because you are not advancing the drill bit. So that's a critical point here.

Having said that, the statement that I made here was also documented this morning in BP's MoC from April 15 where they documented clearly in their own records that they would have to use very low pump rates for any circulation of liquid.

Now, I'm not a cementer. I don't do that for a

01:30 living. But I understand how fluids flow, including mud, because that's part of what I do. Any fluid that you circulated at the bottom of this well in this condition would have been a delicate operation. You would have had to be very careful how you did it because the well was very fragile at this point.

Q. So there is a relationship, sir, between the safe margin you have to maintain and circulating any fluids at the bottom of a well?

A. That's correct. And that's defined in BP's own *Tubular Design Manual* we looked at this morning in direct. They clearly understand that that margin is needed for cementing.

Q. Those fluids could be foam-based cement?

A. Yes. It can be any fluid that you are circulating in the well.

Q. Let's look at the MoC document that's TREX-51165. Do you remember this document with the very fine print, Dr. Huffman?

A. Yes. Yes.

Q. That document is dated April 15, 2010, correct?

A. It is.

Q. Dr. Huffman, I know you testified about it this morning. I'm not going to go back into the substance. I just want to make sure we all know who was involved with the preparation of this document.

The verifier of this document is listed as who,

Dr. Huffman?
A. Mark Hafle.
Q. Responsible persons for this particular document and the completion of this document was done by whom at BP, Dr. Huffman?
A. I believe it says Greg Walz and John Guide.
Q. And Greg Walz and John Guide worked in the operations department at BP?
A. I actually don't recognize Greg Walz's name; but John Guide was involved in drilling the well, yes. He was one of the superintendents, I believe, out on the rig. He was the well team leader.
Q. Specifically for Macondo, correct?
A. Yes.
Q. We know that you have said before that Mark Hafle performed a very critical role for BP in terms of complying with safe drilling issues, correct?
A. Yes. He was one of the drilling engineers involved in the rig, in drilling, yes.
THE COURT: The document that's up on the screen, it's 51165, correct?
MR. MILLER: Correct.
THE COURT: What is that document? What's the title of it?
MR. MILLER: It's called "Management of Change," and

it pertained to operations BP was doing in mid-April 2010.

THE COURT: Okay.

MR. MILLER: A change in plans.

THE COURT: Okay.

BY MR. MILLER:

Q. This was a document before lunch, you said, in terms of BP's statements about maintaining an arbitrary frac gradient, was something you had never seen in your entire career, correct?

A. I don't believe I said exactly that. What I stated was that they recognized how delicate the condition of the well was. They had established their arbitrary frac gradient, as you just stated, of 14.5.

My own view was that it was slightly lower than that; it was between 14.35 to 14.4, was their operative lowest fracture gradient in the open hole.

Q. What exactly from this document, again, was something you had never seen in your career? Very egregious, in your opinion?

A. I don't believe I said that relative to this document specifically.

Q. Okay.

A. I believe it may have been another document, Counselor.

Q. Let's move on. In this case you issued two reports, correct, Dr. Huffman?

01:33 **A.** Yes, an initial report and a rebuttal report.
01:33 **Q.** My read of those reports contains no opinions with respect to Transocean. Is that correct, Dr. Huffman?
01:33 **A.** That is correct.
01:33 **Q.** In compiling those reports, Dr. Huffman, you didn't evaluate or conduct any analysis of Transocean personnel awareness of safe drilling margins on the rig, correct?
01:34 **A.** I did not.
01:34 **Q.** Okay. So you can't answer whether the driller had any knowledge or awareness of the drilling margin of Macondo, correct?
01:34 **A.** That is correct.
01:34 **Q.** The same is true in your rebuttal report. You don't mention Transocean, correct?
01:34 **A.** I don't believe I did, no.
01:34 **Q.** The point of your rebuttal report was specifically to rebut BP experts, correct?
01:34 **A.** That is correct.
01:34 **MR. MILLER:** Thank you, Dr. Huffman. That is all I have.
01:34 **THE WITNESS:** Thank you, Counselor.
01:34 **THE COURT:** Halliburton.
01:34 **MR. GODWIN:** Thank you, Your Honor. Your Honor, I think I can be done in about five to seven minutes.
01:35 **THE COURT:** Thank you.

01:35 **MR. GODWIN:** You're welcome.

CROSS-EXAMINATION

BY MR. GODWIN:

Q. Good afternoon. How are you?

A. Very good, sir. How are you?

Q. We have not met before, have we?

A. I do not believe we have. I haven't shaken your hand, anyway.

Q. Well, anyway, I did see you in the hall with your lawyer, shook your hand, and walked by you --

A. That's right, yes.

Q. -- but anyway, nice to see you, sir.

Dr. Huffman, what was, in your opinion, the fracture gradient at the bottom of the well just prior to the cement job?

A. My estimate is it was between 14.35 to 14.4 at its weakest point.

Q. Okay, sir. Just prior to the lunch break, you testified -- and I'm paraphrasing -- that it is important to understand the pore pressures encountered as you drill. Isn't that correct, sir?

A. Yes, it is important.

Q. The way I understood it, and you correct me if I'm wrong, was that you want to know that or want to be able to accomplish that so as to manage the appropriate drilling margins there at

01:36 the bottom of the well, correct?
01:36 **A.** That is correct.
01:36 **Q.** Okay, sir. And, sir, did you analyze the pore pressures that existed in the final production interval of this Macondo well?
01:36 **A.** Yes, I did.
01:36 **Q.** Okay, sir. And if -- and as you say you did, what was the first sand with elevated pore pressures encountered in the final interval? And when I say "elevated," I'm saying at or around 14.15 ppg.
01:37 **MR. REGAN:** Your Honor, if I could interpose an objection. The United States has made clear that Dr. Huffman is not here to testify about the zone that I believe Mr. Godwin is asking him about right now. I think it is expressly in their filing in response to the *Daubert* motion that Dr. Huffman was not retained to render an opinion on the particular hydrocarbon zone that is the subject of this question.
01:37 **MR. GODWIN:** Judge, pore pressure is what has been talked about here --
01:37 **THE COURT:** I'm going to overrule the objection.
01:37 **MR. GODWIN:** Thank you, Your Honor.
01:37 **BY MR. GODWIN:**
01:37 **Q.** Go ahead, sir.
01:37 **A.** Yes. The first sand that was encountered with the high pressures was not a hydrocarbon-bearing sand.

01:37 **Q.** Okay, sir.
01:37 **A.** It was a wet sand.
01:37 **Q.** All right.
01:37 **A.** To clarify counsel's comment.
01:37 And that sand had a measured pore pressure from the Geo Tap measurements of 14.15 pounds per gallon.
01:38 **Q.** Okay, sir. Had you finished?
01:38 **A.** Yes.
01:38 **Q.** What was the first sand that was elevated with pore pressures that you encountered that you deemed to be a hydrocarbon-bearing sand?
01:38 **MR. REGAN:** Your Honor, that's expressly an opinion that the United States said that this witness is not here to proffer --
01:38 **MR. GODWIN:** Judge, prior to the lunch break, he was asked, "If BP hired you and said they'd run out of drilling margin and you were giving advice, what advice would you give them?"
01:38 He said, "I would advise them to set casing and cement higher -- the higher hydrocarbon sands in the well."
01:38 **BY MR. GODWIN:**
01:38 **Q.** Did I state that correctly, sir?
01:38 **MR. REGAN:** My objection is still pending.
01:38 **THE COURT:** Let me understand your objection, Mr. Regan. Explain it to me. What interval does this relate

01:38 to as opposed to what you're talking about?
01:38 **MR. REGAN:** There's an interval in that part of the
01:38 well, which Halliburton will put on evidence about, it's called
01:38 *M57B*. They will put on witnesses to testify about it.
01:38 **THE COURT:** It's the higher level than what he was
01:39 talking about?
01:39 **MR. REGAN:** I'll get to Dr. Huffman's statement in a
01:39 second. With respect to his opinions, it has been made clear
01:39 both to the parties and to the Court that he is not here as a
01:39 witness to express an opinion on whether or not that zone,
01:39 M57B, is a hydrocarbon-bearing zone.
01:39 So with respect to Mr. Godwin's question, it is
01:39 not proper -- it's my belief it is not proper for him to ask
01:39 questions for this witness to identify whether a zone is
01:39 hydrocarbon bearing or not because he has been expressly
01:39 represented to not be an expert to testify to this Court on
01:39 that topic.
01:39 **MR. GODWIN:** Judge, in the rebuttal report at
01:39 appendix 1 on page 2 --
01:39 Could we pull up here TREX-7511, please.
01:39 **MR. REGAN:** While they are pulling it up,
01:39 Your Honor --
01:39 **MR. GODWIN:** Appendix 1, the second page.
01:39 **MR. REGAN:** The representation made by the
01:39 United States about this witness was after the date of this

report being filed.

MR. GODWIN: Judge, we are looking here at the --

THE COURT: Wait, wait.

MR. GODWIN: We have it up here on the screen, Your Honor.

THE COURT: What do you have up on the screen?

MR. GODWIN: Appendix 1, Your Honor, to the rebuttal report of this witness. That's page 2, sir.

THE COURT: Well, if this is, as Mr. Regan represents, an area or subject which the United States has advised the Court that this witness was not being offered as an expert to testify about, I don't know how we can go there.

MR. REGAN: It's Docket 5672, filed February 14, 2012.

MR. GODWIN: Judge, what I'm asking --

THE COURT: I have that document here. What part?

MR. REGAN: Footnote 1, Your Honor, page 2.

THE COURT: Footnote 1. Hold on. I have that right in front of me. Hold on.

"BP also claims that Dr. Huffman impermissibly proffered an opinion regarding M57B zone. The United States asserts that Dr. Huffman was not retained to render an opinion on whether the M57B zone contained hydrocarbons."

It goes on to say: "During the deposition the United States made it clear that such testimony was beyond the

scope of Dr. Huffman's report. The United States, therefore, does not object to limiting Dr. Huffman's testimony at trial to avoid opinions regarding whether the M57B zone contained hydrocarbons."

I sustain Mr. Regan's objection.

MR. GODWIN: May I attempt to lay a foundation, Your Honor? In other words, what I'd like to do --

THE COURT: No. We are just not going to go there.

MR. GODWIN: Well, in the report, if I might, Your Honor, is what -- without being disrespectful to the Court at all -- I never would -- he talks about these hydrocarbon-bearing zones there on page 2 in the rebuttal report, sir, which is what I'm referring to. And all I want to ask him, that just with regard to the report and not to go outside of it, Judge, can he identify here for Your Honor with regard to that one sentence that you have here in the report what zones you're referring to.

THE COURT: Let me clarify it. This thing I just read occurred after the rebuttal report was filed, right?

MR. REGAN: Yes, Your Honor, it did.

THE COURT: I'm going to sustain Mr. Regan's objection.

MR. GODWIN: Thank you, Your Honor.

I will ask a couple questions, Your Honor, and stay away from M57B.

01:43 **THE COURT:** Go ahead.
01:43 **MR. GODWIN:** Thank you, Your Honor.
01:43 **BY MR. GODWIN:**
01:43 **Q.** Dr. Huffman, you conducted a petrophysical analysis for purposes of preparing your rebuttal report, did you not, sir?
01:43 **A.** Yes, I did.
01:43 **Q.** While the specific purpose of the analysis, as was stated, was to assess the property of the rocks in the last two intervals of the well, the analysis necessarily had to separate the rock from the geological formation or the sands, including the sands in the well, did it not?
01:43 **A.** Yes. It analyzed all the rocks, including sands, shales, all the materials in the well.
01:43 **Q.** To do your analysis, you used data gathered from BP's wireline logging operations, did you not, sir?
01:44 **A.** That is correct.
01:44 **Q.** And I believe before the lunch hour, you were asked about those wireline operations that you used, and you said you did use those. And so for purposes of that analysis, you did use BP's wireline logging operations, correct?
01:44 **A.** Yes, I did.
01:44 **Q.** The same data that you used to identify the rock and calculate its hardness, can those -- can that same data also be used to identify what is contained in the sands that intersect with those rocks?

01:44 **A.** Yes.
01:44 **Q.** Okay, sir. And did you do that, sir, as a part of your petrophysical analysis?
01:44 **MR. REGAN:** Your Honor, I think we are getting right back into the same topic, with respect to Mr. Godwin trying to use this witness to be an expert on hydrocarbon-bearing zones.
01:44 **MR. GODWIN:** I haven't mentioned hydrocarbon-bearing, Judge.
01:45 **THE COURT:** Let's see where it goes.
01:45 **MR. GODWIN:** Thank you, Your Honor.
01:45 **THE WITNESS:** Would you ask the question again, please?
10:55 **MR. GOODWIN:** Yes. Could we ask for the reporter to read back? If not, I can rephrase it.
01:45 **THE COURT:** Did you do that as a part of your petrophysical analysis, I think is the last question.
01:45 **THE WITNESS:** Yes. In order to analyze the rock strength, which is the reason why we did the log analysis, you have to include in that analysis a calculation of the fluids that are saturating the rocks.
01:45 **BY MR. GODWIN:**
01:45 **Q.** Okay.
01:45 **A.** Whether it be brine or water or oil or gas. You need to know that for the computation of the strength of the rocks. The goal of the log analysis was very specific, to try to

01:45 understand whether there was any chance that the anomalously high formation integrity test could be valid.

And my determination was they were not. The rocks all appeared to be similar in strength through the well, and there was no explanation for the absurdly high tests that they got in the two intervals.

Q. In those rocks that you were analyzing, for purposes of your petrophysical analysis there, did you determine that those rocks, those sands, contained a percentage of water, water saturation?

MR. REGAN: Your Honor, we are getting right into the question of how people who do this for a living and express opinions on this, other than Dr. Huffman, determine whether a zone is hydrocarbon bearing. This is exactly the topic you are going to hear about from Mr. Strickland, who is a Halliburton expert who they will put on the stand to give this testimony about his views. Dr. Huffman is the wrong witness for this.

MR. GODWIN: I'm just asking here about the water, Your Honor. And he said he did a petrophysical analysis to determine the hardness of the rocks, the water saturation, what was there. He was looking at the fracture gradient, pore pressure, all of that being very important, said he needed it. And I have not asked about hydrocarbons, Judge. I'm just about done here. I need a little leeway from you, please.

MR. REGAN: This is an interpretive science. It

takes people to look at data that itself is a product of algorithms, to look at that data to come to judgments in their view about where you have things like resistivity, crossover, water saturation. These are -- it's a science that has been done by Dr. Strickland, who they are going to put on. We have witnesses that address this. He is the wrong witness to testify about this.

THE COURT: Let me ask the witness.

Do you understand the question Mr. Godwin is posing to you?

THE WITNESS: Yes, Your Honor.

THE COURT: Can you tell me, do you consider that within the bounds of the expertise for which you were brought to court to testify about, or is that outside of it?

THE WITNESS: It is -- if you would look at my CV, Your Honor, the other area --

THE COURT: I'm not looking at your CV. I want to know what it is you understand you were called here by the United States to testify about, whether this is within or without the bounds of that.

THE WITNESS: It is not within the bounds of what I was asked to opine on, Your Honor.

THE COURT: I sustain the objection.

MR. GODWIN: Thank you, Your Honor. I pass the witness.

01:48 Thank you, Dr. Huffman.
01:48 **THE WITNESS:** You're welcome.
01:48 **THE COURT:** BP.
01:48 **CROSS-EXAMINATION**
01:48 **BY MR. REGAN:**
01:48 **Q.** Dr. Huffman, my name is Matt Regan. I represent BP, and
01:49 I'm here on cross-examination.
01:49 Dr. Huffman, could you tell us what *BSEE* stands for?
01:49 **A.** It's the Bureau of Safety, Environment, and
01:49 engineering [verbatim], I believe is the new term. It's had
01:49 several changes since MMS.
01:49 **Q.** It's the Bureau of Safety and Environmental Enforcement,
01:49 correct?
01:49 **A.** Yes, enforcement. That's correct.
01:49 **Q.** You don't work for BSEE, do you?
01:49 **A.** No, I do not.
01:49 **Q.** You don't work for BOEM, correct?
01:49 **A.** I do not.
01:49 **Q.** Do you know what that stands for?
01:49 **A.** I forget what the acronym stands for, Counselor.
01:50 **Q.** That's the Bureau of Ocean Energy Management.
01:50 You have never worked for the MMS, correct?
01:50 **A.** No, I have not.
01:50 **Q.** Which federal agency in the United States is responsible
01:50 to enforce the drilling regulations that you testified about on

01:50 your direct exam?
01:50 **A.** At the time of the accident, it was the MMS.
01:50 **Q.** Do you know who does it today?
01:50 **A.** I believe it's BSEE today.
01:50 **Q.** Now, you were retained by the federal government in this case, correct?
01:50 **A.** Yes, I was.
01:50 **Q.** The federal government is paying your fee, your hourly fee, in conjunction with your work as an expert and your testimony today, correct?
01:50 **A.** That is correct.
01:50 **Q.** You are not responsible for enforcing drilling regulations in the United States, are you?
01:50 **A.** No.
01:50 **Q.** BSEE's employees, they also get paid by the federal government, correct?
01:50 **A.** I would assume so, yes.
01:50 **Q.** Their job is to review regulations, interpret regulations, and apply them to drilling operations, correct?
01:50 **A.** I would assume so, yes.
01:51 **Q.** That's what they do day in, day out, correct?
01:51 **A.** Yes.
01:51 **Q.** You, sir, have never analyzed whether a well has complied with MMS regulations until the expert report that you filed in this case, correct?

01:51 **A.** I have never been asked to do a direct comparison to the regulations, that is correct.

However, I use those regulations in my design work on a regular basis.

Q. As part of your work, have you ever analyzed whether a well has complied with MMS regulations or not before you submitted your expert report to Judge Barbier?

A. Not that I can recall, no.

Q. This is the first time you have ever done it?

A. It's the first time I have rendered an opinion on whether someone violated the drilling margin.

Q. It's your maiden voyage with respect to expressing opinions about whether or not an operator has complied with CFR regulations for drilling margin, correct?

A. It's the first time I have been asked to opine on it, yes.

Q. You do not interpret regulations in your day-to-day work, correct?

A. That is a question I need to be careful how I answer, Counselor. I, every day of the week, do well planning work and well monitoring work for wells both in U.S. waters and outside the United States for a large group of companies.

In doing so, I utilize the regulations and their equivalents to advise the clients how to drill their wells safely and not violate the regulations. So there is a distinction here that needs to be made between opining on it on

an accident, like we are doing here, and applying those regulations in my daily work for over 23 years.

Q. But what you are doing here, in applying those regulations in an accident, this is the first time you have ever done that?

A. That's correct. And I, frankly, hope it's the last one I have to do.

Q. Are you a regulator?

A. No, sir, I am not.

Q. Are you in the business of determining whether or not regulations are violated?

A. That is not my normal practice of work, no.

Q. How would you -- well, let me ask you.

With respect to how the regulators, the people who are paid by the federal government to work at BSEE to interpret and enforce regulations, do you have an understanding of how they do that job?

A. The only interactions I have had with the MMS, other than in this case, have been in the area of shallow hazards analysis, where we worked closely with them in the past at my time at Conoco.

Q. Shallow hazards analysis, we'll get to that in a minute. That talks about shallow gas, really about a couple thousand feet below the mud line, correct?

A. It's actually other things as well.

Q. You understand that the people who are paid by the federal

government to review and enforce regulations physically travel offshore, go to rigs, and conduct inspections of the documents that are there, correct?

A. Yes, I do.

Q. You have never done that?

A. I have never been asked to.

Q. You have never been on an offshore rig that is operating in your life?

A. That is correct. I have only been on them during rig inspections in port.

Q. Now, there are rules that the federal government has to apply to its federal employees who, as their job, interpret federal regulations about how to conduct inspections. You know that, right?

A. I believe so, yes.

Q. Those are in the CFR, right?

A. Actually, I believe they're partly in their operations manuals as well.

MR. REGAN: Can we pull up 30 CFR 250.130.

BY MR. REGAN:

Q. This is part of the CFR, Dr. Huffman. While we are waiting for it to come up, have you ever participated in a BSEE inspection?

A. No, sir, I have not.

Q. 250.130, this is the Code of Federal Regulations, the same

chapter that you are relying on in terms of your report, correct?

A. That is correct.

Q. "BSEE will inspect OCS facilities and any vessels engaged in drilling. These include facilities under the jurisdiction of other federal agencies."

Do you see that?

A. Yes, I do.

Q. They conduct these inspections to verify that you are conducting operations according to the Act, the regulations, the lease, and the contingents. Do you see that?

A. I do.

Q. Now, those BSEE inspectors, they look at APDs, correct?

A. My understanding is that the field inspectors focus primarily on the IADCs when they are on the rig.

The APDs and other documents, such as the weekly activity reports, are used more heavily by the district engineers.

Q. In your review of the CFR, in creating your report to talk about the regulations for the first time, did you see regulations in the CFR about what happens during an inspection?

A. I did not review that part of the process, Counselor. My focus was on Section 400 to 466, which is the part of the regs that I worry about as a pressure specialist.

Q. As a regulatory expert, are you supposed to limit yourself

to one portion of the regulations or the regulations as a whole when you are trying to reach a judgment about whether or not there has been compliance?

A. I want to clarify something here, Counselor.

When you say I'm a regulatory expert, I want to make sure take you understand what I think that means as it pertains to me.

Every day in my practice, I have to design wells that honor and embody the regulations.

Q. Are you a regulatory expert?

A. I am an expert on the application of the regulations from section -- from 400 to 250.466, and it's actually 68 and -9, which are the piece of the regulations that apply to what I do as a professional. I do not profess to be an expert in regulations outside of my expertise area.

Q. Okay.

MR. REGAN: 250.132, please.

BY MR. REGAN:

Q. Now, these federal employees who are charged with interpreting federal regulations and enforcing them, they have rules under the CFR for what should happen when they conduct an inspection. I put that up, 250.132.

I take it from your answer this is not a regulation you would have been familiar with?

A. It's not. And, Counselor, could I clarify? This is using

01:57 BSEE. Is this consistent with what existed at the time of the
01:57 Macondo?
01:57 **Q.** It is.
01:57 **A.** Okay. I just want to make sure it hasn't changed.
01:57 **Q.** You know that, right?
01:57 **A.** I just want to make sure. Because again, I didn't read
01:57 all of the other sections that don't apply to my work.
01:57 **Q.** You didn't look at the work of anyone other than BP,
01:57 correct?
01:57 **A.** In this case, I looked at BP's behavior on this particular
01:57 rig in this case.
01:57 **Q.** Right. You didn't look at Transocean's behavior, correct?
01:57 **A.** The only thing I looked at with respect to Transocean is
01:57 the drilling data, the information that was provided as part of
01:57 the case that they may have collected.
01:57 **Q.** You looked at some of it, right?
01:57 **A.** I looked at the information that I was provided to do my
01:57 job.
01:57 **Q.** Who provided you that information?
01:57 **A.** The Justice Department.
01:57 **Q.** The Justice Department asked you to focus on BP?
01:57 **A.** The Justice Department asked me to look at the data and
01:57 render opinions on what I thought about the way the well was
01:58 drilled and whether it violated the regulations that pertain to
01:58 what I do.

01:58 **Q.** With respect to one company, BP, correct?
01:58 **A.** They did not initially specify that. They asked me to look at the data.
01:58 **Q.** But at some point you were told, "focus exclusively on BP," correct?
01:58 **A.** No, I wouldn't say that, Counselor. It's my opinion that, as the operator, BP was the party that was responsible for the decisions made on the rig. It was my view, and I maintain that view, that ultimately BP had the responsibility for the decisions made on the rig.
01:58 **Q.** If you look at 250.132, it talks about: "What must I do when BSEE conducts an inspection?"

Let me see if I can fix this microphone.

It says: "(b), you must make the following available for us to inspect:

"(3), all records of design, construction, operation, maintenance, repairs, or investigations on or related to the area."

Do you see that?

01:58 **A.** Yes, I do.
01:59 **Q.** You know that the BSEE or MMS inspectors that went out to Macondo looked at APDs, correct?
01:59 **A.** They may have, yes.
01:59 **Q.** Those are applications for permits to drill, correct?
01:59 **A.** Yes.

01:59 **Q.** They looked at APMs, correct?
01:59 **A.** Again, I would have to go back and look at the depositions of Mr. Neal and his son to confirm that. It's been a while since I read it.
01:59 **Q.** Mr. Neal and his son are the people that were paid by the federal government to go out and inspect Macondo to determine whether there was any regulatory violations, correct?
01:59 **A.** That is correct.
01:59 **Q.** How many regulatory violations did they say occurred on Macondo?
01:59 **A.** I don't believe that they cited them for any that I can recall.
01:59 **Q.** Not one?
01:59 **A.** No.
01:59 **Q.** Things that you say were -- I think I've got most of them -- egregious, blatant, extreme, truly egregious, beyond anything I have seen in my career, the people who were paid by the federal government at the time to go to the rig and inspect the records did not find a single violation, correct?
01:59 **A.** Yes. And I think it's important here, Counselor --
02:00 **Q.** That's my question, Dr. Huffman.
02:00 **A.** Okay.
02:00 **Q.** There's also a checklist that the BSEE inspectors have to review, correct?
02:00 **A.** Yes.

02:00 **MR. REGAN:** If we could pull up TREX-4135.
02:00 **BY MR. REGAN:**
02:00 **Q.** You're familiar with this checklist that is used by the
02:00 BSEE inspectors?
02:00 **A.** Yes. I have seen it in their manual.
02:00 **Q.** If we go to the second page, they go through remarks, they
02:00 put in the enforcement actions, and then they sign it, correct?
02:00 **A.** Yes.
02:00 **Q.** You are not aware of any enforcement actions that were
02:00 written up by the inspectors during the drilling of the well,
02:00 correct?
02:00 **A.** Not that I'm aware of, no.
02:00 **Q.** BSEE also has onshore personnel that inspect APDs, APMs,
02:00 and other drilling documents submitted by operators, correct?
02:00 **A.** That is correct.
02:00 **Q.** What was the name of the onshore drilling engineer who
02:00 worked for the MMS who was involved in reviewing the filing
02:00 with respect to Macondo?
02:00 **A.** It was Mr. Frank Patton.
02:01 **Q.** Do you know where Mr. Patton lives?
02:01 **A.** I would assume he lives in the New Orleans/Metairie area.
02:01 **Q.** He was the person, during the drilling of the well, that
02:01 the United States of America put in the position of reviewing
02:01 the filings, that you have reviewed as well, and making the
02:01 determination if there was any violations, correct?

A. Right. And, Counselor, it's important here --

Q. Just -- I would ask you to answer my question.

THE COURT: Well, wait a minute. A witness has a right to answer your question and then explain if he wishes to.

MR. REGAN: Yes, Judge.

THE COURT: So go ahead, Dr. Huffman.

THE WITNESS: We are talking about -- and this is important, I think, for the Court to clarify.

There are two processes at work here. The district engineer, Mr. Patton, is looking at two sets of documents, primarily. He's looking at the APDs, which you cited correctly, and he's looking at the weekly activity reports, which is a weekly update of what's happening on the rig. The inspector -- and Mr. Patton is doing this on a regular basis as information comes in.

The inspectors, Mr. Neal and his son, are going around the Gulf of Mexico inspecting rig after rig. They go from one facility to another, and they only are on the rig one day a month for two to four hours, at which time they are expected to go through all of this information that you have just shown us.

After reading the depositions of both Mr. Neal and his son, they are not trained engineers. They are not experts in the field. To assimilate a month's worth of operational data in a two- to four-hour visit, when they are

also doing tests of equipment and other things, is a daunting task. I, as an expert, would have a hard time in two hours analyzing a month's worth of operational data.

So it's important to understand that we have two processes: The district office is doing their regulatory checks on what's happening, and the inspectors are going on the rig one day a month for a few hours and are expected to assimilate a large amount of drilling information, and the two processes are distinct from each other.

So it does not surprise me in any way that the inspectors, in their visits to the rig, were missing critical information. In fact, my review of the IADCs, the drillers' reports, which is what Mr. Neal and his son looked at, were reporting different information because they were reporting downhole information on the leak-off tests and the PITs, whereas the WARs and the APDs were reporting surface information.

So the information being presented to the MMS in the two sets of individuals were different. And that is a critical factor here, Your Honor, that the information being shown to these people was not consistent in itself. There were separate sets of documents. And that just opens the door for confusion on the part of the regulator. They cannot do their job if the information they're being given is incomplete or selective and in different sets of documents.

02:03 So it's a real challenge for the regulator to do their job in the face of that.

MR. REGAN: Your Honor, I just move to strike the answer as nonresponsive, but I'll ask him the question.

BY MR. REGAN:

Q. You said about 20 minutes ago, in response to counsel for Transocean's questions, that you would have found it helpful to talk to Mr. Morel and Hafle because their contemporaneous views -- they are critical people. The contemporaneous views of critical people may be important to evaluating what happened on Macondo, correct?

A. Yes, that is correct.

Q. Do you agree that the contemporaneous views of Mr. Neal, the father, and Mr. Neal, the son, could be critical to evaluating whether or not BP complied with drilling margin regulations?

A. I would agree with that, yes.

Q. You would agree that the views of Mr. Frank Patton, the drilling engineer here in New Orleans who reviewed those documents that were filed in the office, do you agree that his contemporaneous views would be critical to evaluating the drilling margin issues that you have raised before this Court?

A. I believe both his contemporaneous views and his views during his deposition were important, Counsel.

Q. You talked about the difficulty of the job of an MMS

inspector or a BSEE inspector. Have you ever held that job?
A. No, I have not.
Q. One of the documents that people who do that job review are called IADCs. Do you know what that is?
A. Yes. That is referred to as a daily driller's report also.
Q. Did you review the daily driller's report with respect to the opinions you have expressed to this Court?
A. At the time of my deposition, I was relying on the daily log of operations, which is the master document which we looked at earlier in direct.

The IADC -- again, for clarity of what the document is -- is a daily operations report that is done 12-hour shift by 12-hour shift. And it transcribes information from the master log of drilling operations and also adds on the list of the crew that's on the rig and other information. So it is a separate document from what I use in my field, which is the log of operations on the well.

Q. Dr. Huffman, do you remember my question?
A. Yes. You asked if I looked at it. And what I'm saying to you is I looked at them after my deposition.
Q. For purposes of drafting your first report, had you looked at the IADC reports?
A. I may have fanned through them; but I did not analyze them separately, no.

02:06 **Q.** For purposes of your second rebuttal report, did you look at the IADC reports?
02:06 **A.** I don't believe I did, no.
02:06 **Q.** For purposes of your deposition, had you looked at the IADC reports?
02:06 **A.** No, because the same information was contained in the daily log of operations. I did not need to.
02:06 **Q.** Did you review any cement pump data with respect to the opinions that you have expressed today?
02:06 **A.** The only pump data from the cementing unit that I focused on was where I had Halliburton's reports on the leak-off tests and formation integrity tests, the PITs.
02:06 **Q.** Understanding that you haven't been on an offshore rig, are you able to explain the difference between a cement pump on a rig and the rig pump on a rig?
02:06 **A.** That's not in my area of expertise, Counsel.
02:06 **Q.** Are you able to explain why LOT tests or leak-off tests would be performed on a cement pump on a rig, or a cement unit --
02:06 **A.** Yes.
02:06 **Q.** -- rather than with a rig pump?
02:06 **A.** It's my understanding that the cement pumps are more accurate in terms of their ability to control the pump flow and pressure than the main pumps on the rig.
02:06 **Q.** Not having ever been on an offshore rig when it's in

operation, it's also true you have never been on an offshore rig when it actually conducts one of the tests that you have testified about?

A. That is correct. I have only been on onshore rigs that have done it, not offshore.

Q. At the time of your deposition, was it true that you had not read Robert Neal, the MMS inspector's deposition? Is that correct?

A. I believe that is correct, yes.

Q. You had not read Eric Neal, the MMS inspector's deposition, correct?

A. That is correct.

Q. Is it your testimony that the Neals and Mr. Patton were not qualified to do their job?

A. I believe Mr. Patton was qualified, from what I have seen. I don't know Mr. Patton. I have never interacted with him. But from his credentials and his experience, I believe he is.

Q. Dr. Huffman, the United States never asked you to speak with Frank Patton, the MMS drilling engineer who actually oversaw the filings, before you expressed your opinions?

A. I have not met Mr. Patton, no.

Q. Not before you issued your report or after?

A. No. I merely read his -- the e-mails that he was on and his own deposition.

Q. Well, didn't you have a moment in preparing your opinions

where you thought, Somebody with contemporaneous views of critical information, he could be important to me, I should see if I could talk to him, he is a government employee?

A. Counselor, I want to be careful how I answer this. Okay?

Getting contemporaneous views by talking to people can be extremely subjective because you're now talking to them a year later.

What I relied on as my primary line of evidence in this case were e-mails and other communications that were contemporaneous with the events on the rig plus the actual data from the well.

Q. Right. You think it would be better to look at what happened contemporaneously rather than look at something one or two years later, after somebody knows there's been a blowout and other things that happened, right?

A. Yes. I think that contemporaneous information is more reliable in terms of what people perceived or thought at the time.

Q. The people who contemporaneously reviewed the regulations did not find any violations of drilling margin, correct?

A. Yes, but they were -- they were issued later on, Counselor.

Q. They were issued one or two years later after a blowout, after a lot of information was out, correct?

A. And after my analysis of the well, yes.

02:09 **Q.** Would you find the former to be more reliable or the
02:09 latter? The contemporaneous evidence, that is that not a
02:09 single incident of noncompliance was issued on this well by the
02:09 people paid to do that job, would you find that more reliable
02:09 or an analysis done two years after the blowout?
02:09 **A.** There's two responses to that, Counselor. As I noted
02:09 earlier, the IADCs did not have the same information as other
02:09 documents.
02:09 The second thing I would note is that the last
02:09 inspection of the rig by the Neals was April 1, if I recall.
02:09 They were not on the rig after the serious events occurred in
02:09 early April.
02:09 **Q.** They visited the rig shortly after the October interval
02:09 that you criticize, correct?
02:09 **A.** I would have to go back and check. That's not something I
02:10 kept in memory.
02:10 **Q.** You don't remember their visit that was, I think, two days
02:10 after the period of time that you said was beyond anything you
02:10 have ever seen in your career?
02:10 **A.** Again, Counselor, you would have to show me the actual
02:10 inspection reports. I don't remember the specific dates.
02:10 **Q.** I have a demonstrative that I will get to in a minute that
02:10 I think would be helpful for you and the Court, so we can get
02:10 our dates, locations, and times correct.
02:10 I just used a word, but I don't think I have defined

it, *incident of noncompliance*. Are you familiar with that term?

A. I am familiar with it, yes.

Q. Who issues them?

A. The MMS inspectors on the rig can issue them. But I also believe they can be issued by the district office, as I understand it.

Q. Prior to submitting your expert report in this case, Dr. Huffman, had you ever seen an INC before?

A. I had not.

Q. Dr. Huffman, you are not aware of any INCs, any incidences of noncompliance, that had been issued to any operator for drilling margin issues anywhere prior to April 20, 2010, right?

A. I believe that's what I just stated, Counselor. I have not seen them.

Q. You have not seen one as to BP, correct?

A. I have not seen one, period, until now.

Q. You have not seen one as to Exxon or Chevron or Shell or other major operators in the Gulf, correct?

A. That is correct. My clients don't share those with me when I'm doing analysis for them, typically.

They provide me the raw data from the rig, and I analyze the data. I don't worry about whether they were INC'd on a particular event or not.

Q. Similarly, you are not aware of any operations ever being

shut down for drilling margin violations, correct?
A. No, sir. Not that I'm aware of.
Q. So the answer is: That's correct. You are not aware of that?
A. Yes.
Q. You testified just a second ago about the fact that INCs were issued at some point in time with respect to this accident, correct?
A. Yes.
Q. Those INCs, the first one was issued in October 2011; is that right?
A. I would have to go back and look at the press releases and information. I don't recall off the top of my head.
Q. Well, you know that as of the time of your first expert report, there had not been a single INC issued, correct?
A. I believe that's correct, yes.
Q. Then you filed an expert report, rebuttal report, and you were deposed in late November, early December 2011, correct?
A. I believe that's right, yes.
Q. Then after your deposition, additional INCs were issued, correct?
A. That's correct.
Q. Were you consulted by the government, by BSEE, with respect to whether or not INCs should be issued in connection with your work in this case?

A. I did not speak to anyone at BSEE about that, no.
Q. You said you have never worked for the MMS. Have you ever worked as a regulatory specialist for any company?
A. No, sir.
Q. Have you ever worked for any regulatory body?
A. Regulatory body?
Q. Yes.
A. No, I don't believe so.
Q. Is there anything on your CV about your professional experience in interpreting regulations?
A. Not directly, no.
Q. In fact, there's nowhere in your professional experience on your CV where you list interpretation of regulations, correct?
A. As a profession, no.
Q. No client has ever asked you to review their operations to see whether or not they are in compliance with regulations, correct?
A. Actually, that's not true. I have had several clients outside the U.S. that have asked me to review what they were doing to make sure that it complied with the U.S. regulations.
MR. REGAN: Deposition, page 98 of Dr. Huffman.
BY MR. REGAN:
Q. Dr. Huffman, I will ask you if you were asked these questions and gave these answers on page 98, starting at line 4

through line 12:

"**QUESTION:** Has the BOEM ever asked you to analyze whether an operator violated MMS regulations outside of this project?

"**ANSWER:** I have never been asked to by the BOEM to analyze a well, no.

"**QUESTION:** And none of your clients have ever asked you to review their operations to see if they violated the MMS regulations?

"**ANSWER:** No."

A. At that time that answer was correct. Both the cases I'm speaking of are since the deposition. So they're more recent experience.

Q. So it was after your deposition and after you had filed your expert reports before Judge Barbier?

A. That is correct.

Q. You taught at the University of Oklahoma for two years; is that right?

A. Yes, sir.

Q. You have never taught anything with respect to MMS regulations there, correct?

A. The margin -- the safe margin concepts are embodied in my teaching materials; but I don't specifically quote and teach the students the regulations, no.

Q. Have you ever in your life taught any courses about how to

apply regulations?
A. Not as a direct practice, no.
Q. Now, your CV is about 13 or 15 pages long. Is that about fair? We can pull it up if you prefer.
A. I haven't counted it recently, Counsel.
Q. You would say it's extensive?
A. Yes. It's a CV.
MR. REGAN: Let's pull up TREX-7510 at page 87.
BY MR. REGAN:
Q. There you are. If we were to page through -- it's Roman numerals, which I'm not very good at -- but you have three, four, five, six, seven -- and you have listed activities, patents, honors, research, abstracts. Let's stay there on abstracts and publications.
MR. REGAN: Next page, Donny. Thank you.
Again, for the Court, this is 7510.
BY MR. REGAN:
Q. Is it true, Dr. Huffman, that there's no publication on your CV that discusses MMS regulations?
A. That is correct, yes.
The pore pressure articles that are in my CV are focused on technical aspects of drilling and predicting pressures.
Q. It's also true that not one of your articles that are put forth in your CV even cite the CFRs that you have cited in your

02:15 expert report in this case, correct?
02:15 **A.** Yes. In our profession we normally do not focus on citing
02:15 regulations in our discussions of technical matters. The
02:15 papers are focused on technical matters.
02:15 **Q.** So your expert reports in this case are the first time in
02:15 your professional career you have ever written a paper that
02:15 cites the drilling margin regulations?
02:16 **A.** That cites the regulations specifically, yes.
02:16 **Q.** You have never filled out an APM, or an application for
02:16 permit to modify, correct?
02:16 **A.** No. That is not part of my job. I provide the client
02:16 with the data, and they fill it out.
02:16 **Q.** You have never filled out an application for permit to
02:16 drill, correct?
02:16 **A.** Same answer from the last question.
02:16 **Q.** You have never looked at any instructions that the MMS
02:16 provides about what should be put in those documents, correct?
02:16 **A.** No. I have looked at the instructions, Counselor.
02:16 **Q.** Deposition page 191, lines 20 through 23.
02:16 **"QUESTION:** Have you looked at any instructions about
02:16 what information is expected to be put into the forms?
02:16 **"ANSWER:** No."
02:16 Were you asked that question, and did you give that
02:16 answer under oath at your deposition?
02:16 **A.** Yes, I did, and I have looked at the information since.

It has been over a year, almost a year and a half, since my deposition, Counselor. I have reviewed a lot of things since then.

Q. Did you feel like you were qualified as an expert as of the time you issued your first expert report?

A. As I stated earlier, I am an expert in planning, designing, and then monitoring wells to keep them within the safe boundaries of drilling. The regulations, as they stand, embody the same principles that I use every day in my profession. The oil companies that I work for, when I provide them with a report on a well that they are planning, that well includes all of the critical information: the kick margin or safe drilling margin, the trip margins, accurate pore pressure predictions, all the information that they need to fill out their APDs.

And I wish I could show these to you here, but they are all confidential to those oil companies. They don't release them, unfortunately.

Q. Is it your testimony that you have done this, you have cited these regulations, but they are in confidential documents?

A. No. I provide them with the information to enable them to tell the government what they need. I don't deal with the regulatory issues specifically, but all of my well designs embody the nature of the regulations. I have to do that. In

Section 400, I'm accountable to the regs. I'm a contractor to the oil company, just like our colleagues here at the table.

Q. Let's make that point clear, and we can move on. Section 400 of the regs applies to the operator and the drilling contractors and the cement contractors, correct?

A. Contractors and subcontractors.

Q. Right. That would include Halliburton and Transocean, correct?

A. That is correct.

Q. And the drilling margin regulations are in that same subsection, correct?

A. Correct.

Q. You did not look at all about whether Halliburton or Transocean had any involvement in the violations that you presented in your expert report, correct?

A. My analysis tells me that, again, as I stated earlier, BP was the responsible party that was making the decisions on the rig. That is -- from all my 23 years of experience, Counselor, when I was at Exxon, we were in charge of that rig when we were hiring a contractor. When I was at Conoco, the same rules apply.

What I see when I monitor wells in my current role -- and I do half a dozen a year -- the oil company operator is calling the shots on the rig while drilling is going on, and the drillers are taking directives from them. That is the

chain of command at all times.
Q. So you're an expert in offshore operations?
A. I am an expert in helping the client drill the well safely as it pertains to the pore pressure and the fracture gradient issues and safe drilling. That is my area that I deal with.
Q. Do you know what a toolpusher does?
A. I believe I do.
Q. Do you know what a morning meeting is on the rig?
A. I attend them when I'm monitoring a well, yes.
Q. It's your testimony, having never been on a rig, that you believe you are capable of explaining the relationship of people who work on them?
A. In some cases, yes. I don't know every worker on the rig and what they do. But --
Q. Let me ask you about --
A. -- certain jobs, yes.
Q. I'm sorry. Had you finished?
A. Yes. Certain jobs on the rig I do understand.
Q. With respect to your work here, did you look at the filings that were made by any operator for any well other than BP?
A. I did not believe I needed to, Counselor.
Q. I'm not asking you whether you thought you needed to; I'm just asking you whether you did.
A. I did not.

02:20 **Q.** Did you look at a single filing by any other operator anywhere with respect to the opinions that you have reached in this case?
02:20 **A.** No.
02:20 **Q.** So you have no basis to express an opinion to the judge as to how BP's filings compare to that of Exxon, Shell, or others, correct?
02:20 **A.** That is correct.
02:20 **Q.** You have no basis to compare BP's conduct to the industry standard conduct with respect to the documents that you cited, correct, having never looked at them?
02:20 **A.** My judgment in this was based on BP's behavior in this well. The documents I looked at were only for this well because I was asked to analyze this well.
02:20 **Q.** Right. You looked at this well and you looked at BP's conduct on this well, correct?
02:20 **A.** That is correct.
02:20 **Q.** You looked at regulations that you had never published anything about or expressed an opinion about before this report, correct?
02:21 **A.** Regulations that I use every day in my job, yes.
02:21 **Q.** You did not look at any other operator's policies with respect to how they fill out forms to the MMS, correct?
02:21 **A.** The only information that I would have on that issue would be dating back to my years at Exxon and Conoco, and I was

02:21 familiar with their procedures at the time, but I have long since forgotten them.
02:21 **Q.** The United States collects all of those documents by regulation from all of the operators out in the Gulf, correct?
02:21 **A.** I believe so.
02:21 **Q.** Those documents were available to you to review, if you so chose, correct?
02:21 **A.** In this case I was given a directive by my client to evaluate certain aspects of this well, and those aspects are what my report is about. If it was outside those aspects, I did not look at any documents.
02:21 **Q.** The directive that you received in connection with the work that you have performed was to look exclusively at this well and not look at documents or filings or the conduct of other operators?
02:22 **A.** That is correct.
02:22 **Q.** If we could go back to your CV, TREX-7510, page 87, I note at the top of it you have a date of July 2011. Do you see that?
02:22 **A.** Yes.
02:22 **Q.** This CV was attached to your expert report, correct?
02:22 **A.** Correct.
02:22 **Q.** If you go to the second paragraph of your CV -- first paragraph, sorry -- do you see the sentence: "Recognized internationally as a technology leader and lecturer in several

areas, including pore pressure and fracture pressure prediction, and detection while drilling."

Do you see that?

A. Yes, I do.

Q. Was that sentence, including the phrase "and detection while drilling" always in your CV?

A. I have updated my CV every few months for the last 23 years, Counselor. I don't remember when I put the words in.

Q. Do you remember if you put the words in "detection while drilling" in connection with putting the CV together for purposes of your expert report in this case?

A. I honestly don't remember, Counselor.

Q. You certainly have spent a lot of time in your career in pore pressure and fracture pressure prediction, correct?

A. Yes, probably 50 to 60 percent of my time for the last 23 years.

Q. That prediction is something that you can do with 3D seismic and really fancy proprietary models that you are very comfortable using that I wouldn't understand. Fair?

A. That's fair, yes.

Q. But with respect to pore pressure and fracture pressure detection while drilling, can you tell us who has recognized you internationally as a technology leader in that area, in the detection while drilling area?

A. I guess the most recent example would be where I spent

half of the month of January in Dhahran in Saudi Arabia, working with Saudi Aramco on their first deepwater well in the Red Sea. They brought me from the United States to monitor the well after I had done the predrill prediction for them.

Q. Did you go out on the rig and help them do LOT tests?

A. No. They actually had a full digital center set up to feed the data to us in the office. So there was no need to go to the rig.

Q. How would you define *predrill prediction work*?

A. Predrill prediction work usually involves taking the 3D or 2D seismic data along with offset well calibration, as we call it -- these are other wells nearby that we have information on. And we take all of the log and the pressure and the leak-off test data, all the available drilling information from those offset wells, and construct a stress and pressure model for the subsurface that we then apply to the 3D seismic data to predict three-dimensionally how the pressures are changed.

Q. Is it a simple mathematical exercise, just very straightforward?

A. The way I describe this to people, to laymen like yourself, is, the physics is straightforward, but the devil is in the details of all the information we have to integrate to get the right answers.

Q. You can have errors --

A. So -- and typically it's simple to understand.

02:25 **Q.** You can have errors in your predrill work, correct?
02:25 **A.** Yes. And, in fact, every prediction that I do has error bars on it.
02:25 **Q.** With respect to monitoring while drilling -- that work, not the prediction work, but the monitoring while drilling work -- at Conoco you didn't do much of that work, correct?
02:25 **A.** Yeah. There were only a few wells at Conoco. There was one well in the North Sea that we had a problem with that I was called in to look at. And I was involved in a few wells in the Gulf of Mexico, one in Venezuela, and one in Trinidad, where they asked me to look at the data. In Conoco I managed the team of experts that did that full time for the company. I was in a managerial position and was only called in where there were challenges.
02:25 **Q.** Your normal work, Dr. Huffman, at Sigmacubed is to do a separate, independent analysis of the predrill prediction that was originally done for a well. That's what you would normally do, correct?
02:25 **A.** If you were to look at the volume of work that we do, it's probably 80 percent predrill prediction and 20 percent monitoring of wells. So the monitoring is a smaller component of our overall work in this area.
02:26 **Q.** Did you testify -- and I can put it up, if you'd like. The normal procedure in evaluating what happened in the well would be to do a separate, independent analysis of the

predrill; is that correct?
A. I'm a sorry. With all the static there, I lost you, Counselor.
(Discussion off the record.)
THE COURT: You need a break?
THE WITNESS: Yeah, in a few minutes.
THE COURT: Just let me know when.
THE WITNESS: Yeah, maybe five minutes.
MR. REGAN: Do you want to take a break?
THE WITNESS: Yeah, it would be a good time for a biological break.
THE COURT: All right. Let's take about a 15-minute recess.
THE WITNESS: Thank you, Your Honor.
(Recess.)
THE COURT: Please be seated, everyone.
Mr. Regan, you may proceed again.
BY MR. REGAN:
Q. Dr. Huffman, I was asking you when we broke about materials that you reviewed and may not have reviewed. I was asking about IADC reports.
It's true, as of the time of your deposition which followed both of your reports, that you did not use the IADC daily drilling reports in your work, correct?
A. That is correct. I had not read them at that time.

02:52 **Q.** You did not use those IADC drilling reports in forming your opinions, correct?
02:52 **A.** Yes. They were not relevant to my opinions.
02:52 **Q.** You know that those IADC reports are filled out and signed by both an operator's representative and a Transocean representative in this case, correct?
02:52 **A.** I believe I did see that on the documents, yes.
02:52 **Q.** Did you also see that many of the numbers that you put before the Court with respect to leak-off test values are recorded in those IADC reports themselves?
02:52 **A.** In reviewing them after deposition, what I discovered was that the IADC reports in general had downhole values of the leak-offs and FITs reported, which is different and inconsistent from what was reported to the MMS on the other documents, including the weekly activity reports, and also where they updated them on the APDs and other application documents.
02:53 **Q.** An inspector, who does this for a living and was out on the rig reviewing those documents, would have the personnel who actually performed the tests there on the rig to ask questions that he had about the tests that had been performed, correct?
02:53 **A.** Not necessarily. With shift changes on the rig, it could be those people weren't there when he was on the rig.
02:53 **Q.** Did you do anything to determine whether or not, when the inspections was done in late October/early November 2009, the

same people that had done the leak-off test that you complained were -- as part of your expert report -- were still on the rig?
A. No, sir. It was not germane to my analysis.
Q. You did not read the inspectors' depositions, correct?
A. I read them after my deposition.
Q. They were not germane to your analysis, correct?
A. At the time, yes, they were not.
Q. Is there anything about your expert report that would change after reading their depositions?
A. No.
MR. REGAN: Now, I would like to pull up Demonstrative 4363, if we could.
BY MR. REGAN:
Q. Dr. Huffman, if you will indulge us. What we have here is something that's vertical to scale but not to horizontal scale.
First, it shows the *Marianas* rig -- actually, the riser and BOP. When you are doing predictive pore pressure analysis, there's -- nothing has been drilled, correct?
A. At the well location they are going to drill, no. That's correct.
Q. So in essence, you are using different techniques to try to predict, analyze, assess, but express an opinion about what you think the pore pressure or frac reading could be, correct?
A. That's correct.

02:54 **Q.** Then just so that we can get our terms correct, I'm going to go down here a little bit.

The way the well is drilled, as you explained on your direct examination, is that casing strings proceed in sequence. On this well there's a sidetrack right there going down into the productive zone, correct?

A. That's correct.

Q. I want to make sure we have the definitions correct for the questions I'm going to ask you.

Does this, first of all, appear to be the casing strings for the MC252 No. 1 well?

A. From the 22-inch down, that's correct. I really didn't pay attention to the section that was drilled at the riserless part of the well. I only paid attention to the deeper part of the well.

Q. Let me make sure we are all on the same page.

22-inch or 18-inch on this chart, that represents the outer diameter of the casing, correct?

A. I believe that's correct, yes .

Q. So if we were to hold two pieces of paper next to each other 11 inches wide, the 22-inch would be about that wide?

A. I believe that's correct.

Q. That's one of the casing strings that's pretty high up in the well, right?

A. It is.

02:55 **Q.** By the time we get to the casing strings that are down below, when we get to a 9 7/8 or a 7-inch, it actually -- the outside of the circle of the casing would be inside the width of a piece of paper, a normal piece of paper, right?

02:55 **A.** Yeah. The 9 7/8 would be inside the long dimension, but not the --

02:56 **Q.** Right. The 7-inch. I'm sorry.

02:56 **A.** The 7-inch would be, yes.

02:56 **Q.** These inches, just dimensions, are outside diameters of the casing, correct?

02:56 **A.** I believe that's correct, yes.

02:56 **Q.** It's called OD?

02:56 **A.** Right.

02:56 **Q.** And then there's an ID, correct?

02:56 **A.** That is correct.

02:56 **Q.** As you said in direct, they proceed in a series when you drill the well, correct?

02:56 **A.** Yes.

02:56 **Q.** I want to back up and just talk about what you mean when you say *shoe*. So I'm just going to pick one for an example. Let's pick 11 7/8.

02:56 The shoe is where one of these strings of casing, in this case an intermediate string, ends, correct?

02:56 **A.** That is correct.

02:56 **Q.** And the procedure, as you understand it, is to then cement

the shoe, correct?
A. You cement the bottom of the casing to get cement behind the casing in what's called the annulus. And you are trying to create a condition where the well has integrity so that the casing and the cement prevents any movement of fluids.
Q. The regulations that you cite, and as His Honor asked you questions about this morning, the leak-off test, or it's called the pressure integrity test, has nothing to do with the negative pressure test. But the pressure integrity test is done after then drilling proceeds 10 feet below the shoe, correct?
A. The requirement is a minimum of 10, maximum of 50 feet, correct.
Q. In your testimony, when you are referring to different pressure integrity tests or leak-off tests or FIT tests, what we are talking about is at these various shoes where the casings stop as they go?
A. That is correct.
Q. Now, there are a number of shoes in the MC252 well, correct?
A. Correct.
Q. Your opinion is limited to four of them, right?
A. That is correct.
Q. The 22-inch leak-off tests that were done on October 21st through October 25, correct?

02:57 **A.** I would have to go back and look at my records, but it was October. I don't remember the exact dates.
02:57 **Q.** The depth at that point in time in the well was around 8,000 feet from the rig, correct?
02:58 **A.** That is correct, from surface.
02:58 **Q.** About 3,000 feet below what's called the mud line, correct?
02:58 **A.** Correct.
02:58 **Q.** And the leak-off tests that were performed were in the area that was drilled below the 22-inch casing, correct?
02:58 **A.** They drilled -- yes. They drilled a small amount out of the shoe, correct.
02:58 **Q.** So just definitionally, when we talk about the 22, the 22-inch casing has been cemented and they are actually drilling a new hole and making a new hole for the next section, which is the 18-inch section?
02:58 **A.** That's correct.
02:58 **Q.** The leak-off test is to determine fracture gradient numbers and other information for that next hole section?
02:58 **A.** That's correct.
02:58 **Q.** The issues with respect to the 22-inch casing, your drilling margin opinions, do they have anything to do with the blowout on April 20, 2010, nine months later?
02:58 **A.** It is true that that 22-inch was now behind several other layers of casing. So that part of the well was now isolated

02:58 from where they were drilling in April.
02:59 **Q.** With respect to the next shoe, the 18-inch shoe, they cased it and then they started to drill a new hole section beneath it, correct?
02:59 **A.** That is correct.
02:59 **Q.** They did a leak-off test, correct?
02:59 **A.** Correct, multiple tests.
02:59 **Q.** That was for the 16-inch hole section, correct?
02:59 **A.** Correct.
02:59 **Q.** So they had to get a 16-inch pipe. They couldn't go wider than 18 unless they wanted to use an expandable, correct?
02:59 **A.** Correct.
02:59 **Q.** So for that shoe, did you have any issue with the reporting that was done or testing that was done by BP?
02:59 **A.** No. For the 18-inch test I had no issues with the leak-off tests.
02:59 **Q.** Now, just to be clear, the 22-inch shoe, the *Marianas* was the rig at the well, right?
02:59 **A.** I believe that's right.
02:59 **Q.** It was not the *Deepwater Horizon*?
02:59 **A.** That's correct.
02:59 **Q.** The *Deepwater Horizon* came to the well site in approximately late January/early February 2010, correct?
02:59 **A.** Correct.
02:59 **Q.** And then there were multiple tests done at this 18-inch

shoe from February 12 to February 15, correct?
A. I believe those dates are right. Again, I don't remember them exactly.
Q. Do you challenge those tests?
A. No. The final tests reported here was acceptable, in my opinion.
Q. The same people that were involved in the tests that you think showed egregious behavior, truly egregious behavior, extreme behavior, were also involved in tests that you found were perfectly fine?
A. I want to just make a distinction here. I did not look at who was physically pumping the tests on the rig. So the people that physically ran the tests may have been different people, based on shift change on the rig. But I believe the people on shore, Mr. Albertin and his colleagues, and Ms. Paine on the rig, were the same consistent eyes looking at the test data from BP's perspective.
Q. Have you seen any Transocean documents describing how to do leak-off tests and the narrowed pore pressure margins in the Gulf of Mexico?
A. I don't believe I've reviewed those, no.
Q. Have you seen any teaching materials that were put together by a gentleman named Steve Hand of Transocean with respect to drilling deepwater wells?
A. I don't believe so.

03:01 **Q.** It's not something you looked at in connection with your opinions in this case?
03:01 **A.** I don't think I saw a document by someone with that name, no.
03:01 **Q.** Is it your opinion that the men on the rig that do not work for BP, that they have no knowledge or understanding about how to conduct the leak-off test or what it might mean?
03:01 **A.** I have no basis for an opinion on that, Counselor. I didn't look at that.
03:01 **Q.** So you have no basis to know whether or not five, 10, 15, 20 or more people knew about tests that you have testified to the Court represented things that nothing like -- like nothing you have ever seen in your career; is that fair?
03:01 **A.** At this level, that's not what I said. The two tests that I made those statements about were the deeper intervals, the March and the April.
03:01 **Q.** Right. But even those intervals, you would agree with me that there were maybe 10, 15, 20 or more people that would have been either directly involved or aware of those tests having been performed, both from BP, Transocean, and perhaps even Halliburton, because they were down on the cement pumps, correct?
03:02 **A.** The number 20, I don't know if that's right. I would agree with you that there were probably multiple people that looked at the data.

03:02 **Q.** It could also include inspectors who came and then looked at the reports, including the daily drilling reports -- which we understand you didn't look at -- looked at the daily drilling reports that contained that information, correct?
03:02 **A.** But again, as I stated earlier, I did look at the IADCs later after my deposition. And when I looked at them, what I discovered was that the numbers being reported on the IADCs, which the inspectors were using during their inspections, were different than what was reported on the WARs and the APDs.
03:02 **Q.** You don't know what the inspectors were using for their inspections because you never read their depositions.
03:02 **A.** I read them after my deposition, Counselor.
03:02 **Q.** You did that work, again, after you had issued expert reports and testified?
03:02 **A.** Yes. I had not read their inspectors' reports because I was focused on the operations of the well, not on the inspectors that come once a month.
03:03 **Q.** If we continue then with the well, the 16-inch goes down to 11,638. And the leak-off tests were performed on or about March 7, 2010. That was into the 13 5/8 interval, correct?
03:03 **A.** Correct.
03:03 **Q.** That's one of the tests that you challenged, correct?
03:03 **A.** Yes.
03:03 **Q.** But that test you -- I think you testified today was something that you had a slight problem with, or you used some

kind of qualifier with respect to your concern about that test.
A. Yes. The test itself looked okay. The concern was how they used the test data in requesting the waiver from MMS to drill with a 12.3, when their test was actually a 12.55, but they reported it as a 12.6. So they were asking for .3 waiver on a test result that was rounded up a full half a pound to 12.6.
Q. You have thrown a lot of numbers around today. But for that interval, it was a 16-inch shoe, correct?
A. Yes.
Q. The test result was 12.55?
A. I believe that's correct, yes.
Q. The mud weight was 12.3?
A. The mud weight that they requested to drill with was 12.3. But the test result that they gave the MMS in their waiver request was 12.6.
Q. Right. So let's start there. Do you know what eWells is?
A. I do.
Q. What is it?
A. It is the digital online reporting system that the MMS used at the time.
Q. Can you report tests in hundredths? That is, could you even type 12.55 into that system?
A. It is my understanding that it only allows you to type into the tenths.

03:04 **Q.** You would not be able to type 12.55 into the system that
03:04 the United States government uses for the reporting of this
03:04 data?
03:04 **A.** That's correct. However, the waiver was not done through
03:04 eWells. The waiver was done through e-mail. And the current
03:04 state-of-the-art for pressure measurements is now the
03:04 hundredth, in my view, to the hundredth of the unit. That is
03:05 what we are using in reporting data these days because we have
03:05 more accurate tools.
03:05 **Q.** That may be your view about what the current
03:05 state-of-the-art is. But what's the current state-of-the-art
03:05 of what the United States government uses for operators to
03:05 report this information? Is it eWells?
03:05 **A.** They use the eWell System. But the eWell System does not
03:05 contemplate the use of e-mails and other media to request
03:05 waivers.
03:05 And if you look back at Scherie Douglas' e-mail to
03:05 Mr. Leonard Carter, which we looked at this morning, she was
03:05 reporting information to him in the hundredths. And this is
03:05 one of the issues I have with the reporting, Counselor.
03:05 **Q.** If I can ask just a new question.
03:05 **A.** Okay.
03:05 **Q.** I want to just go down the well. We'll come back up to
03:05 your review of e-mails.
03:05 **A.** All right.

03:05 **Q.** After the 16-inch shoe, they drilled a 13 5/8-inch interval?
03:05 **A.** Correct.
03:05 **Q.** They had a kick, correct?
03:05 **A.** They did.
03:05 **Q.** The bottom hole assembly got stuck, correct?
03:05 **A.** Yes.
03:05 **Q.** They had to cement it, correct?
03:05 **A.** I believe so, yes.
03:05 **Q.** They had to sidetrack, correct?
03:05 **A.** Yes.
03:05 **Q.** Is that an unusual operation in your view?
03:05 **A.** No. It happens all the time.
03:06 **Q.** Just like losses. Losses happen all the time too, correct?
03:06 **A.** But we try to avoid them.
03:06 **Q.** But they happen all the time in the Gulf of Mexico, correct?
03:06 **A.** I wouldn't say all the time, Counselor. They happen on certain wells in certain circumstances.
03:06 **Q.** In all of the studies and travels that you do, and all of these conferences, you have heard a number of presentations about the issue of how much nonproductive time, NPT time, there is in drilling because of lost circulation, correct?
03:06 **A.** Lost circulation and other factors, yes.

03:06 **Q.** It is not an unusual thing at all, is it?
03:06 **A.** It is not unusual, but it's something that is telling you that you are encroaching on your fracture gradient somewhere in the well.
03:06 **Q.** You also know that the Gulf of Mexico deepwater is a well-known narrow pore pressure frac gradient area, correct? You know that?
03:06 **A.** Portions of the Gulf are; portions are not. You'd have to be a little more specific.
03:06 **Q.** Well, you are familiar with the Mississippi Canyon area, the MC in MC252. You are familiar that that is a narrow pore pressure frac gradient area?
03:06 **A.** Yes. Parts of the Mississippi Canyon were known for being narrow margin.
03:07 **Q.** We were talking about the sidetrack. The actual tool, the drill bit, got stuck. They couldn't get it out, and so they cemented it in and sidetracked. It's represented here on the demonstrative.
03:07 **A.** Yes.
03:07 **Q.** Then you have a new shoe, 13 5/8. Then we are going to drill the 11 below it, right?
03:07 **A.** That's correct.
03:07 **Q.** Now, the 13 below the 11, leak-off test on March 27, correct?
03:07 **A.** Yes.

03:07 **Q.** Below that is then a 9 7/8-inch hole. Another shoe, correct?
03:07 **A.** Correct.
03:07 **Q.** And then in early April, in terms of the drilling, is the first time that we get into the hydrocarbon-bearing zones for this well, correct?
03:07 **A.** I believe that's correct, yes.
03:07 **Q.** With respect to all of your testimony on various drilling margin zones, it was just the last zone that you focus on with respect to the actual drilling past the leak-off test, the drilling -- the open-hole area below shoe?
03:08 **A.** Would you repeat that, Counselor, please?
03:08 **Q.** Let me ask you a different way.

With respect to the leak-off tests that were done before the 9 7/8 -- so everything on the chart up, okay -- the well, at that point in time, was not near the hydrocarbon-bearing zones, correct?
03:08 **A.** That's correct.
03:08 **Q.** Do you believe that the hydrocarbon-bearing zones were what -- was the hydrocarbons that came up onto the rig on April 20, 2010?
03:08 **A.** Counsel, that's outside my expertise area. I was not asked to opine on that.
03:08 **Q.** So we have identified what a shoe is. We've identified what a test is. And now I want to go to your answer to one of

the Court's questions this morning.

He asked about the definition of *drilling margin*. Do you recall the question?

A. Yes.

Q. I believe you said something to the effect that the base assumption of drilling margin is that you measure the fracture gradient at the shoe -- that is, in the 10 to 50 feet below -- and measure that against your mud weight, correct?

A. You take the shoe test and you provide the half-pound safe drilling margin off of that shoe test as the presumed weakest point. And your highest mud weight in the open hole must not infringe on that half-pound margin.

Q. Using the value you get from the shoe test -- that is the test you actually do, for example, here on March 27, 2010 -- the value you get at the shoe is what you use to measure mud weights against, correct?

A. Assuming that you believe it's a valid test, yes.

Q. All right. We are going to get into the belief issues in a minute. But that's what the regulations specify as well, correct?

A. The regulation specifies you must do a pressure integrity test. And implicit in the regulations is that it's a valid test, that it's a test that truly measures the rocks.

Q. And explicit -- that is, actually using words on the page in the regulation -- is that you do that test 10 to 50 feet

below the shoe, correct?
A. That is correct.
Q. You indicated to the Court, though, that in your view, drilling margin should actually be defined as using the weakest point in the open hole for safe drilling margin, correct? That's your view?
A. That is only if you have a zone in the well as you're drilling that appears -- shows evidence of being weaker than the fracture gradient at the last casing shoe.
Q. All right.
A. So as a general statement it would be yes, if you assume that the casing shoe is the weakest point, initially. The statement is correct on its face.
Q. There is no regulation that you are aware of that says what you just did, which is that for a safe drilling margin under the regulations, you have to use the weakest formation in the open hole, correct?
A. That is not true. 427 specifically states that you have to use hole behavior observations. And a loss of mud or other such event in the well is an indication that you have a weaker fracture gradient at which location you are losing mud. That information must be taken into account.

Likewise -- likewise, Geo Taps and other downhole data that allow you to calculate a fracture gradient should also be used as another measurement of what's happening in the

hole as you are drilling.
Q. You don't have any regulation that explicitly says, Dr. Huffman, you should use the weakest fracture gradient minus .5 to be the safe drilling margin, correct?
A. I don't need a regulation to state what is obvious, Counselor. Everyone at MMS agrees with my interpretation. All their depositions showed that that was correct. And Ms. Scherie Douglas' deposition, BP's own regulatory specialist, indicated that she understood the same principles, as did Mr. Albertin and Mr. Alberty, the other two experts from inside BP.
Q. I believe you testified that you haven't spoken with anyone at MMS, correct?
A. No. I read their depositions, Counselor.
Q. You read some of their depositions, correct?
A. I read Mr. Saucier, Mr. Trocquet, and Mr. Patton. And then, as you mentioned later, the Neals.
Q. Did you read your own deposition?
A. Yes, I did.
MR. REGAN: If we could go to page 264, lines 3 through 7.
BY MR. REGAN:
Q. Were you asked this question, and did you give this answer, Dr. Huffman:
"QUESTION: And you don't have any regulation that

03:12 explicitly says weakest fracture gradient minus .5 is the safe drilling margin, right?

"**ANSWER:** That is correct."

Were you asked that question, and did you give that answer?

A. Yes. That is essentially correct. It is defined in the APD, and the APD is specified in the regulations. The margin is defined as being on that document that you submit to the MMS and they approve. That's where the margin is determined.

You don't need to write .5 in the regs if you are going to approve it on a case-by-case basis.

Q. With respect, Dr. Huffman, at your deposition, you were also asked if you could provide one example where someone used the weakest fracture gradient in the open hole and dropped their mud weight by a .5 because that's what the safe drilling margin required.

You were asked that question, correct?

A. Yes, I was.

Q. You could not identify a single example, correct?

A. At the time of my deposition, I was not prepared to give a laundry list of previous projects that I had done, mainly because they are confidential to my other oil company clients.

But I, after deposition, went back and tried to look for any data that I had on that topic.

Q. Are you saying that you came to your deposition in this

case unprepared to support the opinions that you had rendered?
A. No. The --
Q. Do you deny the answer you gave in your deposition when you were asked under oath shortly after writing your reports where you claim that BP violated regulations that you could not name a single example where someone took the weakest fracture gradient in the open hole and dropped their mud weight by .5 because that's what safe drilling margin required?

Were you asked that question, and did you give that answer?
A. I believe I was, and at that time I had not gone back and reviewed all of the details that I still had in my records for previous projects.

One of the challenges that I face in responding to questions like that --
Q. My question was just whether you were asked that, and did you give me an answer?
A. Yes, I did. Yes.

The problem I face is I don't keep --
Q. I don't have a question pending, Dr. Huffman.
A. Okay.
Q. There are other definitions of *drilling margin* that you disagree with, correct?
A. Can you be more specific, Counselor?

MR. REGAN: TREX-4019. Let's go to page 2 of the

03:14 pdf. Well, first let me show you page 1 -- if we could, Donny.
03:14 Page 1 of TREX-4019.
03:14 **BY MR. REGAN:**
03:14 **Q.** This is titled BOEMRE National Office Potential Incident
03:14 of Noncompliance, or PINC list? Do you recognize this
03:14 document?
03:14 **A.** I believe I've seen a version of this. I don't know if
03:14 it's the same one, but I've seen a version.
03:14 **Q.** Do you know what it is?
03:14 **A.** I believe it is the instructions for how to handle the
03:14 reporting events.
03:14 **Q.** Instructions to whom?
03:14 **A.** I don't remember off the top of my head. I don't deal
03:14 with this type of thing on a regular basis.
03:14 **Q.** Because you don't work for BOEMRE?
03:15 **A.** That's correct.
03:15 **Q.** Right. So the instruction that BOEMRE would give to its
03:15 personnel about how to look at these issues, you would not be
03:15 familiar with?
03:15 **A.** I'm not concerned with those, no.
03:15 **Q.** You are not concerned with them?
03:15 **A.** It's not part of my job.
03:15 **Q.** Page 2. It indicates that "These are the preferred
03:15 guidelines" under Inspection Procedure there.
03:15 **MR. REGAN:** There, Donny, yes. Thank you. Right

there.

BY MR. REGAN:

Q. "These are the preferred detailed guidelines to be used by BOEMRE personnel to ensure that the stated requirement is met."

It says it's not a directive to supersede regulatory language.

Do you see that?

A. It's the first time I have read this, Counselor. Let me read it.

Yes, I see it.

Q. Go to page 30, then, of the document, of the pdf. There's an Item D-831 in this instruction to MMS inspectors. Do you the see title: "Are drilling operations suspended when the safe margin, as approved in the APD, between the drilling fluid weight in use and the equivalent drilling fluid weight at the casing shoe is not maintained?"

Do you see that?

A. Yes, I do.

Q. Is there any mention of -- the drilling rig fluid weight in use is the mud weight that's being used during drilling operations, correct?

A. That is correct.

Q. And the, quote, equivalent drilling fluid weight at the casing shoe is the reported leak-off or FIT value at the shoe, correct?

03:16 **A.** That's the way I would interpret those words.
03:16 **Q.** There's nothing in the instructions that the federal government gives to MMS inspectors that they should be evaluating drilling margin between the weakest point in the formation in the open hole and the mud weight, correct?
03:16 **A.** On reading this on its face, it states that you should be using the shoe. But again, that is assumed to be the weakest point in the hole. That does not -- you cannot ignore 427(a) in applying this, Counselor. 427(a) is still there. You have to use the hole behavior observations.
03:17 As I stated this morning in direct, it is physically absurd to drill with mud weights that are heavier than your weakest fractured rate. It will cause you to lose control.
03:17 **Q.** Dr. Huffman, do you believe that the federal government's instructions to its own inspectors about the regulations that you have cited for the first time in your life in your report -- do you believe that the instructions the federal government is giving to its inspectors are absurd?
03:17 **A.** I wouldn't say they are absurd, Counselor. Again, without studying this in more detail, it's not something that I would offer an expert opinion on at this point. It appears to be not consistent with what I understand.
03:17 **Q.** But you have --
03:17 **THE COURT:** Wait a minute, Mr. Regan, because I want to clear up something. I want to understand something, since I

have to understand all of this.

MR. REGAN: Yes.

THE COURT: Are what we are talking about, is this like a *weakest link* issue? In other words, if there's a weaker part placed somewhere down the interval, you have to look at that as opposed to where you normally look?

THE WITNESS: That is the practice that I have seen industry-wide, Your Honor, yes. This is using the standard assumption that the casing shoe is the weakest point.

But that's not always the case. As we showed in the Demonstrative B this morning, if you have a weaker zone in the well, you have to honor that zone in your drilling margin.

THE COURT: It just sounds like common sense to me.

THE WITNESS: It's very much common sense, and it's --

MR. REGAN: Maybe I can clear it up with this question, the issue is whether the regulation that Dr. Huffman claims was violated --

THE COURT: I think you are beating a dead horse, Mr. Regan. Why don't you move on. He has explained it.

MR. REGAN: We'll move on.

BY MR. REGAN:

Q. With respect to your testimony that BP misreported or did not report certain information, we have established that you did not look at all of the documents that may have contained

that information, including the daily driller's report or IADC reports, correct?

A. At the time I wrote my expert report and rebuttal, I had not looked at them, that is correct. I did review them later.

Q. You make that determination that BP employees misreported information based on looking at documents and e-mails, correct?

A. Both their internal documents, their e-mails and the documents they submitted to the MMS, yes.

Q. Is there any testimony from any of the MMS inspectors in this case to the effect that they felt that things were misreported to them?

A. Again, I don't recall the depositions of Mr. Neal and his son. At this point it's been over a year since I have read them. But they were looking at a subset of documents, not all of the documents that I looked at; and it's unclear to me that they ever saw any of BP's internal documents. So I can't really assess what they knew or didn't know when they were on the rig several years ago.

Q. Just like you can't assess what BP employees knew or didn't know when they were filling out forms, correct?

A. I can't know what a BP employee filled -- thought while filling out a form, but I can make an opinion based on e-mails that communicate data and information as to what BP believed the condition of the well was at the time. That's what I used in my analysis.

03:20 **Q.** With respect to Mr. Neal's testimony --

MR. REGAN: Donny, can we bring up Robert Neal deposition, page 107.

BY MR. REGAN:

Q. I understand that you did not review this at the time of your deposition, Dr. Huffman. Do you see Mr. Neal, who was an inspector, testified on line 19:

"QUESTION: When you review the APDs, do you look at the most recent, or do you look at the histories" --

A. Yes.

Q. It continues:

"QUESTION: To the extent there were multiple APDs, you would look at each one of them, correct?"

"ANSWER: Yes, sir."

That doesn't surprise you, right?

A. No. If they were on the rig, I would expect the inspector to look at those.

Q. You would expect them also to look at the weekly activity reports, correct?

A. It's my understanding that the inspectors were not always looking at the WARs. They were looking at the IADCs, what you call the *driller's report*. They may have looked at WARS. Again, I don't remember their specific depositions.

Q. You don't remember?

A. I just don't remember at this point, yes.

03:21 **Q.** They would look at cement pump data for the LOTs?
03:21 **A.** That would be reasonable, yes.
03:21 **MR. REGAN:** If we could go back to the Demonstrative 4363.
03:21 **BY MR. REGAN:**
03:21 **Q.** You were shown a PowerPoint that was with respect to this interval, the 22. The shoe test that was done there approximately late October. You were shown a PowerPoint where you testified with respect to the potential risk of an uncontrollable well event. Do you recall that?
03:21 **A.** Yes.
03:21 **Q.** There was a kick that occurred as they were drilling the 18-inch shoe -- 18-inch hole section after this shoe, correct?
03:22 **A.** That is correct.
03:22 **Q.** Was it controlled?
03:22 **A.** I believe it was, yes.
03:22 **Q.** Are you a drilling engineer?
03:22 **A.** No, sir. I'm a geophysicist.
03:22 **Q.** You have never been a drilling engineer at any point in your career, correct?
03:22 **A.** No, but I have been trained in aspects of that in my days at Exxon and Conoco. We had a lot of internal training for that purpose.
03:22 **Q.** Are you a registered engineer?
03:22 **A.** No, sir.

03:22 **Q.** With respect to an engineering decision about where to set casing, do you believe you are qualified to make that decision?
03:22 **A.** When I am involved in monitoring wells for my clients, they -- the drilling engineers consult me on when they should set casing. So they work with me in a collaborative way to take advantage of my knowledge and integrate it with their own knowledge to make the best decision possible on where to set casing.
03:22 **Q.** But with respect to an engineering decision about where to set casings, do you understand that people have to use engineering judgment?
03:22 **A.** Oh, yes, absolutely.
03:22 **Q.** That includes drilling engineering judgment?
03:22 **A.** It requires engineering judgment. I wouldn't specify just drilling.
03:22 **Q.** But it would include drilling engineering judgment?
03:23 **A.** Yes.
03:23 **Q.** With respect, then -- I'm going to go into the intervals now. The 18-inch shoe and the 16-inch hole section beneath it, there were multiple tests done for that shoe as well, correct?
03:23 **A.** That is correct.
03:23 **Q.** What was the leak-off test value?
03:23 **A.** I don't remember off the top of my head. I believe it was 11.78.
03:23 **Q.** You remember correctly, 11.78.

And what was the recorded number for eWells?

A. I don't remember what was in eWells, Counselor. That wasn't germane to what I was analyzing.

Q. The submissions that BP made to the regulatory authorities was not germane?

A. No. I believe -- no. On their revised documents they reported 11.8, as I recall.

Q. BP asked for permission to go to 11.5 mud weight for that interval, correct?

A. That's correct.

Q. They received permission for that, correct?

A. They did.

Q. You do not believe using 11.8 for that interval was a false reporting, do you?

A. It was very close to the 11.78. I did not quibble with that interval.

Q. You believe that BP accurately reported that interval when they got an 11.78 test and reported 11.8, correct?

A. Yes.

Q. Then using your hundredths, 11.78 would have been 11 1/2 mud weight --

MR. REGAN: If we could go to the ELMO.

BY MR. REGAN:

Q. 11.78, 11.5, that's a difference of .28?

A. That is correct.

03:24 **Q.** You don't have any problem with that?
03:24 **A.** No, Counselor, because they only drilled with 11.4 in this interval, not 11.5. They had a .38 margin in this interval. That's why I didn't raise a concern.
03:24 **Q.** So you would want to look at what they actually drilled with, right?
03:24 **A.** Yes.
03:24 **Q.** But in terms of the reporting, there was nothing wrong with that difference in reporting, correct?
03:24 **A.** I had no issue with it because they did not infringe on the .3 margin.
03:25 **Q.** With respect to the next shoe, there was a 12.5 you criticized, and it's the 16-inch shoe, and then the drilling of the 13, correct?
03:25 **A.** Yes. It was a 12.55.
03:25 **Q.** 12.55. It was reported as 12.6, correct?
03:25 **A.** Correct.
03:25 **Q.** You think that was inaccurate?
03:25 **A.** I believe that when they requested the waiver, which did not require rounding, they should have reported the 12.55 and asked for a 12.25 for their actual mud. Instead they asked for a 12.3, which technically they infringed on the .3 margin that they requested.
03:25 **Q.** The mud weight that was -- a waiver was requested, correct?

03:25 **A.** Yes, it was.
03:25 **Q.** The mud weight that was used was 12.3, correct?
03:25 **A.** Correct.
03:25 **Q.** The difference was 0.25, correct?
03:25 **A.** That is correct.
03:25 **Q.** You think that was an inaccurate --
03:25 **MR. REGAN:** If we can go back to the ELMO. Thank you.
03:25 **BY MR. REGAN:**
03:25 **Q.** Sorry for switching around.
03:26 You think the 0.28 was okay, but the 0.25 was not?
03:26 **A.** That's not what I said, Counselor. What I said was that in the first interval on the left, they requested a .3 margin from an 11.8; and they told the MMS they would drill with 11.5. They never went above 11.4. So they had a .38 margin in that interval. They didn't infringe on the .3.
03:26 We got into this in deposition, Counselor, and I think it's important to clarify. This is a rounding game --
03:26 **MR. REGAN:** I would like to ask him questions, if I could, Your Honor.
03:26 **THE COURT:** Wait a minute. Let the witness explain his answer. You asked the question, Mr. Regan.
03:26 **THE WITNESS:** This is a rounding game that we went through in deposition as well. And I think what's fundamentally important here to understand is that when you ask

for a drilling waiver to drill with a .3 margin, .3 means what it means. You don't go below that .3 margin. You don't impinge on it.

If you are requesting to MMS with a 12.6 reporting number and asking for 12.3, my view is, if you know that number is 12.55, you drill it at 12.25. You honor the difference that the government has approved for you to drill with. You don't play games with rounding.

As counsel pointed out this morning, you can play games with these numbers to make a .3 a .21 if you want to play that game. And that makes a mockery of the regulations, Counselor.

MR. REGAN: With respect, Your Honor, I just would like the witness to -- I think that was outside of the scope of my question, but I will ask a new question.

BY MR. REGAN:

Q. The difference of .28 and .25 is 3/100, correct?

A. That is correct.

Q. Have you ever been a mud engineer?

A. No.

Q. You understand that mud engineers are drilling fluids specialists, mix up mud on rigs to certain densities, correct?

A. That is correct.

Q. You understand how they do that, right?

A. Yes, I do.

03:27 **Q.** Is it your belief that mud can be mixed to a hundredth of
03:28 a pound?
03:28 **A.** I believe that you can control it to that level, but it is
03:28 not always easy, which is why I did not make an issue of the
03:28 .28.
03:28 **Q.** With respect to Mr. Frank Patton, he had a phone call with
03:28 BP with respect to this interval, the 16-inch shoe and the
03:28 13-inch hole section, correct?
03:28 **A.** I believe that's correct, yes.
03:28 **Q.** He approved BP's going to a .3 margin, correct?
03:28 **A.** He did.
03:28 **Q.** With respect to the last two shoes, it's your statement or
03:28 opinion that the shoe at the 13 5/8 and the shoe at the 9 7/8,
03:28 so the bottom shoe, 9 7/8 and the 13 5/8, that those two tests
03:28 were -- that the number received on the test was reported
03:29 accurately, correct?
03:29 **A.** The number received on the test for the max pressure was
03:29 reported as it was measured, yes.
03:29 **Q.** But you criticize those tests because you think that BP
03:29 did not believe that it was a valid test?
03:29 **A.** I don't criticize it just for that reason, Counselor. I
03:29 criticize it because as an expert -- and I've done thousands of
03:29 leak-off test analyses in my 23 years doing this -- I would
03:29 never have accepted those two tests as valid leak-off tests,
03:29 and I don't believe that other experts would have either. And

BP's own specialists internally had serious doubts about the validity of those tests.

There's a basic rule: When in doubt, retest. The time it takes to retest a shoe and get a correct number that you trust is very small. It's a small amount of NPT that is required to do that additional test.

And be sure where you are before you put your wellbore in jeopardy by getting a shock or a surprise down the hole --

Q. Dr. Huffman --

A. -- when you're drilling.

Q. -- are you finished?

A. Yes.

Q. Do you know Dr. Ted Bourgoyne, Jr.?

A. Yes, I know of him.

Q. He is a professor emeritus of petroleum engineering from LSU, correct?

A. Yes, I do.

Q. He was at LSU since 1971?

A. Yes.

Q. Is that correct?

A. Yes.

Q. He was dean of the college of engineering there?

A. I don't remember his whole CV, but I do recall he was in the administration at the university for a while.

03:30 **Q.** Are you aware he disagrees with your judgments with respect to the 13 5/8-inch test and the 9 7/8-inch test as to whether they were valid tests, correct?

03:30 **A.** I believe I addressed that issue clearly in my rebuttal report. As stated in that report, Dr. Bourgoyne is taking the approach that those two tests represented incredibly strong rock; and yet the two tests on their face suggest that that is not what was happening.

03:31 In particular, the 13 5/8 test, as I stated this morning, showed clear evidence of a cement channel. So even if you accept the fact that it was very strong rock, you still must -- you should have retested that shoe to confirm integrity of the wellbore before you drilled forward.

03:31 **Q.** Is it possible, Dr. Huffman, that you -- as you say, you have done thousands of these tests -- or you haven't done thousands. You have looked at thousands?

03:31 **A.** I have looked at thousands of them, yes.

03:31 **Q.** You have looked at thousands of them.

03:31 And Dr. Bourgoyne, who has been in this area for his own entire professional career, that you have a difference of engineering opinion?

03:31 **A.** If you look at Dr. Bourgoyne's deposition, I believe that he testified that he has not done work in deep water. So I would argue that deep water, as an area of drilling, is outside his experience base.

Q. That would be your view of Dr. Bourgoyne?
A. I have great respect for Dr. Bourgoyne in general, and I have read his textbooks and other information that he has published.
Q. Right.
A. But there is a big difference between onshore and shallow water drilling experience and deepwater, ultra deepwater experience.
Q. Dr. Bourgoyne has published textbooks that talk about leak-off tests, correct?
A. He has, yes.
Q. Dr. Bourgoyne has published articles that talk about leak-off tests, correct?
A. He has.
Q. Do you have great respect for the LSU petroleum engineering department?
A. Yes, I do. I wouldn't dare say otherwise and be in the state of Louisiana, would I? I would never get home.
THE COURT: Well, I went to Southeastern and Loyola, so I'm kind of neutral here.
BY MR. REGAN:
Q. Have you ever been a member of an API committee concerning the determination of formation pore pressures and frac gradient, Dr. Huffman?
A. No, I have not.

03:32 **Q.** You understand that Dr. Bourgoyne has?
03:32 **A.** That's possible. Again, I didn't review his CV.
03:32 **Q.** With respect to determining whether or not -- I'll just try and simplify it, but please tell me if I have it wrong.
03:32 One of your views is that you think they may not have actually drilled into new formation in these last two tests, correct?
03:33 **A.** The data from the daily log of operations, which is, again, a document that I relied heavily on because it's the actual drilling document on the rig, indicates that they did drill forward 10 feet. However, as we noted this morning in direct, Mr. Morel documented in late April that they put the casing at the bottom of the well, which means they didn't have the normal amount of rathole. That alone could have significantly affected the quality of the test.
03:33 In both cases, in my view, they should have squeezed the shoe and then drilled out another 10 to 20 feet and retested. This is a simple procedure to confirm that you have a valid leak-off test.
03:33 **Q.** You did not look at the actual IADC reports to see what the crew reported with respect to whether they drilled 10 feet further, did you? Did you look at those reports or not? That's the question.
03:33 **A.** I looked at the IADCs, and the IADCs confirmed the same information in general that I had already reviewed on the daily

log of operations months earlier. The two are consistent in most cases.

Q. They show that 10 additional feet was drilled beneath the shoe, correct?

A. That is correct. That's what they show.

Q. You disagree with that statement?

A. I do not believe, whether they drilled the 10 feet or not, that those tests are indicative of a valid leak-off test or formation integrity test, Counselor.

Q. With respect to your pore pressure prediction work -- and that, again, is what you do when the well looks like this, right? There's nothing there -- do you look at offset well information?

A. Yes, I do.

Q. Why do you look at that?

A. That is the only nearby calibration, as we call it, of the pore pressures, the fracture gradients from other leak-off tests nearby, and so forth.

Q. There was offset well information analyzed by BP in connection with looking at the values that had come in for the 13 5/8-inch test, correct?

A. That is correct.

Q. The offset well information was from a well called Yumuri, correct?

A. That is correct.

03:35 **Q.** Before I throw jargon, there's a question of what's called *overburden*; is that right?
03:35 **A.** Yes.
03:35 **Q.** Overburden is, in essence, further out from the frac gradient or it could be the frac gradient?
03:35 **A.** Yes.
03:35 To clarify for the Court, the overburden is the total vertical weight of sediment and water that exists at any point in the subsurface. So that is the stress of all the materials above you that are weighing down on you at any point in the subsurface.
03:35 **Q.** BP's engineers, in assessing this test, looked at offset well information, correct?
03:35 **A.** They did, yes.
03:35 **Q.** There is also a relief well that was drilled very close to this area after the accident, correct?
03:35 **A.** That is correct.
03:35 **MR. REGAN:** I would like to pull up 7250. What I'm pulling up is the leak-off test plot for the MC252 No. 3 well.
03:36 And, Your Honor, the relief wells each had a different number sequence. This is No. 3.
03:36 **BY MR. REGAN:**
03:36 **Q.** The vertical depth of the leak-off test that was performed here was approximately 13,461 feet, correct?
03:36 **MR. REGAN:** If we could focus on that. It's page 31

03:36 of the pdf. I'm sorry.
03:36 **BY MR. REGAN:**
03:36 **Q.** While they are looking for it, Dr. Huffman, are you aware
03:36 of the leak-off test that was performed for the relief well?
03:36 **A.** I believe it's an exhibit that was shown in deposition, if
03:36 I'm not mistaken, if it's the same test.
03:36 **Q.** The value for the leak-off test at the same depth of
03:36 rock -- here we are -- was 14.66. Do you recall that from your
03:36 deposition? We can find it on the chart, but do you recall
03:37 that?
03:37 **A.** Yes, I do.
03:37 **Q.** The leak-off test in the No. 1 well for the same area was
03:37 14.7, correct?
03:37 **A.** That is not correct, Counselor. I want to specify why.
03:37 **Q.** Was the value that was received on the rig -- when they
03:37 believed they had drilled 10 feet below, was the value 14.7?
03:37 That's my question.
03:37 **A.** In the original well?
03:37 **Q.** Yes.
03:37 **A.** The value they reported was 14.7.
03:37 **Q.** Was the value that was reported from the relief well --
03:37 which was just in the same depth but a different location to
03:37 drill to intersect the well, at that same area. Was that value
03:37 14.66?
03:37 **A.** The maximum pressure on the test was reported as 14.66.

That is not the leak-off pressure, Counselor. I analyzed this test myself after it was provided to me, and the leak-off value in this test was much lower than 14.66.

Q. You did not rely in any way on the information from the relief well in reaching your opinions in this case, correct?

A. I did not, no. This was not available at the time.

Q. Let's look at a document that I believe you showed earlier this morning, that your counsel showed you, TREX-3715.

This is a series of e-mails. I want to direct your attention to the -- first of all, you were shown this document in your deposition, and do you recall testifying that you excluded it from your consideration?

A. I may have, Counselor. I don't remember all the statements that I made. It's been a while.

Q. If we could focus on the bottom half, there's a discussion of the Yumuri LOC test. Do you see that?

A. Yumuri was one of the offset wells nearby. They used Isabella, Yumuri, and Rigel, if I recall correctly.

Q. The Yumuri well, when they did a leak-off test in a similar area, meaning similar depth, they received a result that was also above overburden, correct?

A. That's correct.

Q. So three wells around the same depth, reasonably proximate to each other, all received values that were over overburden, correct?

03:39 **A.** That is not correct, Counselor.

I want to make two notes here that are important for the Court to understand. Look at the bottom of what you have blown up here. You will notice that in Mr. Albertin's e-mail -- and this is very fundamental to this issue -- he states: "For the record, we discounted the reported Yumuri leak-off test and added a BP-calculated value of 14.4 to the archived mud file."

He did not believe that test was actually above overburden.

Q. But you are not a belief expert, right? You are not a psychiatrist, correct?

The question I'm asking you is an engineering question or a geophysical question. You, as a geophysicist, claim in your independent analysis that that test is invalid, correct?

A. That's correct, the test on the original wellbore, yes.

Q. That's your opinion, correct?

A. That's correct.

Q. You do not include in your analysis the Yumuri offset well or the relief well, do you?

A. That is not correct, Counselor.

And again, let me clarify. I had this kind of information available to me. I was aware that there was a high leak-off test reported at Yumuri, but I was also aware that BP

discounted that leak-off and lowered the value to below overburden.

Furthermore, going back to your relief well diagram that you put up a minute ago, as I stated very clearly a minute ago, I analyzed that leak-off test myself, and the leak-off was occurring on that test far below the max pressure that BP reported.

I do not believe that that test was anywhere near as high in its actual leak-off pressure as what they were claiming in the 13 5/8 shoe test in the original Macondo well.

Q. In the e-mails that you reviewed in making your judgment that people did not believe a test, you looked at TREX-3733.

MR. REGAN: Can you pull that up.

BY MR. REGAN:

Q. It's an e-mail from Marty Albertin, correct?

A. Yes.

Q. In that e-mail that you saw earlier today, he wrote about the test result, correct?

A. He did.

Q. He sent the e-mail to Randall Sant and Mark Alberty, correct?

A. Correct.

Q. In it he has four different possibilities with an explanation, correct?

A. Yes.

03:41 **Q.** Is there anywhere in that e-mail that Mr. Albertin says, This is an invalid test?
03:41 **A.** I believe I answered this question this morning on direct, Counselor. He ruled out -- there were four options. The 3 and 4 are on the next page of the document. He ruled out Option 3 and 4. And, in fact, one of his explanations for Yumuri being so high was that it was closer to the salt near Yumuri, and so he thought it was not valid.
03:41 **Q.** You were shown this document in your deposition, correct?
03:41 **A.** That is correct.
03:41 **Q.** Page 445 of your deposition, Dr. Huffman?
03:41 **A.** That's correct.
03:41 **Q.** I'm sorry. I'll pull it up.
03:41 **A.** Yes.
03:41 **Q.** Line 25 of page 445, you were asked this question:

03:42 **"QUESTION:** And Martin Albertin does not say that it's an invalid test, correct?

03:42 **"ANSWER:** I don't believe he specifically said that, no."

03:42 Was that your answer?

03:42 **A.** He did not specifically say it, but --
03:42 **Q.** Okay.
03:42 **A.** -- if you look at his note on its face, he discounted two of his four options, which means there was a 50 percent chance, toss of a coin, that it was not a valid test. In that

circumstance you should retest the shoe.
Q. You agree that there was an engineering and science discussion about the validity of the test amongst the BP personnel, correct?
A. Yes. I saw several e-mails to that effect.
Q. None of the people involved in that discussion wrote an e-mail or testified that they believed it was an invalid test, correct?
A. None of them said it was valid either, Counselor.
Q. My question to you, sir, is: None of those people involved in this discussion wrote an e-mail or testified under oath that they believed it was an invalid test, correct?
A. I would disagree with that, Counselor. If you look back to Mr. Morel's document from April 28, he clearly shows that he had concerns about the test, along with the other e-mails from earlier in the process. I would argue they didn't have confidence in this test, period.
Q. Page 446 of your deposition, were you asked this question and did you give this answer:

> **"QUESTION:** And you believe that all three of them thought that the test was invalid?
>
> **"ANSWER:** No. I believe there were questions about the test."

A. Yes, that's what I said.
Q. You don't know whether or not --

03:43 **THE COURT:** Wait a minute. Wait a minute, Mr. Regan. You are using the witness' deposition, and it's exactly what he just said in court. So it's not a proper use of a deposition.

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

THE COURT: It's supposed to be if he said something different, but I heard him say the same thing.

MR. REGAN: I may have heard him slightly different, Your Honor, but I will move on.

THE COURT: We both need to get our hearing checked.

BY MR. REGAN:

Q. Do you know what Marty Albertin believed about these tests, Dr. Huffman, other than what you see in e-mails?

A. The e-mails are the primary documents that I relied on as indicators of what BP's people were -- the way they viewed the results of the tests.

Q. I would like to now turn to the final production interval, which is the 9 7/8-inch shoe. And you gave some testimony about that this morning. Do you recall that?

A. Yes.

Q. With respect to determining whether or not they tested the new hole -- that is, actually went below the shoe -- can an operator analyze the depth of the bit to determine that they actually made a new hole?

A. They can do that, and they use what's called a pipe tally to determine where they are.

03:44 **Q.** They evaluate the changes in the weight on the bit to
03:44 indicate that they were drilling new formation?
03:44 **A.** That is correct. And also the rate of penetration.
03:44 **Q.** In reaching your opinion that they may have not actually
03:44 drilled new hole, you did not review the weight on the bit or
03:44 the ROP?
03:44 **A.** At the time of my deposition, I had not. I went back
03:44 later and determined that the information was equivocal. It
03:44 really didn't change my mind either way.
03:44 **Q.** You again saw in e-mails that there were discussions
03:45 amongst a number of people about the leak-off test at the
03:45 9 7/8, correct?
03:45 **A.** Yes.
03:45 **Q.** You saw testimony from Pinky Vinson about the test at the
03:45 9 7/8, correct?
03:45 **A.** I read his deposition a long time ago, Counselor. I don't
03:45 remember what his opinion was on the test.
03:45 **Q.** Do you recall Mr. Vinson testifying that he thought the
03:45 test results indicated a strong rock, in his view? Do you
03:45 recall that?
03:45 **A.** He may have said that, Counselor. You would have to show
03:45 it to me.
03:45 **Q.** Do you agree that there's a lot of technical analysis
03:45 that's involved in trying to evaluate these test results,
03:45 things that are -- using either geophysicists or other

techniques?

A. I would answer that in two steps, Counselor.

If you have what looks like a valid test, there are steps you take to analyze the test. If the test on its face is absurd, is not valid -- and I believe the 9 7/8 falls into that category, based on what I stated in direct this morning -- you retest. You don't analyze something that's absurd. You retest the shoe.

Q. To be clear, Dr. Huffman, it would be your testimony that anyone who thought that test was valid would be reaching an absurd judgment, in your mind?

A. In my expert opinion, yes. You don't pump to the same pressure as your casing test.

Q. With respect to drilling the final interval, you had some discussion about the mud weights that were seen and the ESD, the equivalent static density, and the ECD, the equivalent circulated density. Do you recall that testimony generally?

A. Yes.

Q. There was a detail that I wanted to ask you about, tools you can use the strengthen the wellbore. One of the tools that can be used to strengthen the well bores is called *loss circulation material*, correct?

A. Correct.

Q. Or LCM?

A. Correct.

03:46 **Q.** LCM exists in drilling to help remedy loss zones?
03:46 **A.** That's correct.
03:46 **Q.** There's a lot of study and there's specialized companies that develop different types of LCM materials to help remediate loss zones in wells, correct?
03:47 **A.** Yes.
03:47 **Q.** Use of LCM can not only remedy a loss zone but can actually strengthen the fracture gradient of an area of rock that had had a loss, correct?
03:47 **A.** Not exactly, Counselor.
03:47 **Q.** Is that an opinion of yours?
03:47 **A.** No. If you look at LCM as a general type of material, LCM is used to strengthen formations as long as you have not done severe damage to a formation so that the rocks are so badly fractured and broken that the LCM can't be effective.

And there are different types of that material. Some are polymer mixes that gel in the cracks. Some are things with fibers in them. There's a whole range of materials that are used. And Mr. Alberty went into great length in his deposition about that subject.

03:47 **Q.** In terms of the dates -- and I think we went through this earlier with His Honor -- the drilling that went to a depth of approximately 18,260 was on or about April 4, 2010; is that correct?
03:48 **A.** That's about right, yes.

03:48 **Q.** The final 100 feet was drilled on April 9, 2010, correct?
03:48 **A.** I believe that's correct, yes.
03:48 **Q.** So there was no drilling that took place between April 4, 2010, and April 9, 2010. Is that fair?
03:48 **A.** Again, I would have to go back and look at the master log to be sure. But, yeah, I don't want to speak without looking at the data.
03:48 **Q.** On April 9, 2010, the total depth was reached of 18,360, and there was no further drilling after that date, correct?
03:48 **A.** I believe that's correct, yes.
03:48 **Q.** You testified -- it may have been on either Transocean or Halliburton's cross-examination -- but that the drilling margin regulations apply while you are drilling, correct?
03:48 **A.** The safe drilling margin regulations apply while drilling the well, correct.
03:48 **Q.** The drilling had ceased on April 9 around 12:30 in the afternoon when they reached 18,360, correct?
03:48 **A.** That is correct.
03:48 **Q.** Between April 4 and April 9, when you were looking at the mud weights, did you also look at the use of loss circulation materials during those dates?
03:49 **A.** I did.
03:49 **Q.** You saw that loss circulation materials were used on several days between those dates?
03:49 **A.** That is correct.

03:49 **Q.** Did you do any assessment as to whether those loss circulation materials would actually remedy the loss zones that were seen?
03:49 **A.** It's my opinion that they did not remedy the loss zones, as we demonstrated in the PowerPoint from Mr. Randall Sant this morning, with the third loss event.
03:49 **Q.** A loss circulation pill was circulated on April 9. Do you recall that?
03:49 **A.** Again, Counselor, I don't remember every detail.
03:49 **Q.** With respect to -- do you recall that a circulation took place on April 9 with no losses after an LCM pill was used?
03:49 **A.** I believe they may have circulated with a downhole EC -- with an ECD that was a little less than 14.4.
03:49 **Q.** Do you agree, after five days of using LCM pills, BP and Transocean on April 9 circulated the well without losses?
03:50 **A.** I believe that there were some more losses in there, Counselor. There was a total of 51 barrels lost at the end, and it's not clear exactly when that occurred. But there was -- there were more losses. The margin in the well was very, very close.
03:50 **Q.** So with respect to the use of LCM pills for five days, it's your expert opinion that that would not reestablish the fracture gradient?
03:50 **A.** That's correct. I believe it was still below 14.4, at best.

03:50 **Q.** It's your opinion, after using five days of loss circulation materials, the fracture gradient would not have been reestablished for purposes of drilling forward the final 100 feet, correct?

03:50 **A.** Not only would it have not been reestablished, but they did no measurements to confirm it was reestablished.

03:50 **Q.** And so with respect to that last 100 feet of drilling, how many losses did they have in that last 100 feet?

03:50 **A.** I believe they had a total of 51 barrels, as I recall. That's the number that sticks in my head during the last 100 feet or so. But that might not be quite right.

03:51 **MR. REGAN:** I'd like to pull up TREX-41063, which is the April 9 daily drillers report.

This is a daily drillers report. I think a couple have been shown to Your Honor, but we would like to go to the remarks section, if we could, in the middle of the page. There we go. It's on the second page.

Again, this is TREX-41063. We can just go ahead and make that . . .

BY MR. REGAN:

03:51 **Q.** This details the activities that have taken place on the rig during the designated time periods, correct?

03:51 **A.** Yes. In both shifts, yes.

03:52 **Q.** It shows that there was a drilling that took place here 8:30 to noon, drill with 8 1/2-inch drilling assembly from

18,260 to 18,330, correct?
A. Yes.
Q. All right. They are saying they are monitoring the active system for gains and losses in that same entry. Do you see that?
A. Yes, I do.
Q. That was with a surface mud weight of what?
A. Let's see. Do they actually say it?
Q. Do you know?
A. I believe that they had surface mud weight here of 14 pounds per gallon.
Q. 14.0?
A. 14.0, yes.
Q. If we go to the next remarks, which continue there below the header, they say: "Circulate hole clean at 18,330."
MR. REGAN: If we can just zoom that whole paragraph up there. The middle of the page there, the details of operation.
My question, if you can see it on the screen -- you can take off the magnification there.
BY MR. REGAN:
Q. Do you see any evidence of losses that took place?
A. Again, Counselor, I would have to read this whole thing before I answer.
The other thing I'm concerned about here is that, as

I stated earlier, this is a derivative document from the daily log of operations. And I have found cases where the information here is not consistent with the master daily log of operations that we showed this morning. I would want to look at both to make sure there's nothing missing.

Q. The master document you're talking about is the spreadsheet that you showed earlier today, right?

A. The daily log of operations, yes.

Q. Do you know that the IADC reports are actually kept and maintained by the drilling contractor, not BP?

A. The drilling team on the rig is also filling in the daily log of operations. They are doing both. And I want to make sure. In most cases I found the details here of operations were the same as what's in the daily log of operations.

I did find a few cases where there were differences. And so I don't want to rely on just this document without looking at the daily log of operations for comparison.

Q. Drilling stops on April 9, as evidenced here, in terms of reaching 18,360 in this report, correct?

A. That is correct.

Q. Between April 9 and April 20, the well was -- no further hole was made, no further drilling operations, correct?

A. That's correct.

Q. Were there any further losses over those 11 days?

A. I don't recall, Counselor.

03:54 **Q.** It's your testimony that the well was in an extremely fragile state, and you used some different descriptions of that. But it stayed that way for 11 days and did not have any further losses?

03:54 **A.** And the reason for that is straightforward. As you noted a minute ago, they had a surface mud weight of 14. That provided them a downhole static density of about 14.22, I believe was reported in the first half of the document we are looking at.

03:54 And as they noted in their MOC and other documents, they circulated very gently after this point. Whenever they were circulating the well for any purpose, they were trying to keep the ECD as low as possible while circulating so that it would not go over that 14.4 to 14.5 that they were concerned about.

03:55 They understood the delicate nature of the well. That is clear in all their documents.

03:55 **Q.** They understood the delicate nature of the well, they took action with respect to it, and there were no further losses between April 9 and April 20, correct?

03:55 **A.** I believe that's correct.

03:55 **Q.** There were no further losses in the hole interval that you believe was -- basically had no margin, correct?

03:55 **A.** It had very little margin, yes.

03:55 **Q.** Not a single barrel lost from April 9th to 20th?

03:55 **A.** Again, I would have to go back and look at the data to be sure of that, Counselor.

MR. REGAN: Thank you, Dr. Huffman.

I will pass the witness, Your Honor.

THE WITNESS: Thank you, sir.

THE COURT: Cameron?

MR. JONES: No questions, Your Honor.

THE COURT: M-I SWACO?

MR. TANNER: No questions, Your Honor.

THE COURT: Redirect by the U.S.A.?

MR. SPIRO: Can we have five minutes to work with our technical people before that?

THE WITNESS: I could use a bio break here, Your Honor.

THE COURT: We will try to keep this to about five minutes. Don't venture too far.

I'm talking to everybody else.

(Recess.)

04:17 **THE COURT:** Please be seated. Our five-minute break was a little extended, but it was only because we had another little technical transmission problem to the other courtrooms. Some device had to be changed out, but it's all done now, I understand.

I was asked to mention by someone -- I forgot to do it earlier today. When you-all submit your lists of

exhibits to us, to Ben and Stephanie and all, I think good protocol courtesy would be that you simultaneously give copies of that to counsel for all parties. Apparently that hasn't been happening. Let's try to do that.

MR. REGAN: On that subject, Your Honor, we will put together a list with respect to the exhibits that I've used with Dr. Huffman.

THE COURT: Good. Thank you.

MR. REGAN: Before I get to the very small number of redirect questions, I gather the protocol would be to move the various exhibits in tomorrow?

THE COURT: You can do that today when the witness is finished, if you would like. We have kind of been doing it at the end of each witness. I think that's what we have been doing.

REDIRECT EXAMINATION

BY MR. SPIRO:

Q. Dr. Huffman, we heard questions earlier about how Dr. Bourgoyne disagreed with you about the PIT that was taken before they drilled ahead in the second margin interval; is that correct?

A. Yes.

Q. I would like to show you Dr. Bourgoyne's deposition Volume 2, page 96. Do you see line 15?

A. Yes, I do.

04:19 **Q.** Now, Dr. Huffman offered the explanation that mud is being lost through a shoe in a cement canal.

Do you remember reading that? Is that the interval we were talking about earlier?

A. Yes, it is, the 13 5/8 shoe.

MR. SPIRO: Can we go back to just the page without even the fly-out part?

BY MR. SPIRO:

Q. The statement is:

"QUESTION: Is that a yes?"

Can you read on.

A. Yes. He say -- the question is:

"QUESTION: Is that a yes?

"ANSWER: I remember reading that, yes.

"QUESTION: Do you dispute that as a possibility?"

Then an objection, and his answer is:

"ANSWER: It's possible."

MR. SPIRO: Can we go to TREX-4533. This is a mud -- let's go to the top --

BY MR. SPIRO:

Q. Mud loss event summary from John LeBleu, drilling excellence group. Have you seen this before?

A. Yes, I have.

Q. It's a portion of one of the documents we looked at earlier dated May 13, 2010?

A. Correct.

MR. SPIRO: Let's go to the second page and then the fly-out for the second page.

BY MR. SPIRO:

Q. So correct me if I'm wrong. What this indicates is they continued to wash and ream from 18,234 to 18,260 and drill to 18,360, losing a total of 51 barrels. Do you see that?

A. Yes, I do.

Q. And the total mud losses for this interval were 3,271 barrels?

A. That's correct.

Q. Do you know how many gallons roughly 3,271 barrels would be?

A. If you multiplied by 42, which is the number of gallons in a barrel, it is a substantial amount. You are looking at well over 100,000 gallons of mud was lost.

Q. Is that something you want to avoid in an interval with hydrocarbons?

A. You want to avoid it anywhere but especially in a hydrocarbon-bearing zone, yes.

Q. 51 barrels that was lost from 18,234 to 18,360, that would be about 2,000 gallons?

A. That's correct.

MR. SPIRO: Let's go to TREX-3995, which has not been shown earlier today. Let's go to the first page, please. The

very first page. Can we see the very first page of the exhibit. TREX-3995. There you go.

BY MR. SPIRO:

Q. So this purports to have attached to it a Macondo mud loss summary from John LeBleu. Have you seen this before?

A. Yes, I have.

MR. SPIRO: Let's go to the last page we were just looking at. Let's zoom in on the column with those numbers -- there you go, 68. Can we see the top of it so that everybody knows what each column indicates.

BY MR. SPIRO:

Q. So downhole mud losses were being marked on a few of the days?

A. That's correct.

MR. SPIRO: Can we go to the last page. The next fly-out. No, no, no. The next fly-out. It's two pages after this.

There we go.

BY MR. SPIRO:

Q. Look at April 9. Do you see that?

A. Yes, I do.

Q. It says: "Drilled last 100 feet to 18,360 feet."

A. Correct.

Q. Does it show that there were mud losses on the last day?

A. Yes, the 51 barrels that I quoted earlier.

04:23 **Q.** You had seen this document before?
04:23 **A.** Yes, I had.
04:23 **Q.** So they did lose mud on the last day -- according to this
04:23 document, the last day of drilling?
04:23 **A.** That is correct.
04:23 **Q.** You say that as a contractor, you are obligated to apply
04:23 the drilling margin regulations to your work. Is that how you
04:23 testified earlier?
04:23 **A.** Yes.
04:23 **Q.** Would that also apply to BP personnel?
04:23 **A.** Yes. As employees of the lessee that's -- operator
04:24 lessee, they are obligated to follow the regs as well.
04:24 **Q.** We talked before about the incidents of noncompliance or
04:24 INCs?
04:24 **A.** Yes.
04:24 **Q.** MMS's ability to issue INCs is based on what?
04:24 **A.** Having accurate information reported to them by the
04:24 operator.
04:24 **Q.** Did you find that the information provided to MMS was
04:24 consistent with the information in the internal records of BP?
04:24 **A.** No, it was not. It was reported selectively and in some
04:24 cases not reported at all.
04:24 **MR. SPIRO:** Those are all of the redirect questions
04:24 that I have. I would like to offer a list of documents into
04:24 evidence. I have not provided that list to any other parties.

That's something I need to do.

THE COURT: Are all these documents that you used here today in connection with the examination of this witness?

MR. SPIRO: Absolutely.

THE COURT: Does anybody have any objection to any of those documents?

MR. REGAN: No objection.

THE COURT: Hearing none, those are admitted.

Provide the list to opposing counsel as soon as you can and to us, of course.

MR. SPIRO: Okay.

THE COURT: Mr. Regan, do you have documents you want to submit?

MR. REGAN: They're generating a list for me right now.

THE COURT: That's fine. Whenever you are ready. But just don't forget to do it.

MR. REGAN: We will circulate it.

THE COURT: We are finished with this witness?

Okay. Thank you, sir.

THE WITNESS: Thank you, Your Honor.

MR. SPIRO: The statement earlier is that the report needs to be put in, but that was the first thing I did was move the report.

THE COURT: The report, the rebuttal report, and the

CV were put in at the beginning. If not, I am admitting them.

MR. GODWIN: Thank you, sir.

THE COURT: Who is up next for the plaintiffs?

MR. STERBCOW: The PSC calls Mark Bly, Your Honor.

MARK BLY,

having been duly sworn, testified as follows:

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

THE WITNESS: My name is Mark Bly, M-A-R-K, B-L-Y.

MR. STERBCOW: May it please the Court, Paul Sterbcow, plaintiffs steering committee, on cross-examination.

CROSS-EXAMINATION

BY MR. STERBCOW:

Q. Good afternoon, Mr. Bly.

A. Good afternoon.

Q. Let's begin with your background, please.

MR. STERBCOW: If we could pull up D-2747, TREX-22784.

BY MR. STERBCOW:

Q. My understanding, Mr. Bly, is that you have degrees in both civil engineering and structural engineering, correct?

A. That's correct.

Q. Civil engineering from the University Cal Davis, structural engineering degree from the University of California Berkeley, correct?

04:27 **A.** Correct.
04:28 **Q.** Did you ever have the opportunity to be taught by Dr. Bea while you were at Berkeley?
04:28 **A.** No, sir, I didn't.
04:28 **Q.** Do you know him?
04:28 **A.** I do not know him.
04:28 **Q.** Is it a fact that you started with BP right out of college?
04:28 **A.** I started with Exxon Corporation right out of college, then back to graduate school, and BP right after that.
04:28 **Q.** Graduate school entailed what?
04:28 **A.** That was the master's degree in structural engineering.
04:28 **Q.** Structural engineering.
04:28 Were you with BP from 1984 uninterrupted until this year?
04:28 **A.** Yes.
04:28 **Q.** My understanding is you recently retired?
04:28 **A.** I will in just a couple more months, that's right.
04:28 **Q.** Do you have plans to resume a new or different career?
04:28 **A.** I haven't made any type of plans yet.
04:28 **Q.** So how long will your career with BP have spanned when you retired?
04:28 **A.** Twenty-nine years.
04:28 **Q.** In 1984, what position did you start?
04:28 **A.** I started as a project engineer working on North Slope

things and did that for a very brief time before I moved to Lafayette to become a drilling engineer.

Q. Did you hold a drilling engineer's job in a similar fashion as Mr. Morel and Mr. Hafle held on the Macondo project, or was it a different responsibility?

A. It was a bit junior to them. I was a brand-new engineer in that role.

Q. Would you have been training under a more senior engineer during the time you were there?

A. Yes.

Q. Did you have the opportunity to do any actual drilling engineering work on offshore wells in the Gulf of Mexico?

A. Yes, I did.

Q. I assume at that time this is the early '80s, mid-'80s?

A. Yes, that's right.

Q. That would have all been shallow water work?

A. Yeah, it was out to about 1,000 feet of water at that time, maybe 1500. So it was starting to move into the deeper water.

Q. Did you have the opportunity to actually work aboard and sleep aboard any rigs, semisubmersibles or jack-up rigs?

A. Yes. I did both several times.

Q. So you had the experience in actual hands-on work on drilling rigs in the Gulf?

A. Yes.

04:30 **Q.** Did you hold any job positions other than drilling engineer on any rigs in the Gulf of Mexico?
04:30 **A.** Not really. There were times when I was offshore where I would operate as the night company man, but it was really in a drilling engineering role.
04:30 **Q.** I assume, given what you have told us and what we know about the industry, you never held any roles that would have involved responsibilities in drilling, actual drilling, drilling crew, support crew, anything like that?
04:30 **A.** That's correct.
04:30 **Q.** Has all of your oil field experience, in terms of actual hands-on operations, been on the operations side with BP, the oil company side?
04:30 **A.** It has, yeah.
04:30 **Q.** In that capacity, though, am I not correct that you would have had to have attended well training -- well control school as part of your drilling engineering training?
04:30 **A.** Yes. Back at that point in the early to mid-'80s, that's right.
04:30 **Q.** Do you know if BP continued to require its drilling engineers to undergo well control school training as part of their engineering responsibilities?
04:31 **A.** I don't know that for a fact. I assume that to be the case.
04:31 **Q.** Do you have any specific knowledge as to whether either

Mr. Morel or Mr. Hafle had any well control school training as of the time the Macondo project was conceived and designed?
A. I assume that, but I don't know it for a fact, no.
Q. I take it you never personally spoke to either one of those gentlemen as part of the investigation, correct?
A. That is correct.
Q. We will get into that in a little while.

Now, when did you leave the drilling engineering phase of your career and go into something else?
A. Probably two years, two years after I started, and then I shifted to another role.
Q. What was that role?
A. The next thing I did was construction work. I worked on a platform, an offshore platform project in Morgan City, Louisiana.
Q. Were you actually part of the engineering of the construction of the platform?
A. Yes, that's right.
Q. That didn't involve specifically engineering any exploration or production, correct?
A. This was building the platform structure itself.
Q. Structural in nature?
A. That's right.
Q. How long did you do that type of work?
A. That project lasted about 18 months or so, and I was with

it from beginning to end.
Q. What did you do from there?
A. From there it was a move to Houston, where I spent time in the production engineering side. So I went drilling projects into production in Houston.
Q. About what year did you move into production?
A. It would have been the late '80s, '87, '88.
Q. Is it fair to say, then, that at least by 1990, you had experience with BP in the drilling engineering component, the construction engineering component, and the production engineering component of design, drilling, and management of offshore wells and facilities?
A. Yes.
Q. You had done all of them?
A. Yes, I had good exposure to all of that.
Q. How long did you stay in the production engineering?
A. Again, that was a couple years. There was a point where I went back into project work. I was seconded into the Shell company for a year. That was in 1990.
Q. What did you do after that?
A. After that I did one more project, an onshore gas plant; and then I actually moved into what we call *commercial*, the more financial side of our business.
Q. So that took you out of the actual operation engineering phase of the business and moved you to more of the business

side of the business?
A. That's right.
Q. What position was that?
A. I started as a business analyst running economic models and things like that and planning and pulling plans together.
Q. Did you get any type of background in that work either by education, training, or experience before you moved into that field?
A. No, I really didn't. It was engineering background and being taught this as on-the-job training basically.
Q. Through that on-the-job training, did you learn a lot of the business end of offshore drilling?
A. Yeah. You learn a lot of the economics, the numbers that underpin the business, how cash flow works and those kind of things.
Q. How long did you do that?
A. That was about five years, multiple assignments. Maybe six years, I guess.
Q. That takes us up to around '06 or '07?
A. I'm sorry, we are still in the mid-'90s.
Q. Oh, I'm sorry. We're still in the mid-'90s. I jumped ahead. I apologize.
A. Yeah.
Q. What areas of the company did you specifically deal with in terms of this economic position, the business side?

04:34 **A.** It was -- it had two parts. The first part was looking exclusively at Gulf of Mexico activity, because I was stationed in that part of the company. At the end I was transferred to the headquarters in London where I was involved in looking at more global projects.

04:34 **Q.** What job position did you hold when you were first transferred to London?

04:34 **A.** It was one of these commercial jobs. It was called planning and performance management.

04:34 **Q.** You actually lived and worked in London at that point?

04:34 **A.** Yes.

04:34 **Q.** Who was your superior?

04:34 **A.** I worked for a gentleman named Andy Inglis first and Andy Hopwood second in that job.

04:35 **Q.** My understanding in going through the information, you and Mr. Inglis continued to proceed through BP promotion-wise and continued to work together for a number of years. Is that fair?

04:35 **A.** Not consistently, but our paths did cross, yes.

04:35 **Q.** Mr. Inglis was employed by BP in '09 and through April 20, 2010?

04:35 **A.** Yes.

04:35 **Q.** Did he have any role in the Macondo project, to your knowledge?

04:35 **A.** Well, he was the chief executive officer of the upstream

under -- the very top structure under which the Gulf of Mexico and the Macondo project sat.

Q. Would he have been in an executive management position at that time?

A. Yes.

Q. Again, you said during this time period leading from the mid-'90s up to 2010, 2009, your career paths crossed occasionally?

A. Yeah.

Q. Is that fair?

A. That's fair.

Q. You knew each other?

A. We knew each other, yes.

Q. How long did you stay in London?

A. Less than two years, 18, 20 months.

Q. Then what did you do?

A. From there -- that was sort of the point at which I really shifted into more senior operational management jobs. My first one of those was a move to Alaska to look after part of our operating activity up there.

Q. When you say you looked into part of the operating activity, can you tell the Court what you did?

A. Yes. Yes. Sorry.

So I moved up to be -- the job was operations manager. That was for a field called Milne Point, which is to

04:36 the west of the big Prudhoe field that most people know about.
04:36 **Q.** What did you do specifically?
04:36 **A.** I was the operations manager.
04:36 **Q.** How long were you in Alaska?
04:36 **A.** Three and a half years.
04:36 **Q.** From Alaska did you go to the North Sea?
04:36 **A.** I did.
04:36 **Q.** What did you do there?
04:36 **A.** I had two different roles there. They were both business
04:37 unit leader roles. This is one level higher in the company.
04:37 And they were operational, looking after -- responsible for
04:37 operating activity in the North Sea.
04:37 **Q.** From a business standpoint?
04:37 **A.** Business and operations and safety. It was the whole
04:37 thing.
04:37 **Q.** So that was a major position in BP's North Sea drilling
04:37 exploration and production?
04:37 **A.** That's right.
04:37 **Q.** Would that have been considered an executive position at
04:37 that point?
04:37 **A.** I think of executives as the team that's at the top in
04:37 London, so I would say it was below that level.
04:37 **Q.** When you worked in the North Sea, did you have to move
04:37 back to London again?
04:37 **A.** I moved to Scotland.

04:37 **Q.** So you did go overseas again?
04:37 **A.** Yes.
04:37 **Q.** How long did you hold that position in the North Sea?
04:37 **A.** Three years. Three years all told. That took us up to early 2004.
04:37 **Q.** At that time what happened? What did you do from there?
04:37 **A.** I went into the headquarters for an assignment. I was an executive assistant to the CEO of the company. It was a training-type role. I did that for a couple more years before I went back into the operations.
04:38 **Q.** Was that job, in essence, a training job to move up into executive position in BP in some form or fashion?
04:38 **A.** Yeah, I think so. It was a development job. It was an opportunity to see the world through the eyes of the chief executive officer and provide support inside the senior part of the company.
04:38 **Q.** Who was CEO at that time?
04:38 **A.** That was John Browne at that time.
04:38 **Q.** Was Mr. Inglis working in a similar capacity, if you recall?
04:38 **A.** I don't recall the role he had. He was in the upstream at the time. I don't frankly remember which job he had at that point.
04:38 **Q.** Was Mr. Hayward employed at that time?
04:38 **A.** He would have been. I think he was in the treasury

department at that point.
Q. Did you all interact at all at that point?
A. Not much. I mean, it was the senior team occasionally interacting; but they weren't people I spent a lot of time with.
Q. Mr. Baxter, who we will talk about later, he was not there at that time, was he?
A. No. He joined the company after that.
Q. How long did you remain in that position? Till '06?
A. Yeah. That was still from '04 to early '05, so it was just under two years.
Q. Then what?
A. Then I moved to lead our North American gas business, which was -- at that point they were called strategic performance units.
Q. SPUs?
A. SPUs. They had been consolidated into larger units.
Q. You went from this executive training-type job to actually leading the strategic performance unit for North American gas?
A. That's correct.
Q. Would you have moved back to Houston at that point --
A. Yes.
Q. -- or moved to Houston?
A. Yeah, I moved to Houston.
Q. From that point forward in your job duties and

responsibilities with BP, did you live and work in Houston?
A. No. I actually went back to London one more time.
Q. We'll get to that.
So how long were you SPU leader for North American gas?
A. A little over two years.
Q. Then at that point, does that take us to about 2007?
A. Yeah, early 2007.
Q. Were you promoted to group vice president at that time --
A. That's right.
Q. -- for exploration and production?
A. Correct.
Q. My understanding is -- if we can have that on the screen -- your geographic scope of your authority included Gulf of Mexico, Trinidad, Angola, North Africa, and Egypt?
A. That's correct.
Q. You were a group head, the vice president of E&P for those five divisions, if you will?
A. Yeah. Those were the ones I was tagged to.
Q. That's a global position with BP at that point?
A. Correct.
Q. Would that have put you in an executive position, if you will?
A. Again, in my definition, that didn't sit on the executive team of the company. So it was still below that most senior

level.

Q. Were you also a member of any exploration and production, what BP calls operating committees at that time?

A. The operating committee existed inside of E&P at that time, so I would have been a member of that, yes.

Q. So as part of your duties and responsibilities as vice president, you're a member of the committee within that group?

A. Yeah.

Q. So it's fair to say by the end of 2007, you have been promoted and earned your way from starting out as essentially a drilling engineer in the Gulf of Mexico, and you are now an executive on a global scale, vice president of exploration and production?

A. Yes, sir.

Q. At that point in time, I would assume you were very familiar with Gulf of Mexico exploration and production division and activities, correct? You would have to be.

A. Yes, I was.

Q. As you would have been in the other geographic areas: Trinidad, Angola, North Africa, and Egypt?

A. Right.

Q. You knew how BP was structured, and you knew how it ran its Gulf of Mexico exploration and production unit?

A. Yes.

Q. And the major decisions that were made during that time

had to either be made by you or passed through you, correct?
A. Effectively. It was really between -- the real linkage was from the chief executive of upstream to the SPU leader, and I had tag responsibility, but the direct accountability relationship was that way.
Q. Okay. And in that position and specifically within the Gulf of Mexico, obviously you would know how E&P was structured?
A. Yes.
Q. You would be aware of all assets in the Gulf dealing with exploration and production?
A. Yes, I would.
Q. You'd be familiar with most, if not all, of the personnel?
A. Well, I wouldn't say "all." The senior team.
Q. Senior team?
A. Yeah.
Q. Onshore?
A. Yeah.
Q. Organizational structure?
A. I would have a pretty good understanding of that, yeah.
Q. You would be dealing with safety issues that got to your level?
A. Yes.
Q. You would be dealing with the business side budget issues, etc.?

04:43 **A.** Right.
04:43 **Q.** So you had an intimate knowledge of how that operation ran because you had to?
04:43 **A.** Yeah. I mean, I would say the leader of that had an intimate knowledge. I had as intimate knowledge as you could have looking after five things that size globally.
04:43 **Q.** What about drilling and completions in the Gulf at this time? Did it fall under the ambit of your authority as vice president of the E&P?
04:43 **A.** Yeah. At that time the structure was that everything operational that happened in the Gulf of Mexico was through that Gulf of Mexico SPU structure. That included D&C.
04:43 **Q.** That included D&C?
04:43 **A.** Yes.
04:43 **Q.** So operational issues, including business issues, operations issues, safety issues specifically pertaining to operations offshore were, again, part of your duties and responsibilities?
04:43 **A.** Well, as I say, they flowed from the SPU leader to the head of the upstream. But I had this tag relationship where I looked over and supported those. And, yeah, you know, I was involved in those decisions.
04:44 **Q.** And not only were you handling Gulf of Mexico at that time but you also had four other geographic areas: Trinidad, Angola, North Africa, and Egypt?

A. That's correct.
Q. Your responsibilities for each of those areas mirrored your responsibilities that were described in the Gulf?
A. Yeah.
Q. It was a big job?
A. It was a big job.
Q. How long did you hold that job?
A. Just for a year, and then I was asked to do the next one.
Q. There's a term that's used called *group level disciplines*. Is that a term you're familiar with?
A. No, I'm not.
Q. You have never heard that term?
A. No, it's not familiar.
Q. If I were to ask you whether or not you were responsible for or had any authority over what's been called "group level disciplines," that's not something that you are familiar with?
A. No, sir. That's not . . .
Q. It's my understanding -- and it's up on the screen -- by 2008, you became head -- or group head of safety and operations, correct?
A. That's right.
Q. That would have been the next job you just referred to, moving from vice president?
A. That's right.
Q. As group head of safety and operations, you had

accountability for group-level disciplines, including projects, operations, engineering, health, safety, security, and environment, correct?

A. Yes. That sounds right.

Q. Having said that, what you have now done is gone from a very big job as VP of exploration and production in various areas around the world to a job that takes you even above that where your overall overarching responsibility for safety and operations and even a broader area, correct?

A. Yeah. I would describe it differently than above that, because the nature of the role changes quite a bit, moving from the operating organization to the functional organization.

Q. How is that?

A. Well, the operating organization, you know, the accountability for all of the business, all of the safety, all of the operations flows through that line.

The functional side, which is this S&O role, is more of a support and -- you know, it's more of a support function to the company. It's not in the direct line.

Q. You're above the direct line in a sense, aren't you?

A. I don't think of it that way. Because you're more of a peer with the tops of the direct line.

Q. The tops of the direct line, if there are significant safety and operations issues, would they come to you to discuss those with you?

A. The real conversation would be up the line. So they would go to the CEO, and I would -- you know, I may support that or be involved. But the real, you know, conversation about safety performance is down the operating line.

Q. It doesn't directly involve you in this position?

A. That's right. It doesn't have to. I mean, I was involved. I was providing support and doing things. But the -- you know, conversation about safety or business performance is down the operating line.

Q. Did that remain true -- conversations about safety and business performance, did it remain down the direct operating line through April 20, 2010? Is that how the company remained structured?

A. Yes.

Q. So in the Gulf of Mexico, when the Macondo project started, or was conceived in June of 2009, through the date of the event, who would have been the number one person in the Gulf of Mexico charged with safety responsibility for drilling and completions?

A. So the number one person for the Gulf of Mexico would have been the SPU leader for the Gulf of Mexico. That was -- at the time you asked, I think was 2009, I believe it was Mr. Shaw, Neil Shaw at that time.

Just prior to the incident, a gentleman named James Dupree took over that role.

04:48 **Q.** Mr. Dupree was in that role as of the date of the blowout?
04:48 **A.** That's correct.
04:48 **Q.** Did Mr. Dupree report directly to you at that time?
04:48 **A.** No.
04:48 **Q.** In your role as group head of safety and operations, the sphere of your authority, or at least to the extent you can say it was an authoritative role, given what you just said, included the Gulf of Mexico, did it not?
04:48 **A.** Yes.
04:48 **Q.** It was worldwide?
04:48 **A.** Yeah. It was worldwide, that's right.
04:48 **MR. STERBCOW:** Let's pull up D-2670, TREX-21722.001.
04:48 **BY MR. STERBCOW:**
04:48 **Q.** This is an organizational chart we have seen before, but I want you to take a look at it, if you will.
04:48 Where would you be on this chart as of 2008?
04:48 **A.** So in 2008 -- excuse me. 2008, I would be in the group safety and operations integrity box there.
04:49 **Q.** So board of directors at the top, executive management underneath. And to the right, the box that just turned yellow, group safety and operations integrity, correct?
04:49 **A.** That's right.
04:49 **Q.** Would you have been the head of group safety and operations integrity?
04:49 **A.** Yeah, that's right. It wasn't exactly the name of the

group. But, yeah, for the sake of argument, that's what it would be.

Q. In addition to that, next to you would have been a -- I'll call it a sister group called group engineering?

A. I don't recognize those as two separate groups at that point.

Q. Were they one?

A. Yeah.

Q. So based on your knowledge and your participation, obviously, group safety and operations integrity and group engineering were really one -- I'll call it unit -- at that point, not two separate divisions?

A. Correct.

Q. Were they both, as this chart reflects, part of executive management of BP?

A. No, not -- with the definition I hold, which is membership on the executive team, they were not.

Q. Did you report directly to executive management?

A. I did.

Q. Were you also, as of 2008, a member -- if you look at the far left -- the group operating risk committee, which we have come to know as GORC?

A. Yes.

Q. What was the responsibility of that committee?

A. So the GORC is the executive management level committee

04:50 charged with monitoring safety performance, performance --
04:50 managing safety performance across the company.
04:50 **Q.** At this point in 2008, who was the CEO?
04:50 **A.** Tony Hayward.
04:50 **Q.** He was a member of that committee, correct?
04:50 **A.** He was, yes.
04:50 **Q.** Mr. Baxter was a member of that committee?
04:50 **A.** Yes, he was a sitting member.
04:50 **Q.** Was he part of the group engineering team?
04:50 **A.** Yes, he was.
04:50 **Q.** You were a member of that committee?
04:50 **A.** Yes, I was.
04:50 **Q.** That committee was specifically charged with the
04:50 responsibility of dealing with safety issues?
04:50 **A.** That's right.
04:50 **Q.** How often did you meet?
04:51 **A.** Six times a year, if I had to estimate. It was more than
04:51 once a quarter. I think it was six to seven times a year.
04:51 **Q.** Those meetings were in London?
04:51 **A.** Usually, yes.
04:51 **Q.** Did that committee, if I understand correctly, set and
04:51 then ensure implementation of global BP safety policy on a
04:51 grand -- a broader scale?
04:51 **A.** Yeah. I don't remember the committee spending time
04:51 setting policy. It more spent time reviewing risk management,

safety management, and safety performance in the company.

I think safety policy would have been discussed. I guess you could say they set policy, but it wasn't really what the committee met for. It was more to look at performance and progress.

Q. When you looked at performance and progress in the committee meetings, which would have included you, Mr. Baxter and the CEO, Dr. Hayward, were you specifically looking at the safety performance of the various SPUs or units of BP across the globe?

A. Yes. That's exactly what it was looking at.

Q. You would look at it with a critical eye?

A. Very much.

Q. If you saw things that needed to be changed, you would discuss it and discuss how to take action if action was necessary?

A. Yes. That was part of the conversation.

Q. That committee had the authority, if necessary, to dictate to -- if you go down -- exploration and production, Gulf of Mexico SPU, etc., changes in safety policy. Is that correct?

A. Yeah. Because the nature -- the nature of that committee is that it's comprised of the heads of those chains. So they are there with the CEO reviewing performance. So they are the authorities at the top of those operating organizations.

Q. You said the committee met once about every eight weeks?

04:52 **A.** I said six. I think it was a bit more than four times a
04:52 year, so I'm estimating six to seven times a year.
04:52 **Q.** The meetings were in London?
04:52 **A.** Yes, most of the time.
04:53 **Q.** Is it fair to stay that in that membership in the group
04:53 operating risk committee, from 2008 through April 2010, would
04:53 have placed you in a position of being on top of and extremely
04:53 knowledgeable of BP's global safety policy, problems with the
04:53 policy, and any changes that needed to be made to the policy?
04:53 **A.** I'm not sure if I understand what you mean by *BP's global*
04:53 *safety policy*. As I say, it was more to look at performance of
04:53 the -- safety performance of the various parts of the company.
04:53 **Q.** I will rephrase it.
04:53 Would that position have given you access to
04:53 information and involved you in conversations with other
04:53 executives where you specifically discussed safety performance
04:53 in the various units of BP throughout the world?
04:53 **A.** Yes, it would have.
04:53 **Q.** So you knew what was going on?
04:53 **A.** Yes, at a high level. At a high level.
04:53 **Q.** At a high level.
04:53 **A.** Because you are looking at, you know, information covering
04:53 a very large company. But yes, indeed.
04:53 **Q.** And you, in the position that you had after all the years
04:54 that you had been with the company and all the promotions that

you had attained, I would assume brought to the committee experience in drilling engineering, offshore construction, exploration and production, drilling and completions. You were able to bring all of that amassed experience to these meetings when you-all would discuss these safety issues?

A. Yes, I guess that's right.

Q. So if there may have been an issue that involved drilling engineers in the Gulf of Mexico or production personnel in Egypt, those are the type of issues that you could engage conversation with these other executives in, intelligent conversation?

A. Yeah. I think I would have been able to, yeah.

Q. In fact, you did?

A. And did, indeed.

Q. Because that's what you-all discussed?

A. Yeah.

Q. It's my understanding that at some point -- and it may have been in '08, when you became group head of safety and operations -- that you were appointed to oversee the worldwide group-wide operating management system implementation; is that correct?

A. Yes.

Q. OMS?

A. OMS.

Q. Now, is OMS a system that you actually created?

04:55 **A.** Myself?
04:55 **Q.** Yeah.
04:55 **A.** No. It was well under development when I took that role in 2008.
04:55 **Q.** Did you play any role in the development of BP's OMS system?
04:55 **A.** Yes, I did.
04:55 **Q.** What role did you have?
04:55 **A.** At the time it was being piloted, I was running an operating business, North American gas. We said we would like to be early adopters or pilot testers of it. So I was involved in testing it from the operating end, not from the design end, and contributing, you know, inputting into the work.
04:55 **Q.** So in the time where you were vice president of exploration and production, would you have been involved in implementing OMS in any aspect of BP's business?
04:55 **A.** When I was --
04:55 **Q.** Oh, I'm sorry. When you were in Alaska, is that what you said?
04:56 **A.** No, no. I'm sorry. I didn't understand your question.
04:56 **Q.** When were you responsible -- or where were you when you took on the role of implementing OMS at a particular location?
04:56 **A.** So what I just spoke to -- I'm sorry if I misunderstood your question.
04:56 I was speaking to -- OMS was rolled out in

November 2008. That was the point in time when the company began the rollout of the pilot-tested and ready-to-go management system.

Prior to that I was involved in the pilot testing, when I was working in the North American gas business prior to the official rollout.

Q. So when you were working in North American gas, was OMS -- the implementation process took place in the North American gas division as a test, if you will, to see how it worked?

A. Yeah. Testing subsets of the system, etc.

Q. Like a pilot test?

A. It was a pilot test.

Q. What role did you play in the actual implementation and observation of the system to see how it functioned?

A. At that point in time, there were draft versions of it and what I was really doing was working with my operations management folks, you know, to say, "Look, does this make sense? Could we adopt this? What kind of feedback would we give to the designers?"

So to be fair, I would say we weren't really implementing, we were testing it and giving feedback into the design effort.

Q. Did you have a single point of reference, that being some type of handbook or manual that was distributed amongst you and those others involved in North American Gas, that was your

reference manual for OMS?
A. I can't recall if there was -- if there was that detail of information available at that pilot phase. I remember, you know, materials; but I don't remember a particular reference manual.
Q. Were you working off of different documents, then?
A. Yeah. It was pretty high-level documents. And there's people -- the designers of it were working with us to explain what they were attempting to do, etc.
Q. So the designers, the people who actually came in were those folks who were involved in the nuts and bolts of creating the system?
A. Yes, they were.
Q. So if you had questions, or anybody else who was involved in the pilot testing had questions, the designers would be folks with the knowledge that could address the questions?
A. That's right.
Q. I assume you learned about the OMS through this process?
A. I certainly got my first, you know, access to the thinking behind it, yes.
Q. How was it, then, that that being part of the pilot testing took you to the position of actually overseeing worldwide implementation of OMS?
A. Well, the oversight of it came with the group S&O job. Those designers of the OMS existed in this S&O group I stepped

into.

And I think as part of the decision for the company asking me to take that role was the interest I had had in OMS and promoting it while I was in the operating business.

Q. When you say group S&O, what are you referencing?

A. This is the one that you've got shown as safety and operations integrity on your chart, that functional group in the company.

Q. We distinguish that from an S&O audit, which is a completely different thing, right?

A. Yeah. That's an audit activity.

Q. The audit activity is part of the OMS, though, correct?

A. OMS provides for doing self-auditing, and it recognizes independent auditing. So the system recognizes the need to audit, yes.

Q. Being more specific, if OMS is implemented in North American gas or as a pilot or as it developed over time going to Gulf of Mexico, anyplace in the world, it involves specific requirements, both internal auditing of performance and external auditing of performance, correct?

A. That's one of the parts of OMS is it calls for that, yes.

Q. When we say *external*, we mean BP employees, but BP employees who don't work specifically in the area that's being audited?

A. Yeah. Independent of the business is how we think about

it.

Q. These are teams that conduct auditing, is that correct, the independent auditing?

A. Yes, they are.

Q. At this time, when you assumed this job -- well, let me back up.

Did you have this job position and this responsibility of overseeing worldwide/group-wide operating management system implementation? Is that the job you had all the way through April 20, 2010?

A. Yes.

Q. So you had been in that position from '08 -- approximately two years?

A. About two years, right.

Q. At that time, was there anyone higher up in the area of safety and operations, other than maybe Dr. Hayward himself, than you were?

A. No. I was the highest up in that functional area, safety and operations.

Q. You reported directly to Dr. Hayward in that capacity?

A. That's right.

Q. I assume, based on what we've said, the main method of communicating safety and -- operational safety issues would be these group operating risk committee meetings that you-all had?

A. That was the main way at the executive level.

05:01 **Q.** At the executive level.
05:01 **A.** The main subsidiary meetings, you know, on down in the operating organizations. But at the executive level, that was our primary caucus for working on safety issues.
05:01 **Q.** In terms of your implementation activities, did you actually physically travel to different locations, different specific performance units within BP, to assist with OMS implementation in those areas?
05:01 **A.** I didn't personally, no.
05:01 **Q.** You didn't go?
05:01 **A.** No.
05:01 **Q.** Did you monitor that activity?
05:01 **A.** Yes. We had -- after the rollout, we -- our goal was to have the implementation, the switchover to OMS accomplished, and all of the subparts of the company by the end of 2010. There were some specific steps that the company -- that the units had to accomplish to make that switchover. We monitored the -- you know, the switchover, so we could track who had successfully made the switch to OMS and watch that go through the two-year period.
05:02 **Q.** Was that something that you did alone, or was that tracking process part of what the group operating risk committee did?
05:02 **A.** That was one of the things that the GORC looked at.
05:02 **Q.** If the GORC had a problem or an issue, say, with the OMS

implementation in refining or in production, would the GORC communicate questions, concerns, back down to that specific area of the company?

A. Yeah. In this case what you would see is a typical GORC review looking at OMS progress, an assessment of where the various units were. If it was seen that some units were falling behind the pace that they had set out to achieve, then there might be a conversation. But typically, the leader of that part of the organization would then engage in a discussion, you know, a performance discussion with that part of the company.

Q. Were there specific goals set, to your knowledge -- let's say North American refining. Was there a specific goal that the BP group operating risk committee executive management wanted OMS fully implemented, in whatever division it was, by a certain date?

A. So we didn't set that goal that way. We said we had an overall goal of having every one done by the end of 2010.

Underneath of that objective, we allowed or we encouraged the operating organizations, so the R&M business and the E&P business, to set their own -- or agree to their own pace of transformation with the SPUs.

Q. Okay.

A. So we didn't attempt to set one rigid goal for all of the subsets. We said, We would like to have this done in two years

and, you know, you guys work out the best way to do that.
Q. You allowed the units themselves to set goals and try to attain those goals, implementation goals?
A. Right. And, of course, that would have to have been approved up their chain of command.
Q. Right. Was the GORC committee, yourself and the others we have discussed, monitoring the progress of each of those units in achieving whatever goal they may have set?
A. Yeah. The monitoring we had in place was to be able to know when a unit had achieved that implementation step so we could track that.

I don't recall if we had a time line that, you know, we were measuring whether we were ahead or behind because we didn't know that. But we had a pretty good sense of whether the units were accomplishing their conversion rates that they had set out to do.

MR. STERBCOW: Let's go to D-2675, TREX-21722.006.

BY MR. STERBCOW:

Q. Does this graphic accurately reflect the group operating risk committee membership as best you can recall, from the time that you joined in '08 forward through April 20, 2010?
A. The one I'm not sure about is Steve Westwell, the group chief of staff gentleman, the second from the right. I can't remember if he sat on that committee or not at that time.
Q. Would the others, though, yourself, chief executive E&P

Andy Inglis, who we talked about a few minutes ago, correct, same guy?
A. Yes.
Q. Iain Conn, chief executive refining and marketing and John Baxter, group head of engineering, would they have all -- do you recall all of them being members of the committee?
A. Yes, I do.
Q. Was anyone else a member of the committee who's not depicted in our graphic?
A. We may have had another leader. There's a part of the company that's got alternative energy and shipping, some of the other parts that aren't in the core of R&M and E&P, and I just can't remember. But we may have had a representative that looked after that part of the operating business well.
Q. Fair enough.

I see, based on the descriptions, Mr. Baxter is -- his authority is in engineering, correct?
A. That's right.
Q. Mr. Conn is in refining and marketing?
A. Correct.
Q. Would that be marketing even further beyond refining, marketing across the company, or is it just refining and marketing within the refining business, if you know?
A. So that part of the company is what's -- it's selling gasoline products. That's the marketing part of it.

05:06 **Q.** That's why it's linked to refining?
05:06 **A.** Yes.
05:06 **Q.** Mr. Inglis, chief exec, exploration and production; and yourself, group head, safety and operations?
05:06 **A.** Correct.
05:06 **Q.** Who within this group that we see here would have had primary authority and responsibility over drilling and completions?
05:07 **A.** Mr. Inglis.
05:07 **Q.** So as part of his job with exploration and production, that also filtered down to drilling and completions?
05:07 **A.** Yeah. All the drilling and completions operating activity is within exploration and production.
05:07 **Q.** So if there were any issues in any part of the drilling and -- BP's drilling and completions operations around the world having to do with safety that would rise to the level of the group operating risk committee, I would assume those typically would be brought to your attention, to the group's attention, through Mr. Inglis?
05:07 **A.** Correct.
05:07 **Q.** Would he, then, be the one who would communicate back down the line to address the issues and give guidance down to whatever D&C group it was on what your committee decided or what they needed to do?
05:07 **A.** Yeah. That would be the flow, yes, sir.

05:07 **Q.** Was Mr. Inglis also primarily responsible for monitoring
05:08 OMS implementation in exploration and production, or was that
05:08 your function?
05:08 **A.** We provided the monitoring support to them, but the
05:08 accountable line managers monitored and were really driving the
05:08 pace of implementation.
05:08 **Q.** But in terms of going up the chain, would it have been
05:08 more your duty and responsibility to monitor implementation
05:08 rather than Mr. Inglis, even if it was in E&P or D&C?
05:08 **A.** I don't quite know what you mean by *monitor*. Could you
05:08 ask the question, just to make sure?
05:08 **Q.** Sure. I'll rephrase it. I'm sorry.
05:08 In terms of the ongoing effort, the OMS
05:08 implementation effort that we have touched on --
05:08 **A.** Right.
05:08 **Q.** -- if issues arose, problems arose, things that needed to
05:08 be addressed, regardless of where the problem arose --
05:08 exploration and production, drilling and completions, refining
05:08 and marketing -- would you still be the one that was primarily
05:08 responsible for addressing those issues related to
05:08 implementation, or did that spread across the group?
05:09 **A.** Yeah. No. The way that that implementation was driven
05:09 was -- the accountability for getting it done was through the
05:09 operating organizations. My team, you know, developed a
05:09 system, provided support, and we did help people monitor so we

could track performance. But if there was shortfalls or things needed to be, you know, moved along, that would have flowed right down the operating line.

Q. Was there anyone more knowledgeable in this group operating risk committee about the contents, the nuts and bolts of the system and how to implement the system than you?

A. I would have been the most knowledgeable about the system itself.

Q. Am I correct in concluding that the OMS system created over time by BP -- and I think you said rolled out in November of 2008 -- was BP's effort to do its best to ensure that risk was being managed in a consistent and high-level efficient manner all across the company?

A. Yeah, I think that's a fair statement. It's an integrated system that looks at risk and safety and operations. It's an attempt to do that well across the entire operating --

Q. The way it was set up and designed, it was supposed to do that whether we are talking about a refinery or exploration or production or drilling or North American gas. The system itself was designed, based on what you have said, I'm assuming, to apply to all of those, correct?

A. Yes. It's at a high enough level to be applicable to those. And you have to fill in the detail below for exactly the point you make. There's different operating activity. But, yes, that's the idea.

05:10 **Q.** We will get into that in a minute. But it's my
05:10 understanding that the -- as OMS developed from the higher
05:10 level and the high-level goal of overarching risk management
05:10 down to E&P or D&C, they would actually implement their own
05:11 local OMS manual to fit their specific needs?
05:11 **A.** That's the design, yes.
05:11 **Q.** Would those manuals or the contents of the manuals or the
05:11 authorship of those manuals have to pass through the group
05:11 operating committee, risk committee, for review and approval?
05:11 Or was that left to them?
05:11 **A.** The design of the -- of the individual manuals was left to
05:11 the business. The requirements and the shaping of the manual
05:11 and what was expected was part of the OMS architecture. So
05:11 there was an outline of what was expected.
05:11 **Q.** So each unit would take the outline of the system and then
05:11 apply it specifically to their activity, their specific needs?
05:11 **A.** Yes, that's right.
05:11 **Q.** I'm assuming that would also include their specific unique
05:11 risks, whatever those risks may be?
05:11 **A.** That's right.
05:11 **Q.** So if refining had a specific set of identified risks low
05:11 to high, frequent to infrequent, refining would deal with those
05:12 in its local OMS manual against the background of this
05:12 overarching system?
05:12 **A.** Yes, I think that's well-described.

05:12 **Q.** E&P did that?
05:12 **A.** Yes, it would. Yes.
05:12 **Q.** Drilling and completions did that too?
05:12 **A.** I don't know if you would have seen a separate drilling and completions or you would see that as part of the fabric of E&P, because it's a subunit of E&P. But, yes, that would be the way you would do this.
05:12 **Q.** And all of these, regardless of what division we are talking about, fell under the umbrella, the OMS umbrella that required S&O audits, correct?

It didn't matter whether you were drilling and completions or refining, if you were going to implement the OMS system in your division, you were going to start having internal and external audits of your activity?
05:12 **A.** Yes, that's right.
05:12 **Q.** And *internal* means -- again, we will use drilling and completion because that's, obviously, what we're going to talk about -- there would be internal auditors within Gulf of Mexico drilling and completions that would perform the internal audit described in the OMS?
05:13 **A.** I don't think that's quite right.
05:13 **Q.** Correct me.
05:13 **A.** So the audits, there's -- what OMS requires is to prepare for external audits, which means the independent audits that the S&O team did.

And it also says you have to have self-verification and self-assessment practices and process in place. I don't believe it defines that you have to have certain internal audits inside of your unit, just to be really crystal clear.

Q. Good. And I appreciate the clarification.

Would the same external S&O audit teams, the group of people, travel to different areas of the business to conduct audits? In other words, would have a team or two or three, whatever it is that would go to refineries, would go to production, would go to drilling and completions? Or did you have dedicated external units that would just handle a particular area of your business?

A. So the structure of that independent auditing function is -- there will be some people that are flexible to move across, but what we do is we supplement that with subject matter experts, depending on the type of audits you are doing. So it's a bit of a blended answer to your question. Some people travel globally and do it. Others are sort of targeted at certain areas of expertise.

Q. Fair enough.

Now, you held the position, as I understand it, of group head of safety and operations, you were a GORC member; and the duties and responsibilities we just discussed, including OMS implementation in the manner we just discussed, throughout the time that the Macondo project was conceived,

planned, and executed up to April 20, 2010, correct?
A. Yes, I think that's right.
Q. You sat on the GORC committee throughout that time period as well?
A. That's right.
Q. Now, less than 72 hours after the blowout, it's my understanding Dr. Hayward contacted you and asked you to lead the accident investigation?
A. Yes, that's right.
Q. Phone call? He called you?
A. Yeah, he called me.
Q. He said he needed you?
A. He did.
Q. The result of that phone call and then the subsequent effort is what we have marked as TREX-1, the *Deepwater Horizon* Accident Investigation Report, correct?
A. Yeah, that's the report from that group.
Q. Colloquially, for better or for worse, it's come to be known as the *Bly Report*?
A. I'm afraid that's right.
Q. My understanding is that the effort essentially began, at least in its formative stages, around April 23, and the report was published September 8, 2010?
A. Yes, that's right.
Q. Does it represent the complete and full reported findings

of the BP investigative team into the facts and circumstances surrounding the Macondo disaster?

A. Yes, it does.

Q. There is no other report, published report, correct?

A. There's no other report that I worked on.

Q. That's what I was going to ask you. There's no other report that involves such an organized, systemwide review of what happened other than this?

A. No, none, sir.

Q. To your knowledge, in terms of public reports, it's the only report that the CEO of the company, Dr. Hayward, commissioned?

A. Yeah, that's right.

Q. You led the way?

A. I led that team, yes.

MR. STERBCOW: Pull up D-2671, TREX-21722.002.

BY MR. STERBCOW:

Q. What we have up now is the investigation team. You at the top; and then two down to the left is Tony Brock, technical and operations lead; to the right, Matthew Lucas, RCFA and interview lead.

Did you choose both Mr. Brock and Mr. Lucas?

A. Yes, sir.

Q. Why Mr. Brock?

A. Mr. Brock was my first choice. I made the call to him in

the first 12 hours after I was asked to do this. I had known Tony for a number of years. I knew he had a deep drilling background, including Gulf of Mexico experience, and I knew that he also had an operation and safety background. And I thought he would be a very good place to start.

Q. He had the hands-on practical experience in drilling and safety that you thought you would need?

A. That's right.

Q. Now, on the right, Mr. Lucas, RCFA. Is that root cause. . .

A. It's probably root cause failure analysis.

Q. Analysis and interview lead. What was it about Mr. Lucas' background that you felt was appropriate to put him in that position?

A. Well, this was -- even in the early days, it was clear it was going to be a big and significant and terrible tragedy, significant event, big investigation. So I knew I wanted to have the top investigation expert that we had in the company. That's who Mr. Lucas is.

Q. Would Mr. Lucas then represent, in your opinion, BP's best and brightest accident investigation employee as far as you knew?

A. He certainly is the one that knows our policy and process the best. That was really what I looked to him for.

Q. Very good. So really Mr. Brock, it sounds like, you

wanted more for his drilling and safety experience?
A. Yes.
Q. And Mr. Lucas was there more for his expertise, training, and experience in actually conducting an investigation of this type?
A. Yes, that's right.
Q. That would explain, it seems to me, the two branches: One being experience on what the activity was that you were investigating, the Macondo well; and the other side being how do we go about investigating the Macondo well?
A. Yes. Yes.
Q. Now, under Mr. Brock you have it then divided into four: Steve Robinson, operations; Kent Corser, engineering; Dave Wall, hazard analysis; and Fereidoun Abbassian -- is that how you pronounce his name?
A. Yes.
Q. -- vice president of technology.

Again, were these your choices?

A. With all those choices, Tony Brock actually helped me with those selections. So I can't remember if I picked them or he did, but he is the one that identified a bunch of these candidates for us.
Q. In terms of operations, my understanding is Mr. Robinson would have been responsible for looking at, analyzing, investigating the operations portion of the Macondo project?

05:19 **A.** Yes, that's right.
05:19 **Q.** What happened on the rig, how did they work?
05:19 **A.** Right.
05:19 **Q.** Mr. Corser obviously has an engineering background, and he is looking at it from the drilling engineering standpoint?
05:19 **A.** That's right.
05:19 **Q.** What did we do in design, what kind of decisions did we make, and how did we implement our engineering?
05:20 **A.** Yes.
05:20 **Q.** Mr. Wall, hazard analysis. What exactly was he supposed to do?
05:20 **A.** So what -- David's part was to look at the fire and explosion aspect of it. So when we began, we had no idea what had happened other than there was a fire and explosion. So this was to look at -- to try to evaluate that part of it and how had that happened.
05:20 **Q.** So when you reference hazard analysis, really it's confined to why did the rig catch on fire and why did the explosion occur, essentially?
05:20 **A.** Yes, that's right.
05:20 **Q.** Last -- you have this on here. Mr. Abbassian, it looks like, was responsible for looking into the blowout preventer, the BOP?
05:20 **A.** That's correct.
05:20 **Q.** They each had people under them that were charged with the

responsibility of helping them accomplish their piece of the investigation, correct?

A. Yes. They built teams to do that.

Q. On Mr. Lucas' side, we have three people: Mr. Martin, root cause specialist; Rex Anderson, crisis management and planning root cause specialist; Mr. Fontenot, root cause specialist.

Are these essentially three internal, trained BP accident investigators? Is that who these guys are?

A. Yeah. They have that process experience that Mr. Lucas does.

Q. So if an accident happens in BP and it involves North American gas or it involves a refinery someplace, would these gentlemen, under Mr. Lucas' supervision, if you will, potentially go out and start investigating the root cause of the accident?

A. They may provide the same kind of support as this team did in this case, yes.

Q. So they weren't specifically trained to do this in drilling and completions in the Gulf; they could do it anywhere?

A. That's right.

Q. Now, look under Mr. Anderson, it says: "Crisis management and planning."

What makes him different, if anything, than the other

05:21 two?
05:21 **A.** I really don't know what that title is about.
05:21 **Q.** Fair enough. But they all worked under the supervision of Mr. Lucas?
05:22 **A.** Yes.
05:22 **Q.** Would Mr. Lucas, Mr. Brock, and yourself meet regularly during the course of the accident investigation?
05:22 **A.** Yeah. We had team meetings every day where myself and the team leads would get together to get an update on the progress for the day.
05:22 **Q.** Did you have the opportunity to personally meet with anybody in the next row -- Robinson, Corser, or Wall, etc.? Would you have regular meetings with them as well?
05:22 **A.** They would be part of that morning meeting.
05:22 **Q.** Oh, they would be?
05:22 **A.** Yes.
05:22 **Q.** And you did this every day?
05:22 **A.** Effectively, yes.
05:22 **Q.** A phone call?
05:22 **A.** No. We were all working in one office building in one floor, so it was face-to-face.
05:22 **Q.** Were you at Westlake in Houston?
05:22 **A.** Yes, we were.
05:22 **Q.** So you-all actually got together personally at a table or tables in a room every day and talked about the next 24 hours'

progress of your accident investigation?
A. Yeah. It wasn't quite that way. It was more about did anyone need any additional resources, what was going on, any request for information that we wanted to make, and then a bit of an update about anything new to report. Every day is a little of a rapid cycle, but it was really more just a staff meeting really to keep track of where things were.
Q. Were the other folks underneath Martin -- well, not Martin, but underneath operations, engineering, and hazard analysis, were they in these meetings as well?
A. Not typically, no.
Q. Were they more out in the field conducting investigation activity? Is that fair?
A. Sir, were you pointing to a specific one of the lower team there?
Q. Just anybody -- we'll take Mr. Robinson, for example. He is doing the operations portion?
A. Yes.
Q. He has got Jim Weatherbee, Jim Cowie, and Walter Guillot beneath him. I assume they are at his disposal to help him accomplish the operations portion of the investigation?
A. Amongst others. I don't know if this is exactly accurate; but for the sake of argument, that's -- I understand your question then.
Q. Well, was the concept of the organization that Weatherbee,

05:23 Cowie, and Guillot, for example, would go out and begin to
05:24 gather the forensic operations evidence that you needed?
05:24 **A.** Yeah. If you think about it, there wasn't -- given that
05:24 the thing happened on the rig, you couldn't actually go get
05:24 that type of forensic information. So the types of
05:24 investigative work involved data collection, identifying
05:24 information, if we wanted to request from BP or one of the
05:24 other companies involved, potentially interviews, going to do
05:24 interviews of the witnesses. And then there was quite a bit of
05:24 analysis, analysis-type work done in the office, in the team.
05:24 **Q.** Would these folks -- Weatherbee, Cowie -- and again, using
05:24 them as an example -- and Guillot be involved in the analysis
05:24 phase as well?
05:24 **A.** They might. Yeah. That's a way to understand it.
05:24 **MR. STERBCOW:** Let's pull up TREX-0001, which is the
05:24 Bly Report, Appendix A, page 194. If you would, pull out --
05:25 thank you.
05:25 **BY MR. STERBCOW:**
05:25 **Q.** First of all, do you recognize Appendix A as the page that
05:25 gave a general description of how the investigation was to be
05:25 conducted?
05:25 **A.** Yes, I do.
05:25 **Q.** It also included paragraph 3, which tells us how -- what
05:25 was going to be included in your report, correct?
05:25 **A.** Yes. The terms of reference are stated, that's right.

05:25 **Q.** That's what -- I was going to ask you. That's what we all refer to as "the terms of reference"?
05:25 **A.** Yes.
05:25 **Q.** The terms of reference tell us, if we read this, basically what's going to be in the report if we read the report. Fair?
05:25 **A.** That's what we hoped to accomplish when we set out.
05:25 **Q.** Okay. Very good. So it defines the scope, breadth, and content?
05:25 **A.** I think that's right.
05:25 **Q.** So this report -- and we will get into it -- was to conclude from the beginning, as of April 23, 2010, background information, whatever you felt was relevant and needed to lend context, I assume?
05:26 **A.** Right.
05:26 **Q.** Time line of events?
05:26 **A.** Yes.
05:26 **Q.** Description of what happened?
05:26 **A.** Correct.
05:26 **Q.** And then D, critical factors, immediate causes, system causes; and then proposed recommendations, I assume, based on the body of work of your group, what you learned and what we could all learn in terms of going forward?
05:26 **A.** Yes, sir.
05:26 **Q.** What is an immediate cause?
05:26 **A.** Immediate cause tends to be the thing -- if you look at

05:26 the structure, we described four critical factors. The
05:26 immediate cause is the thing that happened to enable that
05:26 factor to come into play.
05:26 **Q.** When you say "the thing," it's the specific event that
05:26 precipitated?
05:26 **A.** Yeah, yeah.
05:26 **Q.** That drills down -- no pun intended. But that takes us
05:26 all the way down to what somebody may have done to push a wrong
05:26 button or pull a wrong lever or be in the wrong place at the
05:27 wrong time?
05:27 **A.** Yes. I think that's right.
05:27 **Q.** Now, draw back, if you would, and tell us what *system*
05:27 *causes* are.
05:27 **A.** System would be just the next level down. So if someone
05:27 pushed the wrong button, you would be trying to understand why.
05:27 **Q.** That's the next step?
05:27 **A.** That's the next step.
05:27 **Q.** Then you took those, you analyzed those two areas of
05:27 causation as it applied to this accident and then explained
05:27 what you found. And based on that analysis, you then give the
05:27 public recommendations on how we can avoid pushing the wrong
05:27 button and why we pushed the wrong button in the future?
05:27 **A.** I really gave those to the company, and the company
05:27 decided to give them to the public.
05:27 **Q.** Right, understood. But as we know now, it's public

knowledge?
A. Yes, sir.
Q. It seems to me, and correct me if I'm wrong, one of the goals of this was not both for BP but the industry in general to try to learn lessons on immediate and system causes so something like this wouldn't happen again?
A. We were certainly very open in sharing those, and the company took this work and shared it very openly. So I think that is fair.
MR. STERBCOW: Let's go to D-2017, TREX-0001.018.
BY MR. STERBCOW:
Q. We are going to get into a lot of this, or this a lot in the next day, but commonly known as the Swiss cheese model, correct?
A. Yeah, I think that's the vernacular.
Q. We have had some discussions about this to this point; but if I understand this diagram correctly, your four critical factors are up at the top: "Well integrity not established or failed, hydrocarbons entered the well undetected and well control loss, hydrocarbons ignited on the *Deepwater Horizon*, blowout preventer did not seal the well." Correct?
A. Yes, sir.
Q. Then you come down from those and look at eight -- what do we call these eight slices?
A. We call them key findings.

05:28 **Q.** Key findings. It looks like you group your key findings
05:29 into relationship to critical factors. Fair?
05:29 **A.** Yeah, that's fair.
05:29 **Q.** Say the first two, annular cement, mechanical barriers,
05:29 those two relate specifically to the fact that well integrity
05:29 was not established or it failed?
05:29 **A.** Yes.
05:29 **Q.** And so on down the line, correct?
05:29 **A.** Yeah, that's right.
05:29 **MR. STERBCOW:** Let's go to the report, TREX-1 at
05:29 page 33.
05:29 **BY MR. STERBCOW:**
05:29 **Q.** What we are going to do, Mr. Bly, so you know what I'm
05:29 doing, rather than do something that I'm going to get into a
05:29 lot of trouble for with the judge, we are not going to read
05:29 this report; but we're going to try to highlight your key
05:29 findings and significant conclusions that you came to.
05:29 **A.** Okay.
05:29 **Q.** Key Finding 1 on page 33 of the report: "The annulus
05:29 cement barrier did not isolate the hydrocarbons. The annulus
05:29 cement barrier failed to prevent hydrocarbons from migrating
05:30 into the wellbore. The investigation team's analysis
05:30 identified a probable technical explanation for the failure.
05:30 Interactions between BP and Halliburton and shortcomings in the
05:30 planning, design, execution, and confirmation of the cement job

reduced the prospects for successful cement job."

That is the sum and substance of Key Finding 1, correct?

A. Yes, sir, that's right.

Q. It appears that you looked at the design and installation of the production casing annulus cement, correct? That's what you were doing at this point?

A. That's right.

Q. Would you agree with me that in order to conduct as thorough an investigation as you could into the design and installation of the production casing annulus cement, you had to have some cooperation on some level from Halliburton?

A. Yes, sir, I would agree with that. Yes.

Q. Correct?

Did your findings include looking into the relationship between BP and Halliburton insofar as what Halliburton's responsibilities were for the production casing cement job? Is that something you-all had to figure out?

A. To do this, we really looked at the involvement that people had so that we could understand how the decision -- to the extent we could understand, the decision-making communication and the things that you described. We really didn't look at it through the lens of responsibility.

Q. Fair enough. But from a fact-gathering --

A. Yes.

05:31 **Q.** -- standpoint, based on what we have heard and what we are going to hear in this case and what we all know, it would be very difficult, if not impossible, for you as BP to learn the critical facts about the failure of the annular cement without some cooperation from the company who designed and tested the annular cement. Is that fair?

05:31 **A.** That is fair.

05:31 **Q.** Seems like common sense?

05:31 **A.** It's common sense.

05:31 **Q.** Were you allowed access to Halliburton personnel to conduct this investigation?

05:32 **A.** We did get to do some interviews, yes, with Halliburton personnel.

05:32 **Q.** Do you know how many you were able to do?

05:32 **A.** Sir, I don't recall exactly.

05:32 **Q.** Do you recall any problems with Halliburton in terms of obtaining information from the company as part of your effort to analyze the production casing cement?

05:32 **A.** Yes, sir, I do.

05:32 **MR. STERBCOW:** Pull up, if you would -- before we do that, let me go to D-2024.

05:32 **BY MR. STERBCOW:**

05:32 **Q.** This is a demonstrative or an illustration directly from your report. Do you recognize that?

05:32 **A.** Yes, I do.

05:32 **Q.** For orientation purposes, before we get a little deeper into this, correct me if I'm wrong. On the left we have a diagram of what is a long tube, and essentially that's the production casing, right?

05:32 **A.** Yes, that's right.

05:32 **Q.** Okay. And at the top it says: "Fluid locations while pumping."

Now, that references while the cement job is ongoing. Is that fair?

05:32 **A.** Yes.

05:33 **Q.** So at the bottom you have SOBM, which is synthetic oil-based mud?

05:33 **A.** Correct.

05:33 **Q.** That's followed by a yellow strip called "base oil"?

05:33 **A.** Yes, sir.

05:33 **Q.** That's followed by a light blue called "spacer"?

05:33 **A.** Correct.

05:33 **Q.** If I'm correct -- and if I'm getting beyond what you know, let me know.

05:33 **A.** I will.

05:33 **Q.** But my understanding is spacer is designed to literally space or separate two different fluids that shouldn't mix. Fair enough?

05:33 **A.** I think that's correct, yes.

05:33 **Q.** Behind that is a bottom wiper plug, which we will talk

about later. Then cap cement, foam cement, tail cement, correct?

A. Yes, sir.

Q. And behind that is another plug. We'll get into that later. Then more spacer, then more synthetic oil-based mud, right?

A. Correct.

Q. Am I correct in concluding, based on your investigation, that from spacer to spacer, everything in between those two was designed by Halliburton? Were you able to determine that?

A. We determined that the slurry itself, the material that those places you're pointing to is made of, was designed by Halliburton, yes.

Q. Was it tested by Halliburton?

A. Yes, it was.

Q. Now, if you look to the right, "fluid locations after the job," meaning now the cement job is over, right? We are finished pumping?

A. Yeah. It's in place, yeah.

Q. Which in this case -- and I don't want to get too far ahead; but which in this case occurred early, early morning hours of April 20, correct, when the cement job ended, if you recall?

A. That's right, I think.

Q. So now we have taken the fluids and shown -- when we

showed them while pumping, they are actually in the production casing, in the area we call the *shoe track*, right?

A. Yeah, the shoe track and above --

Q. We'll get to that as well.

Now we have shown it after it has been pumped, because our base oil has come down and gone around and is now up above in the annular space?

A. Yes, that's right.

Q. The annular space being the space between the pipe and the earth?

A. Correct.

Q. Then again, just like on the left, the spacer follows it. The cap cement, which is obviously the top level, why it's called *cap*.

A. Yeah.

Q. The foam cement which, correct me if I'm wrong, is the critical cement in terms of zonal isolation, correct? Am I --

A. Getting to the edge. I believe both of those would be important.

Q. All right. But the foam cement is clearly laying across --

A. Correct.

Q. And I didn't make this clear; I should have. The little yellow lines on the side appear to me to be hydrocarbon-producing zones, right, and their pressures?

05:35 **A.** That's what those indicate, yes.
05:35 **Q.** So the foam cement lays across those zones?
05:35 **A.** Correct.
05:35 **Q.** Then we come back around, and the tail cement is what stays in the shoe track?
05:35 **A.** Yes, that's right.
05:35 **Q.** Beneath that is some synthetic oil-based mud. Then you go behind the plugs. You have more spacer, and then you have synthetic oil-based mud that goes back up, essentially all the way up to the rig at this point, correct?
05:36 **A.** That would be right, yeah.
05:36 **Q.** When the cement job is over, there's been no displacement. That SOBM goes all the way back, right?
05:36 **A.** That's right, yes.
05:36 **Q.** Can you tell me whether or not it's within your knowledge that the SOBM is actually what's providing what's called a *hydrostatic head* to make sure everything stays in place and the well doesn't flow? Is that fair? Providing the downward pressure?
05:36 **A.** That's providing downward pressure, that's right.
05:36 **Q.** As an engineer, you're comfortable with that?
05:36 **A.** Yeah.
05:36 **Q.** Fair enough.
05:36 **MR. STERBCOW:** Go to the next slide, 0001.25. That's D-2024 -- oh, I'm sorry. No, I wanted to go back. We did it

the right way.

BY MR. STERBCOW:

Q. Now, this is an individual photograph rather than two together, but is it my understanding that at the end -- what you found is that at the end of the cement job, this is what the fluids in this part of the well were supposed to look like?

A. Yes. There's planned cement slurry placement, so I'm sure you are correct.

Q. It comes from the report, so --

A. The report. Yeah, that's right.

Q. -- I don't want you to think I'm tricking you.

A. Yeah, right.

Q. But this graphic also has information that the other one didn't, which is the weights of the various fluid in pounds per gallon, correct?

A. Yes, it does.

Q. If you can tell me from an engineering standpoint, why is it important to know these various weights in pounds per gallon?

A. I believe it's because you need to be aware of the hydrostatic balance inside the casing and outside the casing, and you need to know, on the outside, that it's enough to overcome the pressure of the reservoir. And then this U-tube effect you described is another thing that you would worry about here, you'd be concerned with.

05:37 **Q.** Two things: You don't want hydrocarbons escaping from the earth into the annulus?
05:37 **A.** Yes, that's right.
05:38 **Q.** But you also don't want any liquids -- what you say, U-tubing, coming back down the annulus and then back up through the pipe?
05:38 **A.** Correct. Right.
05:38 **Q.** Two things we have to avoid?
05:38 **A.** Right.
05:38 **Q.** These weights are specifically carefully calculated to accomplish that, correct?
05:38 **A.** Yes, that's right.
05:38 **Q.** In order for this to work, the weights have to be correct; and the composition of the fluids -- spacer, cap cement, foam cement, tail cement, spacer -- have to also be correct?
05:38 **A.** I think that's right.
05:38 **Q.** All right. Now, in order to figure out exactly what you were dealing with -- you couldn't go down there. No way to do that, right?
05:38 **A.** That's true, right.
05:38 **Q.** This is gone?
05:38 **A.** Right.
05:38 **Q.** So you have got to have help.
05:38 **MR. STERBCOW:** Let's go to TREX-47541. This is an e-mail -- can we pull up the -- thank you.

05:39 **BY MR. STERBCOW:**
05:39 **Q.** Who is James Lucari?
05:39 **A.** Mr. Lucari was one of the -- a legal support member for my team.
05:39 **Q.** This is an e-mail, Wednesday, June 16. Obviously the investigation is under way, correct?
05:39 **A.** That's right.
05:39 **Q.** He's e-mailing Kelley Green, who is legal litigation. Do you know if she's at Halliburton?
05:39 **A.** I don't know that.
05:39 **Q.** Do you know who Mr. Corser is?
05:39 **A.** Yes. Mr. Corser was on the investigation team.
05:39 **Q.** He gets cc'd on an e-mail from BP counsel assisting the investigation to Ms. Kelley Green, who we will learn in a second, is in fact counsel at Halliburton?
05:39 **A.** Okay.
05:39 **Q.** Mr. Lucari tells her: "As a follow-up to my request of June 10 and further to our discussion this morning, I'm writing to refine and further focus our request for information from Halliburton relative to the BP incident investigation team's ongoing investigation of the tragedy *Deepwater Horizon* rig incident."
05:39 This is obviously, at least according to what Mr. Lucari says, not his first contact, correct?
05:40 **A.** That's right.

05:40 1 **Q.** I would assume your investigation team didn't wait until
05:40 2 June 10 to contact Halliburton to see if you could get
05:40 3 information to start figuring out what had happened?
05:40 4 **A.** That's right.
05:40 5 **Q.** I would assume you got on that as quickly as you possibly
05:40 6 could?
05:40 7 **A.** Yeah. Within the first couple of weeks, we would have had
05:40 8 a sense of where we wanted to begin to make information
05:40 9 requests. I don't remember the exact timing.
05:40 10 **Q.** We are now into the investigation almost two months?
05:40 11 **A.** Right.
05:40 12 **Q.** At the bottom, the highlighted portion: "We are still
05:40 13 missing the lab testing report for the final lab tests for the
05:40 14 9 7/8-by-7-inch production casing cement job that was begun on
05:40 15 April 18."
05:40 16 Based on what you know, would the lab testing report
05:40 17 for the final lab tests for the cement slurry that was pumped
05:40 18 into the hole be a critical piece of information for you to
05:40 19 forensically try to figure out what went wrong with the cement?
05:40 20 **A.** It certainly had the potential to be that, yes.
05:41 21 **Q.** As of June 16, you didn't have that?
05:41 22 **A.** It appears not from the letter, no.
05:41 23 **Q.** Let's go to 47549. Again, we have an e-mail, James Lucari
05:41 24 to Kelley Green at Halliburton, and you got cc'd on this,
05:41 25 Monday, July 26. So now we're another five weeks later and

three months post-accident?
A. Correct.
Q. Assuming you were well into your investigation, because your report was published two months later, not even two months later?
A. Right.
Q. "Kelley, attached is a follow-up letter to BP's letter to Halliburton dated July 7."

Let's go to the attachment. This is a letter from Mr. Lucari to Ms. Green -- and by the way, you were cc'd on the letter. That's why you were cc'd on the e-mail.

If we look at the letter, it says: "I'm writing to follow up on BP's letter of July 7 demanding immediate production to BP's *Deepwater Horizon* incident investigation team of certain laboratory testing results. The letter also requested access to samples of Halliburton cement products and additives used in the Macondo well casing string job. As set forth in our letter, BP is contractually entitled to all consulting information and lab testing data generated as part of Halliburton's services in support of the Macondo well project."

Now, you were cc'd on this letter, correct?
A. Yes, I was.
Q. First question: As the leader of this investigation, do you know of any reason whatsoever why three months later you

had still not gotten either laboratory testing that was deemed critical or, probably even more importantly, samples of the actual cement that was pumped in the hole?

Is that critical to what you are trying to accomplish?

A. It was very important, yes.

Q. Would you agree or do you have any reason to disagree with the unanimous opinions of everyone who has been deposed in this case, including Halliburton personnel, that the longer you wait after a cement slurry is mixed and pumped, the harder it becomes to use that slurry for forensic testing purposes because it deteriorates?

Do you have any reason to disagree with that?

A. I don't have any reason to disagree with that.

Q. Do you have any reason to disagree with the premise that you should use the rig blend with the rig water and the rig additives in the exact way that it was mixed and the exact concentrations it was mixed if you are trying to do post-accident forensic testing to figure out whether this cement slurry would work?

A. That makes sense to me.

Q. Yet we are three months out, and you don't even have either a lab report on what the final lab test showed or any of the samples so you could conduct your own independent testing, correct?

05:43 **A.** Correct.
05:44 **Q.** If you go down to the start of the next paragraph: "Halliburton's lack of responsiveness to our repeated requests for information and access to representative samples of the Macondo well continues to impede the BP *Deepwater Horizon* incident investigation team's effort to investigate the causes of this tragic incident. As such, we renew our demand for access to cement and additive samples from the same lot/batch used in the Macondo well so we can conduct independent testing of the cement program slurry designed by Halliburton."

As you sit here today, almost two years after the -- over two years after the investigation, are you aware of BP ever having received any representative samples of the slurry pumped at Macondo?

A. Not to my awareness, no.

Q. Has anybody ever brought to your attention or given you a report that showed post-accident testing of the lot and batch slurry with the rig water of the stuff that was pumped in the hole?

A. No, sir.

Q. As the lead investigator for BP responsible for publication of this report, if those tests had occurred, would you think it incumbent upon whoever did that testing to either let your investigation team or you know if the point of this is to learn lessons to make sure we don't do this again?

A. Yeah. I think people should share information that can help learn about accidents, yes.
Q. Has anybody ever told you that while Halliburton didn't give you the samples you wanted and you the information you wanted, they conducted their own internal post-accident testing?
A. I'm not aware of that.
Q. You're not aware of that?
A. No, sir.
Q. You're not aware of the fact they conducted multiple post-accident tests and didn't report the results. Nobody has ever told you that?
A. Not that I recall, no.
Q. Now, given these limitations and the lack of cooperation, I assume your team did the best you could to piece the cement saga together, correct?
A. Yeah, we did.
Q. If we go to D-2029, TREX-1.030, this comes from your report. It's Table 2.
A. Okay.
Q. You were at least able to discern from the information you had that the cement used basically had two components. It was a base cement slurry that is, quote, nonfoamed, that has a density of 16.74 pounds per gallon, and then a nitrified foam cement slurry on average of 14.5 pounds per gallon, correct?

05:46 **A.** Right.
05:46 **Q.** Given that it was a foamed cement job, that's what you would expect, right, a lighter nitrified foam cement with a base cement slurry?
05:46 **A.** Yes, I think that's right.
05:47 **Q.** Was the base cement slurry, in whatever composition it took, designed by Halliburton?
05:47 **A.** Yes, it was.
05:47 **Q.** Was the nitrified foam cement slurry, whatever composition it took, designed by Halliburton?
05:47 **A.** That's my understanding, yes.
05:47 **Q.** Was the nitrified foam cement slurry and the base cement slurry, were they both tested by Halliburton?
05:47 **A.** Yes, sir.
05:47 **Q.** Again, you never were able to put your hands, or your investigation team, was never able to put their hands on either of these slurries to do your own independent testing?
05:47 **A.** Correct.
05:47 **Q.** You were able to come to some conclusions, though, correct?
05:47 **A.** Yes, we did.
05:47 **Q.** You did the best you could under the circumstances?
05:47 **A.** Yeah.
05:47 **MR. STERBCOW:** If we'd go to TREX-1, page 35. If we pull out the conclusions.

05:47 **BY MR. STERBCOW:**
05:48 **Q.** BP actually did go out and hire an independent lab, CSI Technologies, correct?
05:48 **A.** That's right.
05:48 **Q.** You did whatever representative lab testing you could do, given the limitations we just described?
05:48 **A.** Tried to make the best match of the slurry possible and then do the testing on that.
05:48 **Q.** You concluded, based on that, that the nitrified foam cement slurry probably would have experienced nitrogen breakout, nitrogen migration, and incorrect cement density, which would explain the failure to achieve zonal isolation of hydrocarbons. Nitrogen breakout and migration would have also contaminated the shoe cement and may have caused the shoe track cement barrier to fail.

It sounds like, in layman's terms, the conclusion -- the overarching conclusion you made, number one, was that the slurry was bad.

05:48 **A.** It appears that -- I don't know how to judge *bad*. It looks like it didn't work.
05:48 **Q.** It didn't work. Okay. And when it --
05:49 **MR. GODWIN:** I object to this. The witness is just guessing with these answers. He has already previously testified in deposition he has no knowledge about cementing. He is just going along with Mr. Sterbcow to whatever -- to say,

Well, it looks bad. I guess it didn't work.

THE COURT: I think he's reporting on his investigation and -- which is in evidence as to what the whole team discovered or didn't discover. So I will overrule the objection.

MR. GODWIN: May I take him on voir dire briefly on this subject, Judge, with regard --

THE COURT: Not right now. You can take him on cross-examination.

MR. GODWIN: Thank you, Your Honor.

THE COURT: Okay.

BY MR. STERBCOW:

Q. Now, you mentioned contamination of the shoe cement. Is that a conclusion -- obviously, it's a conclusion that your team came to as well?

A. We said it would have -- it may have done that. If you look further in the conclusions, we said we weren't exactly sure what the mechanism was.

Q. What the mechanism was. You couldn't get to that point in your analysis?

A. Right.

Q. Would it have been helpful to you to get to a conclusion -- or a more definitive conclusion on breakout, contamination, and the other things we've talked about if you had had the opportunity to test the actual cement pumped in the

Macondo well?
A. It potentially would, yes.
Q. You also looked at the placement of the cement and determined: "Although the decision not to use 21 centralizers increased the possibility of channeling above the main hydrocarbon zone" -- do you know what *channeling* is?
A. I learned through the investigation, yes.
Q. We had some testimony about it earlier. Is channeling basically where you have points in the cement where things can channel whatever it might be, hydrocarbons --
A. Instead of a nice smooth top to the cement, you get channels that go up the back of the casing.
Q. It allows breach of the barrier, if you will?
A. It could do that, yes.
Q. "The decision likely did not contribute to the cement's failure to isolate the main hydrocarbon zones or the failure of the shoe track cement."

So you specifically looked at whether or not the decision not to use centralizers -- which is a BP decision, correct?
A. Yes, it was.
Q. You are not disputing that?
A. No, I'm not.
Q. In terms of number of centralizers, placement of centralizers, etc., that's all a BP decision, correct?

05:51 **A.** Yes, that's right.
05:51 **Q.** Do you know enough now, having done the investigation, to know that the final decision on number and placement of centralizers in this case rested with the well team leader, Mr. Guide?
05:51 **A.** I believe that's correct, yes.
05:51 **Q.** Your conclusion or your team's conclusion as published was that while there were issues about the number of the centralizers, because of what you were able to learn, that didn't contribute to the failure of the cement to achieve zonal isolation, correct?
05:51 **A.** We said it wasn't causal because we concluded the path of the hydrocarbons went a different way. They went through the centralized part of the hole.
05:52 **Q.** And actually, it's funny you said that.
05:52 **MR. STERBCOW:** Let's pull up D-2022, TREX-1.023.
05:52 **BY MR. STERBCOW:**
05:52 **Q.** Again, an illustration from your report, correct?
05:52 **A.** That's right.
05:52 **Q.** Does this show us the potential path for the hydrocarbons to have flowed in the Macondo well when well control was lost?
05:52 **A.** This was really indicating our view of the potential for it to first get into the casing, so yes.
05:52 **Q.** The inset that you have -- again, back to what we talked about -- shows the bottom part of -- it actually goes a little

higher on this. But it shows us the production casing, the shoe track, shows us the hydrocarbon-bearing zones, and it shows the -- I assume the gray is the cement as it was placed, correct, the inset part on the right?

MR. GODWIN: Objection, Your Honor, calls for speculation. Mr. Sterbcow said himself that he assumes this and he assumes that.

THE COURT: I think he is asking if the witness knows. If the witness doesn't know, he can say that.

I'll overrule the objection.

THE WITNESS: Could you ask the question again, please?

BY MR. STERBCOW:

Q. You tell me what the inset on the right shows.

A. The inset on the right is just showing the way the casing string sits across the zones there. And it's got the gray that indicates cement. I don't know if it's perfectly accurate to scale, but that's a cartoon of it.

Q. But on the left you have red arrows in your illustration that appear to show what your team concluded was the -- were the two possible paths of hydrocarbon flow once well control was lost, correct?

A. If I can -- I would say this was really at the stage when we were trying to understand how hydrocarbons got into the wellbore. So this was a long time before well control was

lost. This was just trying to understand, having moved from within these permeable yellow zones, how did they get in. And we were looking at three different possible scenarios. That was what our investigation looked at.

Q. What were those three?

A. The first was through the shoe track, this one that's indicated as flow up casing here, the one on the left.

The second possibility was to go through some kind of a breach in the casing itself.

The third possibility was to go through a seal assembly that sits at the top of this casing as it's hung into the well.

Q. Did your team investigate to the best of its ability all three of those possible flow paths?

A. Yes, sir. We looked at all three of those.

Q. Given the mechanical realities of this system, other than those three, are there any other possibilities out there?

A. Those were the three that we could see.

Q. It has to be one of these three?

A. That was our belief, yes.

Q. You looked at all three of them carefully?

A. We did.

Q. What did you conclude?

A. We concluded it came -- the flow came up through the shoe track through the casing.

05:55 **Q.** And what did you do, if you can recall, to determine that, in terms of forensic investigation?
05:55 **A.** So this was something the team spent considerable effort on to try to understand. It had multiple parts, but it -- the big ones that I remember were considerable fluid modeling, which was to understand -- we had pressure data on the surface, and you can use fluid flow modeling in the well to try to match that pressure data. You know, you will get a different pressure data on the surface, depending on which way the oil came up the well, or the hydrocarbons came up the well. That was a big piece of it.

There were some things that we learned during the response, or the kill efforts, where we got more pressure information from the well we got to see.

And then a compelling piece of information came at the end -- it was actually after the report came out, when this seal assembly at the top became available to see, and you could see there was no -- had been no flow by that.

Q. Okay. That's an important point. That is actually a piece of equipment, the casing hanger seal assembly, that was recovered?
A. Yes, it was.
Q. So it was available for forensic examination?
A. Yeah. You could see it.
Q. Correct me if I'm wrong. But your investigation

concluded, based on examination, that there was no damage to the casing hanger seal assembly, certainly not the type of damage you would expect to see from an encounter with gas at this high temperature and this high pressure?

A. Yes is the answer. To be perfectly accurate, I think our report was completed before that seal assembly was actually seen. So we had a strong view, you know, underpinned by all these other things that was confirming the information to us post-report.

Q. Have you seen the photographs or any documents talking about the condition of the casing hanger seal assembly?

A. I remember seeing a photograph, yeah.

Q. Do you have any reason to disagree with me that if the evidence is going to show that the casing hanger seal assembly was nearly pristine, that that clearly indicates that it could not have been exposed to the high pressure/high temperature hydrocarbon?

A. That's definitely my understanding.

Q. The modeling that you did was based on real data that you could recover, correct?

A. Yes. This was electronic pressure information that was available from off the rig, yes.

Q. This is not speculation; this is hard data that you had?

A. Correct.

Q. It discounted flow up the annulus through the casing as

well?
A. Yeah. There was additional -- yes, it did. And we had -- I forgot to mention we also evaluated that casing string itself, and looked at all the running information -- casing running data, etc., and that was part of our conclusion as well. We couldn't see a potential for a breach there.
Q. So the final conclusion of the team, and as you have just stated, is this flow came right up the casing?
A. That was our conclusion, yes.
Q. Would that then indicate to you that, in fact, it left the hydrocarbon-bearing zones, had to travel down to what's called the reamer shoe, and then back up through the casing to eventually reach the mud line BOP riser, etc., as your red line shows?
A. That's what we believe, yes.
Q. As you sit here today, you know of no information that would call that conclusion into question?
A. Not at all.
MR. STERBCOW: Let's go to page 36 of TREX-1.
BY MR. STERBCOW:
Q. You also came to a second, but very related conclusion, and this one pertains to a BP procedure, correct?
A. Yes.
Q. You talk about "Evaluating lift pressure and lost returns and say it "did not constitute a proven cement evaluation

technique, per Section 5 of ETP GP 10-60."

Now, lift pressure and lost returns, as we have sort of heard to this point and will hear a lot about as we go, was the method that was used to determine whether or not the cement job went well, fair?

A. Yes, that's right.

Q. Lift pressure, do you know what we are referring to?

A. I understand that to be the pressure between the fluid inside the pipe and the fluid outside the pipe as it turns the corner. So if it's heavier on the outside, you will have pressure inside.

Q. But the pressure readings were such that it appeared that the pressure was -- showed that the cement, as pumped, flowed down through the shoe track, through the reamer, back up the annulus, as you would have hoped and expected?

A. Yes. That was what the team that pumped it on -- you know, on the rig team felt good about the job, yes.

Q. The absence of lost returns simply means that you were getting enough fluid back to the rig where you weren't losing spacer, cap cement, foam cement, or any other of the fluids into the formation, correct?

A. That's right.

Q. All right. You conclude that these two things were not sufficient -- these two pieces of data were not sufficient to constitute a proven cement evaluation technique per BP's own

06:00 policy?
06:00 **A.** That was the conclusion of my team, right.
06:00 **Q.** So at the end of the day, by not conducting a formal risk assessment of the annulus cement per ETP recommendations, it's the view of the investigation team that the Macondo well team did not fully conform to the intent of this engineering technical practice, correct?
06:00 **A.** That was what my team concluded.
06:00 **Q.** Simply translated, they didn't do the proper risk assessment to determine whether or not the cement job really went as planned?
06:00 **A.** The cement placement, and -- you said the proper risk assessment. We said they didn't do a formal enough -- and I won't mince words. I think that's fair.
06:01 **Q.** And then finally, your overarching conclusion for the cement, the annular cement, based on everything we've talked about, is that improved engineering rigor -- that would be a BP function?
06:01 **A.** We sort of broke this into two, and we made some comments about our views of Halliburton, and our second comments were about views of BP.
06:01 **Q.** So you're talking about engineering rigor in terms of cement design engineering?
06:01 **A.** Design of the slurry.
06:01 **Q.** ". . . cement testing and communication of risk by

Halliburton could have identified the low probability of the cement to achieve zonal isolation."

Translated, it sounds like to me if Halliburton had done -- in your mind, in your investigating team's mind -- had done a better job in designing, testing, and communicating risks with their cement slurry design to you, you could have identified what you concluded was a low probability of the cement achieving its goal?

A. It had the chance of doing that, right.

Q. It's something that could have been discussed, identified, and dealt with before the cement was ever put in the hole?

A. I think that's right, yeah.

Q. Improved technical assurance, risk management, and management of change -- which, by the way, correct me if I'm wrong. But management of change is critical in the identification and management of risk in a particular operation, correct?

A. It can be, that's right.

Q. If an operation is planned to go a certain way and then for whatever reason it's decided that it needs to change, the change can create new risks that didn't exist before?

A. It can in certain instances, that's right.

Q. The management of change analysis is designed exactly to deal with that?

A. Philosophically, that's exactly what it's for, yeah.

06:02 **Q.** If we change our mind and because we changed our mind
06:03 we've created a risk we didn't face before, we need to deal
06:03 with it now?
06:03 **A.** Yes.
06:03 **Q.** "Improved technical assurance, risk management and
06:03 management of change by BP well team could have raised
06:03 awareness of the challenges of achieving zonal isolation and
06:03 led to additional mitigation steps."
06:03 So we have a -- it's a two-prong issue with the
06:03 cement, correct? Essentially, it's bad design and testing by
06:03 Halliburton and it's a failure to appropriately manage risk on
06:03 BP's part that you-all felt combined to cause the annular
06:03 cement failure?
06:03 **MR. GODWIN:** Objection, Your Honor. This -- while it
06:03 would appear --
06:03 **THE COURT:** Overruled.
06:03 **MR. GODWIN:** May I state my --
06:03 **THE COURT:** Overruled.
06:03 **MR. GODWIN:** It would appear --
06:03 **THE COURT:** Overruled.
06:03 **MR. GODWIN:** Thank you, Your Honor.
06:03 **MR. STERBCOW:** Judge, I'm done with this. Is this a
06:03 good place to stop?
06:03 **THE COURT:** I don't know if the witness answered the
06:03 last question.

06:03 **MR. STERBCOW:** Oh. All right.
06:03 **THE COURT:** I didn't hear an answer.
06:03 **THE WITNESS:** I didn't answer the question.
06:03 **THE COURT:** I don't know if you completed your question.
06:03 **MR. STERBCOW:** I did.
06:03 **THE COURT:** Okay.
06:04 **THE WITNESS:** I'm sorry. Could we do it again?
06:04 **THE COURT:** Do you want to restate it?
06:04 **MR. STERBCOW:** I should.
06:04 **THE COURT:** And then we will recess. This will be the last question, and then we will recess for the day.
06:04 **BY MR. STERBCOW:**
06:04 **Q.** Simply put, what you concluded about the annular cement is that a combination of the failure of Halliburton to appropriately design from an engineering standpoint the cement, test the cement, and alert BP of risks that may be associated with their cement, correct, combined with the BP personnel's involved failure to appropriately manage risk and conduct a management of change analysis so that you could deal with new risks that were introduced, those things combined to cause the annular cement failure?
06:04 **A.** I think we concluded --
06:04 **MR. GODWIN:** Objection, Your Honor.
06:04 **THE COURT:** It's the same question. I overruled your

objection, Mr. Godwin.

MR. GODWIN: He restated, Your Honor. I lodged my objection.

THE COURT: That's fine. Okay. Thank you.

BY MR. STERBCOW:

Q. Go ahead.

A. We concluded that those two things together, the two companies working together, the weaknesses that we identified, may have made a difference. We didn't just say they would have. We just said those may have contributed.

Q. The best you could do with the data you had?

A. Yes, sir.

THE COURT: We will resume at 8:00 a.m. in the morning.

Before everyone leaves, let's check the witnesses for tomorrow. I'm not sure how much longer Mr. Bly will take; but after Mr. Bly, we are going to have who?

MR. ROY: We're going to have Andrew Hurst.

THE COURT: Andrew Hurst. He's an expert, correct?

MR. ROY: And then Randy Ezell, if we run out of time.

THE COURT: Randy Ezell. Okay. Good.

Everyone have a good evening.

THE DEPUTY CLERK: All rise.

(Proceedings adjourned.)

CERTIFICATE

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

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