

# Deposition Testimony of:

## **Edmond Shtepani**

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Page 7:04 to 7:12

00007:04 Today is November 30th, 2012. This is  
05 the deposition of Dr. Edmond Shtepani regarding  
06 the oil spill of the Oil Rig DEEPWATER HORIZON on  
07 April 20th, 2010.  
08 The time is 8:12 a.m. We are on the  
09 record.  
10 EDMOND SHTEPANI, PH.D., P.ENG.,  
11 was called as a witness by the United States and,  
12 being first duly sworn, testified as follows:

Page 9:08 to 10:06

00009:08 Q. Okay. Great. The first document I'm  
09 going to show you is actually not in your binder  
10 there in front of you. It is the Deposition  
11 Notice of Intertek.  
12 MS. ENGEL: Let's mark this as  
13 Exhibit 10413.  
14 (Exhibit No. 10413 marked.)  
15 Q. (By Ms. Engel) You can look at the first  
16 page there. I'm going to direct your attention  
17 to the Topics on the -- on the second page, but  
18 feel free to look at the whole document.  
19 Have you seen this Deposition Notice  
20 before?  
21 A. No.  
22 Q. Did Mr. Kenney discuss with you the  
23 Topics about which you're here to testify today?  
24 A. I know that I am going to testify about  
25 the test.  
00010:01 Q. Do you understand that you're here to  
02 testify about the work that Intertek's Westport  
03 Labs did with respect to fluids taken from BP's  
04 Macondo Well?  
05 A. Yes.  
06 Q. Okay.

Page 10:10 to 11:05

00010:10 Q. (By Ms. Engel) On the second page  
11 there -- and I gave you my copy, so I don't have  
12 the words directly in front of me, but there are  
13 three Topics.  
14 A. M-h'm.  
15 Q. Could you take a minute and look at those  
16 and --  
17 A. M-h'm.  
18 Q. -- just read through them and let me know  
19 when you're done?  
20 A. (Reviewing document.) So those are the  
21 areas that is the testimony today?  
22 Q. That's my understanding from your  
23 Counsel, is that you're here to talk about those

24 three Topics with respect to the work done by  
25 Intertek's Westport Labs. Is that your  
00011:01 understanding, as well?  
02 A. We can -- we can discuss to the best of  
03 my knowledge, but the first -- the No. 1 and  
04 No. 3 is more what actually is related to  
05 Intertek.

Page 11:08 to 14:16

00011:08 Q. Okay. Do you know why you were  
09 designated to be Intertek's Representative here  
10 today with respect to the Westport work?  
11 A. Because I was the Project Manager for  
12 this Project.  
13 Q. The Project Manager for all of the PVT  
14 analyses --  
15 A. That's correct.  
16 Q. -- done by the Westport Labs?  
17 A. For this Project.  
18 Q. For the -- for the Macondo Well?  
19 A. Yeah.  
20 Q. Okay.  
21 A. For -- I mean, for this Project, yeah.  
22 Q. Okay. How -- how would you like to refer  
23 to this Project? Do you want to refer to it as  
24 the "Macondo Project," or is there another term  
25 you're more comfortable with?  
00012:01 A. I would refer to this, "BP Project."  
02 Q. Okay. We can do that.  
03 A. (Nodding.)  
04 Q. Okay. Before we get rolling on -- on  
05 some of the substance of the -- of the Reports  
06 and the --  
07 A. M-h'm.  
08 Q. -- analyses that Intertek did, I'm going  
09 to talk a little bit about your personal  
10 background.  
11 A. M-h'm.  
12 Q. Did you go to college?  
13 A. Yes, I did.  
14 Q. Do you have a -- a degree?  
15 A. I have a -- a Bachelor degree and Master  
16 degree in Physics and a Ph.D. in Reservoir  
17 Engineering.  
18 Q. Where is your Bachelor's degree from?  
19 A. It's from University of Tirana, Albania.  
20 Q. And what about your Master's?  
21 A. The same.  
22 Q. And your Ph.D.?  
23 A. It is from University of Leoben, Austria.  
24 Q. Okay. Much more exotic than any of my  
25 degrees.  
00013:01 Did you have any other supplemental  
02 training or any other Certifications or anything,  
03 other than your Bachelor's, your Master's, and

04 your Ph.D.  
05 A. I'm also a Professional Engineer with the  
06 Province of Alberta in Canada, so, you know, a  
07 Certified Professional Engineer.  
08 Q. Okay. And is a Certification that's  
09 valid in the U.S., as well?  
10 A. It's -- it -- it is a Certification that  
11 is in the Province of Alberta, but can be  
12 converted --  
13 Q. That's --  
14 A. -- in the U.S., as well.  
15 Q. Okay. And I'm -- I just did one of the  
16 things that I should have told you I'll try not  
17 to do, which is to interrupt you or talk over  
18 you. So if I do that, and you're not done with  
19 the question, if you're pausing --  
20 A. M-h'm.  
21 Q. -- just, you know, tell me to back off,  
22 and I'll -- I will, and I'll let you answer your  
23 question.  
24 A. Okay.  
25 Q. Okay? When did you begin working for  
00014:01 Intertek?  
02 A. In July 2007.  
03 Q. And what -- what is your current position  
04 at Intertek?  
05 A. I'm responsible for Intertek Upstream  
06 Services and the Managing Director for Intertek  
07 Westport Technology Center.  
08 Q. Okay. Can you explain to me what you  
09 mean by Intertek Upstream Services?  
10 A. The Intertek Upstream Services is one  
11 Group within Intertek dealing with oil and gas  
12 industry and upstream, globally.  
13 Q. Okay. And then you also said you're the  
14 Managing Director for Intertek's Westport  
15 Technology Center?  
16 A. That's correct.

Page 16:09 to 17:23

00016:09 Q. Is -- are the current positions that you  
10 hold at Intertek Westport the only positions  
11 you've held within Intertek?  
12 A. Yes.  
13 Q. Okay. What did you do before you started  
14 working at Intertek in 2007?  
15 A. I was in Canada, in Calgary, working for  
16 Hycal Energy Research Laboratories, a Division  
17 now of Weatherford International.  
18 Q. And you said Hycal?  
19 A. Yeah, Hycal.  
20 Q. How do you spell that?  
21 A. H-y-c-a-l.  
22 Q. Okay. What was your position at Hycal?  
23 A. I was Chief Research Engineer and

24 Engineering Manager.  
25 Q. For what years did you hold that  
00017:01 position?  
02 A. This has been from 2000 to 2007.  
03 Q. I should have asked you earlier. When  
04 did you get your Ph.D.?  
05 A. In 1993.  
06 Q. 1993. Okay. So you held some other  
07 positions between 1993 and 2000?  
08 A. I've been working in Europe, as well, and  
09 also in Calgary, and also, I've been teaching at  
10 universities.  
11 Q. Okay. What university did you teach at?  
12 A. I taught at the University of Leoben. I  
13 taught at the University of Calgary while I was  
14 doing full-time engineering functions at Hycal.  
15 Q. Okay.  
16 A. I was an Adjunct Professor.  
17 Q. Okay. Where did you work prior to  
18 starting at Hycal in 2000?  
19 A. Prior to Hycal, I was at -- in Leoben,  
20 in -- at the University of Leoben, and also  
21 worked at OMV. It's the National Oil Company in  
22 Austria. And prior to that, I was a -- a  
23 Professor at the University of Tirana, Albania.

Page 18:04 to 20:22

00018:04 Q. Okay. Great. What are your  
05 responsibilities at Weathertek as the --  
06 Weathertek -- sorry -- Intertek --  
07 A. M-h'm.  
08 Q. -- Westport, as the Director of the  
09 Westport Lab?  
10 A. As the Managing Director, so I am  
11 responsible for not only technical direction for  
12 the -- this facility, but also for -- and the  
13 end, for the P and L.  
14 Q. And remind me of what your other position  
15 was -- your current position is at Intertek.  
16 A. It's VP for Upstream Services and  
17 Managing Director for Westport.  
18 Q. Okay. So as VP for Upstream Services,  
19 what are your general job responsibilities?  
20 A. It's a -- a function that I'm -- have  
21 responsibility to look now to have the -- to look  
22 after the Upstream Services globally as we  
23 expand, so right now, I have a location in  
24 Australia, and -- as part of my responsibility,  
25 in addition to Westport.  
00019:01 Q. Do you perform any lab analyses as part  
02 of either of your positions?  
03 A. I do not perform lab analysis. I only do  
04 engineering work.  
05 Q. Do you oversee lab analyses?  
06 A. I -- we have Supervisors, we have

07 Operations Manager, and I am only a Project  
08 Manager in cases that is a -- complex or is of my  
09 area of expertise.  
10 Q. Okay. So, for example, I think you said  
11 you were the -- the Project Manager --  
12 A. M-h'm.  
13 Q. -- for the BP Project --  
14 A. M-h'm.  
15 Q. -- and that's why you were selected to  
16 testify today?  
17 A. Yeah.  
18 Q. What were your job responsibilities in  
19 that capacity as Project Manager?  
20 A. The -- just for to start and to complete  
21 successfully a Project, that's -- and not only  
22 for me, but for all Project Managers at the -- in  
23 my organization.  
24 Q. Were part of your responsibilities to  
25 oversee a group of Lab Technicians and other  
00020:01 Engineers that were performing the actual  
02 analyses?  
03 A. That's correct.  
04 Q. Okay. Who were those people that worked  
05 on -- underneath you on the BP Project?  
06 A. They are Lab Technicians, they are  
07 Supervisors, and they are -- is Operation  
08 Manager.  
09 Q. Is Stephanie Heard one of the people that  
10 worked with you on that?  
11 A. Stephanie Heard is in the Sales  
12 Department.  
13 Q. Okay. What are the names of some of the  
14 other people that worked on the BP Project?  
15 A. The Supervisor was Darren Findley at that  
16 time, Operation Manager, Scott Brown, Analytical  
17 Lab Supervisor, Allwell Anuytwny.  
18 Q. What was the first name?  
19 A. Allwell.  
20 Q. Can you spell that for me?  
21 A. A-l-l-w-e-l-l. Anuytwny I will try to  
22 spell. A-n-u-y-t-w-n-y.

Page 21:11 to 22:02

00021:11 Q. Absolutely. Before I move on, I wanted  
12 you to ask you a little bit more about what  
13 your -- your personal area of expertise was. I  
14 guess let's start with your Ph.D. Did you have a  
15 particular spec -- specialization?  
16 A. Yes. My specialization is in the -- in  
17 fluid phase behavior, equation of states,  
18 modeling, and reservoir simulation.  
19 Q. And are those all specialties that you  
20 use or that inform your job responsibilities at  
21 Intertek Westport?  
22 A. This is -- you asked about the expertise.

23 Q. M-h'm.  
24 A. That's my expertise. Other areas that  
25 I -- I am involved are more than that. So  
00022:01 it's -- I've been working for 25 years, so I've  
02 learned a bit more than those three things.

Page 22:05 to 24:15

00022:05 Q. I want to take some time to run through  
06 some of the PVT analyses that Westport did.  
07 A. M-h'm.  
08 Q. And I'm going to -- I kind of want to  
09 give you a little bit of a roadmap of where we're  
10 going. I want to -- I want to kind of run  
11 through one Project at a time, so we can keep  
12 things organized. So let's -- let's talk first  
13 about the -- the CCE work that --  
14 A. M-h'm.  
15 Q. -- Westport did. Is it okay if I use the  
16 terms "Intertek" and "Westport" interchangeably  
17 with you? Does that mean the same thing, more or  
18 less?  
19 A. Yeah. It's no problem.  
20 Q. Okay.  
21 A. Yeah.  
22 Q. So if you could flip to Tab No. 5 in your  
23 binder, which is Exhibit -- which is Exhibit  
24 10414.  
25 A. Yeah.  
00023:01 (Exhibit No. 10414 marked.)  
02 Q. (By Ms. Engel) And this is an E-mail  
03 from the -- it's an E-mail chain among Stephanie  
04 Heard, from Intertek, you, Kelly McAughan from BP  
05 and Yun Wang from BP.  
06 A. M-h'm.  
07 Q. The "Subject" line is "CCE Test." And  
08 the top E-mail in this chain is dated Friday,  
09 May 14th, 2010.  
10 Was this the first communication that  
11 Intertek had with BP related to the BP Project?  
12 A. It looks like, yeah, that --  
13 Q. Intertek didn't perform any work for the  
14 BP Project before this -- the CCE Test that's  
15 referred to in this E-mail chain?  
16 A. No.  
17 Q. Okay. So if you flip to the second page  
18 of the chain, the very last E-mail from Yun Wang  
19 to you and Stephanie Heard and Kelly McAughan.  
20 And it says: "A heads-up to please expect a  
21 sample from Pencor before Friday. Please have  
22 the lab ready for immediate sample restoration  
23 upon arrival."  
24 A. M-h'm.  
25 Q. "Please also have the video setup ready  
00024:01 for CCE."  
02 Did I read that right?

03 A. Yeah.  
04 Q. Okay. Did you have a conversation with  
05 Yun Wang before you received this E-mail from  
06 him?  
07 A. We expected the -- the sample because of  
08 the conversation that you see here. So as a  
09 Project Manager, I am not involved in the  
10 initiation phase. As you see, I'm only copied on  
11 that.  
12 So Stephanie Heard, our Business  
13 Development Representative, was part of the -- I  
14 mean, has, in her account, BP, and, therefore,  
15 the initiation process start with her.

Page 25:04 to 25:13

00025:04 Q. I guess it was: Was this the first  
05 notice you had of the work being done?  
06 A. No. But you can -- you can see that  
07 we -- we know that -- that these are  
08 correspondence there, I have been copied here  
09 that have you received the samples, did you  
10 receive the samples, and -- and then that has  
11 been -- is -- is a follow-up, yeah. And so I was  
12 prepared; therefore, to use your word again,  
13 "surprised," I was not surprised, yeah.

Page 26:21 to 27:10

00026:21 Is -- "CCE" stands for Constant  
22 Composition Expansion, right?  
23 A. That's correct.  
24 Q. Okay. Is that a test that Intertek  
25 Westport typically performs for clients?  
00027:01 A. Yes.  
02 Q. Does Intertek usually videotape the CCE  
03 tests?  
04 A. It depends. If with a client's request,  
05 yes.  
06 Q. What percentage, ballpark, would you say  
07 of -- of the tests you run you videotape?  
08 A. Maybe 10, 20 percent.  
09 Q. Okay. What would be the reason -- again,  
10 generally speaking -- to videotape a CCE test?

Page 27:12 to 32:15

00027:12 A. I can only -- I mean, this is something  
13 you have to ask the client, why they -- they want  
14 to have that. But I can only tell you that most  
15 of the time is they either -- they want -- some  
16 clients, I'm not talking about this Project --  
17 may need to be in the lab just for their  
18 curiosity, because they may not have lab  
19 experience, or they may want to have, if you



20 don't have time, maybe just to -- to have some --  
21 just in case they may -- I mean, they want to  
22 look at this. But this video is not part of the  
23 test.  
24 Q. (By Ms. Engel) It's not a standard  
25 part --  
00028:01 A. It is not --  
02 Q. -- of the test?  
03 A. -- any -- it has nothing to do with any  
04 data in the test.  
05 Q. It's just a documentation of --  
06 A. It's more as --  
07 Q. -- the testing run?  
08 A. -- more curiosity as anything else.  
09 Q. Okay. Did Yun Wang tell you why he  
10 wanted this test videotaped?  
11 A. No.  
12 Q. Did you ask him?  
13 A. No.  
14 Q. Did anyone else at Intertek ask Yun Wang  
15 why he wanted the test videotaped?  
16 A. We never ask those if it's requested by  
17 the client.  
18 Q. Okay. Now, flipping back to that first  
19 page of this document. It's an E-mail from Yun  
20 Wang to Stephanie Heard, you, and Kelly McAughan  
21 on May 13th, and it says, quote: "Stephanie, the  
22 reservoir conditions are 11,856 psia and 243F. I  
23 would restore at 14,000 psia and 243F, if  
24 possible."  
25 A. M-h'm.  
00029:01 Q. Did I read that right?  
02 A. Yeah.  
03 Q. The "243F," that's 243 degrees  
04 Fahrenheit?  
05 A. That's correct.  
06 Q. And the -- the "11,856" and "14,000" are  
07 pressure readings, right?  
08 A. That's correct.  
09 Q. Okay. What does -- what does Yun Wang  
10 mean by "restore"?  
11 A. When you take a -- a sample and the  
12 sample has been taken from the reservoir at those  
13 conditions that you just read out, we have to --  
14 to restore or to condition the sample again at  
15 those conditions in order to be representative of  
16 the reservoir.  
17 So that means we take the sample; we heat  
18 it to 243 degree F; and in -- in that time, the  
19 pressure will drop, so we maintain the pressure.  
20 And in order to make sure that we are including  
21 the reservoir pressure is an engineering  
22 advise by the -- I mean, by the -- by the  
23 engineering methodology to have a pressure higher  
24 than the reservoir pressure.  
25 Q. Okay. What does a CCE test test for?  
00030:01 A. Well, the Constant Composition Expansion

02 is a test to determine the saturation pressure,  
03 most of the time, but also to determine the  
04 compressibility of the oil above the saturation  
05 pressure and density of the oil above the  
06 saturation pressure and also liquid of oil and  
07 gas below the saturation pressure.  
08 Q. Does it also test for bubble point?  
09 A. That's the saturation pressure.  
10 Q. That's the saturation pressure?  
11 A. Yeah.  
12 Q. So you use those terms interchangeably?  
13 A. The saturation pressure is the pressure  
14 that can be a -- if we go more specific, can be a  
15 bubble point or it can be a dew point, depending  
16 on the reservoir fluid, so -- and "saturation  
17 pressure" is the -- the word that actually  
18 comprises both.  
19 Q. Both bubble point and dew point?  
20 A. And dew point.  
21 Q. Okay. Did Intertek see a bubble point in  
22 this fluid?  
23 A. Yes.  
24 Q. Okay.  
25 A. They did.  
00031:01 Q. Did you ever see -- did Intertek ever see  
02 a dew point in the fluid?  
03 A. There's only can be a bubble point or a  
04 dew point. There cannot be both.  
05 Q. Right.  
06 A. Yeah.  
07 Q. Would the videotape that Intertek  
08 recorded of the CCE test have shown that bubble  
09 point?  
10 A. It is shown, the -- the bubble point, as  
11 well, yeah. It is not -- you have a -- a black  
12 phase and a bright phase, and that's where -- the  
13 videotape is not more than what the Technician  
14 actually sees.  
15 Q. So the videotape is seeing the same thing  
16 the Technician sees --  
17 A. But it's -- it's from the -- the same  
18 cell. It's a visual cell with the same -- it's  
19 only even from further distance, yeah.  
20 Q. Okay. So would you -- is it fair to say  
21 watching the video is as good as watching the  
22 test being conducted?  
23 A. Not.  
24 Q. No? Why not?  
25 A. Because there's -- the video can be asset  
00032:01 is only more to be visually seeing, and there may  
02 not be as good as we do the measurements with a  
03 cathetometer.  
04 Q. What was that last word?  
05 A. It's a cathetometer.  
06 So it's a --  
07 Q. Okay.  
08 A. -- it's pretty much a zoomed in video

09 that we have to determine the liquid and gas in  
10 this, and that is the Technician that is having  
11 this tool.  
12 Q. Okay.  
13 A. The video is more being present or -- or  
14 having phys -- than somebody that -- watching  
15 from distance.

Page 32:22 to 33:09

00032:22 Q. For some of the CCE tests, you were  
23 present in the lab, the CCE tests run on the BP  
24 Project?  
25 A. As I said, we have Technicians -- we have  
00033:01 a big organization. We have Technicians that can  
02 do better work than me doing these tests, we have  
03 a Lab Supervisor, and then I get the data and I  
04 process the data from an engineering point of  
05 view.  
06 So I walk in the lab. Frequently I  
07 discuss with people, not only for this Project,  
08 but not necessarily I have to be there because I  
09 have other functions.

Page 33:13 to 35:01

00033:13 Q. Did you make a point of observing any of  
14 the CCE tests for the BP Project?  
15 A. I -- I don't recall that, that I have.  
16 Q. Let's turn to another document in your  
17 binder.  
18 A. M-h'm.  
19 Q. It's behind Tab 7.  
20 A. 7.  
21 Q. Yeah. And it's Exhibit 10415.  
22 (Exhibit No. 10415 marked.)  
23 (Discussion off the record.)  
24 Q. (By Ms. Engel) Do you have it there?  
25 A. I -- I thought I have. 7?  
00034:01 MR. KENNEY: 7.  
02 THE WITNESS: Yeah.  
03 Q. (By Ms. Engel) Okay. And this is a -- an  
04 E-mail chain --  
05 A. M-h'm.  
06 Q. -- again, and it has an attachment. The  
07 attachment is titled "WTC-10-001812" --  
08 A. M-h'm.  
09 Q. -- "BP CCE Report.pdf."  
10 That "WTC" number, is that the Project  
11 number for the BP Project?  
12 A. That's correct. It's our Project number  
13 for BP Project.  
14 Q. Okay. It's the --  
15 A. It's Westport's Project number.  
16 Q. Okay. Thank you.

17           Is that the Project number that Westport  
18 used for all of the BP Project PVT analysis?  
19       A. No. That is each Project has a number.  
20 We have a laboratory inventory managing --  
21 management system for all the samples we receive,  
22 and also we have for -- each Project that we  
23 initiate has a Project number and it's  
24 chronologically.  
25 This was the number, as you can see here,  
00035:01 is "10" for the year --

Page 35:03 to 35:14

00035:03       A. -- 2010, and the numbers are  
04 chronologically as we enter the projects and will  
05 be assigned.  
06       Q. Did Intertek receive any bottomhole  
07 samples from the Macondo Well, other than the  
08 Pencor sample that was -- or the sample you  
09 received from Pencor that was referenced in that  
10 first exhibit we looked at?  
11       A. We received -- to -- to emphasize that,  
12 we received a pro -- a -- a sample from Pencor  
13 from BP, but there was nothing related which  
14 well.

Page 35:21 to 36:03

00035:21       Q. Sure. So when Intertek Westport was  
22 running these PVT analyses on the sample received  
23 from Pencor --  
24       A. M-h'm.  
25       Q. -- did Intertek know that the fluid was  
00036:01 from the well that was spilling oil into the  
02 Gulf?  
03       A. No.

Page 36:05 to 37:08

00036:05       Q. (By Ms. Engel) Let me ask the other  
06 question that I was trying to get at in a  
07 slightly different way, which is: Is the sample  
08 that Int -- Intertek received from Pencor the  
09 only sample on which -- strike that.  
10       Let me ask it this way: Is the sample  
11 that Intertek received from Pencor the one sample  
12 that it used for the CCE tests, the viscosity  
13 tests, and the single-stage and multi-stage flash  
14 tests?  
15       A. That's -- that's correct.  
16       Q. Okay. And so would this WTC-10-001812  
17 Project number be associated with all of those  
18 tests?  
19       A. That's correct.  
20       Q. Okay. Thank you.

21 Now, I want to -- looking, again, at this  
22 Exhibit 10415, which is behind Tab 7, it's an  
23 E-mail from you to -- I'm looking at the top  
24 E-mail in the chain -- an E-mail from you to Yun  
25 Wang and Kelly McAughan; Cc, Stephanie Heard.  
00037:01 And it looks like Stephanie Heard is -- is copied  
02 on a lot of these, or almost all of these,  
03 E-mails between you and Yun Wang and Kelly  
04 McAughan.  
05 A. (Nodding.)  
06 Q. Is that standard practice to copy your  
07 Sales Team?  
08 A. Yes.

Page 37:10 to 41:25

00037:10 Q. (By Ms. Engel) Okay. And this is dated  
11 Thursday, May 20th. The "Subject" line is "Quote  
12 for Rush CCE Testing," and I'm just going to read  
13 from the top E-mail here. It says, quote: "Yun,  
14 "Please find attached the results from  
15 the first CCE test with the mixer on. The  
16 density data above the saturation pressure cannot  
17 be provided as we do not have the GOR data."  
18 This "test has been video recorded. Tomorrow we  
19 are going to repeat the test without using the  
20 mixer."  
21 A. M-h'm.  
22 Q. What is a mixer?  
23 A. Well, in this PVT cell -- and "PVT"  
24 stands for pressure volume temperature, is an  
25 abbreviation -- in this cell, which can have the  
00038:01 fluid at high pressure and high temperature and  
02 has a window that you can see the phase  
03 transition.  
04 She's also mixed a magnetic mixer to make  
05 sure that everything is mixed well, because  
06 you may -- because there's a -- the ratio -- the  
07 volume-to-height ratio is such that may allow --  
08 that is, you need a mixer to make sure that  
09 everything, the gas and the oil, are mixed  
10 together well.  
11 And you also can use the mixer or you  
12 cannot use the mixer. So in this case, the  
13 client asked us to -- to do both, with mixer on  
14 and mixer off. That's -- and we provided both  
15 data for that.  
16 Q. For the BP Project in particular, after  
17 the test -- after the mixer agitated the -- the  
18 sample in the --  
19 A. M-h'm.  
20 Q. -- PVT cell, was the sample allowed to  
21 equilibrate for any amount of time?  
22 A. It's always the case.  
23 Q. Okay.  
24 A. You have to equilibrate.

25 Q. How long was the sample equilibrated?  
00039:01 A. The samples are equilibrated until we  
02 have an equilibrium, so that means there's no  
03 change in pressure, no change in -- we maintain  
04 the temperature, and that's the indicator that  
05 there's an equilibrium.  
06 Q. So there's not a standard amount of time  
07 it takes. It's based on the judgment of whoever  
08 is running the test?  
09 A. No. It's based on the oil. It's not  
10 based on the -- on any other judgment. It's --  
11 if we say we need to equilibrate the fluids, when  
12 they reach the equilibrium, then that's how much  
13 time was needed.  
14 Q. So when the measurements show that there  
15 are no more fluctuations in pressure and  
16 temperature?  
17 A. That's correct.  
18 Q. Okay.  
19 A. And temperature is maintained constant,  
20 because it's done at the -- but the only -- the  
21 only variable there will be pressure. And  
22 pressure, if it's not an equilibrium, gas may  
23 go -- can be liberated or go in solution. That  
24 fluctuate the pressure. And at one point, when  
25 it reaches equilibrium, then you don't see any  
00040:01 pressure changes.  
02 Q. Is it typical for Intertek to run a CCE  
03 test without using the mixer?  
04 A. It is -- it's typical. I would say we  
05 normally use a mixer, yeah. Normally we use a  
06 mixer. But there is a -- if you use a mixer or  
07 you don't use a mixer, you may not get the same  
08 res -- result, so -- because it's -- it's path  
09 dependent. You may -- you may promote a little  
10 bit more mixing, and then you may show a  
11 saturation pressure that's a lower or a higher,  
12 depending on the fluid, or you can have with  
13 mixer or without mixer which may take more  
14 natural, or it may take longer and may not be as  
15 good as -- as with mixer. Okay?  
16 So it's a -- is there is no standards  
17 there. You can -- both can be used, and there's  
18 nothing -- nothing wrong with that.  
19 Q. If you had to make a recommendation to a  
20 client using a mixer or not using a mixer, which  
21 would you recommend?  
22 A. If I had to make a recommendation, as  
23 this is most of the time, I think to do both is  
24 the best way; yeah, to do both. But there's  
25 financial constraints, and they may select -- or  
00041:01 normally they don't know, and the -- the -- the  
02 difference because also you have a factor there,  
03 and so it's the only thing that is test.  
04 Q. Did Intertek videotape the CCE test that  
05 was conducted without the mixer?  
06 A. Should have been both should have been

07 videotaped.  
08 Q. Now, this -- the "Subject" line of this  
09 E-mail says "Quote for Rush CCE Testing."  
10 A. M-h'm.  
11 Q. What is the -- what is Intertek's  
12 standard turnaround time for a CCE test without  
13 rush?  
14 A. It depends on the workload; so it may  
15 take -- may be in the queue for a while, because  
16 we have other projects, or it may take as a --  
17 may not be starting right away. And we normally  
18 call a "rush" when clients -- the client need  
19 this within 24 hours, or depending on the  
20 analysis, but starting -- better to say starting  
21 within 24 hours.  
22 Q. So a rush analysis you would say is  
23 somewhere in the neighborhood of 24 hours, if  
24 that can be done?  
25 A. Starting, not --

Page 42:02 to 45:17

00042:02 A. -- not -- starting at -- within 24 hours,  
03 because, for example, this test, if I remember,  
04 we had to condition it for a few days before we  
05 do the CCE. We are not shortening the  
06 procedures, only starting point is within 24  
07 hours.  
08 Q. (By Ms. Engel) Okay. I understand.  
09 So the test will begin within 24 hours  
10 after the rush request --  
11 A. Yes.  
12 Q. -- or so?  
13 A. Yes.  
14 Q. And then it's going to be dependent on  
15 the characteristics of the fluid about how long  
16 it takes to bring it back to whatever reservoir  
17 temperature and pressure is requested?  
18 A. Yes.  
19 Q. Okay. And then how long the CCE test  
20 actually takes to perform is also  
21 fluid-dependent; is that right?  
22 A. That's correct.  
23 Q. Okay. The attachment to this E-mail  
24 is -- it's two pages. And it is titled:  
25 "CONSTANT COMPOSITION EXPANSION" on the top --  
00043:01 A. M-h'm.  
02 Q. -- and I see the WTC-10-1812 Project  
03 number that you said --  
04 A. M-h'm, yes.  
05 Q. -- references the BP work. The table on  
06 the first page here is "TABLE 1, AVERAGE FLUID  
07 COMPRESSIBILITIES." And then on the second page,  
08 "TABLE 2" is "CONSTANT COMPOSITION EXPANSION"  
09 @243F, and then in parens it says: "(390.4K)."  
10 What does the "K" stand for?

11 A. Kelvin.  
12 Q. Okay. Is this the form that Intertek  
13 typically provides CCE results to its clients in?  
14 A. Yes.  
15 Q. Okay. Who would have prepared these  
16 tables?  
17 A. I did.  
18 Q. You prepared the tables. Did you -- you  
19 received data from the Lab Technicians that  
20 performed the analyses and incorporated it into  
21 these tables?  
22 A. That's correct.  
23 Q. Okay. How soon after the Lab Techs ran  
24 the CCE test did they provide the data to you?  
25 A. As -- as soon as they completed the test,  
00044:01 they provided the data to me.  
02 Q. And then how quickly did you incorporate  
03 it into these tables?  
04 A. Might have been a day or so.  
05 Q. And then sent it over to BP as soon as  
06 you had it?  
07 A. Yeah.  
08 Q. Okay. Do the Lab Technicians that run  
09 the CCE analyses receive any sort of specialized  
10 training from Intertek?  
11 A. Yes. They all are trained. They have  
12 Certifications to the dependency program that --  
13 before they start the test, so everybody goes  
14 through a -- a -- a rigorous Training Program.  
15 Q. Okay. So they're all capable of running  
16 these tests in --  
17 A. They're all --  
18 Q. -- Intertek Training Program?  
19 A. -- qualified, and otherwise we wouldn't  
20 have them -- have this in our organization.  
21 Q. Understand. Understand and appreciate  
22 that.  
23 A. Yes.  
24 Q. All right. So let's -- let's flip to  
25 another document here in -- in your binder. It's  
00045:01 behind Tab 8, and it's Exhibit No. 10416.  
02 (Exhibit No. 10416 marked.)  
03 THE WITNESS: Which Tab?  
04 MR. KENNEY: Tab 8.  
05 THE WITNESS: 8.  
06 A. Okay.  
07 Q. (By Ms. Engel) And this is a -- another  
08 E-mail chain among -- well, I guess the top  
09 E-mail is just from you to Yun Wang --  
10 A. M-h'm.  
11 Q. And then later down in the E-mail  
12 chain --  
13 A. M-h'm.  
14 Q. -- Kelly McAughan and Stephanie Heard  
15 are -- are added, as well. Who is Kelly  
16 McAughan, by the way?  
17 A. Should be a -- an Engineer with BP.



Page 46:12 to 47:04

00046:12 Q. Thank you. Reading from the second  
13 E-mail in this chain, behind Tab 8. And it's  
14 from Yun Wang to you, Kelly McAughan, Stephanie  
15 Heard. I'm reading from the second paragraph of  
16 that E-mail. Quote: "When you repeat the test  
17 tomorrow, could you add more pressure points  
18 immediately below Psat? In your report, there is  
19 a approximately 300 psi gap between Psat (6,438)  
20 and the next lower pressure (6,141). Maybe  
21 already have more points in between but didn't  
22 report. In any case, I would want approximately  
23 50 psia pressure increments between Psat and  
24 Psat - 300 psi."  
25 A. M-h'm.  
00047:01 Q. Did Intertek already have the pressure  
02 point data -- was -- was additional pressure  
03 point data generated by the Lab work aside from  
04 what was initially reported to BP?

Page 47:06 to 48:02

00047:06 A. We have a -- the -- the pressure data  
07 were there. Only because I do not include  
08 everything is there, if it's makes -- makes no  
09 sense, yeah, in terms of having the large amount  
10 and to produce pages of data.  
11 So -- and, therefore, is a -- we have  
12 a -- I have selected to do, let's say, 15 points  
13 below the saturation. And then in with his  
14 request, then he wanted to have more in -- data  
15 in that phase, then we certainly -- we -- we  
16 included this in that.  
17 Q. (By Ms. Engel) Do you know why Yun and --  
18 Yun Wang wanted more of these pressure points?  
19 A. He -- he wanted to make sure that we have  
20 enough evidence there in terms of the -- the  
21 pressure behavior at this point. So --  
22 Q. And by "this point," you mean immediately  
23 below the saturation point, saturation --  
24 A. Yeah --  
25 Q. -- pressure?  
00048:01 A. Yeah. Saturation.  
02 Q. Okay.

Page 48:04 to 48:25

00048:04 Q. (By Ms. Engel) And so what would that  
05 tell you? You said, I think -- you said, "He  
06 wanted to make sure that we have enough evidence  
07 there in terms of the pressure behavior at this  
08 point. What do you mean by "enough evidence  
09 there"?

10 A. The enough evidence is the transition,  
11 where you have two points represented by two  
12 points or by five points. That's the evidence.  
13 Q. By "transition," you mean -- mean the  
14 phase transition?  
15 A. Phase transition.  
16 Q. Of the fluid?  
17 A. Yeah.  
18 Q. Okay. The next paragraph of Yun Wang's  
19 E-mail to you says: "Did the video capture the  
20 phase transition clearly?"  
21 Did the video capture the phase  
22 transition clearly on that first CCE --  
23 A. Yes.  
24 Q. -- test?  
25 A. Yeah.

Page 49:14 to 49:23

00049:14 Q. Do you recall whether Yun Wang or anyone  
15 else at BP asked to view the video of the CCE  
16 test?  
17 A. Not with -- not for -- from me, or they  
18 asked me. So that's -- I'm -- so it's nothing  
19 that I -- I can see that they -- they asked for  
20 this video.  
21 Q. You don't know if anyone from BP asked  
22 anyone at Intertek for a copy of that video or to  
23 view that video?

Page 50:01 to 51:04

00050:01 A. As I said, to my knowledge, is -- was --  
02 were not asked to view this video.  
03 Q. (By Ms. Engel) Okay. And so this video  
04 of the first CCE test showed a phase -- the phase  
05 transition and the phase transition --  
06 A. Right.  
07 Q. -- showed a bubble point?  
08 A. That's right.  
09 Q. Okay. Let's turn now to the document  
10 that's behind binder -- or Tab 12 in your binder.  
11 (Exhibit No. 10417 marked.)  
12 Q. (By Ms. Engel) Which is Exhibit 10417.  
13 A. Okay.  
14 Q. And it's another E-mail regarding CCE  
15 tests. The top eight -- E-mail in the chain is  
16 from Kelly McAughan to Stephanie Heard and you  
17 and Yun Wang. It's from May 27th. The "Subject"  
18 line is: "CCE at 100F."  
19 A. M-h'm.  
20 Q. Which I assume is 100 degrees Fahrenheit.  
21 The -- I'm going to read from the top E-mail in  
22 the chain. It says, quote: "Stephanie and  
23 Edmond,

24 "Yun and I were talking and we would like  
25 to do a CCE at 100F if possible. Can you add  
00051:01 that to the list from Monday? We appreciate it.  
02 Any questions let me know."  
03 Did I read that correctly?  
04 A. Yes.

Page 51:06 to 51:09

00051:06 Q. (By Ms. Engel) Did Yun Wang or Kelly  
07 McAughan tell anyone from Intertek why they  
08 wanted the CCE test rerun at 100 degrees?  
09 A. I don't think so.

Page 52:22 to 53:06

00052:22 Q. In your experience, with all of your 25  
23 years of experience --  
24 A. M-h'm.  
25 Q. -- and your degrees and your expertise  
00053:01 in --  
02 A. Yes.  
03 Q. -- fluids, what is the reason why you may  
04 want to run a CCE test at something other than  
05 reservoir temperature?  
06 A. And --

Page 53:16 to 53:22

00053:16 A. Well, I -- I will give you an answer. I  
17 just said it to you. Can be for equation of  
18 states modeling, that's the only -- I mean, can  
19 be a possibility. Because the more points you  
20 have, the more data you have. Then when you do  
21 equations -- equation of states modeling, you  
22 may -- you may have more -- more confidence.

Page 54:01 to 58:17

00054:01 Q. Let's look at the document that's behind  
02 Tab 14. And I'm trying to run you through all  
03 the CCE --  
04 A. Okay.  
05 Q. -- tests here, and then we can turn to  
06 some of the other tests --  
07 A. M-h'm.  
08 Q. -- after. This document is Exhibit  
09 10418.  
10 (Exhibit No. 10418 marked.)  
11 MR. KENNEY: 14.  
12 A. 14 and --  
13 Q. (By Ms. Engel) Yes.  
14 MR. KENNEY: DW 7218. It's right  
15 here.

16 THE WITNESS: Yeah.  
17 Q. (By Ms. Engel) And again, it's an E-mail  
18 chain among you and Kelly McAughan, Stephanie  
19 Heard, and Yun Wang. And then there's an  
20 attachment here. The attachment is  
21 "WTC-10-001812 BP CCE Tables..."  
22 A. M-h'm.  
23 Q. Reading from the top E-mail in the chain  
24 here, which is from you, it says, quote:  
25 "Yun/Kelly  
00055:01 "Attached are tables in xls extended with  
02 more points below the saturation pressure. Yun  
03 as we discussed earlier today, we expect to have  
04 the repeat CCE test by the end of this week. We  
05 are going to start the viscosity study at 243 F  
06 and the single stage and" the "multi-stage  
07 separator test tomorrow. The CCE at 100" degrees  
08 "F and viscosity study at 100" degrees "F will be  
09 completed early next week."  
10 Did I read that correctly?  
11 A. Yes.  
12 Q. Okay. The repeat CCE test that's  
13 referenced here, is that the CCE test at 243  
14 without the mixer?  
15 A. That's correct.  
16 Q. I want to look at the attachment for a  
17 second here. It's -- it looks to me to be more  
18 or less the same as the attachment we looked at  
19 earlier --  
20 A. M-h'm.  
21 Q. -- which was the initial test with the  
22 mixer running at 243.  
23 A. Yeah, because is the same -- is only  
24 extended for the points that he wanted to be  
25 closer to the saturation.  
00056:01 Q. Okay. Understood. So there are -- if  
02 you look at Table --  
03 A. Therefore, I said --  
04 Q. -- 2 --  
05 A. -- "extended with more points below the  
06 saturation pressure."  
07 Q. There are more entries on this table?  
08 A. Yeah.  
09 Q. Okay. And was this document prepared in  
10 the same way that that -- these tables prepared  
11 in the same way that we discussed as with the  
12 earlier tables that were provided --  
13 A. It's --  
14 Q. -- to BP?  
15 A. -- the same procedure the same way, it's  
16 more points.  
17 Q. Okay. Is it typical for Intertek to send  
18 iterations of test results to its clients?  
19 A. What do you mean "iterations of test  
20 results"?  
21 Q. So, for example the first test --  
22 A. M-h'm.

23 Q. -- results that you provided --  
24 A. M-h'm.  
25 Q. -- were for the CCE test --  
00057:01 A. M-h'm.  
02 Q. -- at 243 with the mixer on?  
03 A. M-h'm.  
04 Q. And then now you're sending another file  
05 with basically the same tables but more pressure  
06 points --  
07 A. M-h'm.  
08 Q. -- correct?  
09 A. (Nodding.)  
10 Q. Is that -- is that a practice that -- or  
11 a procedure that Intertek typically goes through  
12 with clients as you're preparing -- running these  
13 tests and preparing the results?  
14 A. It is. Yes.  
15 Q. Okay. I think it's the next tab in your  
16 binder there behind Tab 15. Which is Exhibit  
17 10419.  
18 (Exhibit No. 10419 marked.)  
19 Q. (By Ms. Engel) This is just a single  
20 E-mail with an attachment --  
21 A. M-h'm.  
22 Q. -- from you to Yun Wang. "Subject" is  
23 "CCE at 243 F." And the E-mail says: "Yun,  
24 "The results are attached. The CCE at  
25 100F and SSST and MSST to follow."  
00058:01 Did I read that right?  
02 A. That's correct.  
03 Q. And then flipping to the -- the  
04 attachment, which is a little bit longer this  
05 time, there are several tables as well as a -- a  
06 chart.  
07 A. M-h'm.  
08 Q. Or a -- a figure. Are these the results  
09 of the test run at 243, both with and without the  
10 mixer?  
11 A. Yes.  
12 Q. And was this prepared in the same manner  
13 that the tables are -- that we discussed earlier  
14 were --  
15 A. That --  
16 Q. -- prepared?  
17 A. -- that's correct.

Page 61:15 to 61:23

00061:15 Q. (By Ms. Engel) Okay. So let's turn back  
16 to those tables we were looking at earlier in  
17 this Exhibit 10419 on Page I - 2. And I was  
18 asking you what it is that these two -- these two  
19 graphs represent?  
20 A. M-h'm.  
21 Q. Okay.  
22 A. These two graphs are graphs from the data

23 from the two tables, with mixer, without mixer.

Page 66:08 to 67:07

00066:08 Q. (Nodding.) Okay. So the -- the graph on  
09 the left-hand side -- or the chart on the  
10 left-hand side, I'm sorry, the table, CCE 243  
11 with mixer, has a saturation pressure 6,438?  
12 A. Yes.  
13 Q. Okay.  
14 A. And, therefore, is on -- on the right.  
15 If you go -- because the pressures are increased  
16 on the X axis --  
17 Q. M-h'm.  
18 A. -- so you have -- on the right, you have  
19 6,438. And if you go without mixer, I think it  
20 was a lower pressure, and it's cir -- 6,362. So  
21 that's where you have it on the left.  
22 Q. Okay. So tell me if I'm understanding  
23 this correctly, that where these lines, these  
24 curves along the liquid volume percent chart,  
25 where they end along the X axis corresponds to  
00067:01 the saturation pressure for the respective CCE  
02 tests?  
03 A. Yeah. It's the CCE Test. I'm -- I'm not  
04 sure what you said about the -- the pressure.  
05 But that corresponds to liquid volume below the  
06 saturation from the constant composition  
07 expansion.

Page 67:22 to 68:03

00067:22 Q. Okay. And these -- these two curves -- I  
23 won't belabor it like I belabored the other one  
24 because I think I have a better understanding  
25 now -- but these two curves represent, in graphic  
00068:01 form, the column titled "Relative Volume" from  
02 the two CCE expansion tests at 243?  
03 A. That's correct, yes.

Page 68:10 to 69:12

00068:10 Q. (By Ms. Engel) Let's turn now to the next  
11 tab in your binder behind 16, which is  
12 Exhibit 10420.  
13 (Exhibit No. 10420 marked.)  
14 Q. (By Ms. Engel) And this is, once again,  
15 an E-mail chain among you, Yun Wang, Stephanie  
16 Heard. Kelly McAughan is not actually on this  
17 chain, it doesn't look like. The top E-mail in  
18 the chain is dated June 10th, and the "Subject"  
19 line is "Concerns or Questions."  
20 And then the attachment here is titled --  
21 has the BP Project number that we've been  
22 discussing, and they are the BP CCE tables from

23 June 10th, 2010; is that right?  
24 A. Yes.  
25 Q. And the top E-mail on the chain from you  
00069:01 to Yun Wang says: "Yun,  
02 "The CCE data at 100 F are attached. The  
03 SSF and" MS -- "MSF will be sent...tomorrow."  
04 Did I read that correctly?  
05 A. Yes.  
06 Q. Did Intertek run the CCE Test at 100F  
07 only with the mixer on?  
08 A. I -- I think so. I do not recall, but I  
09 think so.  
10 Q. Do you know if the tables that are  
11 attached here are the final CCE tables that were  
12 generated by Intertek for this Project?

Page 69:14 to 70:09

00069:14 A. Yes.  
15 Q. (By Ms. Engel) Okay. And if you flip  
16 through quickly, the tables that are -- that are  
17 in here in this attachment, starting at Roman  
18 I - 1 is "Table 2 AVERAGE FLUID  
19 COMPRESSIBILITIES...243F...WITH MIXER."  
20 Table 3 is -- I'm going to abbreviate --  
21 CCE at 243F with mixer.  
22 Table 4 is the "AVERAGE FLUID  
23 COMPRESSIBILITIES" at 243 "...WITHOUT" the  
24 "MIXER."  
25 Table 5 is CCE at 243 without the mixer.  
00070:01 Table 6 is "AVERAGE FLUID  
02 COMPRESSIBILITIES" at 100F "WITH" the "MIXER."  
03 And then the last table here is Table 7,  
04 at CCE -- Table 7, CCE at 100F with mixer?  
05 A. That's correct.  
06 Q. So does that confirm your recollection  
07 that the CCE Test at 100F was only run with the  
08 mixer?  
09 A. With the mixer, yes.

Page 70:25 to 72:20

00070:25 Q. And these tables in here were prepared in  
00071:01 the same way as the other tables we've been  
02 discussing, where you get the data from the Lab  
03 Techs, incorporate it into these tables, and  
04 provide it to BP?  
05 A. That's correct.  
06 Q. Okay. All right. I want to shift gears  
07 a little bit and move to another category of  
08 testing that you all did which is the viscosity  
09 measurements --  
10 A. M-h'm.  
11 Q. -- of this bottomhole sample.  
12 The first document I want to refer you to

13 is behind Tab 13 in your binder, and it's  
14 Exhibit 10421.  
15 (Exhibit No. 10421 marked.)  
16 Q. (By Ms. Engel) And it's an E-mail from  
17 Kelly McAughan to you, Stephanie Heard, and Yun  
18 Wang, dated Tuesday, June 1st, 2010, and the  
19 "Subject" is "Viscosity."  
20 It says: "Edmond / Stephanie,  
21 "Can we get a viscosity measurement at  
22 243F, 100F and dead oil from the sample you have?  
23 We appreciate it!  
24 "Thanks,  
25 "Kelly."  
00072:01 What is "dead oil"?  
02 A. The dead oil is the oil after it has  
03 been -- the gas has been liberated. That is  
04 called "dead oil."  
05 Q. (By Ms. Engel) Are there any other terms  
06 for "dead oil"?  
07 A. It's stock tank oil. That's also a term.  
08 It's -- anything that doesn't have any gas in  
09 solution, we just pretty much --  
10 Q. Okay.  
11 A. -- we call this "dead."  
12 Q. Okay. Is that -- Intertek generally  
13 use -- uses the term "dead oil" when it's  
14 referring to oil where the gas has been  
15 liberated?  
16 A. Not only Intertek, the Petroleum Industry  
17 uses this word.  
18 Q. Okay. So there's no question what she  
19 meant when you saw "dead oil"?  
20 A. No.

Page 72:23 to 73:02

00072:23 Q. Did Intertek have any discussion with  
24 either Yun Wang or Kelly McAughan or anyone else  
25 from BP about why these viscosity measurements  
00073:01 were necessary at the three different --  
02 A. No.

Page 73:18 to 73:22

00073:18 Q. (By Ms. Engel) Is there a standard stock  
19 tank oil temperature that's used within the  
20 industry?  
21 A. There's a standard, yes. It is 60 degree  
22 F.

Page 74:16 to 75:22

00074:16 Q. (By Ms. Engel) How does viscosity --  
17 generally speaking now, how does viscosity change  
18 as temperature of the oil dis -- decreases?



19 A. If temperature of the oil decreases, then  
20 normally the viscosity increases.  
21 Q. As the temperature decrease -- as you  
22 decrease the temperature for the viscosity  
23 tests --  
24 A. M-h'm.  
25 Q. -- on the -- for the BP Project, did the  
00075:01 viscosity increase?  
02 A. Yeah. If you -- if you increase -- if  
03 you decrease it for one oil -- for -- for  
04 different oils, it can be different.  
05 But normally, if -- if temperature  
06 increase, then the viscosity decrease. In your  
07 words, if a temperature decreased, viscosity  
08 increase.  
09 Q. Okay. And the -- the fluid that you all  
10 were testing here --  
11 A. M-h'm.  
12 Q. -- behaved normally with respect to that  
13 temperature viscosity?  
14 A. Yes.  
15 Q. Okay. Let's look at this document that's  
16 behind Tab 18.  
17 (Exhibit No. 10422 marked.)  
18 Q. (By Ms. Engel) It says: "Yun,  
19 "The CCE and Viscosity Data at 243 F are  
20 attached. The only test remaining is the  
21 viscosity study at 100 F."  
22 And this is Exhibit 10422.

Page 76:07 to 78:22

00076:07 Q. Do you see that now? It's an E-mail from  
08 you --  
09 A. Yes.  
10 Q. -- to Yun Wang and Stephanie Heard --  
11 A. Yes.  
12 Q. -- Friday, June 10th, 2000 -- or  
13 June 11th, 2010?  
14 A. M-h'm.  
15 Q. The "Subject" is "CCE and Viscosity  
16 Data."  
17 Does Intertek typically report CCE and  
18 viscosity data in the same Reports?  
19 A. We call this a Project, so if it's  
20 attached to -- if it's an order that we have a  
21 program, then we -- we can report this in a -- in  
22 the same Report because it's part of the -- the  
23 same Project.  
24 Q. Okay. I understand. Okay.  
25 So the attachment to this -- this  
00077:01 document is -- has the BP Project number, and  
02 it's titled: "BP CCE" viscosity tables or "Vis  
03 Tables 061110..."  
04 A. Are you referring to the same --  
05 Q. The same document.

06 A. Yeah. Yeah.  
07 Q. I'm looking at the attachment behind it,  
08 yes.  
09 A. Yes.  
10 Q. So if you just take a quick flip through  
11 here, can you confirm for me that these -- the  
12 Tables 1 through 7 are the -- are the same as the  
13 Tables 1 through 7 that we were looking at  
14 earlier in the prior CCE Reports to BP?  
15 A. Yes.  
16 MR. BEFFA: Objection, form.  
17 Q. (By Ms. Engel) And then Table 8 is the  
18 last table here. It's on page Roman I - 10.  
19 A. Yeah.  
20 Q. It's titled "TABLE 8, DIFFERENTIAL  
21 LIBERATION FLUID VISCOSITY" at "243 F...WITH  
22 MIXER."  
23 A. M-h'm.  
24 Q. What's "differential liberation"?  
25 A. As we are -- if -- if above the bubble  
00078:01 point, then the fluid is in the single-phase oil,  
02 liquid.  
03 As we go below the bubble point, then you  
04 have liquid and gas. The viscosity is only  
05 measured on a liquid phase. So therefore, we  
06 have to remove the gas phase and do the viscosity  
07 on the liquid phase as we are below the bubble  
08 point.  
09 Q. Okay.  
10 A. It's differential liberation because now  
11 we're going, stepwise, from 6,438 to 6,000  
12 pressure, and we have a gas liberated. We remove  
13 this, and then we have this liquid. Then we go  
14 to the next step, remove the gas again, and  
15 measure viscosity.  
16 Q. I understand. Okay.  
17 Did Intertek have any difficulty with the  
18 viscosity measurements on this fluid?  
19 A. No, not that I'm aware of having any.  
20 Q. Is differential liberation the only test  
21 that can be used to measure viscosity on PVT  
22 samples?

Page 78:24 to 79:03

00078:24 A. As I explained to you, if you are below  
25 the bubble point, then you have to remove one  
00079:01 phase to get to only to measure on the other  
02 phase. Yeah. And, therefore, it's called  
03 differential liberation --

Page 79:05 to 79:23

00079:05 A. -- if you have to do many steps.  
06 If you want to do above the bubble point

07 like we have here, there is no need for -- to  
08 remove any gas, because all the gas is in  
09 solution.  
10 Q. Okay. So you don't have to be below the  
11 bubble point to measure viscosity on a fluid?  
12 A. You actually have to do all these steps  
13 that are here for the fluid.  
14 Q. Why is that?  
15 A. Because you need to know all the points  
16 there if you want to do a -- a -- a good -- or to  
17 have a good understanding of the viscosity of the  
18 fluid as the pressure changes.  
19 Q. You want to know how it behaves both  
20 above and below --  
21 A. Exactly.  
22 Q. -- the saturation pressure?  
23 A. Yes.

Page 82:01 to 83:20

00082:01 Q. (By Ms. Engel) Okay. Thank you. Tab 20  
02 in your binder, which is Exhibit 10423, which is  
03 another E-mail chain with attachments, from you  
04 to Yun Wang, Stephanie Heard, Kelly McAughan,  
05 from June 15th, 2010. The "Subject" is: "CCE  
06 and Viscosity Data." And it again has an  
07 attachment titled: "WTC" 10-1812 "BP CCE Visc  
08 Tables," and this one has a date of June 15th,  
09 2010, instead of the June 11th, 2010 tables we  
10 were just looking at.  
11 The first E-mail -- or the first -- yes,  
12 the first E-mail here says: "Yun,  
13 "The results including the viscosities at  
14 100 F are attached."  
15 Did I read that correctly?  
16 A. Yes.  
17 Q. Okay. So this, like these other  
18 documents that we've been looking at, is --  
19 they're sort of building on one another --  
20 A. Yes.  
21 Q. -- so this includes Tables 1 through 8  
22 that were in the last Report that we looked at.  
23 A. Yes.  
24 Q. And now there's a new Table 9.  
25 A. There's a -- yeah. Was a Progress  
00083:01 Report, yeah.  
02 Q. Okay. And this is the results from the  
03 "DIFFERENTIAL LIBERATION FLUID VISCOSITY @" 100 F  
04 here in Table 9 on the last page of this  
05 attachment --  
06 A. Yes.  
07 Q. -- correct?  
08 A. (Nodding.)  
09 Q. How do these viscosity numbers at 100 F  
10 differ from the viscosity numbers that are in  
11 Table 8 for the test run at 243 F? Let's just

12 take -- let's take one point, and that'll be  
13 easier to do.  
14 So the saturation pressure point.  
15 A. So as you can see, you have a -- the --  
16 as I mentioned to you, the viscosity at 243 F is  
17 lower than the viscosity at hundred.  
18 Q. Okay.  
19 A. Okay? So that's the only difference  
20 there.

Page 85:16 to 87:12

00085:16 Q. Okay. So is this the -- the attachment  
17 that's here at Exhibit 10423, that's behind  
18 Tab --  
19 THE COURT REPORTER: Tab 20.  
20 Q. (By Ms. Engel) -- Tab 20 in your binder.  
21 MS. ENGEL: Thank you, Kym.  
22 Q. (By Ms. Engel) Is this the final --  
23 Intertek's Final Report of the viscosity results  
24 to BP?  
25 A. Yes.  
00086:01 Q. Okay. It's actually the viscosity and  
02 the CCE results, correct?  
03 A. Yes. Everything is built up, yes.  
04 Q. Okay. And you don't recall that Intertek  
05 provided any other viscosity results to BP after  
06 the date of this Report?  
07 A. No. Only that's at -- within here, yeah.  
08 Q. Okay. All right. I'm going to switch  
09 gears on you again a little bit and talk about  
10 the -- we've been using the acronym "MSF" and  
11 "SSF."  
12 A. M-h'm.  
13 Q. "SSF" stands for single stage flash. Is  
14 that right?  
15 A. Yes.  
16 Q. And what is the single -- single stage  
17 flash test for?  
18 A. What it's for is to determine the  
19 properties of the live fluid at reservoir  
20 conditions. By taking a subsample from the --  
21 the main sample, from the bottomhole sample, and  
22 then the flashing this to a standard conditions,  
23 to be able to determine the properties of the  
24 fluid at the reservoir conditions.  
25 Q. Okay. What about the multistage  
00087:01 separator test?  
02 A. Is the same -- the -- the same  
03 methodology, but instead of going to one stage,  
04 you go to multistage.  
05 Q. Okay. So different -- different  
06 conditions -- a series of different conditions  
07 are involved in the multistage --  
08 A. Going to --  
09 Q. -- test?

10 A. -- three different stages.  
11 Q. Okay.  
12 A. Separation stages.

Page 88:11 to 88:25

00088:11 Q. All right. Sorry. Turning back to  
12 the -- the document behind -- turning to the  
13 document behind Tab 11 in your binder, which is  
14 Exhibit 10424.  
15 (Exhibit No. 10424 marked.)  
16 Q. (By Ms. Engel) And it's an E-mail from  
17 Kelly McAughan to you and Yun Wang and Stephanie  
18 Heard. It's dated May 24th, 2010. The "Subject"  
19 line is -- is still: "Quote for Rush CCE  
20 Testing," but the E-mail in the top of this chain  
21 refers to single-stage flash test and multistage  
22 separator test, the two tests we were just  
23 referring to.  
24 A. Can you -- can we go back to -- to 18  
25 was this the last one?

Page 89:02 to 89:14

00089:02 Q. (By Ms. Engel) The -- 20 was the one that  
03 we were just looking at with the --  
04 A. Well, the --  
05 Q. -- CCE and viscosity --  
06 A. Viscosity.  
07 Q. -- results.  
08 A. Can we go back there?  
09 Q. Sure.  
10 A. Just for my --  
11 Q. Absolutely.  
12 A. -- my -- (reviewing document) -- because  
13 I was -- just wanted to see if I included this  
14 dead oil on the -- the last one, but it's not.

Page 89:17 to 91:13

00089:17 Q. No. That's okay. Okay. So are you back  
18 at Tab 11 now?  
19 A. Yes.  
20 Q. Okay. So reading from the top E-mail in  
21 that chain, it says: "Edmond,  
22 "We would like to conduct more tests with  
23 the sample you have at 18142 feet. Please send  
24 the invoice to me if needed to kick off the work.  
25 Contact me or Yun if you have any questions."  
00090:01 No. 1: "Single-stage flash to determine  
02 phase compositions, zero-flash GOR, API, STO MW  
03 and gas gravity."  
04 No. 2: "Multi-stage separator test to  
05 determine evolved" -- "evolved gas compositions,  
06 residual liquid composition, liquid densities,

07 gas gravities, separator GOR, FVF, STO API and  
08 MW.  
09 "The separator test conditions already  
10 used are: HP 1,250 psia and 130F  
11 "IP 450 psia and 120F  
12 "LP 150 psia and 120F  
13 "ST conditions at 15.025 psia and 60F.  
14 "Thanks,  
15 "Kelly and Yun."  
16 Is this sample that she references, the  
17 1842 foot sample, that same sample that Intertek  
18 had received from Pencor?  
19 A. It looks like, yeah.  
20 Q. Okay. The things she asked you to test  
21 for by running the single-stage flash, are those  
22 standard things that Intertek looks for in  
23 running that single-stage flash test?  
24 A. Yes, they are standards.  
25 Q. Are any of those out of the ordinary?  
00091:01 A. No.  
02 Q. Okay. Can single-stage flash be used to  
03 determine FVF -- actually, what -- what does FVF  
04 stand for? I've read through a lot of acronyms  
05 there.  
06 A. Apparently new. So it's a formation  
07 volume factor.  
08 Q. Okay. And can single-stage flash be used  
09 to determine formation volume factor?  
10 A. Yes.  
11 Q. Do you know why BP didn't request that it  
12 be run here?  
13 A. The -- why? This is a standard --

Page 91:15 to 91:20

00091:15 A. This is a standard test, as was mentioned  
16 to you, to determine the properties of oil at  
17 reservoir conditions.  
18 Q. (By Ms. Engel) So FVF isn't part of the  
19 standard single-phase flash test?  
20 A. That's correct.

Page 92:02 to 93:11

00092:02 Q. (By Ms. Engel) Okay. The separator  
03 conditions that are listed here, "HP," what does  
04 that stand for?  
05 A. H'm --  
06 Q. The HP, IP, LP, if you could describe  
07 each of those for me?  
08 A. I have to -- so for us is -- those are  
09 the -- the stages.  
10 Q. M-h'm.  
11 A. I understand it would be a high pressure,  
12 intermediate pressure, and low pressure. That's

13 what I -- I can give you as an explanation.  
14 Q. Okay. While we're running through  
15 acronyms, there's one here, "STO MW."  
16 A. And --  
17 Q. "STO" is stock tank oil?  
18 A. Is stock tank oil.  
19 Q. What is "MW"?  
20 A. Is molecular weight.  
21 Q. Okay. And "GOR" is gas to oil ratio,  
22 right?  
23 A. And GOR is gas/oil ratio, yeah.  
24 Q. Okay. So for the multi-stage separator  
25 test, she gave you -- Kelly gave you three  
00093:01 conditions, three separator conditions, HP, IP,  
02 and LP and then ST conditions. ST conditions are  
03 stock tank condition -- conditions?  
04 A. Stock tank or standard conditions, yes.  
05 Q. Okay. So the -- for the multi-stage  
06 separator test, Intertek actually ran four  
07 stages?  
08 A. That's --  
09 Q. Is that right?  
10 A. -- yeah. The last stage is just the  
11 stock tank conditions.

Page 95:20 to 96:10

00095:20 Q. The behind Tab 17 in your binder is  
21 actually a previously marked Exhibit 9734. It is  
22 an E-mail from you to Yun Wang and Stephanie  
23 Heard --  
24 A. M-h'm.  
25 Q. -- June 11th, 2010. The "Subject" is  
00096:01 "MST report." And then there are two attachments  
02 here, one of which is "BP MST Tables," and it's  
03 an Excel file.  
04 And then the second one is the "BP  
05 Multistage Separator Test Report," which is a --  
06 a pdf. And the E-mail from you to Yun says:  
07 "Yun,  
08 "The SSF and MST reports and the tables  
09 are attached."  
10 A. (Nodding.)

Page 99:01 to 99:06

00099:01 Q. (By Ms. Engel) So I want to turn to the  
02 second attachment here, which the -- the number  
03 on the bottom of that page is DEP485-000055, and  
04 it's titled "MULTI-STAGE SEPARATOR TEST...FINAL  
05 REPORT."  
06 A. (Reviewing document.)

Page 99:22 to 100:13

00099:22 Q. (By Ms. Engel) So this says "MULTI-STAGE  
23 SEPARATOR TEST...FINAL REPORT Prepared for BP By  
24 Intertek Westport Technology Center" June 10th,  
25 2010.

00100:01 MR. BEFFA: And just so we're clear,  
02 this is a Bates number of DW 0007241?  
03 MS. ENGEL: Yes. It has two Bates  
04 numbers. It also has DEP485-000055.  
05 MR. BEFFA: I think that might be  
06 your internal.  
07 MS. ENGEL: Just -- correct.  
08 Correct. But that's the number I referred the  
09 witness to.  
10 MR. KENNEY: What are you looking  
11 at, 055?  
12 MS. ENGEL: And it is the previously  
13 marked Exhibit 9734.

Page 101:01 to 103:07

00101:01 Q. (By Ms. Engel) Okay. Now that we're all  
02 on the same page, I wanted to ask you some  
03 questions about this document.  
04 A. M-h'm.  
05 Q. So this is the Final Report prepared by  
06 Intertek for BP for the multi-stage separator  
07 test, correct?  
08 A. Yes.  
09 Q. Does it also include the results of the  
10 single-stage test performed by Intertek?  
11 A. It -- it includes, but you -- just I  
12 think you -- you skipped it because there's a --  
13 this is the -- the main results here, which has a  
14 single stage and multi-stage, so --  
15 Q. The main results are in the first  
16 attachment, the one I skipped over?  
17 A. Yes. Yeah.  
18 Q. Okay. And the number on the bottom of  
19 that is?  
20 A. The "SINGLE-STAGE SEPARATOR TEST."  
21 MR. KENNEY: DEP485-000038.  
22 A. 38.  
23 Q. (By Ms. Engel) Okay.  
24 MR. KENNEY: Main -- "MAIN PVT  
25 RESULTS."

00102:01 Q. (By Ms. Engel) Okay. And so listed here,  
02 then, are "INITIAL RESERVOIR CONDITIONS" -- it's  
03 three tables, "INITIAL RESERVOIR CONDITIONS,"  
04 "MULTI-STAGE SEPARATOR TEST," and "SINGLE-STAGE  
05 SEPARATOR TEST," and what you're looking at is  
06 the table that's called "SINGLE-STAGE SEPARATOR  
07 TEST"?  
08 A. Yes.  
09 Q. And are these the only results that  
10 Intertek reported to BP for the single-stage  
11 test?



12 A. Yes.  
13 Q. Okay. And then there are many more  
14 results for the multi-stage test, correct?  
15 A. Yeah. And multi-stage has more -- we  
16 have the tables here in Table 3 and Table 4 that  
17 are the -- so this is the Report.  
18 Q. Okay.  
19 A. All right?  
20 Q. And when you say "this is the Report,"  
21 are you referring to both of these attachments  
22 together?  
23 A. No. The -- the Report is starting at  
24 000038 to the -- through 54.  
25 Q. Okay. So, then, what is the document  
00103:01 that's starting at DEP485-000055?  
02 A. This is also a multi-stage document  
03 there, is -- that's the same -- might have  
04 been -- yeah, it's the same Report. It  
05 looks like I -- it's the same Report, because I  
06 didn't see that you have the main result on this  
07 side. Yeah, that's the same.

Page 103:16 to 105:14

00103:16 Q. Okay. But -- so your understanding is  
17 that there are these few preparatory pages here,  
18 the second attachment, but that the tables  
19 beginning with "MAIN PVT RESULTS" are the same in  
20 both the first attachment and the second  
21 attachment?  
22 A. I -- I understand what you're looking  
23 here now. The first one should be in Excel  
24 tables.  
25 Q. Right.  
00104:01 A. And the other one is a p -- pdf report.  
02 Q. Right.  
03 A. It's our practice we don't include the --  
04 the list of tables if it is in Excel, because  
05 only to have the data more -- I mean, to -- to  
06 have the data for them for other processes they  
07 may need in Excel format, yeah.  
08 Q. Okay.  
09 A. So, therefore, it's the same Report, only  
10 these are the tables.  
11 Q. Okay. So if I refer just to the second  
12 attachment that --  
13 A. Uh-huh.  
14 Q. -- starts -- that the first page ends in  
15 Bates 0055, the number there on the bottom of  
16 that first page, from here to the end of this  
17 document, is this what you would consider to be  
18 Intertek's Final Report to BP regarding the  
19 multi-stage --  
20 A. That's --  
21 Q. -- and sin -- single-stage separator  
22 tests?

23 A. Yes.  
24 Q. Okay. Sorry. That took much longer than  
25 it should have.  
00105:01 A. Well --  
02 Q. I just want to make sure I'm  
03 understanding what you did and we're on the same  
04 page.  
05 A. M-h'm.  
06 Q. So looking at the page in this Final  
07 Report that ends 0059, it's the same "MAIN PVT  
08 RESULTS" that we were looking at earlier?  
09 A. Yeah.  
10 Q. Under the "MULTI-STAGE SEPARATOR TEST,"  
11 it lists "Solution Gas-Oil Ratio 2747.13  
12 scf/STB," and then it lists it in meter -- is  
13 that meters cubed?  
14 A. By meter cubed, yeah.

Page 105:20 to 107:19

00105:20 Q. Okay. And then the "Solution Gas-Oil  
21 Ratio" under the "SINGLE-STAGE SEPARATOR TEST" is  
22 "2830.86 scf/STB."  
23 Did I read that right?  
24 A. The copy that I have, it looks like a  
25 zero there, but it's not a good copy that I have  
00106:01 here.  
02 Q. I'm sorry.  
03 A. But --  
04 Q. More problems with this document.  
05 A. Yeah, "2830.86," I -- I -- I read here.  
06 Q. Okay. So the -- the solution gas-to-oil  
07 ratio results from the single-stage separator  
08 test are higher than the solution gas-to-oil  
09 ratio for the multi-stage separator test,  
10 correct?  
11 A. That's correct.  
12 Q. Is that to be expected?  
13 A. Yes, it -- yeah, it -- it can be.  
14 Q. Okay. So you ran several stages for the  
15 multi-stage separator test, but report one  
16 solution GOR here. How do you reach one number  
17 from those several stages?  
18 A. There's not several stages. It is a  
19 process --  
20 Q. M-h'm.  
21 A. -- going through the stages. So we have  
22 a -- an oil with gas in solution to begin with at  
23 bubble point, and then we go through those HP,  
24 IP, LP stages that you ref -- referred earlier.  
25 And through this process, we remove the  
00107:01 gas every time we go through a different stage.  
02 Then you collect this gas, and this gas has been  
03 to begin with. So then you collect all these  
04 gases, and you -- you divide this by volume of  
05 oil in standard conditions which is remaining

06 without gas, and this is your gas/oil ratio.  
07 Okay?  
08 Q. (Nodding.)  
09 A. So in the single-stage, then we go from  
10 live oil again to stock tank oil, and we collect  
11 the gas.  
12 Q. In one step instead of the --  
13 A. One step.  
14 Q. -- several steps?  
15 A. Yes.  
16 Q. So why would you expect, then, the GOR  
17 from the multi-stage test to be different than  
18 the GOR from the single-stage test?  
19 A. Because it's --

Page 107:22 to 107:22

00107:22 A. -- it's path dependent.

Page 108:14 to 108:22

00108:14 Q. What does that mean?  
15 A. Because it is dependent on the path, so  
16 on the process. So if you go single stage or you  
17 go five stages, three stages, you'll always have  
18 different results.  
19 Q. Does the gas exsolve from the oil at a  
20 different rate, depending on whether you use  
21 single-stage flash or multi-stage?  
22 A. That's exactly what -- yeah.

Page 109:02 to 109:05

00109:02 background -- is a single stage -- is a  
03 single-stage separation ever implemented  
04 practically in the field by the Petroleum  
05 Industry?

Page 109:09 to 113:08

00109:09 A. I -- this is a property, as I said, that  
10 is needed in Reservoir Engineering, yeah, that  
11 from -- because that's the only way that you can  
12 determine the properties of the fluid, or it is  
13 one of the parameters. Okay?  
14 Q. (By Ms. Engel) Are you referring to GOR  
15 now --  
16 A. No --  
17 Q. -- I mean --  
18 A. -- I'm referring to everything there,  
19 any -- it's a gas/oil ratio, the formation volume  
20 factor, density, and everything that is --  
21 Q. Okay.  
22 A. -- is part of the properties that you

23 need to have for the oil.  
24 Q. So this -- this Report here, the Final  
25 Report for the multi-stage and single-stage  
00110:01 separator tests, did you prepare this Report?  
02 A. Yes, I did.  
03 Q. Okay. Was it prepared in a -- a similar  
04 fashion as the CCE and viscosity tests that we  
05 were looking at before?  
06 A. It is a different process, so it's not  
07 a -- a CCE, but, though, the same principles.  
08 Q. So there are Technicians in -- in  
09 Intertek's lab that run the single-stage flash  
10 and multi-stage flash tests?  
11 A. That's correct, yeah.  
12 Q. And those Technicians generate a bunch of  
13 data --  
14 A. Yes.  
15 Q. -- in connection with those tests?  
16 A. Yes.  
17 Q. And then you take that data that's  
18 generated by them and --  
19 A. Collect it, yeah.  
20 Q. -- consolidate it into the tables that  
21 appear in this Report?  
22 A. That's correct.  
23 Q. Okay. Is that Intertek's standard  
24 practice in -- in generating these types of  
25 Reports for clients?  
00111:01 A. Yes.  
02 Q. Do you know how long it took you to  
03 prepare this Report, dated June 10th, the Final  
04 Report, after the tests were actually run in the  
05 laboratory?  
06 A. Maybe two days, I would -- I would -- I  
07 would think.  
08 Q. Okay.  
09 A. Not really --  
10 Q. More or less?  
11 A. Yeah.  
12 Q. All right. I want to refer you to  
13 Table 2 in this Final Report.  
14 A. M-h'm.  
15 Q. The last numbers are 0061, on the bottom  
16 right there. The Table 2 is -- is titled  
17 "COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID."  
18 A. That's correct.  
19 Q. Did the -- how is the composition of the  
20 reservoir fluid determined in connection with the  
21 SSF and MSF tests?  
22 A. It's determined from the SSF test, so  
23 from single-stage flash, because -- and you  
24 should have it here somewhere. It's Appendix A.  
25 Q. Appendix A in this same Report?  
00112:01 A. Yeah.  
02 Q. Okay. Appendix A is "SAMPLE VALIDATION"?  
03 A. And you have -- "SAMPLE VALIDATION,"  
04 yeah, and you have Table A1, A2, A3.

05 Q. Okay. And A1 is "COMPOSITIONAL ANALYSIS  
06 OF RESERVOIR FLUID," so that has the same title  
07 as the Table 2 we were just looking at a second  
08 ago?  
09 A. Yes.  
10 Q. Okay. And then Table A2 is  
11 "COMPOSITIONAL ANALYSIS OF FLASHED OIL"?  
12 A. M-h'm.  
13 Q. Table A3 is "COMPOSITIONAL ANALYSIS OF  
14 FLASHED GAS"?  
15 A. That's correct.  
16 Q. So the reservoir -- the compositional  
17 analysis of the reservoir fluid, then, is the  
18 fluid as it's taken from the -- the bottomhole  
19 sample, as it's taken, and you run a composition  
20 of that -- that oil or that fluid?  
21 A. No. We're under composition of a flashed  
22 oil and flashed gas.  
23 Q. Okay.  
24 A. Okay? And then based on those -- this  
25 information, or this data, and based on the  
00113:01 gas/oil ratio and other density and the molecular  
02 weight of the oil, we can calculate what is the  
03 composition of the reservoir fluid.  
04 There is no tool to measure the  
05 compositional reservoir fluid as is in a  
06 reservoir.  
07 Q. I see. So let me restate this in a  
08 different way --

Page 113:10 to 113:22

00113:10 Q. -- and you tell me if I'm right or wrong:  
11 Is the -- the information that's presented here  
12 in Table A, "COMPOSITIONAL ANALYSIS OF RESERVOIR  
13 FLUID," is that essentially a combination of the  
14 results from Table A2 and A3?  
15 A. M-h'm. Yes. Yeah.  
16 Q. Okay. And you don't do a compositional  
17 analysis using the multi-stage flash test?  
18 A. The multi-stage flash test is for gases  
19 that are liberated at each stage. It's -- it's  
20 nothing to do with -- with that. So this is --  
21 this is the -- the test that you do to calculate  
22 the composition of the reservoir fluid.

Page 114:02 to 114:22

00114:02 Q. (By Ms. Engel) So, then, Appendix C is  
03 the "MULTI-STAGE SEPARATOR - COMPOSITIONAL  
04 ANALYSES OF LIBERATED GAS"?  
05 A. That's correct.  
06 Q. Okay. This is what you were just  
07 referring to --  
08 A. Yes.

09 Q. -- that as you run through the different  
10 stages in the multi-stage --  
11 A. As --  
12 Q. -- flash test?  
13 A. As you can see here --  
14 Q. M-h'm.  
15 A. -- so you have -- at each pressure and  
16 temperature, you have a corresponding gas  
17 composition which has been liberated.  
18 Q. So each one of these tables, C1 through  
19 C4, each one corresponds to one of those  
20 separator conditions that were provided to  
21 Intertek by BP?  
22 A. That's correct.

Page 117:12 to 117:19

00117:12 Q. (By Ms. Engel) Okay. I put in front of  
13 you there, Dr. Shtepani, a -- a new document.  
14 It's not in your binder.  
15 A. M-h'm.  
16 MS. ENGEL: There are copies up on  
17 the table here for Counsel. It's going to be  
18 Exhibit 10425.  
19 (Exhibit No. 10425 marked.)

Page 121:10 to 121:23

00121:10 Q. Okay. You mentioned earlier, I think,  
11 when we were talking about perhaps the CCE test  
12 or maybe it was the viscosity test being run at  
13 100F --  
14 A. M-h'm.  
15 Q. -- that that data might, for instance, be  
16 used in an EOS --  
17 A. M-h'm.  
18 Q. -- an equation of state?  
19 A. Yes.  
20 Q. Is that -- this other data that's  
21 generated in the MSF [sic] Report and the SSF  
22 Report, might that also be useful in developing  
23 an EOS?

Page 121:25 to 122:11

00121:25 A. It can be. I'm -- I'm not excluding  
00122:01 that. Yeah. It -- because every experimental  
02 data -- or let's go back.  
03 The equation of states is a -- not a  
04 predictive tool. You need experimental data  
05 to -- to be able to -- to do a better modeling.  
06 So any -- any information, any data may be used  
07 for that.  
08 Q. (By Ms. Engel) So any of this type of  
09 information, generally speaking, might be useful

10 to an equation of state?  
11 A. Yes, yeah.

Page 123:06 to 123:25

00123:06 Q. I want to circle back a little bit to  
07 some of what we were talking about earlier, which  
08 was your particular job duties related to this BP  
09 Project.  
10 A. M-h'm.  
11 Q. So you -- you were the Project Manager?  
12 A. That's correct.  
13 Q. And we've talked about how you prepared  
14 the Reports --  
15 A. (Nodding.)  
16 Q. -- that were developed and sent to BP?  
17 A. Yes.  
18 Q. Did you have any other job duties, other  
19 than overseeing the work and developing these  
20 Reports?  
21 A. I -- I'm involved in other Projects, so  
22 not only -- we cannot -- we cannot -- I mean, we  
23 have other Project Managers. I'm Project Manager  
24 for -- was for this Project, and for other  
25 Projects that are for different companies.

Page 124:11 to 125:10

00124:11 Q. (By Ms. Engel) And what specifically did  
12 your -- did your job duties entail as Project  
13 Manager, other than generating these Reports that  
14 we've discussed?  
15 A. That -- that's all it entails, the --  
16 Q. Okay.  
17 A. -- generating a Report.  
18 Q. Were you the -- would you consider  
19 yourself to be the primary contact between  
20 Intertek and -- and BP for this Project?  
21 A. Yes.  
22 Q. Did you have any contact with anyone  
23 other than Yun Wang and Kelly McAughan related to  
24 this Project at BP?  
25 A. Those are the -- the contacts that -- I  
00125:01 mean, we had also -- I mean, Yun Wang might have  
02 been the Project Manager from that side.  
03 That's my --  
04 Q. And I think you said earlier, as well,  
05 that you had not been the Project Manager for any  
06 other BP Projects prior to this one; is that  
07 correct?  
08 A. I -- we have -- we have had BP Projects  
09 in-house, and I have not been a Project Manager  
10 for BP. Other people might have been.

Page 125:23 to 126:16

00125:23 Q. I have just a few more questions. I want  
24 to just talk to you about how you prepared for  
25 the deposition today. Other than speaking with  
00126:01 Mr. Kenney and any other Counsel, did you speak  
02 to any Intertek employees to prepare for the  
03 deposition today?  
04 A. No.  
05 Q. Did you speak with any other individuals  
06 at all?  
07 A. Not at all. Not -- when I say "not at  
08 all," not that -- the only person that was  
09 involved, and he is one of the contact Managers  
10 that was part of the -- at the initiation phase  
11 where we were asked to -- to -- to deliver the  
12 data.  
13 Q. To deliver the documents --  
14 A. The documents, yeah.  
15 Q. -- that we've been looking at today?  
16 A. These documents.

Page 128:24 to 129:04

00128:24 Q. Okay. Did BP ask Intertek to do any  
25 comparative analysis of this fluid to any other  
00129:01 reservoir fluids?  
02 A. I -- is it -- not that I know, so it's  
03 only this test for this bottomhole sample.  
04 That's the test we -- we have done.

Page 131:10 to 131:17

00131:10 Q. Okay. So all of the information that's  
11 in all of these --  
12 A. That -- there is --  
13 Q. -- Final Reports that were passed along  
14 to BP by you takes into account all of these huge  
15 piles of data --  
16 A. Yes.  
17 Q. -- that we have here?

Page 133:13 to 134:05

00133:13 Q. Did anyone other than BP ask Intertek  
14 Westport to perform any analysis of hydrocarbons  
15 from the Macondo Well?  
16 A. I repeat this: That this is -- we don't  
17 know that this is a sample we received, is not  
18 from -- we don't know if it's from Macondo or  
19 not, yeah. And -- not to my knowledge.  
20 Q. Okay. And in connection with the  
21 analysis that you did regarding what you've  
22 termed the "BP Project," did that involve any oil  
23 samples other than that which you received from  
24 Pencor?



25 A. The -- the test was done only on this  
00134:01 sample.

02 Q. And it came from Pencor, but you  
03 understood that they were working at the  
04 direction of BP. Correct?

05 A. Yes. I mean, it --

Page 134:07 to 134:07

00134:07 A. -- the Project is for -- for BP.

Page 134:22 to 135:01

00134:22 Q. Did Intertek Westport communicate with  
23 any Parties, other than BP, for Labs working at  
24 the direction of BP in connection with the BP  
25 Project?

00135:01 A. No.

Page 135:03 to 135:18

00135:03 Q. (By Mr. Williams) And any specifications,  
04 any inputs into your testing that you received  
05 came from BP, correct?

06 A. Some --

07 MR. BEFFA: Objection, form.

08 A. -- some part of this, yes.

09 Q. (By Mr. Williams) Such as temperature?

10 A. Temperature, yes.

11 Q. Or reservoir conditions?

12 A. Yes.

13 Q. You didn't receive any similar  
14 information from any party other than BP?

15 A. No.

16 Q. And when you sent the results of your  
17 analysis out, you only sent them to BP, right?

18 A. That's correct.

Page 136:22 to 137:01

00136:22 Q. And I believe you said that Westport  
23 didn't know why BP wanted the test run or what  
24 they were going to do with the results; is that  
25 correct?

00137:01 A. That's correct, yeah.

Page 141:01 to 141:02

00141:01 Q. So Dr. Wang requested a Rush CCE test?

02 A. That's correct.

Page 142:01 to 142:01

00142:01 (Exhibit No. 10426 marked.)

Page 142:24 to 142:25

00142:24 Q. That has been marked Exhibit 9762.  
25 A. M-h'm.

Page 143:08 to 144:13

00143:08 Q. Okay. The second paragraph of that  
09 E-mail from Dr. Wang states: "We received two"  
10 tests "of Constant Composition Expansion (CCE)  
11 data from Pencor (a subsidiary Core Labs) in the  
12 afternoon of Wednesday, April 28th. One is under  
13 reservoir temperature of 243F, the other is under  
14 100F. In addition, we received" a "single-stage  
15 flash data from Pencor yesterday afternoon  
16 (Thursday, April 29th). Below is a summary of  
17 the observations" we "made after examination of  
18 the new data received."  
19 Do you see that?  
20 A. Yes.  
21 Q. And if you'll go down to the paragraph  
22 marked No. 6, which is on the next page, it  
23 states: "The new CCE data under reservoir  
24 temperature of 243F indicates a highly unusual  
25 volumetric behavior, however. The CCE data seems  
00144:01 to suggest a dew point system, though with  
02 maximum liquid dropout volume of 60%. The CCE  
03 data under 100F shows a similar behavior, with  
04 maximum liquid dropout volume of close to 70..."  
05 degrees. "For your reference, a typical very  
06 rich, near-critical gas condensate would have a  
07 maximum liquid dropout volume of only 50%."  
08 Do you see that?  
09 A. Yes, I see. Yeah.  
10 Q. But Intertek was not aware that BP  
11 thought the Pencor data reflected unusual  
12 volumetric behavior, right?  
13 A. As it -- I mean, I'm just --

Page 144:15 to 144:23

00144:15 A. -- repeating myself here. I -- we have  
16 no information, and we do not actually work or  
17 even get because Pencor or Oil Phase are our  
18 competitors. So we never discuss anything with  
19 or being involved in this kind of processes that  
20 you're referring to.  
21 Q. (By Mr. Williams) And BP never indicated  
22 to you that they thought the sample exhibited  
23 unusual volumetric behavior, correct?

Page 144:25 to 145:02

00144:25 A. No.  
00145:01 Q. (By Mr. Williams) Would that have been  
02 useful information for Intertek to have?

Page 145:04 to 145:04

00145:04 A. No.

Page 145:07 to 145:14

00145:07 Q. (By Mr. Williams) Okay. Let's look at  
08 Tab 4, which has been marked 9767.  
09 A. (Reviewing document.) Yeah.  
10 Q. This appears to be a -- a BP document or  
11 presentation that says "Macondo data summary" as  
12 it's titled.  
13 Do you see that?  
14 A. Yeah.

Page 148:05 to 148:08

00148:05 Q. This is the first time you've heard that  
06 the testing Intertek performed was a  
07 triplicate of what had been done by Oil Phase and  
08 Pencor?

Page 148:10 to 148:14

00148:10 A. That is what -- only because of you here.  
11 Q. (By Mr. Williams) So does that surprise  
12 you that the testing you were performing was a  
13 triplicate of that performed by Pencor and Oil  
14 Phase?

Page 148:16 to 148:18

00148:16 A. I'm not really surprised at all.  
17 Q. (By Mr. Williams) Okay. Why doesn't that  
18 surprise you?

Page 148:20 to 149:04

00148:20 A. Because that's -- can be at a -- can be a  
21 normal operations. One lab can vary from the  
22 other Lab. It can be we do round-robins for  
23 clients. So everybody wants to ensure they have  
24 good data.  
25 Q. (By Mr. Williams) What's a "round-robin"?  
00149:01 A. "Round-robin," when you have a sample  
02 without knowing, and it's part of round-robin  
03 that a company wants to see how good the Labs  
04 are.

Page 150:04 to 150:24

00150:04 Q. You talked about performing the Rush CCE  
05 test --  
06 A. (Nodding.)  
07 Q. -- and I believe you stated that if -- if  
08 a client wants to pay more -- and I'm par --  
09 these are not your words --  
10 A. M-h'm.  
11 Q. -- but let me see if I can -- if I have  
12 it right --  
13 A. Yeah.  
14 Q. -- if I understand the situation.  
15 A. M-h'm.  
16 Q. If a client doesn't want to wait in the  
17 queue to get their test performed in the normal  
18 course of Intertek's business, they can pay a  
19 premium and have their test elevated?  
20 A. That's correct.  
21 Q. Is that what you understood BP was asking  
22 you to do here, just move their test to the top  
23 of the queue, or was it even more Rush than a  
24 typical Rush?

Page 151:01 to 151:10

00151:01 A. Well, a -- a Rush for us is anything that  
02 starts within 24 hours. We don't put the motions  
03 after that on that.  
04 Q. (By Mr. Williams) Okay. And that's what  
05 you understood BP was asking you to do, start the  
06 test within 24 hours?  
07 A. Yes.  
08 Q. Did the testing performed by Westport  
09 uncover anything unusual regarding the sample you  
10 tested in the BP Project?

Page 151:12 to 151:12

00151:12 A. No.

Page 152:10 to 153:12

00152:10 Do you have any knowledge about the  
11 conduct on the part of Halliburton between  
12 April 22nd, 2010 through September 19th, 2010,  
13 relating to the attempt to stop the flow of oil  
14 from the Macondo Well?  
15 A. I don't have any.  
16 Q. And did anyone from Halliburton give you  
17 or your company any directions about how to  
18 proceed with respect to any of the testing  
19 Intertek conducted?

20 A. No.  
21 Q. Do you know whether anyone from Intertek  
22 sought Halliburton's input or advice regarding  
23 the testing performed by Intertek?  
24 A. No.  
25 Q. Did Intertek provide any data or test  
00153:01 results to Halliburton?  
02 A. No.  
03 Q. Did any Intertek employees have any  
04 communications with anyone from Halliburton?  
05 A. No.  
06 Q. And do you know of anyone having any  
07 criticism about any of Halliburton's conduct or  
08 work related to the relief efforts?  
09 A. It's not related to this -- anything the  
10 way I understand.  
11 Q. And, therefore, you don't know anything?  
12 A. No, I don't know anything.

Page 154:09 to 160:16

00154:09 Q. Did anyone ask Intertek to skew or alter  
10 the results of any of the tests that Intertek  
11 Westport ran on the Macondo fluid?  
12 A. No.  
13 Q. Now, we've talked a bit about the request  
14 for a Rush on some of the tests that you  
15 performed on the Macondo fluid; is that right?  
16 A. That's correct.  
17 Q. And I believe you testified that that  
18 meant that the tests were put at the top of the  
19 queue of -- at the top of the Intertek's queue;  
20 is that right?  
21 A. That's correct.  
22 Q. Was Intertek given the time that it  
23 needed to perform the tests themselves?  
24 A. That -- that's correct, yeah.  
25 Q. And -- and Intertek took the -- the full  
00155:01 time that it needed to perform the tests  
02 properly, correct?  
03 A. Yes.  
04 Q. And Intertek accurately reported the  
05 results of those tests that it ran on the Macondo  
06 fluid, correct?  
07 A. Yes.  
08 Q. Intertek used the best techniques, to its  
09 ability, to perform these tests?  
10 A. Yes.  
11 Q. And it performed them as carefully as  
12 possible, right?  
13 A. That's correct.  
14 Q. Now, I -- I -- I think you testified that  
15 you did not know that the sample you were  
16 provided was from the Macondo Reservoir; is that  
17 right?  
18 A. That's correct.

19 Q. Did you, at some point, learn that the  
20 sample was from the Macondo Reservoir?  
21 A. Not to my knowledge.  
22 Q. But sitting here today, you understand  
23 that the sample we've been talking about is from  
24 the Macondo Reservoir?  
25 A. Apparently, yes, yeah.  
00156:01 Q. How often does Intertek perform PVT tests  
02 on reservoir fluids?  
03 A. On a daily basis.  
04 Q. And were these tests that you ran on the  
05 Macondo fluid the standard suite of tests that  
06 you run on reservoir fluids that you receive at  
07 your laboratory?  
08 A. That's correct.  
09 Q. Was there any deviation from your  
10 standard procedures in running the tests that you  
11 ran on the Macondo fluid?  
12 A. No.  
13 Q. Is it fair to say that the tests you ran  
14 on the Macondo fluid are routine?  
15 A. Pretty much routine.  
16 Q. You say "pretty much routine." Is there  
17 something that's not routine or something that  
18 was not routine about them?  
19 A. It's -- all -- all the -- say "routine,"  
20 because all this testing is -- is -- the language  
21 I use, "pretty much routine," is because it's --  
22 it's 90 percent of the cases or 95 percent, we do  
23 this kind of test --  
24 Q. Okay.  
25 A. -- routinely. So we classify this little  
00157:01 bit more -- now, if it's not routine or can be --  
02 if it's a -- a higher temperature or pressure,  
03 that can create a little bit not to the standard  
04 routine, you know.  
05 Q. So the precise temperatures and pressures  
06 that you use within the tests might change, but  
07 the overall procedures for the tests remain  
08 standard?  
09 A. It's standard. They're standard. And  
10 even those conditions are within the standard  
11 conditions.  
12 Q. Okay.  
13 A. Or not the standard -- not conditions,  
14 but standard routine conditions.  
15 Q. And -- and those standards were followed  
16 in the case of testing the Macondo fluid,  
17 correct?  
18 A. Yes.  
19 Q. You discussed earlier that some of the  
20 tests you ran on the Macondo fluid were  
21 videotaped, correct?  
22 A. Yes.  
23 Q. Videotaping the tests does not affect the  
24 results of those tests, does it?  
25 A. Not at all.

00158:01 Q. Did you send BP a copy of any of the  
02 videos you took of the testing of the Macondo  
03 fluid?  
04 A. Not to my knowledge.  
05 Q. To your knowledge, did BP request a copy  
06 of the videos that you took on Macondo --  
07 A. Not -- not to my knowledge.  
08 Q. Now, there was just a single sample that  
09 Intertek Westport tested from the Macondo  
10 Reservoir, correct?  
11 A. Yes, this single sample that we're  
12 referring to, if we can call this, in Macondo.  
13 Q. Do you know how that sample was chosen?  
14 A. No.  
15 Q. You don't have any reason to believe that  
16 the sample Intertek Westport analyzed did not  
17 accurately represent the Macondo fluid, do you?  
18 A. I had -- we only received -- we did work  
19 on the sample that we received.  
20 Q. And as far as you know, the results of  
21 the Intertek Westport analysis should be  
22 representative of the samples that were obtained  
23 from the Macondo Reservoir?  
24 A. That's correct.  
25 Q. In your experience, does it matter which  
00159:01 sample is chosen from a reservoir when you choose  
02 a sample to run PVT tests?  
03 A. I would -- I would say the samples,  
04 theoretically, should be the same, but the --  
05 they may be -- not every sample is -- should be  
06 exactly or is accurately collected. Okay?  
07 So, therefore, there's a sample  
08 validation process that is part of the sample  
09 collection.  
10 Q. Did Intertek perform any sample  
11 validation of the type you just discussed?  
12 A. It was part of this single-stage flash.  
13 Q. And you determined that --  
14 A. The properties.  
15 Q. -- the sample was valid, correct?  
16 A. We determined the properties of the  
17 sample -- the only way -- I mean, that's -- the  
18 property for the sample, those are the  
19 properties, and that's the only information we  
20 had. We have only one sample.  
21 Q. Does that validation, the type that  
22 Intertek did on the Macondo fluid, does that tell  
23 you whether the sample was collected properly?  
24 A. Yes. In terms of it's unthink -- is  
25 nothing unusual that for this reservoir. Based  
00160:01 on sample validation or a single-stage flash, we  
02 didn't see anything unusual with this sample.  
03 Q. And that's an indication that the sample  
04 was collected properly?  
05 A. That's an indication that this sample as  
06 it is nothing unusual. I don't make any  
07 statements there that are not representing. In

08 order to be -- to have accuracy, you should have  
09 compared different samples, and we only had one  
10 sample. We cannot make this -- I can make a  
11 statement that this collected properly because  
12 this -- everything is relative to what?  
13 Q. And so what you would look for is a -- a  
14 comparison between two or more samples, and --  
15 and you would look for consistency between those?  
16 A. That's correct.

Page 161:02 to 161:06

00161:02 Q. And nothing about that validation  
03 suggested to you that the samples were collected  
04 improperly?  
05 A. Well, I'll repeat myself again. It's  
06 nothing unusual, yeah.

Page 161:19 to 162:02

00161:19 Q. Is it typical for your Lab to analyze  
20 fluid samples that were collected at a pressure  
21 that's above the saturation pressure of the  
22 fluid?  
23 A. That is typical the case.  
24 Q. Do you ever analyze fluid samples at your  
25 Lab where the sample was collected at pressure  
00162:01 below saturation pressure?  
02 A. That's not the case.

Page 162:08 to 163:07

00162:08 Q. I -- I think you described earlier that  
09 PVT stands for pressure, volume, and temperature,  
10 correct?  
11 A. Yes, yeah.  
12 Q. And is -- is there a suite of tests that  
13 you consider PVT tests?  
14 A. Yes.  
15 Q. What are those tests?  
16 A. Well, those tests are those routine tests  
17 that we have here, like Constant Composition  
18 Expansion, differential liberation, single-stage  
19 flash, multi-stage flash, or a multi-stage  
20 separator test. This belongs to the routine part  
21 of it.  
22 And then we have more advanced PVT tests  
23 that are also PVT tests which are more when you  
24 have other, let's say, you want to have injection  
25 gas for enhanced oil recovery, like injecting  
00163:01 CO<sub>2</sub>, for example. Then you do tests like  
02 swelling test, multiple-contact test, slim-tube  
03 experiments, so those are tests that we conduct  
04 for advanced PVT tests.  
05 Q. Now, you did not perform those advanced



06 PVT tests on the Macondo fluid, correct?  
07 A. No.

Page 164:03 to 166:10

00164:03 Q. Now, a couple of minutes ago, you said  
04 "multi-stage separator test" and "multi-stage  
05 flash," I believe were two terms that you used.  
06 A. They are the same. I correct -- yeah, I  
07 corrected this. I mean, to be consistent with  
08 what we're using here is the same, multi-stage  
09 separator flash or -- or separator test.  
10 Q. Those two terms are interchangeable?  
11 A. Interchangeable, yeah, and, therefore, I  
12 corrected what the --  
13 Q. Are any of the tests that Intertek ran on  
14 the Macondo fluid destructive of the fluid  
15 sample?  
16 A. It can -- it is destructive in sense that  
17 it's -- we cannot recover the fluid as we perform  
18 the test.  
19 Q. Which tests are you then unable to  
20 recover the fluid afterwards?  
21 A. Only if the -- if we are not going  
22 through those stages, like multi-stage separator  
23 test, a single-stage flash, those are fluids and  
24 viscosity, so after those tests, you cannot  
25 recover these fluids that we --  
00165:01 Q. Okay.  
02 A. It pretty much is used fluids from it.  
03 Q. Let's start with the multi-stage flash  
04 test.  
05 A. M-h'm.  
06 Q. What is it about that test that the  
07 resulting fluids after the test mean that you  
08 can't use that fluid for another test?  
09 A. Because from the original sample, we take  
10 a subsample that we know that is going to --  
11 where it is sufficient to conduct the multi-stage  
12 separator test. And this fluid, then, going  
13 through those stages, you separate the gas, and  
14 you end up with the dead oil at the end.  
15 So you collect all those gases. You know  
16 the properties of each stage, but you cannot go  
17 back and put this sample again what was in the  
18 original conditions.  
19 Q. So when you're conducting the multi-stage  
20 separator test, you collect the resulting dead  
21 oil, correct?  
22 A. Yes.  
23 Q. And you collect the resulting gases?  
24 A. That's correct.  
25 Q. But you're not able to recombine those?  
00166:01 A. You -- there is no point. There's no  
02 meaning to recombined. It's only as separation  
03 process. The calculations that are done in the

04 Report are based on these stages, so that you go  
05 back and calculate what was prior to get to  
06 this -- to the last stage.  
07 Q. Could -- could those, the -- the  
08 resulting gas and the resulting liquid oil, be  
09 recombined?  
10 A. Mathematically, yes.

Page 167:03 to 167:24

00167:03 Q. I'd like you to take a look now at a few  
04 of the documents that the Department of Justice  
05 attorneys showed you earlier today. And let's  
06 start with Exhibit 10415, which is Tab 7 in the  
07 Government's binder.  
08 A. M-h'm.  
09 Q. Do you remember looking at this document  
10 earlier today?  
11 A. Yes.  
12 Q. And Exhibit 10415 is an E-mail dated  
13 May 20th with an attachment, right?  
14 A. 10415, where is this? Yeah, yes.  
15 Q. Is this the first data that you provided  
16 to BP resulting from tests you ran on fluid from  
17 the Macondo Reservoir?  
18 A. I think so.  
19 Q. And if you'll take a look at the  
20 attachment for me.  
21 A. M-h'm.  
22 Q. It's the page -- the third page of  
23 Exhibit 10415, the Bates number ending 385,  
24 should be the second-to-last page of the exhibit.

Page 168:01 to 171:02

00168:01 Q. (By Mr. Beffa) It says: "TABLE 1 AVERAGE  
02 FLUID COMPRESSIBILITIES"?  
03 A. Yes, yep.  
04 Q. Okay. The average fluid  
05 compressibilities reported on this page here,  
06 those are simply calculations from the data  
07 reported on the following page which is the  
08 constant composition expansion results, correct?  
09 A. That's correct.  
10 Q. All right. And there are two tables on  
11 the page ending Bates 385. Those two tables are  
12 the same data just expressed in different units,  
13 correct?  
14 A. That's correct.  
15 Q. Now, we've seen a few instances today  
16 where Intertek reports data in two different  
17 units. Why does Intertek Report data in two  
18 different units?  
19 A. We report data because there is two  
20 standards that are used in the -- in the oil

21 industry. We are using this. We are int -- we  
22 are working with -- internationally. If you work  
23 in Europe, normally, it's an SI metrics system.  
24 If you're in the U.S., there is more in the oil  
25 field system.

00169:01 So to -- in order to -- to avoid any  
02 repeat or any -- with the client, we have  
03 selected to be on both units, so that whichever  
04 wants to see the data that -- in their units,  
05 they have it there. Otherwise, we have been in  
06 cases that we're producing in the oil field, they  
07 wanted to have this in standard, and vice versa.  
08 So just to -- for our purposes, nothing more than  
09 that.

10 Q. Can you explain the calculation that's  
11 used to take the data from Table 2 and calculate  
12 the compressibilities in Table 1?

13 A. I certainly can. So you have the  
14 "Relative Volume" on a Table 2, Column 3. And  
15 then for each "Pressure," you have those volumes,  
16 and then the -- the compressibility is calculated  
17 such that is the change in -- in volume, the unit  
18 volume, or unit pressure. Okay? So -- and  
19 that's the calculation in compressibility.

20 So you have the difference in "Relative  
21 Volume," the difference in -- at those pressures,  
22 and then you divide by the -- the volume at which  
23 is an average volume between these two pressures,  
24 and then gives you the compressibility.

25 Q. Thank you for that.

00170:01 Can you turn to the last page of the  
02 exhibit now, that's the "TABLE 2." The first two  
03 columns on Table 2 are labeled "Pressure."

04 A. Yes.

05 Q. And the first column is in units of psia,  
06 correct?

07 A. That's correct.

08 Q. And the second column is in units of  
09 me --

10 A. Megapascals.

11 Q. Megapascals.

12 Now, if you look down the first column,  
13 the numbers -- or the pressures above the  
14 saturation pressure --

15 A. M-h'm.

16 Q. -- are in even jumps of 1,000; so, for  
17 instance, the first number is "13,500" --

18 A. Yes.

19 Q. -- and the second number is "12,500."  
20 Do you see that?

21 A. Yes.

22 Q. Now, below saturation pressure, the jumps  
23 between pressure are not in even 1,000 psi. And  
24 I'm curious why below the saturation pressure  
25 the -- the difference between the recorded  
00171:01 pressures is not regular intervals?

02 A. I can explain that. The --

00171:04       A. This -- in all of this, we have --  
05       there's the engineering part of it. The  
06       compressibility on the first -- I mean, the --  
07       the values, or the pressures, above the  
08       saturation pressure are used for compressibility.  
09       And, therefore, we kind of interpolate, give you  
10       the -- at those values, at those pressures, so  
11       that you can have a -- an average compressibility  
12       between two values, because the compressibility,  
13       actually, is a -- a function of the pressure and  
14       temperature, and is at any volume change, your  
15       compressibility changes.

16               So either we end up with a  
17       compressibility at the point, or we do this as an  
18       average between an interval. And because it's  
19       easier to get to the intervals which in comprise  
20       those pressures that are not so rounded, then  
21       it's better, and we -- we provide this in this  
22       form. Okay?

23               But there is -- in -- the technique and  
24       everything is pressure/volume relationship and is  
25       all the way through. Only for compressibility is  
00172:01 in practice in -- in petroleum to have this as  
02       their average between two points.

03       Q. (By Mr. Beffa) So, then, how were the  
04       intervals chosen for the pressures reported below  
05       the saturation pressure?

06       A. M-h'm. The same way as the above, but  
07       the -- the difference here is we go -- let's say,  
08       we lower -- we expand by 1 cc, centimeter cube,  
09       and we allow it to equilibrate at this pressure  
10       and which pressure results is, let's say, 6141.  
11       That's so be it, yeah; so if you go 2 cc's, 3  
12       cc's, and so on.

13               As we can see, we're expanded by 1  
14       percent at sixteen -- at 6141 and then 2 percent  
15       at the other pressure, and so on. We pretty much  
16       go about two times the volume which we had just  
17       started the bubble point.

18       Q. And now the Constant Composition  
19       Expansion Test, the fluid is held at a constant  
20       temperature throughout the entire test, correct?

21       A. That's correct.

22       Q. In this case, it was held at 243 degrees  
23       Fahrenheit?

24       A. That's correct.

25       Q. And no fluid is released from the testing  
00173:01 chamber during the Constant Composition Expansion  
02       Test?

03       A. No.

04       Q. All right. Let's look at the third  
05       column in Table 2. It's labeled "Relative  
06       Volume."

07 A. Yeah.  
08 Q. Now, that is a -- a report of  
09 measurements of the volume of the sample at the  
10 listed pressure divided by the volume of the  
11 sample at saturation pressure, correct?  
12 A. That's correct.  
13 Q. The fourth column over is called  
14 "Y-Function."  
15 A. M-h'm.  
16 Q. Can you describe Y-Function for me?  
17 A. The -- the Y-Function is -- you have  
18 the -- the note here, what is a Y-Function, so  
19 you have it in the Report -- is -- it is -- if  
20 you use this correlation -- not correlation, but  
21 this rearrangement of these values, pressure and  
22 relative volume, and you plot it, it should be a  
23 straight line. Okay? So -- with pressure.  
24 Q. Did you plot the Y-Function for the  
25 results for the Macondo fluid?  
00174:01 A. I haven't plot any of those, only the  
02 table; so the plot can be taken from this  
03 pressure here in this column here, and you can  
04 plot it.  
05 Q. Let's look at the fifth column, which is  
06 labeled "Liquid Volume."  
07 A. Yes.  
08 Q. And that's expressed in units of percent  
09 of total volume, correct?  
10 A. That's correct.  
11 Q. And there are no entries for pressures  
12 above the saturation pressure, and that's because  
13 above the saturation pressure, the liquid volume  
14 is a hundred percent?  
15 A. That's always a hundred, yeah.  
16 Q. And at the saturation pressure, it's also  
17 100 percent, correct?  
18 A. That's correct.  
19 Q. And as the pressure drops below the  
20 saturation pressure, a portion of the fluid will  
21 be liquid. And what's expressed in Column 5 is  
22 the -- the percentage that is liquid divided by  
23 the total volume of the --  
24 A. The --  
25 Q. -- sample?  
00175:01 A. -- liquid and gas, yeah.  
02 Q. The sixth column, the sixth column is  
03 labeled "Fluid Density."  
04 A. Yes.  
05 Q. There's no data entered in the "Fluid  
06 Density" column. And I'll refer you back to the  
07 first page of Exhibit 104415 -- excuse me,  
08 Exhibit 10415.

Page 175:24 to 177:04

00175:24 Q. (By Mr. Beffa) Okay. So we're looking at

25 Tab 7 in the Government's binder. It's been  
00176:01 marked as Exhibit 10415. This is, again, that  
02 E-mail on May 20th that you sent to Yun Wang and  
03 Kelly McAughan --  
04 A. M-h'm.  
05 Q. -- do you see that?  
06 A. Yeah.  
07 Q. In the second sentence of your E-mail,  
08 you say: "The density data above the saturation  
09 pressure cannot be provided as we do not have the  
10 GOR data." Do you see that?  
11 A. Yes, I see that.  
12 Q. And why is it that you need a GOR data in  
13 order to provide density data?  
14 A. We don't have any information. We can  
15 only look at the PV -- it's the pressure  
16 volume -- relationship, how the oil expand and  
17 where we get the gas, but there is no way to get  
18 the density if you are not using a sub-sample to  
19 flash it and to get the properties which is from  
20 the single-stage flash. And if you look at  
21 the -- as we generated the Reports later on, we  
22 provided the density after we got the -- the --  
23 those -- this information.  
24 Q. So the -- the source of the GOR that you  
25 needed is the single-stage flash test?  
00177:01 A. That's correct.  
02 Q. And a -- as of May 20th, you hadn't run  
03 the single-stage flass -- flash test?  
04 A. Yes.

Page 178:22 to 179:08

00178:22 Let's turn now to Tab 15 in the  
23 Government's binder, and that's an exhibit that  
24 was previously marked 10419.  
25 Do you remember looking at this document  
00179:01 earlier today?  
02 A. Yes.  
03 Q. Okay. And this is a new version of the  
04 same spreadsheet that we were looking at in  
05 Exhibits ten one -- 10415 and 10418 with results  
06 now from a new Constant Composition Expansion  
07 Test; is that right?  
08 A. Yeah.

Page 179:11 to 183:01

00179:11 We discussed earlier that you ran two  
12 different Constant Composition Expansion Tests,  
13 one with a mixer and one without a mixer,  
14 correct?  
15 A. That's right.  
16 Q. Which of those two -- more accurately  
17 rep -- more accurately represents the depletion

18 of fluid in a reservoir?  
19 A. There is a -- a difference in the  
20 laboratory and what happened in the reservoir, so  
21 it's -- the testing is -- is such that you may  
22 have a mixer, because as I mentioned this  
23 morning, is you may have to -- to -- to make sure  
24 that everything is -- is mixed under the -- the  
25 condition we have in the lab. And the cell that  
00180:01 we have is just a -- a small cell and long, so we  
02 have to make sure that everything -- so most of  
03 the time, we use the mixer. Okay?  
04 But there are also questions there, if  
05 we -- with the mixer, we're actually pretty much  
06 having -- if it's any difference we're  
07 introducing by doing this mixer, because in a  
08 reservoir, it doesn't have a mixer.  
09 Q. Yeah.  
10 A. So, therefore, we want to make sure  
11 that -- and it's good to have, to see what is the  
12 difference in case we -- we would do a -- a Risk  
13 Analysis or if it were any -- any -- any other  
14 analysis to see where we are in -- in that  
15 determination of -- of the bubble points.  
16 Q. So neither of these exactly mirrors what  
17 happens in a reservoir out --  
18 A. No.  
19 Q. -- in a field?  
20 Now, I think you described earlier that  
21 this mixer is a magnetic mixer?  
22 A. Yes.  
23 Q. Is it what we would typically think of as  
24 a mixer, where it is truly mixing the fluids, the  
25 gases, and the -- the liquids that are in the  
00181:01 sample chamber?  
02 A. That's correct.  
03 Q. Is it running constantly throughout the  
04 test, or does it only run once you're set at a  
05 given pressure? How -- how does it work?  
06 A. It's only during the equilibration phase.  
07 As we do readings, then this is stopped.  
08 Otherwise, you cannot determine the -- where the  
09 liquid and where the gas is. At every single  
10 reading is no mixer, but as you equilibrate, then  
11 you may use mixer or you may not use mixer.  
12 Q. And I think you said that the -- when you  
13 used the mixer, it takes less time to reach  
14 equilibrium?  
15 A. Normally, yeah, it's -- it's with less  
16 time, yeah.  
17 Q. You said earlier that the test without  
18 the mixer is not as good. I -- I wrote that  
19 down. Do you remember saying that the test  
20 without the mixer is not as good?  
21 A. Well, the -- the test without mixer, as  
22 I -- if I said, is -- is the equilibration may  
23 not be as good as with mixer.  
24 Q. And why is that?

25 A. Because there can be a -- if we have a --  
00182:01 a -- a liquid and a gas formed, and then if we  
02 are not making sure that we are -- the separation  
03 is such that we are -- we have to make sure,  
04 first, do we have -- done a good mixer of the  
05 fluid, yeah. And then after that -- any -- any  
06 other process that goes after that can -- can be  
07 more representative of what happened for this  
08 sample in there. So that is the -- the  
09 difference that we have mixer, without mixer  
10 is -- is such that we like to see that everything  
11 is done properly, or is done.  
12 We know it is a single-phase and is -- is  
13 now -- especially in this case, as you can see,  
14 the difference is minimal in terms of the  
15 saturation pressure between a mixer and no mixer.  
16 In some cases the only difference we have is when  
17 we can have samples, that we need to -- to make  
18 sure that we have to -- depending on the  
19 conditions there, as on -- on the oil, depending  
20 on the -- let's say, if you have a heavy oil, if  
21 you have a light oil, it's totally different  
22 results, also.  
23 Q. Okay.  
24 A. So it -- it may help make it better,  
25 yeah. But this one here, if it's so volatile, it  
00183:01 may not make any difference. Okay?

Page 183:15 to 186:17

00183:15 Q. -- the next one, and that was previously  
16 marked today as Exhibit 10420.  
17 Do you remember looking at this exhibit  
18 earlier?  
19 A. Yes.  
20 Q. And the attachment to this exhibit is,  
21 again, a new version of the same spreadsheet that  
22 we have been looking at over the last couple of  
23 exhibits --  
24 A. M-h'm.  
25 Q. -- with the addition of results from the  
00184:01 Constant Composition Expansion Test run at 100  
02 degrees Fahrenheit, correct?  
03 A. Yes.  
04 Q. Now, if you'll turn to the fifth page of  
05 the exhibit. It is Table 3.  
06 A. M-h'm.  
07 Q. And you'll notice that that sixth column  
08 now has some data in it for fluid density. Do  
09 you see that?  
10 A. Yes.  
11 Q. And is that because you now had data from  
12 the single-stage flash test that you could  
13 calculate the fluid density?  
14 A. That's correct.  
15 Q. Now, if you'll turn to Table 5 --



16 A. M-h'm.  
17 Q. -- and -- and actually Table 7. There's  
18 no fluid density data. And I'm curious why you  
19 weren't able to report fluid density data at this  
20 point for the 243 degre -- degree test without  
21 the mixer or the 100 degree test?  
22 A. It can be just nothing we can provide is  
23 the same. It's just a matter that I may have  
24 forgotten to -- to provide that, yeah. It is the  
25 same. It's -- it's not going to change the  
00185:01 density. The fluid density here is going to be  
02 pretty much the same as -- with the slightly  
03 changes, because of there are two repeat tests,  
04 and the compressibility may be a little bit --  
05 slightly different from the other one, because  
06 any repeat may not be exactly the same, so --  
07 and, therefore, it's slightly difference, but not  
08 very significant. Within -- within, I would say,  
09 point -- maybe .05 percent difference.  
10 Q. Is the difference between the fluid  
11 density on the without mixer test compared to the  
12 fluid density in the with mixer test?  
13 A. Yes.  
14 Q. If you can turn to Table 7. It reflects  
15 in the title that the 100 degree Constant  
16 Composition Expansion Test --  
17 A. Yes.  
18 Q. -- was done with a mixer?  
19 A. That's -- yes. That's correct.  
20 Q. And that's exactly the same mixer that  
21 was used for the --  
22 A. Yeah, is the --  
23 Q. -- 243 degrees?  
24 A. -- the same as PVT cell. Yeah. And, for  
25 example, here we don't have density, because we  
00186:01 haven't done a GOR at hundred degree F.  
02 Q. And so Tables 6 and 7 reflect the results  
03 from the 100 degree Constant Composition  
04 Expansion test --  
05 A. That's correct.  
06 Q. -- correct? All right. If you could  
07 turn now to Tab 18, which was previously marked  
08 as Exhibit 10422. Do you remember looking at  
09 this exhibit earlier today?  
10 A. Yes.  
11 Q. And once again, this is the -- a new  
12 version of the same spreadsheet we've been  
13 looking at with new data now for viscosity at 243  
14 degrees?  
15 A. Yes.  
16 Q. Is that right?  
17 A. (Nodding.)

Page 189:14 to 189:21

00189:14 Q. And how about on the table labeled

15 "COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID,"  
16 where does the information in that table come  
17 from?  
18 A. And this comes from a single-stage flash.  
19 So when you go to -- I mean, multistate separator  
20 when you have the PVT main -- the summary there,  
21 then this is generated at that point.

Page 191:07 to 191:09

00191:07 Q. Okay. If you could turn to Table 8, in  
08 the same document, Exhibit 10422.  
09 A. M-h'm.

Page 191:12 to 192:12

00191:12 Q. (By Mr. Beffa) Yeah, it's the last page  
13 of the exhibit.  
14 A. I see.  
15 Q. And -- and the third column is labeled  
16 "Oil Viscosity"?  
17 A. Yes.  
18 Q. That is the viscosity of the liquid  
19 portion of the fluid --  
20 A. That's correct.  
21 Q. -- at each given pressure?  
22 A. Yes.  
23 Q. And I -- I -- I think you said earlier  
24 that it's standard for Intertek to do viscosity  
25 measurements at different pressures using a  
00192:01 differential liberation process?  
02 A. It is a standard -- I mean, ev --  
03 every -- every company does that. There is no  
04 other way to -- to do it --  
05 Q. And -- and so --  
06 A. -- other ways.  
07 Q. -- the viscosity -- excuse me.  
08 A. Yeah. The viscosity are only around --  
09 or measured on the liquid phase.  
10 Q. And so the viscosity test for the Macondo  
11 fluid was run in Intertek's standard process?  
12 A. That's correct.

Page 192:16 to 194:13

00192:16 Q. (By Mr. Beffa) Previously marked as  
17 Exhibit 10423. That's a June 15th E-mail from  
18 you with attachments. Do you remember looking at  
19 this --  
20 A. Yes.  
21 Q. -- document --  
22 A. Yes.  
23 Q. -- earlier today?  
24 And this, I believe you said, is the  
25 final version of this same spreadsheet that we've

00193:01 been looking at --  
02 A. Yes.  
03 Q. -- over the last several exhibits.  
04 A. (Nodding.)  
05 Q. The addition here is new viscosity data  
06 at 100 degrees Fahrenheit?  
07 A. Yes.  
08 Q. And that would be reflected on the final  
09 page of this exhibit --  
10 A. Table -- m-h'm.  
11 Q. -- in Table 9 --  
12 A. That's correct.  
13 Q. -- correct?  
14 A. Yes.  
15 Q. The same test was performed as was  
16 performed in Table 8, just at a different  
17 temperature?  
18 A. That's correct.  
19 Q. And -- and this is the last data that  
20 Intertek provided to BP related to Constant  
21 Composition Expansion and Viscosity, correct?  
22 A. That's correct, yeah.  
23 Q. Okay. If you could turn to Table 5 for  
24 me.  
25 A. M-h'm.  
00194:01 Q. This is the Constant Composition  
02 Expansion results without the mixer. You now  
03 have fluid density data in --  
04 A. Yes.  
05 Q. -- the -- the sixth column there, and I'm  
06 wondering why you added the fluid density data in  
07 this version of the --  
08 A. As it -- we -- we -- in this case, we  
09 added this to be on the -- to have the data for  
10 consistency for densities. It is nothing to do  
11 with any -- anything else. In terms of just to  
12 have the data for -- to have the data for  
13 densities above the bubble point. Yeah.

Page 194:19 to 197:14

00194:19 Take a look again at Tab 18, which was  
20 Exhibit 10422.  
21 A. Yeah.  
22 Q. And the final page is Table 8.  
23 A. Yes.  
24 Q. And the heading there includes the words  
25 "WITH MIXER." Do you see that?  
00195:01 A. Yes.  
02 Q. Now, if we look back at exhibit -- at Tab  
03 20, which is Exhibit 10423 --  
04 A. Yes.  
05 Q. It no longer, on Table 8, says "With  
06 Mixer" in the title.  
07 A. (Reviewing document.)  
08 Q. And I'm wondering why the words "With

09 Mixer" were removed -- were removed from Table 8 in  
10 this version of the --  
11 A. Where --  
12 Q. -- spreadsheet?  
13 A. -- where have this here --  
14 Q. Table 8 in Exhibit -- in -- on Tab 20 --  
15 A. Yes.  
16 Q. -- which is Exhibit 10423.  
17 A. Yes. The reason is very -- I mean,  
18 normally, as I said, we use the mixer. Our  
19 template says it doesn't include with mixer or  
20 without mixer. So anything that is -- it's as we  
21 have -- our template is without -- we -- we --  
22 not to have the description with mixer or without  
23 mixer.  
24 This was one of the cases that we had to  
25 differentiate the case with -- with mixer or  
00196:01 without mixer. And this is our standard  
02 template, where we have no -- no description.  
03 Q. So -- so even --  
04 A. So this refers to "WITH MIXER."  
05 Q. Okay.  
06 A. Yeah.  
07 Q. And -- and that's true for Table 9, as  
08 well, the -- the differential liberation fluid  
09 viscosity at 100 degree test?  
10 A. Is with mixer.  
11 Q. Thank you.  
12 A. Yes.  
13 Q. The attachment here in -- on Tab 20,  
14 which is Exhibit 10423 --  
15 A. M-h'm.  
16 Q. -- the data was entered into the various  
17 sheets in this spreadsheet at or near the time  
18 that the tests were run, correct?  
19 A. That's correct.  
20 Q. And the -- I believe you said you created  
21 this spreadsheet?  
22 A. That's correct.  
23 Q. Did you create each Tab in this  
24 spreadsheet?  
25 A. Yes.  
00197:01 Q. And you created that based on data that  
02 was provided to you by the Technicians who  
03 actually ran the tests --  
04 A. That's --  
05 Q. -- correct?  
06 A. -- correct.  
07 Q. This Report is the type of Report that  
08 Intertek typically creates for Constant  
09 Composition Expansion and viscosity tests for its  
10 clients?  
11 A. That's a standard template.  
12 Q. And you created this in the ordinary  
13 course of Intertek Westport's business, correct?  
14 A. That's correct, yeah.

00197:16 Q. (By Mr. Beffa) Okay. Is -- is it part of  
17 the Project Manager's responsibility to create  
18 Reports like this for clients?

19 A. Yes.

20 Q. And you were the Project Manager for  
21 the --

22 A. Right.

23 Q. -- testing of this sample?

24 A. That's correct.

25 Q. Was there anything out of the ordinary  
00198:01 that was observed during the tests that are  
02 reported in Exhibit 10423, which is in Tab 20?

03 A. No.

04 Q. If there had been something out of the  
05 ordinary, would it be noted in the Report?

06 A. Yes.

07 Q. Does Intertek engage in a Quality Control  
08 or Quality Assessment process before it provides  
09 Reports to clients?

10 A. Yes.

11 Q. Did Intertek engage in that Quality  
12 Control or Quality Assessment process before  
13 providing this Report to BP?

14 A. That's correct, yeah.

15 Q. To the best of your knowledge, is the  
16 data reported in Exhibit 10423 accurate?

17 A. That's correct.

18 Q. I'd like you to turn now to Tab 17, which  
19 was previously marked as Exhibit 9734. Do you  
20 remember looking at this document earlier today?

21 A. Yes.

22 Q. And this is an E-mail from you to Yun  
23 Wang, which attaches the results from the  
24 multi-stage separator test and single-stage  
25 separator test, correct?

00199:01 A. That's correct.

02 Q. Now, we discussed earlier today that  
03 there are actually two attachments here. One is  
04 the native Excel file, which provides the table  
05 data. And the second is a Report in pdf format  
06 that includes those same tables plus some  
07 additional pages?

08 A. That's correct.

09 Q. Did you create the two attachments to  
10 Exhibit 9734?

11 A. Yes.

12 Q. Was the data entered into the spreadsheet  
13 and Report at or near the time that the relevant  
14 tests were run?

15 A. Yes.

16 Q. And you created these two attachments  
17 based on input you received from the Technicians  
18 actually running the tests?

19 A. That's correct.

20 Q. Is this the type of document or are  
21 these -- strike that.  
22 Are these the types of documents that you  
23 ordinarily provide to clients to report results  
24 from multi-stage separator and single-stage flash  
25 tests?  
00200:01 A. That's correct.  
02 Q. Is it ordinarily part of the Project  
03 Manager's job to create Reports like this for  
04 clients?  
05 A. Yes.  
06 Q. And these were created as part of  
07 Intertek Westport's ordinary course of business,  
08 correct?  
09 A. That's correct.  
10 Q. If you'll turn to the third page of  
11 Exhibit 9734, Tab 17, you -- you'll see, in the  
12 first box at the top of this --  
13 A. Yeah.  
14 Q. -- table that's labeled "MAIN PVT  
15 RESULTS"?  
16 A. Yeah.  
17 Q. It says: "Saturation Pressure" "6438  
18 psia."  
19 A. M-h'm.  
20 Q. Now, that's the saturation pressure from  
21 the Constant Composition Expansion Test at 243  
22 degrees with the mixer?  
23 A. That's correct.  
24 Q. Why was that chosen, as opposed to the  
25 saturation pressure from the without mixer test?  
00201:01 A. Because, as I mentioned, in this case,  
02 wanted to make sure that the equilibration was  
03 such that we are not influenced by anything that  
04 is due to not mixing very well the -- the liquid.  
05 Q. In the second box on this same page,  
06 there are three properties that are listed under  
07 "At Saturation Pressure." Do you see that?  
08 A. Yes.

Page 201:10 to 201:24

00201:10 What temperature are those results  
11 reflective of?  
12 A. At the same as above. You have reservoir  
13 temperature on the -- on the top.  
14 Q. And -- and down from that, you have one  
15 property listed at ambient pressure. Is that  
16 also ambient temperature?  
17 A. At -- at stock tank conditions, where do  
18 you have ambient pressure?  
19 Q. I -- I see --  
20 A. Oh, this -- this is a -- at -- if it's  
21 ambient pressure it still is at temperature. If  
22 it's at stock tank conditions, then is at -- at  
23 ambient pressure or atmospheric pressure and

24 standard -- or room temperature.

Page 202:11 to 203:15

00202:11 Q. (By Mr. Beffa) Mr. Shtepani, welcome  
12 back. I just have a couple more questions for  
13 you. Hopefully, it won't take too much more of  
14 your time. When we broke, we were looking at  
15 Tab 17 in the Department of Justice's binder,  
16 which was previously marked as Exhibit 9734. Do  
17 you still have that document in front of you?  
18 A. Just to make sure -- yes.  
19 Q. Okay. And specifically, we were looking  
20 at the third page of the document with the title  
21 "MAIN PVT RESULTS"?  
22 A. Yep.  
23 Q. In the middle box on that page, there are  
24 properties for "At Ambient Pressure," as well as  
25 properties for "At Stock Tank Conditions." And  
00203:01 I'm curious what the difference is between  
02 ambient pressure and stock tank conditions?  
03 A. The ambient pressure is at the  
04 temperature, at 243 degrees. The stock tank  
05 condition is at atmospheric pressure and at 60  
06 degree F.  
07 Q. If you'll look at the third box, that's  
08 reporting results from the single-stage separator  
09 test, right?  
10 A. Yes, yeah.  
11 Q. And you'll see under: "At Saturation  
12 Pressure," there's an "Oil Formation Volume  
13 Factor" that's listed of "2.5104." Do you see  
14 that?  
15 A. Yes.

Page 203:23 to 204:11

00203:23 Q. Sure. Is oil formation volume factor a  
24 property that you typically obtain from running a  
25 single-stage separator test?  
00204:01 A. That's correct.  
02 Q. If you could turn to Table 3 in the same  
03 document labeled: "MULTI-STAGE SEPARATOR" --  
04 A. Yeah.  
05 Q. -- "OIL PROPERTIES"?  
06 A. Yeah.  
07 Q. Do you see that?  
08 A. Yes.  
09 Q. Did Intertek choose the pressures and  
10 temperatures for the separator conditions?  
11 A. No.

Page 204:13 to 208:06

00204:13 Who did choose those separator

14 conditions?  
15 A. BP.  
16 Q. Do you know why BP chose those separator  
17 conditions?  
18 A. No.  
19 Q. To your knowledge, did those separator  
20 conditions relate to any pathway that the oil was  
21 flowing through during the oil spill from the  
22 Macondo Well?  
23 A. No.  
24 Q. If you could look at the eighth and ninth  
25 columns in Table 3, they're under the heading  
00205:01 "Gas-Oil Ratio"?  
02 A. Yes.  
03 Q. And take -- Column 8 is the "Solution"  
04 "Gas-Oil Ratio" --  
05 A. That --  
06 Q. -- correct?  
07 A. That's correct.  
08 Q. And Table 9 is the "Liberated" "Gas-Oil  
09 Ratio"?  
10 A. That's correct.  
11 Q. Can you explain the difference between  
12 those two?  
13 A. The -- in order to find out how much gas  
14 is in solution is by actually producing it.  
15 Okay? Because we -- we have a -- a live oil  
16 which initially, we don't know how much gas is in  
17 solution. Okay?  
18 So as we go through these processes, we  
19 collect the gas and, by definition, the gas-oil  
20 ratio is the amount of gas at standard  
21 conditions, divided by amount of oil at standard  
22 conditions. Okay?  
23 So the solution gas now represents all  
24 those stages, all the gas collected at every  
25 stage that actually was initially in solution.  
00206:01 Q. And so the actual measurement is done on  
02 the liberated gas-oil ratio, correct?  
03 A. That's correct.  
04 Q. And the solution gas-oil ratio is just  
05 subtracting --  
06 A. Yes.  
07 Q. -- the --  
08 A. Well, if -- if you see the different --  
09 let's just take those at the "sef" or "STB." The  
10 solution gas starts with the amount that was  
11 prior to go to those stages. It's 27 -- 2747,  
12 for example. But at this point, we haven't  
13 liberated any gas. Is zero.  
14 So after that, is 530.76 is remaining in  
15 solution at the first stage. But was liberated  
16 2216 from the first stage.  
17 Q. And -- and the sum of --  
18 A. It should result -- the total should be  
19 the -- the -- the one that has 2747. And this is  
20 cumulative here in the "Liberated" and then you



21 see the last number, 2747, is equal to the  
22 solution gas.  
23 Q. All right. So just so I can make sure  
24 that I'm clear on this, if we look at the line  
25 reflecting the 1235 (psia) stage, the solution  
00207:01 gas-oil ratio is "530.76," correct?  
02 A. That's correct.  
03 Q. And the liberated gas-oil ratio is  
04 2216.37, correct?  
05 A. That's correct.  
06 Q. And if I were to add those two numbers  
07 together, I should get 2747.13, correct?  
08 A. That's correct.  
09 Q. Which is the entire amount of gas in the  
10 sample at stock tank conditions?  
11 A. That's correct.  
12 Q. So at each stage of the separator test,  
13 all of the gas and all of the liquid are  
14 accounted for?  
15 A. That's correct.  
16 Q. You're not losing any of the gas in any  
17 of these stages when you're calculating these  
18 gas-oil ratios?  
19 A. No. And we have in page -- I should say  
20 here, in Appendix B, is a material balance that  
21 is part of our calibration and our procedure to  
22 make sure that we are -- we are not losing any  
23 gas.  
24 Q. And that's part of your -- your  
25 validation process?  
00208:01 A. Is part of our -- you can call  
02 "validation." We call this as a material balance  
03 process.  
04 Q. While we're looking at this, there's a  
05 Table B1. Are you --  
06 A. Yes, Table B1.

Page 208:10 to 210:25

00208:10 Q. The third column of Table B1 has a  
11 "Calculated Oil FVF"?  
12 A. That's correct.  
13 Q. What is it calculated based on?  
14 A. The -- there are different equipment used  
15 for providing this table. And that is a -- give  
16 us the confidence that we are -- all the  
17 measurements are accurate, within the certainty  
18 of the experiment, which we claim about 1  
19 percent.  
20 Q. And -- and what is it that you're using  
21 to calculate it? The -- what --  
22 A. So that's --  
23 Q. -- data are you --  
24 A. Yeah --  
25 Q. -- using?  
00209:01 A. -- that's a -- we are using data that we

02 have from PVT. So when we use, we measure the  
03 volume, we measure the pressure. Then we measure  
04 the density, which is part of this volume. So  
05 also we know that the mass that was in, if we had  
06 this at the live reservoir condition, and the  
07 mass of the oil and the gas we collected then,  
08 should be the same.

09 So the gas composition that we measure  
10 that is provided in Appendix C, is re -- done by  
11 gas chromatography, which is unrelated with the  
12 pressure volume tools to use for volumetric data.

13 And this data give us the mass or the  
14 gravity of the gas calculated or measured based  
15 on composition from the gas chromatography.

16 So we put all this in one equation. And  
17 then this is the calculated, based on the  
18 composition data, and this is measured based on  
19 the volumetric data. And these two numbers  
20 should give us -- should be close.

21 Q. And -- and in fact, the fifth column on  
22 Table B1 is a -- a reflection of how close those  
23 two numbers are?

24 A. That's correct.

00210:01 Q. And in each case, the absolute relative  
02 error is less than 1 percent?

03 A. That's correct.

04 Q. Would you consider that to be relatively  
05 close?

06 A. We consider that is very good data.  
07 There is no other -- no other Lab that can have  
08 or can claim within 1 percent.

09 Q. If I can have you look back at Table 3 --

10 A. M-h'm.

11 Q. -- within this Exhibit 9734. Earlier  
12 today, as you were describing how this test  
13 works, you were describing, I -- I think oil  
14 going from one tank into another tank into  
15 another tank. Were you describing a production  
16 system in the field that a -- one of your clients  
17 might set up to produce oil?

18 A. It's -- it's a normal procedure, yeah.  
19 Normally, they -- they go some cases in two,  
20 three different -- the pressure stages or  
21 separator stages.

22 Q. And that would be in a production  
23 facility --

24 A. In production --

25 Q. -- out on the ocean?

26 A. -- yes. Yeah.

Page 212:05 to 212:22

00212:05 Q. If you could turn now to Table 5 in this  
06 same exhibit.

07 A. Table 5, yeah.

08 Q. The heading is "COMPOSITIONAL ANALYSIS OF

09 RESIDUAL OIL."  
10 A. That's correct.  
11 Q. And that would be the liquid oil that's  
12 left over after one of these tests?  
13 A. At the end of the test.  
14 Q. Which test?  
15 A. At the multi-stage separator test. So  
16 after the last stage, we end up with an oil  
17 without gas. And that's the residual oil.  
18 Q. And finally, if you could turn to page --  
19 it's relatively deep in this document, but if you  
20 look in the bottom right corner, it'll end in a  
21 000058.  
22 A. 000058.

Page 213:01 to 213:05

00213:01 A. So that should be on --  
02 MR. KENNEY: Is that right? The --  
03 the Results? Is that what you want?  
04 MR. BEFFA: Yeah. The "RESULTS AND  
05 DISCUSSION"?

Page 213:11 to 214:05

00213:11 Q. (By Mr. Beffa) And my only question here  
12 is: Who wrote the -- this page?  
13 A. This is part of the -- of the test that  
14 is also part of the Intertek.  
15 Q. Did you personally write this?  
16 A. This is a -- yes. I -- I wrote this, and  
17 is a -- is part of the experiment that we have.  
18 So it's -- we have a template, a spreadsheet  
19 template, that has all those, and we substituted  
20 bottomhole well. And so -- and the rest is  
21 pretty much -- is a standard test.  
22 Q. Now, you discussed earlier, a Quality  
23 Control or Quality Assessment process that  
24 Intertek has. Did you perform that process on  
25 this Report before you sent it to BP?  
00214:01 A. Yes. Yeah.  
02 Q. And did you -- was there anything out of  
03 the ordinary about the tests that are reported in  
04 Exhibit 9734?  
05 A. No.

Page 214:23 to 215:09

00214:23 Can you turn your attention to the  
24 document that's behind Tab 22 in your binder  
25 there in front of you, which is Exhibit 10427.  
00215:01 (Exhibit No. 10427 marked.)  
02 Q. (By Ms. Engel) And this is an E-mail  
03 from -- it's an E-mail chain. The top E-mail on  
04 the chain is from Stephanie Heard at Intertek to

05 Kelly McAughan at BP, copy to you. It's dated  
06 Friday, July 30th, 2010, and the "Subject" line  
07 is "MC252 Samples."  
08 Do you see that?  
09 A. Yes.

Page 217:05 to 217:16

00217:05 Q. (By Ms. Engel) So the document -- the  
06 E-mail that I was just referring to you that  
07 says: "Please keep in storage for now just in  
08 case," did I read that correctly?  
09 A. Yeah, yeah.  
10 Q. Okay. Now, flip your attention to the  
11 very top E-mail in the chain here. And it's from  
12 Stephanie to Kelly, a copy to you. And it says:  
13 "Kelly,  
14 "In regards to the MC252 sample, we have  
15 165cc remaining."  
16 A. Yes.

Page 217:21 to 218:18

00217:21 Q. Okay. Does Intertek still have this  
22 sample in storage?  
23 A. I am not sure. I have to check. So if  
24 there's any other, but it -- it can be that maybe  
25 there are because it doesn't look that we have  
00218:01 done anything with that.  
02 Q. Do you have any reason to believe that  
03 Intertek doesn't still have it in storage?  
04 A. Unless it's been any -- anything to any  
05 other that I was not involved that might have  
06 been shipped, yeah, but we can check that very  
07 easily.  
08 Q. Okay.  
09 A. It's not a problem.  
10 Q. Prior to this E-mail from Kelly -- I'm  
11 referring to the E-mail from her -- the receipt  
12 reads here, but the E-mail from her to Stephanie  
13 and you, on July 29th, that reads: "Please keep  
14 in storage for now just in case."  
15 A. Yes.  
16 Q. Prior to that E-mail, had Intertek  
17 received any instruction from BP about the need  
18 to retain this sample?

Page 218:21 to 220:05

00218:21 A. Not to my knowledge.  
22 Q. (By Ms. Engel) Do you know if BP told  
23 Intertek how long it should retain that sample  
24 for?  
25 A. We normally maintain the samples if we  
00219:01 are still a not closed Project.

02 Q. Do you consider this Project to be  
03 closed?  
04 A. At -- at this point, I would say "Yes."  
05 Q. Okay. Earlier today, you and I were  
06 talking about the videotape that Intertek took of  
07 the CCE tests?  
08 A. Yes.  
09 Q. And I think you said you took video both  
10 of the test with the mixer on, and with the mixer  
11 off, correct?  
12 A. Yeah, yes.  
13 Q. Does Intertek still have that videotape?  
14 A. We don't have. We looked for it, and we  
15 don't have this videotape. So we -- there are  
16 people there have left the Company since we  
17 completed this test, and so there's been  
18 transition, and, therefore, this is -- we have  
19 looked for two, three days and search all the  
20 tapes we have, and there was nothing there that  
21 was to find.  
22 Q. Okay. Did Intertek have only one copy of  
23 the CCE test with the mixer on and one copy of  
24 the CCE test with the mixer off?  
25 A. No. It should be in one tape.  
00220:01 Q. It would have all been on would one tape?  
02 A. Yes.  
03 Q. Okay. Did BP instruct Intertek to retain  
04 that tape like it did with the sample?  
05 A. No.