Deposition Testimony of:

Rickey Morgan

Date: October 17, 2011

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Page 7:12 to 14:08

00007:12 Q. Good morning, Mr. Morgan.
13 A. Hello.
14 Q. I'm Ervin Gonzalez and next to
15 me is Jeff Keiser and we'll be asking
16 questions on behalf of the Plaintiffs
17 Steering Committee.
18 A. Okay.
19 Q. Can you tell me your full name,
20 please?
21 A. Rickey Lynn Morgan.
22 Q. What is it that you do for a
23 living?
24 A. I am -- now I'm a bulk
25 technician, I guess you would say, for
00008:01 Halliburton.
02 Q. And if you were going to explain
03 that to a bunch of friends who didn't have
04 any idea what a bulk technician was, how
05 would you explain it?
06 A. I go out and I solve problems
07 that they're having at bulk plants where they
08 blend the cement for Halliburton.
09 Q. Tell us about your educational
10 background.
11 A. I have a year and a half of
12 college, mainly in chemistry.
13 Q. Where?
14 A. Cameron. It's in Lawton,
15 Oklahoma.
16 Q. Where did you go to high school?
17 A. Comanche, Oklahoma.
18 Q. And what's the name of the
19 school where you went one and a half years to
20 college at?
21 A. Cameron.
22 Q. Oh, that's the name of the
23 school, Cameron College?
24 A. Uh-huh.
25 Q. C-a-m-e-r-o-n?
00009:01 A. It's a university, actually.
02 Q. Oh, I'm sorry, Cameron
03 University. What did you do after -- first
04 of all, when did you grad- -- when did you
05 stop taking courses at Cameron University?
06 A. 1978, I think.
07 Q. And I'm smiling, 1978, because
08 that's an important year of my life. That's
09 my high school graduation year. So I
10 remember it very fondly. What did you do
11 after 1978?
12 A. I worked in the oil field on a
13 rig for two years.
14 Q. What did you do at the rig?

A. I was a motorman and a mud man.
Q. How many years were you there?
A. A year and a half, two years.
Q. For what company did you work?
A. McCaslin Drilling.
Q. Where were they located?
A. Duncan, Oklahoma.
Q. And the drilling was also there?
A. They were drilling all over southern Oklahoma.
Q. In Oklahoma. And so that takes us roughly to 19 --
A. '80.
Q. -- 80. Where did you go after that?
A. I started at Halliburton in January of 1980 as a lab technician.
Q. What did you do as a lab technician in the early years?
A. We ran large-scale tests.
Q. What type of tests?
A. We would make our own formations and pump mud into them and then cement, see how good a cement job we got.
Q. Can you tell me from 1980 to the present the types of positions that you've held at Halliburton, including the title and description of the work?
A. I was a lab technician, Sr. lab technician, principal technologist, and now I'm a global adviser in the Gulf cementing.
Q. Okay. What years were you a lab technician?
A. I'd say '83, to '83.
Q. 1980 to '83?
A. That's an approximation. I don't know the --
Q. Yeah, of course. I don't think anyone knows -- except maybe your lawyer he remembers everything.
MR. BOWMAN: Not really.
Q. (BY MR. GONZALEZ) Then roughly when you became a senior lab technician roughly in 1983 how did your duties and obligations at Halliburton change?
A. They didn't change.
Q. You just had to supervise others?
A. No. I did essentially the same job.
Q. Okay. And how long were you a senior lab technician?
A. Until approximately '92 or so.
Q. So about nine years or so?
A. Yeah.

Q. Then roughly in 1992, more or less, you became a -- a principal technologist?
A. Yes, sir.
Q. Tell us what that means.
A. You can run projects on -- on your own when you get up to that level there.
Q. What type of projects?
A. Mainly lab chemicals. We would test equipment, that kind of stuff.
Q. How long were you a principal technologist?
A. Until last year.
Q. 2010?
A. Yeah.
Q. How did your role change as a global adviser?
A. I actually change -- moved into a mechanical group, from the chemical group.
Q. What's the difference?
A. Mechanical group, we work with the equipment, mainly bulk equipment is what I would...
Q. The equipment necessary to manufacture cement or something else?
A. Blend it.
Q. Oh, to blend it. And by blending it, it's -- it's the mix?
A. You blend the dry materials together.
Q. Who provides the formulas for the mix?
A. They would come from the engineers.
Q. Engineers that are employed by Halliburton?
A. I think so, yes.
Q. What was your involvement with the Macondo well 252 project, if any?
A. After the well had issues I was called by Ronnie Faul and asked to mix up a slurry and give him my opinion of what I thought about it.
Q. All right. When you say after the well had its issues, are you -- are you referring to after it blew?
A. Yes, sir.
Q. Okay. And let's go before that. Before the April the 20th, 2010 problem were you involved with the Macondo well 252 project at all?
A. No, sir.
Q. Were you involved in the mix for the cement at all?
A. No, sir.

Q. And when you say "at all," I mean any capacity.
A. I didn't know there was a Macondo.
Q. Okay. So not even a casual connection?
A. No, sir.
Q. Nothing?
A. None at all.

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Q. So you first found out about the Macondo well 252 project involving the Deepwater Horizon rig when?
A. I saw on the news that there was a problem, and I didn't know Halliburton was on it or not.
Q. At what point did you become aware that Halliburton was on that project?
A. I think there was an e-mail came out several days later that said Halliburton was on the rig and no one was hurt.
Q. No one from Halliburton?
A. Yeah.
Q. So when did you become involved with the project in any capacity?
A. When Ronnie Faul called me.
Q. Tell us who Ronnie Faul is.
A. He -- as far as I know, he's the -- kind of the supervisor down on the Gulf Coast over the technology engineers?
Q. Is he an engineer?
A. I have no idea what his education is.
Q. In the -- this is now 2010 when he's contacting you, right?
A. Yes, sir.
Q. How much after the April 20th explosion did he call you?
A. He called me twice, I think.
Q. And roughly how many weeks after or days after?
A. Roughly two weeks, two to four weeks.
Q. So towards the end of April, or beginning of May?
A. Yes, sir.
Q. And that would be 2010?
A. Yes, sir.
Q. Where were you working at that time?
A. I was principal technologist in the cementing, materials, and maintenance group.

Q. And the location?
A. Duncan.
Q. Oklahoma?
A. Yes, sir.
Q. What did Ronnie Faul want you to do?
A. He asked me to take a look at the Macondo slurry.
Q. What aspect of it?
A. He didn't say. He said, just take a look at it.
Q. Tell us what slurry means.
A. Slurry is the wetted cement mixed together. Cemented mixed with the water.
Q. Now, I'm going to ask you to go back in time roughly to the time that Mr. Faul -- did he call you, or did he send you a text message?
A. Called. Called.
Q. Or an e-mail?
A. Called.
Q. Okay. In the old days we could just say that he called you. Now we have five different ways he could contact you.
A. Exactly.
Q. And what -- to the best of your knowledge, tell me everything you can remember about that first conversation.
A. He just asked me to take a look at the slurry and give him my opinion of it.
Q. Did you ask him any questions as to what he meant or what the scope was?
A. No.
Q. So he -- he said, Mr. Morgan, I want you to look at the slurry used on the Macondo well 252?
A. (Nodding head.)
Q. "Yes"?
A. Yes.
Q. And then you said?
A. Okay.
Q. And what did -- what did you do?
A. I got the slurry sheet, and I went and mixed the slurry up.
Q. Where did you find the slurry sheet?
A. I got it from Brian Wall.
Q. Who is he?
A. He is a princ- -- I don't know what his exact title is. He's a technician that works there at Halliburton in Duncan.
Q. And what's on the slurry sheet?
A. The recipe for the slurry.
Q. So the exact -- is it the exact

slurry recipe that was used for the Macondo well 252?
A. I have no idea if it was.
Q. Why did you pick that slurry sheet?
A. That's what was on Viking, where they keep track of what the slurry designs are.
Q. Viking is a system where you keep a log of the type of slurry designs that are used in different projects --
A. Yes, sir.
Q. -- is that right? And for the Macondo well 252 you picked the slurry sheet that you felt in the Viking system would be the one that was used in the Macondo well 252; is that right?
A. No. I got the slurry sheet from Brian.
Q. Okay. And Brian was -- here's my question: You're trying to figure out the slurry -- look at the slurry that was used in the Macondo well 252, right?
A. Yes, sir.
Q. So it's important that you pick the right recipe?
A. Yes, sir.
Q. So how -- what assurances did you have that made you feel comfortable, okay, I'm checking the right slurry?
A. That was the slurry Brian was using, as far as mixing his test -- he was in the field service.
Q. Okay. And Brian was also testing the slurry for the Macondo 252?
A. Yes, sir.
Q. So you felt fairly comfortable that it was the right slurry recipe?
A. Yes, sir.
Q. Was it a foam slurry?
A. Yes, sir.
Q. How would you describe that slurry?

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A. When I mixed it up it looked thin to me.
Q. (BY MR. GONZALEZ) And what does that mean?
A. It was not as viscous as I was expecting it to be.
Q. And why is viscosity important?
A. Viscosity determines how easy a slurry is to pump. It -- it determines how

stable a slurry is once it's pumped and mixed.
Q. So the thinner the slurry, the less likely that it will be stable?

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A. Not -- not necessarily.
Q. (BY MR. GONZALEZ) But generally, right?
A. I was mixing it on surface.
Q. Right.
A. Not necessarily. It depends on what's in the slurry, how stable it is downhole.
Q. Right. But when you're looking at it, you expected it to be thicker, not th- -- not as thin?
A. I expected it to be thicker, yes sir.
Q. Right. And if it were thicker, that would tell you greater chances of stability?
A. Generally, but not necessary, we have additives in there that don't react until it gets downhole so...
Q. I understand. But as an experienced person, it was something that you felt was noteworthy?
A. Yes, sir.
Q. And you reported it?
A. No, sir.
Q. You didn't tell it to anyone?
A. I didn't record it. I told it to Ronnie Faul.
Q. Right, you told it to Ronnie. On the phone?
A. Yes, sir.
Q. Now, did Ronnie tell you not to write it down?
A. No, sir.
Q. You just chose not to?
A. Yes, sir.
Q. And was that because you were concerned that it might be considered something that could be used in litigation against the company down the road?
A. No, sir. He was asking for my opinion, and I gave him my opinion. I didn't want to put anything on an e-mail that could be twisted, and turned, just like we were talking about earlier.
Q. Okay. So tell me exactly what you remember telling Ronnie about the third -- slurry being thinner than you

thought it would be.
A. That's exactly what I told him.
Q. Well, give me your words.
A. Oh.
Q. Those are mine.
A. I told him that I thought the slurry was thin.
Q. What did he say?
A. He said okay put it in an e-mail.
Q. Did you?
A. No.
Q. Why?
A. Same reason we just discussed.
Q. You didn't want your words turned around -- down the road?
A. Twisted, exactly, taken out of context.
Q. What did you mean when you said the -- what were you intending to explain to Ronnie when you said the slurry was thin?
A. The slurry was thinner than I'm -- than I normally see for a foam slurry is what I -- what I was expressing to him. What I would normally expect, put it that way.
Q. Now, we don't have the benefit of your experience and work in the lab. So can you take us there and show us with -- through your words on how you would get the slurry sheet, prepare the mixture, do what you do in order to reach whatever opinions or conclusions you reached.

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A. Okay. Get the slurry sheet. You weigh up all the dry materials and blend it together, shake it up in a blender -- I mean, in a dry container. You take the water, weigh it up in a, in this case a 2-quart blender, because you have to have a big volume. You add all the liquid additives, except for the foamer, to the blender. Then you take the blended dry material and mix it with the water solution, and you stir it at 12,000 RPMs approximately for 35 seconds to wet all the material, the dry material. Then you have a foam blender that holds about approximately a thousand 50 cc's of fluid. You add the amount by weight of the fluid, of the mixed fluid into the blender jar, and you add the correct amount of foamer to it to get a certain volume in the blender jar. Then you screw

the lid on the blender jar.
In this case we had about 10 -- 10 to 20 -- 10 to 15 percent less than full when we put -- put the water in it. I mean, put the liquid material in it.
Q. (BY MR. GONZALEZ) And is that what determines that it was thin?
A. No. Okay. Then you --
Q. Yeah, how do you determine if it's thin or thick?
A. Fixing to tell you.
Q. Thanks.
00026:01 A. Then we take the -- the foam blender, put it on the blender base, run -- turn the foam -- turn the base on as high as it will go, about 12,000 R -- well, with the foam blender it has several blades in it so it'll go only go to about 4 to 6,000 RPM. Then we listen for a change in the sound of the motor, which will tell us when it foams. Once we hear that change, the motor load up, we take the foam blender off, screw the lid off, and look at the slurry, then it's foamed.
Q. So how do you determine if it's too thick or too thin?
A. Typically, you'll run a -- a FYSA, which is a fan device attachment, and you can run other -- other tests, which I didn't do. He was just wanting my opinion. So I just mixed it up and looked at it.
Q. Okay. So you did it by looking at it?
A. Exactly.
Q. And that -- by your experience and education and training, you can do that?
A. I guess, yeah.
00027:01 Q. As opposed to me?
A. Yeah.
Q. I'd look at it and say, I don't know. You'd look at it and know looks good, looks thin, looks thick?
A. Right. But that in no way means it is too thick or thin on -- in downhole conditions.
Q. Well, you weren't there?
A. Exactly.
Q. And you're looking at this after the fact?
A. Exactly.
Q. Do you know what was done with the information that you provided?
A. No, sir.
Q. How long did it take you to conduct this test?

A. Approximately an hour or two.
Q. What's the test called?
A. I guess just a mixing test.
Q. Is the mixing test done before the slurry is actually used on a project?
MR. BOWMAN: Objection; form.
A. Should be.
00028:01 Q. (BY MR. GONZALEZ) Do you know who would do it for the company?
A. I would assume the lab in Broussard.
Q. What state would that be?
A. Louisiana.

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00028:20 Q. How does it look -- or how does the slurry look like if it's too thick?
A. It would -- it wouldn't pour out of the blender jar very easy.
Q. And how does it look like if it's too thin?
00029:01 A. It would pour out easy, really easily.
Q. And using the Goldie Locks standard and the Three Bears, when it's just right, how does it look?
A. It would look like a thin milk shake, a thin.
Q. Did you do this test more than once?
A. Yes, sir.
Q. How many times did you do it?
A. Twice.
Q. Did you get the same result?
A. Yes, sir.
Q. And did you tell Ronnie -- did you call Ronnie after the first test and the second test, or did you call him after both tests were done?
A. Both tests.
Q. Did he tell you to run it twice, or did you decide to do it on your own?
A. No, sir. Tim Quirk called and asked how mad- -- how I conditioned the slurry.
Q. And you told him?
00030:01 A. Yes, sir, I didn't condition it. I just mixed it and looked at it.
Q. Why did you decide to do it twice as opposed to once or three times is my question?
A. Because Tim said that the slurry had been conditioned in Broussard before they -- how -- and he asked me if I had

conditioned it, and I said no. So I repeated the test, but conditioned it the second time.
Q. And it still appeared thin to you?
A. Yes, sir.
Q. Tell us what conditioning versus not conditioning means.
A. We have a device that you can heat the slurry up to 200 degrees and stir it at 150 RPM over a period of time. So conditioning would be I put the slurry in the -- it's called an atmospheric consistometer and stirred it for two to three hours, I can't remember exactly how long, whatever the Viking sheet said. Then I took the slurry out and foamed it again.
Q. Does conditioning tend the make slurries thinner or thicker or not at all?
A. Typically, it'll make it thinner, but this slurry had SA-541 in it, which will viscosify it when you put temperature on it.
Q. Meaning it will liquefy?
A. Thicken.
Q. Oh, thicken. Did you do these tests over one day or more?
A. I did the first test, and it took about -- the same day Ronnie called me. And then the second test was a week later or so when Tim called me.
Q. So the first test was roughly sometime in early May and the second test was roughly sometime in mid May?
A. Approximately.
Q. And we're talking roughly?
A. It's hard for me to remember all this. It's been so long.
Q. Yeah, it's been awhile. And that would be 2010?
A. Yes, sir.
Q. And tell us what -- who Tim -- is it Quirk?
A. Quirk.
Q. Tell us who he is.
A. He -- I think he's the lab manager in Broussard, Louisiana.
Q. Had you worked with him before?
A. I had been to their lab a couple times.
Q. Did you know who he was?
A. Yes, sir.
Q. And had you worked with Ronnie before?
A. I knew him, but I never had worked with him.

Q. Now, when you normally do -- not under these circumstances, but when you normally do your work, do you generally log your findings?
A. If it's an official lab test, yeah.
Q. And how would you do that?
A. We have E lab books, electronic lab books.
Q. And you put what you're doing, how you're doing it, and what you found?
A. Yes, sir.
00033:01 Q. And then does that go in the Viking system?
A. No, sir.
Q. What system does it go -- get filed in?
A. The electronic lab book.
Q. That's name of it?
A. Then there also is the Viking system as well, two different systems.
Q. Yeah, that's what I was going to ask you. What's the difference between the electronic logbook and the Viking system?
A. The labs in Duncan, we put all our data in -- the E lab book. We can also put it in the Viking system. The Viking system is seen all over the world. Our E lab books are personal lab books, and the engineers can look at them in Duncan.
Q. Does there come a point when the E lab book information goes into the Viking system?
A. Not that I know of, sir.
Q. Tell me about your conversation with Tim Quirk, everything you remember about it. Tim calls and says, hi, Rickey, and then
00034:01 said what?
A. He says -- he just straight up asked me how -- if I conditioned -- how I mixed the slurry I mixed when I talked to Ron, I talked to Ronnie about. And, and he said that they had conditioned their slurry down there and asked me if I had and I said no. So I went back and repeated the test, conditioned it.
Q. Okay. Did you tell Tim you got the same result?
A. I never talked to Tim again. I called Ronnie and told him.
Q. That you got the same result?
A. (Nodding head.)
Q. You have to say yes or no for --
A. Yes. I'm sorry.
Q. No, that's okay. I understood

you, but the record will be silent otherwise.
Did you speak with Tim Quirk again afterwards at any point?
A. No, sir.
Q. And did Ronnie call you back about anything else?
A. No, sir.
Q. What does it mean if the slurry is too thick?
A. It'd be hard to pump.
Q. What complications may that result in?
A. You could see -- I don't know exactly.
Q. Okay. And same question with respect to if it's too thin, what are some of the problems that may result?
A. As far as pumping it?
Q. Any. Any problems.
A. You could have issues with it settling, you could have.
Q. And you said "settling"?
A. Settling.
Q. Explain settling for us.
A. Settling would be where some of the solids drop, and the slurry weight will vary some.
Q. And that might affect the stability?
A. It could.
Q. Is the test that you conducted a stability test?
A. No, sir.
Q. What would -- what would it be?
A. Mixing test.
Q. A mixing test? I've heard the term conductivity test, and I've seen some documents that indicate you may have been involved in a conductivity test.
A. Yes, sir.
Q. Were you involved in that?
A. Yes, sir. Now, that was an official request.
Q. Okay. Other than -- okay and you just said something interesting. So this -- was this an unofficial request, the mixing test?
A. It was he was asking my opinion, so I assumed it was, yeah.
Q. Okay. Meaning Ronnie was?
A. Yes, sir.
Q. Did you feel it was important that he get the information quickly?
A. Yes, sir.
Q. And that the information be

accurate?
A. Yes, sir.
Q. And you realize that he was looking into potential causes of the Macondo well failure?
MR. BOWMAN: Objection; form.
Q. (BY MR. GONZALEZ) I'm sorry, of the blowout at the Macondo well 252?
MR. BOWMAN: Objection; form.
A. I thought he might be.
Q. (BY MR. GONZALEZ) And you did the best you could?
A. Yes, sir.
Q. As you always do; is that right?
A. Try to.
Q. You take your job seriously?
A. Yes, sir.
Q. What's the next involvement that you had with the Macondo well 252 as it relates to the cement in any -- in any fashion?
A. The conductivity testing.
Q. When did that come about?
A. A few weeks later, I would say mid to late May, early June. I don't know exactly.
Q. Yeah, roughly. Tell us what a conductivity test is.
A. A conduct -- you run the conductivity test onset cement. What you do is you pour 2-by-2 cubes -- 2-by-2-by-2 cubes, 2 inches by 2 inches by 2 inches, and you have a device that you slap the probes on each side of the cube and measure how well electricity conducts or resistivity of the cement.
Q. Why is that important?
A. I don't really know.
Q. Is it always done?
A. No, sir, hardly ever.
Q. Do you know why it was done in this case?
A. BP requested it.
Q. Do you know what BP was looking for?
A. No, sir.

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Q. Had you ever done a conductivity test before?
A. No, sir.
Q. How did you determine the criteria or the protocol for a conductivity test?

A. Dennis Gray, he's an older hand there at Halliburton, gave me the instructions, as well as advised me on how to do it. He'd done it before.
Q. Did he walk you through it or did he give you a -- a sheet with the steps?
A. He gave me a sheet with the steps, and then the first time I ran it he was there and walked me through it.
Q. How many times did you run it?
A. I took -- you take several readings over a time periods, like took a -- I think we might have took a three-or a five-day, a 14-day, 21-day, a 28-day. So you tract it over time essentially.
Q. Okay. And like we did the last time with the mixing test, can you tell us by putting us there how you get it set up and how you actually do it?
A. You go through the same process as far as dry-blending all the cement that's dry, all the additives that are dry are blended together; and then the liquid additives, you add into the blender jar with the water, mix it again. Now, this wasn't foamed, so we didn't go through the foam process. So I mix up the slurry, I poured into 2-by-2 glass cube molds. I let it set up for three to five days, and I pulled the set up see- -- cement samples out of the cube, and I run the test.
Q. Did you get the recipe from the same place you got it last time?
A. No, sir.
Q. Where did you get the recipe this time for the conductivity test?
A. I don't recall exactly. I think it was an e-mail, I think.
Q. Do you know who sent you the information?
A. I think Dennis, Dennis Gray may have, I think. I'm not absolutely positive.
Q. And tell us who Dennis Gray is.
A. He is the Halliburton employee that's a technologist, principal technologist.
Q. How does -- how do you determine if there's electrovolt conductivity?
A. You have a device that sends electricity through the -- through the cube, and you -- you have the two probes that you send power through one and the other probe picks it up and it gives you a value and then you calculate what the conductivity/resistivity is.

Q. What's the difference between conductivity and resistivity?
A. They're essentially the same. You just calculate it different -- I mean...
Q. Well, conductivity means the ability of the electrical current to go through it --
A. Right.
Q. -- and resistivity means the ability to block or stop it or slow it?
A. So they're the opposite of each other.
Q. They're related?
A. Exactly. They're related.
Q. Got it. And are you looking for it to be conductive or resistive?
A. I have no idea.
Q. What did you find?
A. I just took the numbers, put them in a sheet, spreadsheet, and sent them on to everybody. I don't know if they were good, bad, or...
Q. Okay. So you didn't actually analyze the numbers; you -- you collected the raw data and then sent it?
A. Well, I went ahead and calculated up the conductivity/resistivity number, put it in the spreadsheet, and sent it on to Ronnie Faul and Dennis.
Q. Dennis Gray?
A. Yes, sir.
Q. Do you know what they did with it?
A. No, sir.
Q. Well, probably went to BP, because they're the ones asking for it, right?
MS. YANG: Object to form.
A. I don't know.
Q. (BY MR. GONZALEZ) How did you know that -- how did you find out that BP was asking for this test?
A. I think Dennis told me they were.
Q. Dennis Gray?
A. I think so; yes, sir.
Q. How long did it take you to run the conductivity test from start to finish?
A. I think I ran 28 days total. Of course, during that time it only took me a few minutes to check it each time.
Q. Where the conductivity test held?
A. In Duncan, Oklahoma.
Q. Did -- were you the principal

24 person involved with it?

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00044:01 Yes, sir.

Page 44:14 to 44:25

00044:14 Q. After you prepared your reports
15 and you e-mailed the information out, did you
16 have any conversations with anybody regarding
17 the conductivity test?
18 A. No, sir.
19 Q. Did you have any further
20 involvement in the conductivity test?
21 A. No, sir.
22 Q. What was your next involvement,
23 if any, with respect to the cement being at
24 the Macondo well 252?
25 A. None.

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00048:03 Q. Were you involved at all with
04 the Chevron testing of the slurry?
05 A. No, sir.
06 Q. Did you hear about it?
07 A. Yes, sir.
08 Q. What did you hear about the
09 Chevron testing of the slurry?
10 A. I had heard that they were going
11 to test the slurry.
12 Q. Did you hear what the results
13 were?
14 A. No, sir.

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00049:25 Do you know what the "sone" --
00050:01 ZoneSealant 2000 is.
02 A. It's a foamer, yes, sir.
03 Q. What does it do when you add it
04 to the blend?
05 A. It gives the slurry the ability
06 to be foamed.
07 Q. Was that in the slurry that was
08 used in the Macondo well 252?
09 A. Yes, sir.
10 Q. Does that -- does the foamer add
11 or take away from viscosity?
12 A. Adds.
13 Q. And did you use the ZoneSealant
14 2000 when you did your -- your mixing test?

A. Yes, sir.

Page 50:20 to 54:05

This is Halliburton 0045047, and it's a Halliburton technology bulletin, delayed hydrating suspending aid, and the description says, "SA-541" -- And it has the part number -- "is a suspending aid and free-water control agent that has minimal effect on surface mixing viscosity."

Can you tell us what this is?

A. It is an additive that will give you viscosity once it sees some temperature.

Q. Did you use that in the mixing test?

A. Yes, sir.

Q. Let's go to the next tab number, No. 3. That'll be Bates-stamped No. 5598 -- I'm sorry, Exhibit No. 5598.

MR. BOWMAN: It's already been marked as...

MR. GONZALEZ: Oh, I'm sorry. This has already been marked. We'll use the number it's been marked instead. So it well be 811, 811. Bates Stamp No. 0502393. And it -- on the very top it says, "Cement Lab Weigh-Up Sheet" April 16, 2010. Then if we can go to the material section, can you tell us, is that the recipe for the slurry that was used on the Macondo well 252.

A. I don't know exactly what they pumped, no sir. I don't -- I don't know.

Q. Well, what I'm asking you is when it says materials, what does that purport to be?

A. I don't know if the concentrations are exactly what they pumped.

Q. Yeah, but generally. I'm not asking you specifically for the Macondo well 252 with this question. Is when it says materials, is that telling us the types of materials that are used in the slurry?

A. Yes, sir.

Q. Okay. And when it says concentration generally, is that supposed to mean the percentages of each?

A. Yes, sir.

Q. So if we look at the top, it says rig is the Transocean Horizon, and then it says under well, Mississippi Canyon 252, right?

A. Yes, sir.

Q. All right. Going back to materials, under the third line where it

says .250 percent BWOC US-LFT, material is D-Air 3000?
A. Yes, sir.
Q. Is that a defoamer?
A. Yes, sir.
Q. Tell us how a defoamer works.
A. It -- I don't know exactly how it works. It just lets air come out of the slurry.
Q. Do you know the purpose behind wanting air to get out?
A. Makes it easier to pump the slurry.
Q. Then if you go down to the one that says .200 percent BWOC SA-541, is that a retardant, a "retendant"?
A. 541?
Q. Yeah, what is that?
A. That is the viscosifier downhole.
Q. Okay. So that -- can you explain how that works?
A. It allows to mix the slurry on surface, and then as the slurry goes downhole it combats thermal thinning by giving you viscosity as it goes downhole.
Q. So the hotter it gets, there is a tendency to make it want to liquify, and this slows it down?
A. At temperature -- at a certain temperature this viscosifier kicks in, yes, sir.
Q. Then the next one is the foamer we talked about, the ZoneSealant 2000, right?
A. Yes, sir.

Page 55:01 to 55:13

That'll be Exhibit No. 5598, Bates-stamped No. 504562. And this is an e-mail from yourself, right Mr. Morgan?
A. Yes, sir.
Q. To Ronnie Faul regarding cement conductivity. And it states, Hello, Ronnie. The meter is suppose to in Duncan Tuesday. The 16.4 number samples are sent in may water bath at 134 Fahrenheit. David will be coordinating the testing. I will be leaving to JRC in Alvarado, Texas this afternoon.
And can you tell us what you meant by that?

Page 55:21 to 57:05

00055:21 Q. So it's -- this is an update as
22 to what's going on?
23 A. Yes, sir.
24 Q. Now, the e-mail on the bottom
25 may be the e-mail you were referring to from
00056:01 Dennis Gray?
02 A. Yes, sir.
03 Q. It says, Tom, Rickey, The
04 slurries in the attachments are the ones that
05 need to be put down for electrical
06 conductivity. The request number 711774 is
07 an unfoamed slurry to be mixed at 16.4 pounds
08 per gallon, as shown and cured at 134 degrees
09 Fahrenheit, et cetera.
10 Is that the e-mail you were
11 referring to before?
12 A. Yes, sir.
13 Q. If we turn -- same tab number,
14 but Bates No. 504565, the top has an e-mail
15 from Ronnie Faul to Ron Morgan, Dennis Gray,
16 and David Jones. Who is Ron Morgan?
17 A. Ron Morgan was the supervisor
18 over the cementing M&M group, which Dennis
19 and I were in that group.
20 Q. No relationship to you?
21 A. No.
22 Q. And Ronnie writes to Ron, he
23 says, good deal. Thanks for the support.
24 Under the circumstances this is a small item,
25 but it is important to the BP team and the
00057:01 relief well effort.
02 Do you remember earlier I talked
03 to you about the relief well effort? Do you
04 know what that means?
05 A. No.

Page 57:14 to 59:25

00057:14 Q. Okay. Would you turn, please to
15 tab No. 8. This is -- already has an Exhibit
16 No. 4347, it's Bates-stamped No. 6756798, and
17 the title is Global Laboratory Best
18 Practices, Administrative - Volume 1 of 6.
19 Have you seen this document before, sir?
20 A. Yes, sir.
21 Q. Are you generally familiar with
22 it?
23 A. Yes, sir.
24 Q. How are you familiar with it?
25 A. This is -- this is the foam
00058:01 testing procedures.
02 Q. Is that different than the
03 mixing test that you talked about?
04 A. The mixing test would be
05 included with it.

Q. Who sets up these procedures?
A. I don't know.
Q. They're just followed?
A. Yes, sir.
Q. If you can turn to Page Bates Stamp No. 677645. Where it says "Base Slurry Design and Testing," is that a different test than the mixing test? Looks to me as a layperson that this is how to design a slurry formation.
A. Yeah, that's what it looks to like to me, too.
Q. Okay.
A. Design.
Q. If you look at point No. 2 among the things that are to be considered under this document is to design the slurry formulation with foam stability in mind.
A. Yes, sir.
Q. Do you agree that that's important?
A. Yes, sir.
MR. BOWMAN: Object to form.
Q. (BY MR. GONZALEZ) The bullet point under that says, "Keep the formulation as simple as possible."
Do you believe that's important?
A. Yes, sir.
Q. Were there any additives used in the foam slurry at the Macondo 252 that were known to be detrimental to foam -- to foam stability?
A. That were known to be?
Q. Yeah.
A. You got to take the slurry as -- as a whole. Some -- some additives by theirselves would be.
Q. On their own?
A. Yes, sir.
Q. Would that include the ZoneSealant 2000?
A. No, sir.
Q. What about the D-Air 3000?
A. D-Air, could be.
Q. Why was the slurry too thin?

Page 60:02 to 60:07

A. Why was it too thin? In my opinion, it just looked thin to me.
Q. (BY MR. GONZALEZ) What made it thin?
A. Well, it was thinner than we would typically see.

Page 60:23 to 61:11

00060:23 Q. (BY MR. GONZALEZ) On this
24 slurry in particular, what do you think it
25 needed to thicken up?
00061:01 A. There is lots of ways you could
02 design it to be thicker.
03 Q. Among?
04 A. We have a host of additives to
05 make stuff thicker.
06 Q. Which ones?
07 A. We have L -- we have LWL, we
08 have fluid loss agents, we have viscosifiers.
09 Q. And any of those can be added to
10 the mix, and they would make it thicker?
11 A. Yes, sir.

Page 61:23 to 65:16

00061:23 Q. (BY MR. GONZALEZ) Mr. Morgan,
24 can you please turn back to tab No. 1, which
25 is Exhibit No. 5596? And we're going to turn
00062:01 to the third page of that, which is Bates
02 Stamp No. 45253. At the top it says
03 technology bulletin Halliburton, date
04 12/8/99, and it says rheology -- rheological
05 properties for ZoneSealant 2000 foamer
06 stabilizer are listed in Table 6. Can you
07 tell us what rheology means?
08 A. It's a method for determining
09 viscosity of something.
10 Q. Then it discussed -- so this is
11 the rheology for ZoneSealant 2000; is that
12 right?
13 A. Yes, sir.
14 Q. Then if you go down to
15 compatibility, can you tell us what that
16 means, compatibility?
17 A. Compatibility means it'd be --
18 it'd tell you additives you would and
19 wouldn't want to put in a slurry.
20 Q. The ability --
21 A. Like ZoneSeal.
22 Q. The ability to get along?
23 A. Yes, sir.
24 Q. Are the two boys compatible, are
25 they buds, can they play together, or are
00063:01 they going to fight?
02 A. Yes, sir.
03 Q. Then it says caution. Caution
04 is like a warning, right?
05 A. Yes, sir.
06 Q. Do not use defoamers or
07 dispersants (NF and D-AIR defoamers)"...

A. Yes, sir.
Q. Then it also lists others, and it says, These materials will de- -- destabilize the foam.
Is the foam that it will destabilize the ZoneSealant 2000?
A. Foamer, yes.
Q. Is the D-Air 3000, a D-Air defoamer?
A. Yes, sir.
Q. If you'll turn, please, to tab No. 3, Exhibit No. 811, under materials, does that include D-Air 3000?
A. Yes, sir.
Q. And does it also include ZoneSealant 2000?
A. Yes, sir.
Q. So just looking at this
00064:01 document, tab 3, it seems to violate the technology bulletin that we just looked at that says do not use D-Air defoamers with the ZoneSeal 3000, right?
A. Yes, sir, but you can add enough Zonesealant to overcome the effects of the defoamer.
Q. Okay. Can you turn back to tab No. 1 where it says 45253, the same page we were looking at? Can you tell us where it says under caution that it's okay to use the D-Air defoamer, provided you add more ZoneSealant 2000?
A. It doesn't say that.
Q. Let's go back to tab No. 8, please. I think we were discussing Bates Stamp No. 677645, and we said that was the procedure for the base slurry design; is that right?
A. Yes, sir.
Q. And if you turn to the next page, which is 677646, where it says, "Mixability Evaluation."
A. Yes, sir.
Q. Is that the methodology that you
00065:01 would use for the mixing test?
A. Yes, sir.
Q. According to this, the mixing -- the mixability evaluation should be done before the foaming -- before the cement's actually used on the job, right?
A. Yes, sir.
Q. And that makes sense, doesn't it?
A. Yes, sir.
Q. Now, if the person that's evaluating the mix before it's used on the

job determines that it may be too thin, that person should then consider adding some of the things you discussed that would create greater viscosity, right?

Page 65:18 to 66:24

A. Yes, sir.
Q. (BY MR. GONZALEZ) And that would include the L -- LWL, right?
A. Yes, sir.
Q. Fluid loss agents?
A. Yes, sir.
Q. And vis -- viscosifiers?
A. Yes, sir.
Q. If you'll turn to the next page, please, 677647, and the middle of the page that has the words important. For the base slurry test outlined above, a defoamer is recommended to avoid excessive air entrainment that can result in slurry contamination and erratic test results. The defoamer is for base slurry testing purposes only and should not be included in the foam slurry test outlined in this section or in -- or in actual job designs.
And that would be the D-Air that we were talking about, right?
A. Yes, sir.
Q. So under this it says it's important not to use it in the actual job designs, right?
A. Yes, sir.
Q. If you can turn now to Bates Stamp No. 677752, and it refers to the electrical conductivity testing with YSI Model 31. Is this the conductivity test that you performed?
A. Yes, sir.

Page 68:06 to 68:09

Q. Is this what you were looking at when you were conducting the test, or did you have another sheet with the same information?
A. I had a copy of this.

Page 69:21 to 71:18

Q. Let's turn to tab No. 10, please, and that'll be Exhibit No. 5668. This is Bates Stamp number Halliburton 1081334. It is an e-mail at the top from Ron

Morgan DTC, sent Thursday, September 9th, 2010, and in the to, that giant paragraph, you actually appear there --

A. Yes, sir.

Q. -- right, Mr. Morgan?

A. Yes, sir.

Q. Okay. And it states, Attachment: Deepwater Horizon Accident Investigation Report Executive Summary.

Do you remember receiving that attachment?

A. Yes, sir, I -- I guess I did.

Q. Did you --

A. I don't remember it now.

Q. Okay. Did you read it at the time?

A. No. I don't read a lot of e-mails Ron sends out.

Q. Okay. This e-mail says, "It is important to remember that remarks we make and opinions we share about this topic, both at work and away from work, could directly impact future litigation."

A. Yes, sir.

Q. Do you agree with that?

A. Yes, sir.

Q. And that's one of the reasons you gave an oral report on the mixability of the slurry when you spoke to Ronnie, right?

A. No. This was sent out way after I talked to Ronnie.

Q. Yeah, I mean, the -- the thinking behind --

A. Yeah, that was the thinking behind it, yeah.

Q. Right. Similar thought process?

A. Yes, sir.

Q. Now, attached to this is Bates Stamp No. 1081335, and it says "BP Releases Report on Causes of Gulf of Mexico Tragedy."

Do you remember having read this?

A. I may have received it, but I didn't read it.

Page 72:21 to 72:25

Q. Now, had you been the individual that had tested the mix on the slurry before it was used, you would have pointed out to someone that in your opinion the slurry seemed too thin?

Page 73:02 to 73:23

00073:02 A. The slurry may have been
03 designed to be that particular viscosity, for
04 some reason.
05 Q. (BY MR. GONZALEZ) So that was
06 my question.
07 A. Right.
08 Q. Here's my question: If all you
09 had when you did the mix -- if no one told
10 you we're intend -- we want to make it
11 thin --
12 A. Right.
13 Q. -- you just were told test the
14 mix and you test the mix and you get the same
15 results you got in May of 2010 or they looked
16 thin to you, you would have told somebody,
17 this looks thin to me, right?
18 A. Yes, sir.
19 Q. Okay. Who -- who did you report
20 to back then when you were doing the mixing
21 test and the conductivity test? Who was your
22 immediate --
23 A. Ron Morgan.

Page 74:04 to 74:06

00074:04 Q. And who was his supervisor?
05 A. Joe Sandy and Anthony
06 Badalamenti. I don't know how to spell that.

Page 76:11 to 76:13

00076:11 Q. Thank you. Referring to the
12 mixability test that you performed --
13 A. Yes, sir.

Page 77:06 to 78:13

00077:06 When you mixed your mixability
07 test, when you mixed that slurry --
08 A. Yes, sir.
09 Q. -- you were using all
10 off-the-shelf product?
11 A. Yes, sir.
12 Q. You -- is there any reason to
13 believe you had any of the materials that
14 were from the specific batches that were used
15 on the Deepwater Horizon?
16 A. No, sir.
17 Q. And did -- you didn't have
18 access to any samples from the Macondo
19 project?
20 A. No, sir.
21 Q. Thank you. You told me -- you

told us that Brian Wall told you that he was running his own tests on the MC 252 slurry?
A. Yes, sir.
Q. Okay. How did you find out about that?
A. I -- when Ronnie called me and I assumed Brian would be -- involved with it since he was working field service. Normally calls come in to field service to have done from the field.
Q. Okay.
A. So I assumed he had done it, and he had.
Q. And -- and you -- how do you know he had? Did you ask him?
A. Because I asked him for the -- if he'd ran it, and he said yes.

Page 79:01 to 79:10

Q. Were they all from after the blowout?
A. Yes, sir.
Q. Were they generally in the same time frame as your tests were run?
A. I would say within a week or two, yes.
Q. Okay. So approximately Mayish of 2010?
A. Yes, sir.

Page 79:14 to 80:15

Q. Did you talk to anybody else about the tests that Mr. Wall ran?
A. I talked to Chad Brennis.
Q. Okay. Who is Chad Brennis?
A. He's another technician.
Q. In the Duncan lab?
A. Yes, sir.
Q. He works with you?
A. Yes, sir.
Q. Okay. What did you talk to Todd -- Chad about?
A. Chad. That he had mixed the slurry with him.
Q. Chad helped, also?
A. Yes, sir.
Q. Okay. For what reason -- and Brennis, B-r-e-n-n-i-s?
A. I think that's right.
Q. Thank you. Why did Mr. Brennis mix the same slurry?
A. I guess he -- he must have been

requested to.
Q. Okay. Do you know what tests -- do you know if he ran any tests?
A. (Shaking head.)
Q. Is that a no?
A. No, sir, I'm sorry.

Page 81:07 to 81:13

Q. You spoke to Mr. Quirk. He called you to ask you whether you had conditioned the slurry?
A. Yes, sir.
Q. Did you talk to him any other times about the Macondo well?
A. No, sir.

Page 82:23 to 84:20

Q. Did you -- did I hear that right, that you said at some point you ran tests like that to try to simulate the pumping of a cement job?
A. Yeah, but that was in the early -- early days, before we actually pumped down hard scale tests.
Q. Okay. And what exactly were the variable -- sorry, let me back up one second.
When did you say approximately you were doing those projects?
A. Early 1980 through '88 or so.
Q. And do you remember about how many of these projects, rough ballpark, that you did?
A. Hundred.
Q. And that was in your role as a lab tech and a senior lab tech?
A. Yes, ma'am.
Q. And what were the variables that you were testing for when you were seeing if the cement job would make in formation that you made?
A. We would use different types of muds, drilling fluids. We'd use different spacers, different types of cements, and different rates, pumping rates.
Q. Did you ever look at the effects of operational decisions, such as, for example, the amount of centralization?
A. Yeah, centralization, yes, ma'am.
Q. And what was the study that you performed on centralization?
A. We would vary how far the pipe

was offset in the wellbore.
Q. Do you remember the results of that test?
A. Yeah. The better centralized the pipe, the better the job, typically.
Q. And when you say "the job," you meant the cement job?
A. The cement job, yes, ma'am.
Q. Did you come to any more specific conclusions than that, say, a guidelines for the number of centralizers that should be used?
A. No, ma'am.

Page 86:01 to 88:17

Q. Did you ever look at how mud channeling or mud left behind in the formation that wasn't displaced by the cement job, how that would affect the isolation of the wellbore fluids?
A. Yes, ma'am.
Q. And when did you perform that study?
A. Same time period.
Q. Do you remember exactly the experiment that you ran?
A. We ran multiple, multiple experiments.
Q. And how would you simulate the channeling in the wellbore?
A. We built our own synthetic formations that were 15 foot long. They were -- it was an inch and a half of sand packed around the outside of the pipe, with an opening of approximately 6 -- 6 inches wellbore. We'd put a 5-inch pipe in the -- inside the wellbore. We could offset it or centralize it. We would pump drilling fluids through the formation and collect filtrate out holes that were bored into the side of the pipe to build up mud filter cake on the inside of the formation. We would use high fluid loss muds, low fluid loss muds to build up different amounts of cake. And then we would pump spacers through the -- through the formation to try to clean it off, and we'd pump cement and cement them up.
We also put in our own mud channel design. We would put a -- we would fabricate a -- a mud channel, actually, sometimes and leave a mud channel in it on purpose and then try to wash it out and cement it up, so...
Q. Okay. So let me try to break

that down a little bit. When you ran these large scale tests to try to evaluate different variables that could affect how good your circulation was, one of the things you looked at was the type of mud and the type of filter cake that would develop; is that right?
A. Yes, ma'am.
Q. And then another one of the things you would look at would be the -- the type of spacer used and how good the spacer was at cleaning out the hole; is that right?
A. Yes, ma'am.
Q. And that's the purpose of the spacer, in fact, to clean out any mud or filter cake in the hole; is that right?
A. One of the purposes, yes.
Q. Do you remember any conclusions that were drawn from these studies that you did?
A. Yes, ma'am.
Q. And what would they be?
A. The better centralized and the higher rate you pump, generally the better cement job you get. Also, the hole should be clean, the mud should be in very good shape, and the hole should be pumped several times to -- before actually doing a job.

Page 89:01 to 89:11

Q. And having done these studies on the amount of circulation in the well that you needed need to do in order to get a cement job, would you agree that this is something that would vary from well to well, depending on the conditions downhole?
A. Yes, ma'am.
Q. And that there's no flat rule that should work the same way for every single well?
A. Correct.

Page 90:12 to 90:15

Q. Have you ever designed a cement slurry, sir?
A. Yes, sir -- yes, ma'am, I'm sorry.

Page 90:20 to 91:02

Q. So you're very familiar with the

additives --
A. Yes, ma'am.
Q. -- that Halliburton offers?
A. Yes, ma'am.
Q. Have you ever pumped a cement job?
A. No, ma'am.

Page 91:05 to 91:20

earlier this morning. I think you mentioned at some point that you went to a mud school; is that right?
A. Yes, ma'am.
Q. And can you tell me approximately when you went to that mud school?
A. I would say late '80s. It was the Baroid mud school in Houston, Texas.
Q. And about how long was that course?
A. One week.
Q. And what were the topics covered in that course?
A. General basics of mud design and testing.

Page 91:25 to 106:25

Q. Was there anything involved with mud logging or anything --
A. No ma'am.
Q. Do you have any experience with mud logging or monitoring a well during a cement job?
A. No, ma'am.
Q. Okay. I'll turn now to the -- the testing that you did that Mr. Faul asked you to perform. Did you call that a cement mixing test? I can't remember the exact word you used.
A. Yes, ma'am.
Q. Now, you mentioned that you got -- to do this cement mixing test, you got the slurry recipe from Mr. Brian Wall?
A. Yes, ma'am.
Q. And he was a lab tech in the Duncan facility?
A. Yes, ma'am.
Q. And you got it off one of the -- and he provided you with a cement weigh-up sheet from Viking?
A. Yes, ma'am.
Q. And that was how you figured out

the slurry recipe?
A. Yes, ma'am.
Q. When you first saw the recipe for the slurry, did you understand it was the one pumped for the Macondo well production casing?
A. Yes, ma'am.
Q. And did you notice anything odd or concerning about the slurry recipe when you saw the ingredients that went into it?
A. No, ma'am.
Q. Did you notice that the D-Air 3000 was in the slurry recipe?
A. Not until I started weighing it.
Q. But you do understand the D-Air 3000 is a defoamer?
A. Yes, ma'am.
Q. Did you notice that SCR-100L was the retarder that was used in that slurry formulation?
A. When I started weighing it, yes, ma'am.
Q. And you understand the SCR-100L to be a disburser?
A. It can be.
Q. And what do you mean "it can be"?
A. Certain situations I've seen it actually seen it gel a slurry some when you go static.
Q. Can you first give me a little bit more detail on that? What kind of situations would that happen?
A. SCR-100L or SCR-100 helps you build strength quicker than most retarders we have.
Q. Let me stop you for one second, because you said something that I'd like to know. SCR-100 and SCR-100L, are those the same chemical formulations?
A. One's liquid and one's powder form.
Q. Okay. But other than that they're the same composition?
A. Yes, ma'am.
Q. Okay. Sorry to interrupt. Please go on.
A. In certain slurries it can actually help with gelation a little bit, but it does act as a dispersants as well sometimes.
Q. And what types of slurries would it act as a gelling agent?
A. I've seen a few, but I can't remember exactly what they were.

Q. Do you remember if there are certain, you know, well conditions, like a temperature or pressure when that would happen?
A. No. It would probably be in what combination it is with other additives.
Q. Do you know of any Halliburton literature on this subject?
A. Just the field bulletins.
Q. So if it wasn't in the field bulletin, are there any other sources that you can think of?
A. No, ma'am.
Q. Did you also notice that KCL was used in the slurry design?
A. When I started weighing it, yes, ma'am.
Q. Do you understand KCL to be a dispersants as well?
A. Can be, yes, ma'am.
Q. I'm going to ask you again, what
00096:01 circumstances would it be a dispersants?
A. It generally is a dispersants.
Q. Are there circumstances when it's not a dispersants?
A. Not that I'm aware of.
Q. And just to back up one step, when I say dispersants, we -- do we have the same understanding that's something, an additive that would have the effect of thinning a slurry?
A. Yes, ma'am.
Q. So after you started weighing the slurry and realized that these three additives were in the Macondo slurry, which was a foam design, did that raise any questions in your mind?
A. Not when I was weighing it, no, ma'am.
Q. Did it later raise a question in your mind?
A. Yes, ma'am.
Q. What kind -- what question did it raise in your mind?
A. After I mixed the slurry, it wasn't exactly what I was expecting to see.
00097:01 So then I started really looking at the formulation of it.
Q. And what conclusions did you draw after you started looking at the formulations? Well, first, let me back up. When you say that you -- it wasn't what you expected to see, you're referring to the fact that it was thinner than you expected for a foam slurry; is that right?

A. Yes, ma'am.
Q. And what conclusions did you draw about the -- that the formulation of the slurry as it related to how thin the slurry was?
A. I didn't know what their design parameters was, if they had tight hole, that kind of stuff. So I assume they designed it like they wanted it.
Q. And, now, when you're referring to the tight hole, that's because depending on the difference between the pore pressure and fracture gradient in the hole, you might need a thinner or thicker slurry --
A. Yes.
Q. -- to avoid losses; is that right?
A. Exactly, yes, ma'am.
Q. But regardless of the hole conditions, you still need a slurry that has a rheology that'll enable it to foam properly in order to achieve the job; would you agree with that?
A. Yes, ma'am.
Q. And did you believe, based upon what you saw, about the slurry that you mixed, that it would be able to foam properly?
A. It did foam properly, yes, ma'am.
Q. It did foam properly. I'm sorry, I missed that. I didn't catch that you foamed it. So after you mixed the slurry, you made the observation that it was thinner than you were expecting to see, but then you foamed it?
A. Yes, ma'am.
Q. And you were able to successfully foam it?
A. Yes, ma'am.
Q. Did you see any signs of gas break-out when you foamed it?
A. No, ma'am.
Q. And did the slurry foam all the way up to fill the container?
A. Yes, ma'am.
Q. Did you see any signs of free fluid after you foamed it?
A. No, ma'am.
Q. Or any streaking?
A. No, ma'am.
Q. And how long after you foamed it did you observe the slurry?
A. The initial slurry, the first slurry?

Q. Yes, sir.
A. I just poured it could a beaker, noticed how it poured, then I dumped it out.
Q. So you didn't, you know, perform, like, a formal API unset slurry test for two hours?
A. Not on the first slurry.
Q. You didn't take any density measurements, I take it?
A. No.
Q. But afterwards you did call Mr. Faul and tell him that the slurry looked thin?
A. Yes, ma'am.
Q. And you felt that was something important to bring to his attention even though the slurry foamed?
A. Yes, ma'am.
Q. Now, on the second run that you did -- oh, let me back up one second.
And you mentioned before that the first time you ran this test you didn't condition the slurry; is that right?
A. Yes, ma'am.
Q. Why didn't you condition it?
A. Normally, we don't. And he -- it wasn't a formal request of any kind, so I just mixed it up and gave him my opinion.
Q. And when you say "normally" you don't condition it, are there -- is it just in general the lab testing doesn't --
A. If it's asked for, we do.
Q. But it's typically not asked for?
A. Well, you got to realize, we're doing research and -- we're not doing field work. I don't know if it is in the field or not.
Q. But in your research did you find that people requested it frequently?
A. Well, not in the research part of it.
Q. Okay. And, now, the second slurry that you foamed -- oh, well, first, let me confirm, you didn't -- did you take down any notes about the slurry?
A. No, ma'am.
Q. You didn't take any pictures?
A. No, ma'am.
Q. And then you said you dumped out the sample?
A. Yes, ma'am.
Q. And you mentioned that the reason that you didn't document the test and you threw out the sample was because you were

worried about it being misinterpreted in the litigation?
A. Yes, that's part of the reason yes, ma'am.
Q. Now, for the second test you mentioned that the -- before you ran this test you talked to Mr. Quirk?
A. Yes, ma'am.
Q. And he told you that the for the testing he had done in his facility, in the Broussard facility, that he had conditioned the slurry prior to his testing?
A. Yes, ma'am.
Q. Did he tell you what testing he was doing?
A. No, ma'am.
Q. So he didn't tell you any results or anything like that, either?
A. No, ma'am.
Q. And so based on what Mr. Quirk said, you also conditioned the slurry and reran the test; is that right?
A. Yes, ma'am, yes.
Q. How long did you condition the slurry?
A. It's two or three hours. I don't know exactly.
Q. And do you remember how you determined that?
A. It was on the Viking sheet, I think, on the back page somewhere.
Q. So just when they were doing the testing for the job, that's how long they conditioned the slurry?
A. I would assume.
Q. And so you were just trying to match what they did?
A. Yes, ma'am.
Q. And do you remember the temperature that you conditioned at?
A. 134 or 135. I don't remember exactly.
Q. And why did you condition at that temperature?
A. That was the circulating temperature of the well.
Q. And why would you condition a slurry at the circulating temperature?
A. Because that is the ultimate temperature that the slurry will see downhole.
Q. Do you have any understanding of whether the testing performed on the slurry prior to the incident was conditioned at that same temperature?

A. I don't know.
Q. But just based on your experience and all your years in the lab, you knew that that was the appropriate temperature to conditioned at?
A. Yes, it was on the Viking sheet.
Q. Oh, it was on the Viking sheet?
A. Yeah, the bottom hole circulating temperature.
Q. Okay, let me just clarify that one second, because I think there is a small difference here. You saw on the Viking sheet that the bottom hole circulating temperature was 135; is that right?
A. Yes, ma'am.
Q. You didn't see on the Viking sheet that they conditioned at 135?
A. Right.
Q. Okay. Thank you. And then even after you conditioned the slurry for two to three hours at 135, it still looked the same as the first test; is that right?
A. The viscosity was, yes, ma'am.
Q. So it was still thinner than you would expect for a foam slurry?
A. Yes, ma'am.
Q. Now, did you notice any other differences after you conditioned the slurry?
A. No, ma'am.
Q. And do you know -- and same with this test result, you just called and told Mr. Faul; is that right?
A. Yes, ma'am.
Q. There is no documentation or pictures or anything like that of it?
A. No, ma'am.
Q. And you also threw away the slurry sample?
A. No. I actually poured the sample into a -- a cylinder and ran a test there.
Q. And what test did you run for the second one?
A. I poured it in a 250 milliliter cylinder that is about an inch and a half in diameter and 1 foot tall. I set it in a 134-degree water bath for an hour and a half to two hours, and then I observed what the slurry looked like.
Q. So pretty much like the API onset foam slurry test?
A. Close to it, yeah.
Q. Why did you set the slurry up in a 135-degree water bath?
A. That is what most of the

customers are asking for now. Used to we just set them on the countertop at room temperature. But most customers want to have the slurry at whatever circulating temperature is now.
Q. And is that, again, to try to simulate the downhole conditions?
A. Yes, ma'am.
Q. Have you ever seen any circumstances where somebody would set the slurry sample in a temperature that was higher than bottom hole circulating temperature?
A. I haven't, but it could -- if it's requested, it could happen.
Q. But if it was done that way, would it simulate the conditions that the slurry would experience when it's first placed; is that right?
A. It would be more like bottom hole static temperature, yes, ma'am.

Page 107:08 to 108:09

Q. Okay. And what did you observe about the slurry after you finished running this test for two hours?
A. I looked at the slurry to see if there was any foam breaking out, if the level of the slurry had dropped, and there wasn't. I also took a glass rod and dropped down into the slurry to see if the bottom was glass or if there had been settling of the solids in the cylinder, and there wasn't. So the slurry looked stable in that particular test.
Q. Did you take any density measurements?
A. No, ma'am.
Q. If you had been performing the tests that you described in advance of a cement job, would you have relied on the test results you had to show that the foam slurry was stable?
A. Yes, ma'am, and I would have poured some samples, some stability samples.
Q. So you would have conducted additional testing as well?
A. More testing, yes, ma'am.
Q. And, again, there is no documentation of this test?
A. No, ma'am.

Page 109:03 to 114:14

Q. (BY MS. YANG) This document that I have has the Bates range of HAL_0504758, and it goes through HAL_0504767 and I'm going to ask you to take this sticker and mark it as Exhibit 5669, just somewhere in the corner where it won't block somewhere.
A. First page?
Q. Yes, sir. And I think you already went through a lot of this earlier, so I'll try to be brief. But let's start with the very back page, which would have been the first e-mail that was sent. And in that first e-mail from Kenneth Allen to a couple other people he says, I need to find out for the Vector guys what the conductivity of your cement formulation used on the 9 7/8-inch and 7-inch jobs in MC 252 No. 1.
Do you have any understanding of what that means?
A. No, ma'am.
Q. Do you have any understanding of what role Vector normally plays in a cement job?
A. No, ma'am.
Q. And do you know the significance of this e-mail from Mr. Kenneth Allen says that the particular jobs that were of interest were the 9-and-7/8-inch liner cement job and the production casing cement job; is that right?
A. I guess. I -- I don't --
Q. Were those the cement slurry formulations that you tested?
A. I don't know. All I got was a sheet that gave me the slurry design. I don't know where they came from.
Q. Okay. So I take it you don't know how or why those particular strings were selected?
A. No.
Q. Okay. And then on the page ending 762, we went over earlier an e-mail from Mr. Faul where he says, "Thanks for the support, under the circumstances this is a small item but it is important to the BP team and the relief well effort."
Now, I know you mentioned earlier that you didn't know why this particular test was significant for the relief well effort, but when you were brought on did you understand this was an important test that needed to be done right?
A. Yes, all I knew was that BP had requested it and we were trying to help BP as much as we could with anything, yes.

Q. Do you know why you specifically were asked rather than just any lab tech?
A. No.
Q. Did you get the impression that it was an important test and maybe --
A. Yes, ma'am.
Q. -- that's why they wanted someone more experienced, like you?
A. Possibly.
Q. Now, you mentioned that you had never run one of these conductivity tests before, but if I understand it correctly, the conductivity test is just creating 2-by-2-by-2 cured cement samples; is that right?
A. Yes, ma'am.
Q. And then using a machine to take some readings from it?
00112:01 A. That's it.
Q. So you'd never run the test as in you'd never taken the readings before; is that right?
A. Right.
Q. But in your decades of lab work you've had plenty of occasion to generate 2-by-2-by-2 cement cubes; is that right?
A. Several thousand.
Q. Now, one more part of the e-mail that I'll ask you to look at, which is the page ending 761.
A. Yes, ma'am.
Q. And it's the e-mail from Dennis Gray at the bottom of the page, and the first sentence says, "Are we to use our materials or is Lafayette going to send samples for testing."
Did I read that correctly?
A. Yes, ma'am.
Q. Do you understand what this sentence means?
A. Yes, ma'am.
Q. Can you tell me what this sentence means?
00113:01 A. Lots of times we'll get samples from the field that we test, because our chemicals and cement may vary just a little bit from what they're using. So we want to use exactly what they were using.
Q. Okay. And so when he's referring to is Lafayette going to send samples, that was the rig samples that had been put under lock and key after the incident; is that right?
A. It could have been, or it could have been some local stock that they had that

they were going to send us, because there might not have been any samples left.
Q. Okay. And do you have any understanding of where the samples that you came -- got -- that you used for the testing came from?
A. I don't recall if they were from Duncan or from Broussard.
Q. Do you recall that they weren't the actual rig samples?
A. Yeah, I'm sure they weren't.
Q. And there were -- you know, whether it was from Duncan or Broussard, they were lab samples that you tested?
A. Yes, ma'am.
Q. And even though they were lab stock samples, you relied on the results of these tests to perform whatever these -- they were used -- these results were used for in the relief well operations?
A. Yes, ma'am.
Q. And you were confident that these test results would be representative?
A. Could be. Should be.
Q. Enough for you to rely on them --
A. Exactly.

Page 114:18 to 124:09

Okay. I'm going to ask you to turn to tab 4 of the binder. Do you recognize this document, sir?
A. Yes, ma'am.
Q. And these were documents that were in your files?
A. Yes, ma'am.
Q. And, for the record, this is HAL_0707658, and it goes through HAL_0707664. And I will ask you to take a sticker and mark this document as Exhibit 5670, if you will, on the first page.
A. On this page?
Q. Yes, sir, just anywhere you won't block text.
Can you tell us what this document is?
A. This is a Viking sheet for the results of testing done in Broussard --
Q. And do you --
A. -- on this one.
Q. Do you recognize the handwriting?
A. Yes, that's mine.
Q. Okay. And what were you doing

with this lab report?
A. I was looking over the results that they got in Broussard to see what they saw, to see what they had recorded.
Q. And why were you doing that?
(Witness converses with Mr. Bowman.)
MR. BOWMAN: We're actually going to claim privilege, because this was being done in response to a request by lawyers of BP.
MS. YANG: Okay, fair enough.
Q. (BY MS. YANG) Can you explain to me -- I'll ask you to just sort of go through and sort of explain your notations on this to me.
A. Okay.
Q. And on the top you've written "BP Slurry Macondo"?
A. Yes, ma'am.
Q. And that's just to show that this was the slurry used for the Macondo well?
A. Yes.
Q. And next to that there -- it says "5-20-10." Is that when you were looking at these results and making your notations?
A. I don't know exactly what that date is. That may be the date I poured the -- the conductivity testing.
Q. Okay. So you might have been looking at these results while you were doing the conductivity testing?
A. May have been.
Q. Do you remember what the "190F" at the top of the page means?
A. That is the highest temperature we can go to to cure something in the water vat, because the water will boil out.
Q. And why was that important to you?
A. I think -- bottom hole static temperature on this was 210, yeah, that's what it was. Where it says bottom hole static.
Q. Yes, sir.
A. The highest we could go would be 190 in a water vat for curing samples. We couldn't go to the 210.
Q. Okay. And then you've got the 210 crossed out, and there is some notes next to that. Can you read what that says?
A. It says "240F." It's been marked through.
Q. Do you know what that means?
A. No, ma'am.

Q. Okay. And then under that you've circled the -- the slurry density and the foam density and drawn out lines that say 180; is that right?
A. Yes, ma'am.
Q. And do you remember what those notations mean?
A. No, ma'am.
Q. Okay. And then on the second page, on the second page there is some notations in the rheology section, first under the rheology section for a test temperature of 80 degrees Fahrenheit you've written PV 84 and YP-0; is that right?
A. Yes, ma'am.
Q. And the PVs are referring to the plastic viscosity?
A. Yes, ma'am.
Q. And the YPs are referring to the yield point?
A. Yes, ma'am.
Q. And so how did you calculate these numbers using the numbers reported on the rheology results?
A. It's a standard method we use 300 RPM reading minus 100 RPM reading and then multiply that number by 1.5 and that gives you the PV and the PV is 300 RP -- I mean, the YP is 300 RPM reading minus PV.
Q. And that's the way that the YP is calculated every time?
A. No. There's several methods of doing it, and that's just a quick and easy way to do it.
Q. So when -- why did you calculate the YP for this rheology?
A. I was wanting to know approximately what the viscosity of the slurry -- what I was looking at, as far as yield point.
Q. And what does a yield point of zero indicate?
A. A thin fluid.
Q. What's the lowest possible yield point?
A. Zero.
Q. So is that -- is there like, another liquid we can compare that to -- that would have a yield point of zero? Like, is there a standard? Would that be -- like, would water have a yield point of zero?
A. Yes.
Q. So this would indicate, based on your calculation, that at a temperature of 80 degrees the slurry for the Macondo well had

the same yield point as water?
A. Yes, ma'am.
Q. And then at the second part there is a rheology test at a test temperature of 135 degrees.
A. Yeah.
Q. Well, first, let me back up one second. Why are the 80 degrees and 135 degrees chosen as the test temperatures?
A. 80 degrees is assumed to be the surface temperature where they're mixing it on surface.
Q. And the 135 is the bottom hole circulating?
A. Bottom hole circulating temperature.
Q. So, basically, what this is telling us is at the surface conditions the slurry had a yield point of zero, which is the same as water; is that right?
A. Yes, ma'am.
Q. And then the bottom hole conditions of 135 degrees Farenheit it would have a yield point of 2; is that right?
A. You've got to remember, this slurry is unfoamed. So when it's foamed it'll actually be thicker than the two. These are both unfoamed slurries.
Q. Yes, sir. So looking at just the base slurry --
A. The base slurry, yes, ma'am.
Q. -- yes, sir, at the bottom hole conditions of a hundred -- or bottom hole temperature of 135 degrees it would have a yield point of 2?
A. Yes, ma'am.
Q. Is there an easy liquid that you can give us as a reference point for what a yield point of 2 would look like?
A. 5/20 motor oil, something like that.
Q. See, that means nothing to me. Maybe it means something to somebody else.
Okay. And then you mentioned that these are the rheology of the base slurry, but the rheologies of the foam slurries would be different; is that right?
A. Yes, ma'am.
Q. And that's what the FYSA viscosity profile is used to calculate?
A. Yes, ma'am.
Q. And so but for when you're actually generating the foam at surface conditions and you're trying to see how thin or thick it is to determine how easy it would

be to foam, what we're looking at is the viscosity of the base slurry; is that right?
MR. BOWMAN: Do you want to read that back? It was kind of long.
(The last question was read by the reporter.)
A. There is several factors go into it. How much foamer you have in there. You can foam water, actually, if you put enough foamer in there.
Q. (BY MS. YANG) Okay. Moving down to the bottom of the page under the foam mix and stability test, you've got a 14.99 written there.
A. Yes, ma'am.
Q. And can you tell us what that number is?
A. That's 1.8 times 8.33. This is the specific gravity of the sample that Broussard cut.
Q. Okay. So basically what you did here was convert the -- the foam sample specific gravity into the -- the density in pounds per gallon; is that right?
A. Yes, ma'am.
Q. And when you saw that the density from their sample, their test sample was 14.99, what conclusions did you draw about the foam stability test result?
A. Typically, there is a half a pound leeway given to an acceptable foam slurry from target. So, I don't know, if you have a 14.5, 15 would be okay.
Q. So in your mind this was a stable test result?
A. Yes, ma'am.
Q. But it's the very edge of what's considered acceptable; is that right?
A. Yes, ma'am.
Q. And do you know of any Halliburton literature or articles or, you know, API guidelines that provide us some more information on this standard?
A. I'm sure there are some out there, but I'm not aware of them.
Q. Do you know where you got this understanding from?
A. Just training and word of mouth, mainly, is where I have.
Q. Do you know if this is the standard adopted throughout Halliburton?
A. No, ma'am.

00124:25 The purpose -- or one of the
00125:01 purposes of running a compressive strength
02 test like this is to help figure out how long
03 it takes the cement to set, right?
04 A. Correct.
05 Q. And that's important because
06 after the cement sets on the rig they conduct
07 some other pressure testing and other testing
08 that could interfere with the cement if it's
09 not set; is that right?
10 A. Yes, ma'am.
11 Q. And do you know what generally
12 is the strength of the cement that's
13 considered acceptable or what's considered
14 set enough to continue with rig operations?
15 A. I've always been told 500 psi.
16 Q. So after 500 psi the cement is
17 considered to have set enough to continue
18 with rig operations?

Page 125:20 to 126:25

00125:20 Q. (BY MS. YANG) Based on your
21 understanding?
22 A. Yes, ma'am.
23 Q. Do you remember where you got
24 that understanding from?
25 A. Just word of mouth.
00126:01 Q. Just your experience?
02 A. Yes.
03 Q. So looking at this chart right
04 here, I know it's not very clear, but it
05 looks like this test was run out to 48 hours;
06 is that right?
07 A. Correct, yes, ma'am.
08 Q. But if you look on -- if you
09 turn back one page, there's some data at the
10 top of the page about the crushed compressive
11 test; is that right?
12 A. Yes, ma'am.
13 Q. And it gives an actual -- a
14 specific time for when the slurry develops
15 500 psi; is that right?
16 A. Yes, ma'am.
17 Q. And the -- the time that they
18 give is eight hours and 40 minutes?
19 A. Yes, ma'am.
20 Q. So if -- if the critical time
21 that you're looking at to determine how long
22 to wait on the cement is 500 psi and that's
23 reached in eight hours and 40 minutes, is
24 there any reason to extend the test to
25 48 hours?

Page 127:02 to 127:20

00127:02 A. Yes. Typically, we like to see
03 close to what the ultimate strength will be.
04 Q. (BY MS. YANG) Okay. So you run
05 out the test to 48 hours for the purpose of
06 determining the final strength; is that
07 right?
08 A. Well, you'll be within
09 10 percent of -- depending on the slurry
10 design.
11 Q. Yeah. So just to give you an
12 idea of the final strength --
13 A. Correct.
14 Q. -- of the cement?
15 A. Yeah.
16 Q. As opposed to seeing how many
17 more -- how quickly it develops?
18 A. (Nodding head.)
19 Q. Is that a "yes"?
20 A. Yes, ma'am. I'm sorry.

Page 128:18 to 130:03

00128:18 Q. Thank you, sir. Now, other than
19 the -- the two cement mixing tests and the
20 conductivity test that you performed for the
21 Macondo well, did you conduct any other
22 analysis of the Macondo slurry?
23 A. I performed no other test.
24 Q. Did you perform any modeling of
25 the slurry?
00129:01 A. No, ma'am.
02 Q. Did you look at any of the
03 additives, any of the literature on any of
04 the additives?
05 A. No, ma'am.
06 Q. Or review any other documents
07 relating to that slurry?
08 A. No, ma'am.
09 Q. Did you talk to anyone else
10 about that slurry?
11 A. Yes, ma'am.
12 Q. And who would that be?
13 A. Talked to Chad and Brian, Chad
14 Brennis, Brian Wall.
15 Q. Sorry if I'm repeating, because
16 I think I remember hearing those names
17 earlier, but I don't remember exactly what
18 you said.
19 A. Yeah.
20 Q. So can you just quickly remind
21 me what you what exactly you talked with
22 Mr. Brennis about regarding the slurry?
23 A. Both of them said that they had

mixed the slurry and it looked a little thin to them, too.
Q. Did they tell you anything else about the slurry?
A. No, ma'am.

Page 130:17 to 130:20

Q. Do you remember -- do you know Mr. Gagliano?
A. I don't know him personally. Never met the man.

Page 131:23 to 137:10

Q. I'd like now to ask you some questions about the design of a cement job or a cement slurry, rather. And you say you had designed a cement slurry before, sir?
A. Yes, ma'am.
Q. Can you give me some more details about when you designed the cement slurry?
A. I do it all the time.
Q. In what context?
A. Testing new additives, helping the field with -- field with issues.
Q. And what do you mean by helping the field with issues?
A. If they're having particular problems getting certain qualities in a slurry to meet certain parameters, I help them a lot of times. If they can't fix it, sometimes I'll help them?
Q. Can you give me an example of a well that you've provided help like this on lately?
A. Of a well? It's -- typically, it's not for a particular well. It's a generic slurry that they can use on several wells, that kind of thing.
Q. Can you explain that to me a little bit more?
A. Typically, when they go to a certain field, they'll use cookie cutter slurries to do the whole field, if they get slurries that work.
Q. Okay. So --
A. But not for a particular well.
Q. Okay. So when you're looking at one particular field, somebody will go in and figure out a general slurry formulation that should work for most of the wells in that field; is that right?

A. Exactly, yeah.
Q. Who would be the person to do that?
A. The engineers and the coordinators, cement coordinators, typically. And they do talk to the customer about the slurries. Customer has the final say on all the slurry designs.
Q. Do you personally interact with the customer in your role?
A. No, ma'am.
Q. Can you just tell me what your understanding of the customer final say comes from?
A. That's -- a lot of times they'll change the slurries that we advise them to use. So we have -- we're -- we do what the customer tells us, typically, with our -- you know, we give them our expertise, and then they have the final say of what slurry their engineers decided is acceptable or not.
Q. But when you say "we" you're referring to Halliburton?
A. Halliburton.
Q. But not you personally?
A. Exactly.
Q. And you don't personally work with --
A. No.
Q. -- any operators?
A. Right.
Q. Now, you mentioned that the -- this general slurry design to be used in a field could be done by engineers and cement coordinators. Can you tell me what a cement coordinator is?
A. He is the person that makes sure everything is coordinated, as far as getting trucks out there, getting the correct people, getting the correct cement blended, all that kind of stuff.
Q. Is there a cement coordinator for every field or region?
A. Re- -- every region.
Q. So would that be, like, there would be a cement coordinator for the Gulf of Mexico?
A. Yes, ma'am.
Q. Do you know who that would have be?
A. No.
Q. Okay. And then when they're designing a general slurry formulation to use in multiple wells, do you know if that's for any particular casing string, or is that just

all over?
A. No, they'll have different slurry designs for different depths and casing string.
Q. And would those -- would you mix up a huge batch of the blend to be used on all these different wells, or is it still -- is the mixing still done well by well?
A. Well by well.
Q. Now, you mentioned that with this sort of use of this system where you design a basic slurry design for all the wells, that it might not work for some particular depths or casing string, right?
A. Right.
Q. So what would you do in those circumstances?
A. You'd adjust your -- your slurry design, or you may start a brand new slurry design, you may...
Q. You don't just take the blend that doesn't really work --
A. No.
Q. -- and see how good you can get it?
A. Well, you can, yeah. You can adjust the blend that you already have to meet all the parameters that you need, maybe; but if that won't work, you'll have to start from scratch.
Q. Yes, sir. So if I understand you correctly, you should do some sort of analysis as to whether the blend that you have is appropriate for the well conditions; is that right?
A. Yes, ma'am.
Q. And then you can try to make small adjustments to it and see if that will make it appropriate for the well conditions; is that right?
A. Yes, ma'am.
Q. But if that doesn't happen, you should redesign; is that right?
A. Yes, ma'am.

Page 137:13 to 138:25

Q. (BY MS. YANG) I'd like to turn you to tab 7, which has previously been marked as Exhibit 4347, and this is the Halliburton laboratory -- or Global Laboratory Best Practices. And I'd like to direct your attention to a paragraph that we looked at briefly before on that first page that ends in 645. And so this section of the

global laboratory best -- well, let me back up for one second.
Can you describe for me what the Global Laboratory Best Practices, how it functions within Halliburton?
00138:01 A. It's used as the basis for mixing, designing, testing foam slurries.
Q. And when you say that it's the basis, this is what you should start with in designing, of testing a foam slurry; is that right?
A. Yes, ma'am.
Q. And you should follow the suggestions and recommendations in this as closely as possible; would you agree with that?
A. Yes, ma'am.
Q. Now, going to No. 2 under "Procedure," that first sentence says, "Design the slurry formulation with foam stability in mind."
What does that mean to you?
A. That means you would design the slurry so it would be stable and be mixable.
Q. So would you agree, based on this sentence, that when you're working with a foam slurry, it's especially important to make sure that the slurry works well with the well conditions and that the additives in it are appropriate?

Page 139:04 to 139:04

00139:04 A. Yes, ma'am.

Page 139:15 to 144:10

00139:15 Q. (BY MS. YANG) Mr. Morgan, before the break we were talking about parameters in the design of foam cement. Do you understand that you're still under oath after the break?
A. Yes, ma'am.
Q. Now, going back to this Global Laboratory Best Practices excerpt that talks about base slurry design and testing, under the second paragraph for base slurry design there is a bullet point that says, "Keep the
00140:01 formulation as simple as possible."
Did I read that correctly?
A. Yes, ma'am.
Q. What does that mean to you?
A. To minimize the number of additives in the slurry.

Q. So, basically, don't use anything you don't need to use in the slurry?
A. Yes, ma'am.
Q. And this is saying that even regardless of what the test results look like, it's just a best practice to keep a slurry formulation as simple as possible?
A. Yes, ma'am.
Q. Is that because you never know exactly what's going to happen in a well?
A. No, it's because -- yes, that could be part of the reason. But you try to minimize cost, too, in the well.
Q. Any other reasons you can think of?
A. No, ma'am.
Q. And then two points below that there is a bullet that says, Avoid the tendency design -- to design a low rheology slurry.
Did I read that correctly?
A. Yes, ma'am.
Q. And this point is referring to the fact that slurries which have a low rheology and are thin are generally more difficult to foam; would you agree with that?
A. Yes, ma'am.
Q. What would you consider a low rheology base slurry?
A. YP of 5 or less.
Q. So according to this manual, if you have a slurry that has a YP of perhaps 5 or less, that's something you should think extra hard about before you use that as a foam design?
A. Yes, ma'am.
Q. And then the next bullet says, "Use additives that are known to perform well with foam"; is that right?
A. Yes, ma'am.
Q. And sort of along the same lines, the point after that says, "Avoid dispersing additives that are known to be detrimental to foam stability."
Did I read that correctly?
A. Yes, ma'am.
Q. And this is referring to the fact that -- well, strike that.
Now, for every type of additive function -- or for a lot of these additive functions, Halliburton offers multiple products; is that right?
A. Yes, ma'am.
Q. So, for example, for retarders, Halliburton has a large number of different

retarders that can be used to keep the -- or to extend the pump time of the slurry; is that right?
A. Yes, ma'am.
Q. And have you ever seen a document called the Foam Cementing Operations Manual?
A. No, ma'am.
Q. Well, I'll represent to you that that's a Halliburton document that provides some guidance on additives that are good with foam cement and additives that are bad with foam cement, and some of the ones that it lists as good retarders to use with foam cement are Diacel LWL, WG17, and MMCR. Are you familiar with any of these retarders?
A. Yes, ma'am.
Q. Is that consistent with your understanding, that these are non-disbursing retarders that are good to use with foam cement?
A. No. MMCR disburses.
Q. MMCR disburses?
A. Uh-huh.
Q. Would you agree that the first two are retarders that are good to use with foam cement?
A. Yes.
Q. And like MMCR, SCR-100L also disburses; is that right?
A. In most cases, yes.
Q. So all things being equal if you have an SCR-100L and a retarder that didn't disburse a slurry, you would go with the one that didn't disburse the slurry in a foam design; is that right?
A. Yes, ma'am.
Q. Now, the design for the Macondo slurry also contained D-Air 3000; do you remember that?
A. Yes, ma'am.
Q. And a defoamer is also an additive that is known to be detrimental to foam stability; would you agree with that?
A. Yes, ma'am.
Q. And that's something that you should also generally avoid including in slurry designs; is that correct?
A. In foam designs, yes, ma'am.

Page 145:01 to 145:07

Q. Now, even if it's possible for you to add Zone -- enough of ZoneSeal or other surfactant to overcome defoamer in the

slurry, would you still agree that it's better just to not have the defoamer at all and to use the proper amount of ZoneSeal?
A. Yes, ma'am.

Page 145:09 to 151:08

Q. (BY MS. YANG) And I'll ask you to flip to behind the blue page. This is a separate excerpt from the same document, which is the Global Laboratory Best Practices and it's still the exhibit marked as 4347. If you could look at the second page. This is under the "Analytical Materials QC" section of the Global Laboratory Best Practices, and it's the excerpt on D-Air 3000; is that right?
A. Yes, ma'am.
Q. And under the two tables there is a note that says -- well, first, can you tell us what this document is?
A. It's comparing slurries with and without defoamer.
Q. And under tests it says, "To help ensure the quality of D-Air 3000 antifoaming agent, perform a defoaming efficiency test using one of the two slurries below; is that correct?
A. Yes, ma'am.
Q. And so is this a sheet to describe how you can test the defoaming efficiency of the D-Air 3000?
A. Yes, ma'am.
Q. Now, under the second table there is an asterisk and a note that says, "Some cements do not entrain air. To measure defoamer efficiency in these cements, add 0.5 milliliters of ZoneSeal 2000 foamer or similar foamer before API/ISO mixing."
Did I read that correctly?
A. Yes, ma'am.
Q. Do you understand this part -- this sentence to explain that even when ZoneSealant 2000 is added to a slurry, the D-Air 3000 will still have the effect of defoaming the slurry?
A. In minimal amounts, yes.
Q. In minimal amounts?
A. Yes. Not ad at --
Q. Can you --
A. They didn't add very much of the foamer to -- what they're trying to do is foam the slurry a little bit and then see how the defoamer works. So they didn't add much foamer.

Q. Oh, I see. Just to clarify, what you're saying is that a minimum amount of foamer was added, and so you would see a minimum amount of foaming because it never foamed that much in the first place; is that right?
A. Yes.
Q. So you're not saying that regardless of how much foamer was used, D-Air would only foam a minimum amount?
A. Right. What I'm saying is if you put in enough foamer in there you wouldn't be able to knock it out with defoamer.
Q. But do you know how much?
A. No. That's...
Q. And we agree that is a general best practice, it's still better to just leave it out --
A. Yes, ma'am.
Q. -- rather than just compensating?
A. Yes, ma'am.
Q. Okay. I'm going to ask you to turn you -- pick up the plaintiff's binder again. And turn to their tab 2. And this was the document that was previously marked Exhibit 5597, and we looked at this before; is that right?
A. Yes, ma'am.
Q. And this is a technology bulletin describing SA-541?
A. Yes, ma'am.
Q. Now, you mentioned that SA-541 is an additive to combat thermal thinning; is that correct?
A. Yes, ma'am.
Q. And so just to explain that a little bit, that means that generally as a -- let's say an unfoamed slurry for now is pumped downhole it will experience increasing temperatures; is that right?
A. Yes, ma'am.
Q. And then these increasing temperatures can have the effect of thinning the slurry; is that right?
A. Yes, ma'am.
Q. And so the SA-541 is meant to kick in at some of these higher temperatures in order to counteract the thinning; is that right?
A. Yes.
Q. But you mentioned that it only does this to, would you call it a moderate degree, a small degree?

A. Depending on how much you put in there, it can do quite a bit.
Q. So this technology bulletin provides us with some properties of the SA-541, and if you look at the first paragraph, the last sentence says, When cement slurries containing SA-541 are heated to temperatures greater than 150 degrees Fahrenheit, the material yields to suspend downhole solids.
Did I read that correctly?
A. Yes, ma'am.
Q. Does this sentence mean that the SA-541 activates at 150 degrees Fahrenheit?
A. Some of it will activate at a little bit of a lower temperature, but most of it activates at 150, yes, ma'am.
Q. Is that effect described anywhere in this document?
A. No, ma'am.
Q. And where -- what is the basis for your knowledge on that?
A. That's how most all of the suspending aids work. A little bit of the chemicals start coming off of them at lower temperatures than where they're designed to actually kick in.
Q. Is there any way to quantify how much will kick in at the lower temperatures?
A. There probably is.
Q. But you're not aware of one?
A. No.
Q. But if the -- if the additive is designed to kick in at 150, would you rely on it at temperatures below 150 to work?
A. No, ma'am.
Q. And when you say that some of it would kick in at temperatures below 150, do you have any idea of the range that you think it -- some amount might start to kick in?
A. The -- some slurries I've mixed at -- even on surface it will start giving you a little viscosity even at 80 degrees.
Q. But as a general practice that's not the circumstances the additive should be used?
A. Right, correct.

Page 155:07 to 155:15

Q. Now, if a crushed compressive strength test is done by curing at atmospheric pressure, it's not going to be representative of downhole well conditions; is that right?

A. Not exactly, right.
Q. And pressure is something that affects how quickly a cement sample cures?
A. Yes, ma'am, some.

Page 156:03 to 157:04

Q. Okay. But just generally, when you cure a sample for a crushed compressive strength test, would you cure it at the bottom hole circulating temperature or bottom hole static?
A. Static.
Q. And why is that?
A. Because that's the temperature the slurry will see after it equalizes with the well temperature.
Q. But compared with a UCA compressive strength testing where you're using a temperature ramp-up schedule to simulate the well conditions, with the crushed expressive strength testing, it just gets exposed to the static temperature all at once, right?
A. Yes, ma'am, or you can put the sample in the water bath and then heated it up. We've actually have controllers that will be it up at certain rates and...
Q. Okay. So in order to simulate the temperature of conditions in the well that the slurry will experience you need some sort of ramp up schedule between bottom hole circulating temperature and bottom hole static temperature; is that right?

Page 157:06 to 157:25

A. Yes, you can. What you can do is condition the slurry at bottom hole circulating temperature and then pour it into the molds, then put it in the water bath at circulating -- at static temperature.
Q. (BY MS. YANG) Okay. So that's to try to give you a closer match to what's in the well conditions; is that right?
A. Yes, ma'am.
Q. But it's still not a perfect match to -- if the slurry is just sitting there in the well just slowly ramps up temperature?
A. Yes.
Q. And temperature is another factor that affects how quickly a slurry will cure?

A. Critical factor.
Q. What are crushed compressive strength tests usually used for?

Page 158:02 to 158:13

A. Typically, they'll tell you how hard your cement is at a given time, maybe a 24-hour crushed strength, 48-hour. It just gives you a moment in time of what the strength is versus UCA that'll give you a time of when the slurry actually starts to set up.
Q. (BY MS. YANG) Okay. So the UCA, would you agree, then, is a better test for determining how quickly it takes the slurry to set up?
A. Yes, ma'am.

Page 159:20 to 161:01

Q. And when you're talking about a foam slurry in particular, the crushed compressive strength test is also useful in that it gives you another chance to look at the foam; is that right?
A. Yes, ma'am.
Q. So if there is any foam stability issues, it doesn't matter that you generated this foam for a crushed compressive strength test; you'll still be able to see problems with the foam slurry?
A. You should be able to see it, yes, ma'am.
Q. Now, when you're running tests in your lab, is it important to test the actual slurry that -- in the precise additive concentrations that's going to eventually be used?
A. Yes, ma'am.
Q. So would you agree that if you were to increase the concentration of one additive by 12 and a half percent, that you should redo the test with this new additive concentration?
MR. BOWMAN: Objection; form.
A. It would depend on which additive. It would be best to retest it, but it would depend on which additive you were increasing.
Q. (BY MS. YANG) And which additives would be important to look at if you're increasing the concentration?

Page 161:03 to 161:07

00161:03 A. Fluid loss additives, retarders,
04 those mainly.
05 Q. (BY MS. YANG) And why is it
06 important to test a slurry with the precise
07 retarder concentration that will be used?

Page 161:09 to 162:07

00161:09 A. You want -- you want to know
10 exactly when this -- how long the slurry is
11 pumpable, and you'll want to know the
12 setting -- how the slurry sets and how
13 quickly it sets.
14 Q. (BY MS. YANG) So, for example,
15 a thickening time test should be rerun if you
16 change the retarder concentration; is that
17 right?
18 A. Yes, ma'am.
19 Q. And, a for example, crushed
20 compressive strength test should be run if
21 you change the retarder concentration; is
22 that right?
23 A. Yes, ma'am.
24 Q. Now, when you're talking about a
25 foam slurry design and a retarder which has
00162:01 the added effective of dispersing the slurry,
02 would it also be important to rerun foam
03 stability testing with the exact retarder
04 concentration?
05 A. Yes, ma'am.
06 Q. What about the FYSA rheology?
07 A. Yeah, you'd repeat it as well.

Page 162:12 to 163:23

00162:12 Q. Are you familiar with the static
13 gel strength transition time test?
14 A. Yes, ma'am.
15 Q. Can you tell me the importance
16 of that test?
17 A. It tells you how long it takes
18 between the transition -- for the transition
19 time of the slurry to turn from a -- a liquid
20 state to more of a plastic state, then to a
21 solid.
22 Q. And why is that test important
23 if we're trying to figure out how a slurry
24 will perform downhole?
25 A. Generally, we want short
00163:01 transition times. Once the slurry is in
02 place, you want it to turn to a solid fairly

quickly.
Q. Do you know if there is a guideline on what an appropriate transition time would be?
A. Typically, we like to see it go from 100 pounds per hundred square foot to 500 pounds per hundred square foot in 30 minutes or less.
Q. And is part of the reason that a short transition time is important because you could have migration of gases through the slurry during the gelation phase?
A. Yes, ma'am.
Q. Sir, are you familiar with the concept of gas flow potential?
A. Yes, ma'am.
Q. If you had a well with high gas flow potential, would it be a special important to have a slurry with a short transition time?
A. Yes, ma'am.

Page 167:10 to 168:17

Q. Now, if a foam when it's being generated at the surface is not stable, can it become stable as it's being pumped downhole?
A. Depending on the additives in -- in the blend, yes, ma'am.
Q. How would the additives in the blend cause an unstable foam slurry to become stable as it's being pumped downhole?
A. If you have the SA-541, if it kicks in, it can give viscosity that you need downhole, where you wouldn't see it on surface because it never saw the temperature.
Q. But it takes some time for the slurry to get pumped to a depth that's warm enough for the SA-541 to kick in; is that right?
A. Yes, ma'am.
Q. So during this time if this slurry is not -- if a foam slurry is not stable, what does it look like?
A. I have no idea.
Q. Could -- would you have separation of the gas from the slurry?
A. You have to realize when they're pumping it, it's going to be mixing together all the time. As they're pumping -- depending on the rate they pump it at, if you pump it really slow you could, but if you pump it at a normal rate, you might not see any separ- -- separation.

Q. And what would be a slow rate that would cause the gas to break out?

Page 168:19 to 169:11

A. One barrel a minute, two barrels a minute.
Q. (BY MS. YANG) Have you ever seen any articles describing whether a -- well, strike that.
Have you ever seen any literature from Halliburton or in the industry to describe this phenomenon that you're talking about where if you just pump it fast enough, the foam won't break out?
A. No, ma'am.
Q. Have you ever performed any studies to this effect?
A. No, ma'am.
Q. Just to be clear, this wasn't one of the things that you looked at in your large scale testing, was it?
A. No, ma'am.

Page 173:16 to 173:23

Q. If you would look again at what was marked as, excuse me, 5670, this was the document with your name on the front page.
A. Yes, sir.
Q. And the apparently copy of lab results dated April 12th, but with some handwriting on them.
A. Yes, sir.

Page 174:11 to 174:14

Q. (BY MR. FLEMING) Mr. Morgan, when did you write that 5/20/10 date thereon?
A. I assume that it was on the 20th of May.

Page 174:18 to 174:20

Q. As you recall, had you done the mixing test on 5/20/10?
A. Yes, sir, I think so.

Page 175:05 to 176:21

Q. Did you understand this Exhibit 5670 to contain the recipe, cement

recipe that you used in the mixing test?
A. Yes, sir.
Q. If you look over at the second page of this where it says operation test results.
A. Yes, sir.
Q. It says 73909/1 is the request ID.
A. Yes, sir.
Q. That would be the first slurry in that request?
A. Yes, sir.
Q. And would that be the base slurry or the unfoamed slurry, or would that be --
A. Be both, I think.
Q. So it would be a prior test or a prior mixing of slurry?
A. Yes, sir.
Q. And this is -- Viking would combine the results of those two tests on this lab results sheet?
A. Looks like they did.
Q. You were asked about the -- the 210 Fahrenheit crossed out and 240 Fahrenheit written and then crossed out, and you did that, right?
A. Yes, sir.
Q. Do you recall learning that 240 degrees Fahrenheit or thereabouts was the actual base hole static temperature?
A. Yes, sir, I think I did. That's why I wrote it -- wrote it down.
Q. And if that were the case, that is, the base hole static temperature were 240 degrees Fahrenheit, then the base hole circulating temperature would be above 135 degrees Fahrenheit, probably, wouldn't it?
A. Not necessarily.

Page 176:23 to 177:05

Q. (BY MR. FLEMING) Did you know what the base hole circulating temperature was?
A. I assume it was what is said here, 134, 135, whatever.
Q. Could 30 degrees temperature have a significant effect on how the particular cement design would react?

Page 177:07 to 178:10

00177:07 A. Yes, sir.
08 Q. (BY MR. FLEMING) And it's
09 important in well testing to get the
10 temperatures of the tests as close as
11 possible to the actual temperatures at the
12 well site, right?
13 A. Yes, sir.
14 Q. Under submit information primary
15 design, it's a little hard to tell on this
16 copy, but it -- it appears that someone has
17 highlighted the ingredient of D-Air 3000.
18 A. Yes, sir.
19 Q. Did you do that?
20 A. Yes, sir.
21 Q. And why -- why did you highlight
22 that?
23 A. The foam slurry had D-Air in it.
24 Q. And did you do that before or
25 after you had done the mixing test?
00178:01 A. After.
02 Q. And did you highlight that as a
03 possible reason that the slurry looked thin?
04 A. No. I highlighted it as a
05 possible -- because typically foam cement
06 doesn't have D-Air in it.
07 Q. You know a lot about this stuff.
08 Would you expect somebody working on the rig
09 or a customer to be aware that D-Air 3000 was
10 a defoamer?

Page 178:12 to 178:17

00178:12 A. Probably not.
13 Q. (BY MR. FLEMING) Was there
14 anything in this lab result test that said to
15 the -- a customer, caution, this has a
16 defoamer in it?
17 A. No, sir, not that I know of.

Page 179:02 to 179:15

00179:02 Q. And your handwriting on the
03 other page that you were asked about, that
04 the PV 84 and the YP-0, you told us how you
05 arrived at that, right?
06 A. Yes, sir.
07 Q. And you said the YP -- the yield
08 point of zero is equivalent to water in terms
09 of viscosity?
10 A. Yes, sir.
11 Q. Somebody who's -- doesn't
12 have -- have your background or know about
13 rheology of cements, would they be able to
14 look at this and tell that that's -- without

15 your handwriting, that that's a problem here?

Page 179:17 to 179:19

00179:17 A. If they didn't know how to -- if
18 they didn't know what they was looking for,
19 no.

Page 180:12 to 182:11

00180:12 Q. (BY MR. FLEMING) You reported
13 to -- to Mr. Faul that -- after you did the
14 initial batch that you -- you saw it as thin,
15 right?
16 A. Yes, sir.
17 Q. Did you tell him you saw any
18 settling?
19 A. No, sir.
20 Q. Did you see any settling?
21 A. No, sir.
22 Q. And did you regard both the base
23 slurry and the foam slurry as thin?
24 A. Yes, sir.
25 Q. The -- the first slurry, you
00181:01 prepared the base slurry, you foamed it, you
02 saw it was thin, and you dumped it out,
03 right?
04 A. Yes, sir.
05 Q. The second slurry you did after
06 you talked to Mr. Quirk --
07 A. Yes, sir.
08 Q. -- about the condition? You
09 conditioned the base slurry this time for
10 three hours?
11 A. Yes, sir.
12 Q. All right. And then you did the
13 test you described?
14 A. Yes, sir.
15 Q. When -- in a non-slurry job --
16 excuse me, a non-foam job, straight cement is
17 being used, is not foamed, there is, in
18 effect, some conditioning as the cement is
19 pumped down the casing, right?
20 A. Yes, sir, viscosity particularly
21 goes -- gets -- it decreases, yes, sir.
22 Q. Because, in essence, the cement,
23 the slurry is being stirred as it moves down?
24 A. Yes, sir.
25 Q. And so in that situation, in a
00182:01 test environment conditioning the slurry
02 before testing in the lab sort of replicates
03 conditions in the field, right?
04 A. Yes, sir.
05 Q. The foam slurry -- with foam

slurry, foaming is done on the rig before the slurry is pumped through the casing, right?
A. You're correct.
Q. So in the job there is really nothing like the conditioning of the base slurry before the foaming, right?

Page 182:13 to 182:24

A. Yes, sir.
Q. (BY MR. FLEMING) So what's the justification in the lab for testing the slurry by conditioning the base slurry before you do the foaming?
A. I was just repeating what they repeated.
Q. You don't --
A. What they did down there.
Q. You don't know of any justification in terms of trying to replicate what happens in the field, do you?

Page 183:01 to 183:09

A. On surface it's not going to be heated up when you foam it, correct.
Q. (BY MR. FLEMING) It's not going to be heated up, and it's not going to be stirred for three hours?
A. Right, that's absolutely correct.
Q. It's likely to produce a test that shows greater stability, right?

Page 183:11 to 185:01

A. Not necessarily.
Q. (BY MR. FLEMING) But it might?
A. It could, yes, sir.
Q. Isn't the purpose of testing cements in the lab that are going to be used in the field to replicate as closely as you can the conditions downhole?
A. Yes, sir.
Q. You're not aware of any Halliburton manual that says foam cement should be tested by conditioning the base slurry for three hours before adding foam, right?
A. No, sir.
Q. And when you said you conditioned the -- the base slurry at a circulating temperature or at a temperature

of 135 degrees, you said that's the static --
A. Circulating.
Q. -- excuse me, circulating downhole temperature, right?
A. Yes, sir.
Q. But the base slurry wouldn't experience that temperature, right?
A. Correct.
Q. You got asked a couple times about the possibility of adding enough ZoneSealant to overcome the effects of the defoamer?
A. Yes, sir.
Q. What -- do you know if that was done here?
A. No, sir.
Q. What test would you recommend to see if that were done?
A. I would run our standard loading of ZoneSeal and foam it up and then repeat it with extra ZoneSeal.
Q. Do you know if that were done here?
A. No, sir.

Page 185:07 to 185:12

Q. And you mentioned one or two barrels per minute as slow rates, right?
A. I would think so, yes, sir, but I'm not an operational's guy.
Q. Four barrels per minute is still pretty slow rate, isn't it?

Page 185:15 to 186:19

A. I would say that would be typical.
Q. (BY MR. FLEMING) In your discussions with Mr. Brennis and Mr. Wall, you said each of them found the slurry to be thin?
A. Yes, sir.
Q. Did they do separate mixings of the slurry?
A. Yes, sir.
Q. And you understood they were doing separate tests?
A. Yes, sir.
Q. Are they at Duncan or -- or Broussard?
A. Duncan.
Q. At Duncan?
A. Yes, sir.

Q. And was there any further conversation among you about the fact that this was the mix used at the Macondo well and all three of you found it to be thin?
A. No, sir. It was just all said it looked thin to us.
Q. And you were never asked to determine what went wrong with the cement job at Macondo?
A. No, sir.
Q. Will you agree something went wrong with the cement job at Macondo?

Page 186:22 to 187:03

A. No, sir, I don't -- I don't know. I wasn't there.
Q. (BY MR. FLEMING) Based on your work in replicating the slurry used, would you agree at least that it is possible that instability of the foam cement was a contributing cause?

Page 187:05 to 187:09

A. I don't know if it was unstable or not once it got placed.
Q. (BY MR. FLEMING) But you can't rule out instability of cement based on what you saw, right?

Page 187:11 to 188:02

A. Yes, sir.
Q. (BY MR. FLEMING) Any changes in Halliburton testing procedures since Macondo, that you're aware?
A. No, sir.
Q. When you mixed that a slurry at Mr. Faul's request and knew it was the recipe used at Macondo and you found it to be thin, was that sort of an "oh, my gosh" moment for you?
A. It was something that I wasn't expecting to see, so I thought I should call him right back and let him know what I thought, you know, I just -- I was expecting it to be thicker than it was. But I didn't know what well parameters they had, they were designing for.

Page 189:23 to 190:19

00189:23 Q. I'd like to ask you a couple
24 questions about the mixing test.
25 A. Yes, sir.
00190:01 Q. Which I think you termed it the
02 unofficial --
03 A. Yes.
04 Q. -- mixing test?
05 A. Yes, sir.
06 Q. Where was that mixing test
07 actually performed?
08 A. Duncan, Oklahoma.
09 Q. And where did the dry blend and
10 additives come from the --
11 A. It was our stock stuff in our --
12 I took it out of our chemical inventory.
13 Q. So that was?
14 A. In Duncan.
15 Q. Okay. So it was from the lab?
16 A. Yes, sir.
17 Q. And what type of water did you
18 use in order to conduct that test?
19 A. Just tap water.

Page 191:13 to 191:22

00191:13 Q. Did you notice any settling
14 issues?
15 A. No, sir.
16 Q. And that goes for the original
17 test as well as a repeat test?
18 A. Yes, sir.
19 Q. If Mr. Quirk had reported to
20 Mr. Faul that the test showed signs of
21 settling, where would he have gotten that
22 information?

Page 191:24 to 192:12

00191:24 A. I have no idea.
25 Q. (BY MR. GUIDRY) And so the
00192:01 thinning that you saw of the cement slurry
02 after you conducted your mixing test, that
03 didn't suggest to you that there was any
04 settling that had occurred?
05 A. No. Remember, I ran the
06 secondary test where I didn't see any
07 settling where I conditioned the slurry.
08 Q. But you -- you also did not see
09 any settling on the first slurry; is that
10 what you're saying?
11 A. I didn't say, but I just after I
12 mixed it up dumped it out.

Page 192:16 to 192:25

00192:16 Q. But the thinning of the first
17 test didn't suggest to you there was any
18 settling?
19 A. There was a possibility of
20 settling, but I didn't see any.
21 Q. And did you report that
22 possibility to Mr. Quirk or Mr. Faul?
23 MR. BOWMAN: Objection; form.
24 A. To Mr. Faul, I told him the
25 slurry looked thin.

Page 193:16 to 194:03

00193:16 Q. Good afternoon. A few
17 questions, Mr. Morgan. Typically do you see
18 static gel strength, free water, or fluid
19 loss tests run on foam slurry?
20 A. No, sir.
21 Q. Why is that?
22 A. The fluid loss is inherently
23 good on foam slurries, and typically we don't
24 run static gel strength or free water on
25 them.
00194:01 Q. Okay. Do you think it's not
02 necessary or what?
03 A. Yes, sir.

Page 195:04 to 195:07

00195:04 Q. Do you think it would make any
05 difference if 9 gallons instead of 8 gallons
06 of the retarder was used as far as foam
07 stability?

Page 195:09 to 195:13

00195:09 A. No.
10 Q. (BY MR. BOWMAN) No. Now, you
11 do think -- well, do you think it would make
12 a difference as to the pump time?
13 A. Yes, sir.

Page 195:21 to 195:25

00195:21 Q. (BY MR. BOWMAN) You don't know,
22 okay. Someone that's knowledgeable in cement
23 that has cement experts on their staff, do
24 you think they probably understand what
25 defoam is?

Page 196:02 to 196:04

00196:02 A. Yes, sir.
03 Q. (BY MR. BOWMAN) And D-Air is?
04 A. Yes, sir.

Page 196:08 to 197:06

00196:08 record. You were asked if you knew if extra
09 ZoneSealant was used with this particular
10 slurry because D-Air was there, and you said
11 no. What did you mean by the "no," that no,
12 there was not extra ZoneSealant used or no
13 you did not know if there was extra
14 ZoneSealant used or not?
15 A. I did not know if there was
16 extra used.
17 Q. Okay. And how would we -- if
18 you were to look at it, could you figure out
19 if extra was used? Or someone -- how would
20 one go about figuring out if extra was used
21 or not?
22 A. Typically, they use 1 to
23 2 percent by weight of water.
24 Q. 1 to 2 percent by weight of
25 water?
00197:01 A. Yeah.
02 Q. Okay.
03 A. It's usually 1 to 1 and a half.
04 Q. Okay. So we can make
05 calculations on that?
06 A. Yes, sir.

Page 197:09 to 199:15

00197:09 was thin, but let me ask you this: Does thin
10 necessarily mean unstable?
11 A. No, sir.
12 Q. Okay. In fact, you're familiar
13 with the API, the -- the signs of stability
14 or instability?
15 A. Yes, sir.
16 Q. And it has, like, streaking,
17 settling --
18 A. Free fluid.
19 Q. -- free fluid, large variations
20 in the density, that type of thing?
21 A. Yes.
22 Q. Are any of those five or six
23 items, do any of them say if the slurry is
24 thin or not?
25 A. No, sir.
00198:01 Q. No. And to make it clear, when
02 you ran the two tests for Mr. Faul when he

was asking you what you looked at, did you see any signs of instability?
A. No, sir.
Q. And what is the reason that you stick this -- what did you stick down it?
A. Glass rod.
Q. Glass rod?
A. Glass rod, yes.
Q. Why do you stick the glass rod down a tube like that?
A. You stick -- you want to feel if there's any loose cement on the -- or settling on the bottom of the tube, and if you hit glass, y'all hear it click. So if there was any cement in the bottom of the tube, I would have hit the cement and not hit the glass.
Q. Okay. So you -- I take it you hit the glass?
A. Yeah.
Q. And what does that mean as a re- --
A. There was no settling in that particular test.
Q. Okay. Which is a good sign or a bad sign of stability?
A. A good sign for stability.
Q. Okay. So from actually your looking and your running sort of, like, an unset foam stability test?
A. Yes, sir.
Q. Did you see any signs of instability?
A. No, sir.
Q. And, in fact, did you -- based on your test, did it seem, that the slurry was, in fact, stable?
A. Yes, sir.

ERRATA/CORRECTION PAGE

Deposition of Ricky Lynn Morgan

Date of Deposition: October 17, 2011

PAGE	LINE(S)	TESTIMONY		CORRECTION	REASON FOR THE CHANGE
10	23	'83, to '83	*change to*	'80 to '93	clerical error
16	10	maintenance	*change to*	methods	clerical error
18	9	Wall	*change to*	Waugh	clerical error
18	11	princ____	*change to*	principal	clerical error
25	8	thousand	*change to*	thousand and	clerical error
40	16	glass	*change to*	brass	clerical error
76	18	Wall	*change to*	Waugh	clerical error
77	22	Wall	*change to*	Waugh	clerical error
80	25	Wall	*change to*	Waugh	clerical error
83	4	hard	*change to*	large	clerical error
83	13	hundred	*change to*	hundreds	clerical error
92	15	Wall	*change to*	Waugh	clerical error
94	3	seen it gel	*change to*	seem to gel	clerical error
107	5-6	four to four hours to 24	*change to*	four to 24	clarification
129	14	Wall	*change to*	Waugh	clerical error
130	8	Wall	*change to*	Waugh	clerical error
154	23	5000	*change to*	3000	clarification
157	9-10	water bath at circulating – - at static	*change to*	water bath at static	clarification
181	24	Yes, sir.	*change to*	No, sir, due to thermal thinning not a stirring affect	clarification
185	18	Wall	*change to*	Waugh	clerical error

11-17-11

Date Signed

Ricky Lynn Morgan

Ricky Lynn Morgan