Hafle
5/28/10

USCG/MMS MARINE BOARD OF INVESTIGATION
INTO THE MARINE CASUALTY, EXPLOSION, FIRE,
POLLUTION, AND SINKING
OF MOBILE OFFSHORE DRILLING UNIT
DEEPWATER HORIZON, WITH LOSS OF LIFE
IN THE GULF OF MEXICO 21-22 APRIL 2010
Friday, May 28, 2010

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The transcript of The Joint United States Coast Guard Minerals Management Service Investigation of the above-entitled cause, before Dorothy N. Gros, a Certified Court Reporter, authorized to administer oaths of witnesses pursuant to Section 961.1 of Title 13 of the Louisiana Revised Statutes of 1950, as amended, reported at the Radisson Hotel, 2150 Veterans Memorial Boulevard, Kenner, Louisiana, 70062, on Friday, May 28, 2010, beginning at 8:00 a.m.

APPEARANCES:

MEMBERS OF THE BOARD:

CAPT HUNG M. NGUYEN, CO-CHAIR
UNITED STATES COAST GUARD

DAVID DYKES, CO-CHAIR
MINERALS MANAGEMENT SERVICE

JASON MATHEWS
MINERALS MANAGEMENT SERVICE

JOHN McCARROLL
MINERALS MANAGEMENT SERVICE

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UNITED STATES COAST GUARD

REPORTED BY: DOROTHY N. GROS, CCR
CERTIFIED COURT REPORTER

INDEX

EXAMINATION: (CONT'D)

Examination of WILLIAM STONER:

PROCEEDINGS

CAPT NGUYEN:

Please be seated so we can re-start the hearings. Court reporter, let's go on the record. Before we start the hearing this morning I would like to make a couple of comments. To maintain the dignity and efficiency of these hearings, I respectfully request that all Parties In Interest not to engage in conversations just like the one at the end of yesterday's hearings. Clear guidance on the rights of the Parties In Interest are in the regulations and Coast Guard marine safety manual. Particularly if you have witnesses or evidence that you would like to -- for the board to consider please do so in writing. When a witness is subpoenaed by the board, as with all U.S. citizens, they have the right to exercise their constitutional rights. There is no presumption of innocence or guilt. We have other means to gather information and the other information

that we have would allow us to make proper conclusions and recommendations.

So, with that, our first witness this morning is Mr. Mark Hafle of BP. Mr. Hafle, please rise so I can put you under oath.

THE WITNESS:

(Witness complies.)

* * * * * *

MARK HAFLE,

after being first duly sworn in the cause, testified as follows:

CAPT NGUYEN:

Thank you, sir, for being here.

Please be seated.

THE WITNESS:

(Witness complies.)

EXAMINATION

BY MR. MATHEWS:

Q. Mr. Hafle, for the record can you state your full name and spell your last name?

A. Mark Edwin Hafle, H--A-F, like in "Friday", L-E.

Q. And by whom are you employed, sir?

A. BP.

Q. What position do you currently hold within BP?

A. Drilling engineer.

Q. How long have you had that position as drilling engineer?

A. 23 years and a few months.

Q. All with BP?

A. Yes.

Q. What is your educational background, sir?

A. I have a bachelor of science in petroleum engineering.

Q. From where?

A. Marietta College, Marietta, Ohio.

Q. Do you have any special certifications as being a qualified engineer? License?

A. No, no.

Q. Can you please briefly describe your job responsibilities as BP as a drilling engineer?

A. We take -- drilling engineers, myself included, take all the geologic data that gets generated by the geology department, as well as all of the offset information from wells in

the area where we would be drilling a well, take that data, come up with a reasonable assumption going into the well from a pore pressure frac gradient standpoint and design how many strings of casing it's likely to take to drill that well. We put together drilling plans, we do the permits, we do cost estimates. During the drilling operations we answer day to day questions from operations. We write in the well reports, capture lessons learned, transfer those onto the next well.

Q. So you do review the daily reports that are submitted to you?

A. Everyday.

Q. Have you had any special subsea operations and deep water drilling experience?

A. I've been involved in deep water since 1993.

Q. And what is your experience -- about how many wells have y'all drilled since that, 1993?

A. Wells that I've personally involved in?

Q. Yes, sir.

A. I've lost track of the numbers. It's somewhere probably between 20 and 50, but I

don't recall the exact number.

Q. Thank you. When the original Macondo well was being drilled with the MARIANAS, did you ever visit the MARIANAS during that time?

A. I visited the MARIANAS when it was dockside in Galveston.

Q. Did you visit it during the drilling process?

A. No, sir. I don't think I did, I'm pretty sure.

Q. What problems did BP run into on the Macondo original wellbore to bypass it?

A. On the original wellbore?

Q. Yes.

A. With the DEEPWATER HORIZON?

Q. THE MARIANAS.

A. THE MARIANAS did not do a bypass.

Q. No, the MARIANAS wellbore that you came back and later bypassed with the DEEPWATER HORIZON?

A. I'm not sure I understand the question.

Q. Did BP arrive with the MARIANAS in November, remove off location in November drilling the wellbore for Mississippi Canyon-252 and then come back in February with the

DEEPWATER HORIZON to complete the bypass?

A. No, we came back and reestablished the wellbore and continued drilling, but we were not in the bypass phase.

Q. Then you got stuck with THE HORIZON?

A. When the HORIZON came on location in February that was to resume drilling operations because we had released the MARIANAS from contract obligations to BP.

Q. So, how many times did you visit the HORIZON at the current location?

A. One time.

Q. And when was that?

A. During the month of March.

Q. And was that for a special reason?

A. I went offshore for -- I'm not sure exactly what was the primaries when I went offshore, but we were going to do a squeeze job on one of the casing shoes, I went out there to oversee that. It had been quite a while since I had been on the HORIZON, several years prior, and went out there with the assumption I was going to be there a weekend and I end up spending ten days there.

Q. Okay. What is your specific authority

to make revisions to casing programs in deep water wells?

A. It's the engineer's job that if a casing change is needed we engineer that change, make that proposal and get it approved through the proper channels at BP.

Q. Is that approved by you or somebody above you?

A. It's recommended by me, approved by somebody above me.

Q. Can you briefly define what "fracture gradient" is, sir?

A. Fracture gradient is the strength of the rock. All rock has a kind of a given strength under certain constraining forces.

Q. And, also, can you give me a brief definition of pore pressure?

A. Pore pressure is in a rock that has pore spaces it would be the pressure that is contained in those pore spaces.

Q. Can you explain the relationship between the two in deep water drilling?

A. So, pore pressure is always less than or equal to frac gradient. Frac gradient is the higher number in most cases. There are

very, very rare instances that pore pressure and frac gradient can be not exactly the same number, but close enough that for all practical purposes it would be the same number.

Q. During the design of your well, does BP take in any consideration for risk?

A. Every well has risks.

Q. Do you take into consideration the location of casing?

A. Absolutely.

Q. How about shallow gas?

A. All the time.

Q. Ballooning?

A. Ballooning is kind of a result of drilling. It's not something that exist naturally.

Q. How about cement jobs? Do you take poor cement into any type of risk calculations?

A. Absolutely.

Q. How about station keeping of a MODU?

A. Absolutely.

Q. And how do you evaluate and manage that risk?

A. It's done at all different levels. From the well side we do a risk management kind of plan and then we put together a risk management document, capture all of the risks that we think exist going into a well. We -- we – we take previous wells risk, look at how those turn out, learn from them. But we have a risk register. It's kind of the official terminology that you might find within BP.

Q. Did you design the casing program for Mississippi Canyon-252?

A. I came up with the basis of design and then we have that design validated by our technology group.

Q. And who's on that technology group, sir?

A. Specifically for this well would be Steve More (phonetic).

Q. Just one person? Okay.

A. Yeah, other people involved in that casing design would be Rich Miller and Mike Payne and Phil Patillo, Sr., Phil Patillo, Jr.

Q. Do you recall how many times you revised the casing program for this specific well?

A. Not specifically, no, but it was multiple.

Q. If I told you there was four changes to the casing program submitted to the MMS is that accurate?

A. It's possible.

Q. Is it possible or do you not know?

A. Well, I would say that when we set out to drill the well we thought it was going to take six strings to drill the well. It ended up taking eight strings to drill the well. Some of those strings were shortened and some of them were deepened. As all expiration wells, when you go into an expiration well you have a plan and there's going to be changes to that plan because of the nature of the type of well you're drilling.

Q. So, in the initial casing program you submitted, there was seven casings and it was changed to nine?

A. No, the initial permit had six strings of casings.

Q. So, you talked about why those changes were needed. Why specifically in this well were those changes needed to go from different

strings?

A. So when you start the well you have a pore pressure frac gradient implied with some assumptions based on offset information, seismic data calculations. So, when you actually drill the well, you essentially prove or disprove that prediction. And the prediction in this case was not accurate, as it is in most expiration wells. So the plan initially had six strings of casing, but we know that we have two, three or four contingency strings that are available. We don't permit those contingency strings, it's not required to permit contingency strings. Sometimes they show up on wellbore diagrams that the MMS has to kind of identify where potential contingency strings are. But, in drilling an expiration well, as you drill along and, depending on where you are according to the plan, you will then begin start adjusting the plan mobilizing those contingency strings.

Q. Okay, thank you. What was your interaction with the MMS drilling engineer?

A. Which drilling engineer would that be?

Q. Frank Patton or whoever's in the New Orleans District?

A. I had no one on one interaction with Mr. Patton.

Q. Do you normally have any interaction with the MMS drilling engineer or is that solely through your regulatory department?

A. That's usually through our regulatory department.

Q. Prior to the drilling of the Macondo well, did anyone from BP or yourself go visit with the New Orleans District about the exploratory well?

A. For the Macondo well?

Q. Yes, sir.

A. I did not participate in any meeting. In the past we have had meetings when we drill really special wells we'll go and inform the MMS personally. I've been involved in those in the past.

Q. Why did you add the -- in that casing program, why did you specifically add the 11 7/8ths and the 9 7/8ths liners to the casing program?

A. Those casings were going to required to

reach the objective depth due to the pore pressure frac gradient.

Q. Are you familiar with BP's management of change program, sir?

A. Yes.

Q. Is the program that you use in the engineering department the same that's outlined in their HSE manual?

A. I'm not sure what's in the HSE manual.

Q. Would you mind if I just showed it to you real quick?

A. Sure. I would say that the drilling department's MOC is -- this is what it's talking about, yeah.

Q. Okay. So --

A. But I have not personally -- I do not personally have a copy of this document or --

Q. Oh, no problem. I'm just trying to see if -- I was going to ask you some general questions about the management of change process and it might not be that one. That's why I asked if it was similar.

A. Right.

Q. When you change an APD, application permit to drill, with the specific casings, do

you go through a management of change process that's initiated by someone?

A. We do go through a management of change process.

Q. And how often does that -- how long does that take?

A. It depends on the nature of the change.

Q. Okay.

A. Depends how many risks there are with the change, how much -- you know, how much time's going to be involved with the change. There's a lot of various factors.

Q. So, a casing program change does actually initiate a management of change process?

A. Yes.

Q. And who verifies that process?

A. There's -- there's multiple people involved in both the review and approval of management of change.

Q. And who would review such a change of the casing program and actually sign off on it?

A. It would depend on the scope of the change, the level would change -- the level of

approval would change depending on what the exact change that you want to know about. You know, if it's -- if it's -- if it is setting a casing string shower by 300 feet because of pore pressure frac gradient does not allow you to get to the original planned depth, that management of change is a much different scale than trying to deepen a casing string by 3,000 feet.

Q. Okay. Do you recall why you use a 7 inch casing in the hole at the very end of the production casing?

A. Yes.

Q. Can you please elaborate on why?

A. Well, 7 inch fits inside an 8 and « inch hole. We had to run the 9 and 7/8ths contingency liner, so the original plan was to run a 9 and 7/8ths long string due to the fact we were in a 9 and 7/8ths contingency string it's unable to get a full 9 and 7/8ths inch long string to the reservoir.

Q. But you still have the option to run a 5 inch casing if you wanted?

A. You can run any size casing that will fit in that 8 and a half inch hole, yes.

Q. Are you familiar with the economics between a 5 inch and a 7 inch casing, the flow rate?

A. I don't run economics and I don't do flow rate calculations.

Q. Earlier we talked about ballooning, can you inform me or give me a brief definition of what formation ballooning is, sir?

A. So, while you're drilling the hole section, you have a certain mud weight in the hole and you know prior to drilling -- prior to drilling out -- when you drill out that casing string you get a frac gradient estimation by doing a leak off test or a formation integrity test and then you have a mud weight that you're drilling ahead with. In a ballooning situation you will start losing mud or, you know, you're pumping -- let's just use for example 1,000 gallons a minute in the hole and you may be getting 900 or 800 back. So, you're having loss circulation event, you're not getting full returns. So, you would shut the pumps down, monitor the hole and perhaps during a ballooning event the formation is either

swelled or fractured. It's not an exact science. You don't really know what's going on down in a hole. The ballooning is given in the fact that if you expand the hole then the hole contracts when you turn the pumps off and gives the mud back.

Q. During the Macondo well, were there any ballooning incidents that you were aware of?

A. Yes.

Q. And what were your recommendations to address those ballooning incidents?

A. Well, we have many different ways to combat ballooning.

Q. Can you elaborate?

A. In one instance we slowed down the pump rate, which lowers the ECD or equivalent circulating density. You can also cut the mud weight back. You can pump lost circulation materials to help bridge off any fractures or permeable zones that may be causing the ballooning. We actually did all three of those in multiple hole sections, as well.

Q. At any time did BP consider using managed pressure drilling?

A. No.

Q. Did you encounter any other abnormalities during the drilling of this well?

A. We had major lost circulation events, we had well control events.

Q. Did you have any swabbing?

A. Not to my knowledge.

Q. Did you pull any drill pipe wet?

A. Not to my knowledge.

Q. Were there any tight spots in this well?

A. I can't recall specifically.

Q. Was there a stuck bottom hole assembly?

A. Yes.

Q. What was the maximum background gas that you received when drilling this production casing?

A. While drilling the last hole section I don't recall that number exactly, but it was not the highest background gas we had seen while drilling this well.

Q. Not the highest. Do you have a range or --

A. Well, when you use the units it's either zero and the maximum's 3,000.

Q. While you were drilling that production section, did you have any gas cut mud due to high drilling gas?

A. I'm not -- not sure.

Q. Did you have a detailed procedure for performing a negative test on the production casing?

A. I wrote the permit for that temporary abandonment.

Q. Yes, sir.

A. Which included the negative test.

Q. Yes, sir.

A. The detailed procedures are generated at the rig site.

Q. And those are sent to the rig?

A. The permit's sent to the rig.

Q. Okay.

A. The detailed procedure is created on the rig site.

Q. And that procedure, did it say "Negative test casing to sea water gradient equivalent for 30 minutes with the kill line"?

A. I believe that's what the permit said.

Q. And there was no other permit that was submitted to the rig other than this one?

A. There's only one permit for the temporary abandonment.

Q. Thank you. I'm just trying to clarify something that was told to me yesterday.

A. Yeah.

Q. Do you know if the DEEPWATER HORIZON crew set the top plug before they circulated the riser?

A. The top plug --

Q. Yes, sir.

A. -- or the surface plug?

Q. Top plug, did I say surface?

A. Well, it is the surface plug. Was not set.

Q. Oh, sorry. We have different terminology in the MMS, we call it a top plug. He was talking to me when you answered my question, I'm sorry.

A. Well, in the CFRs I thought it was known as a surface plug, sorry. But that plug was not set.

Q. Okay. Do you think they should have set that plug before they started circulating out the riser?

A. No.

Q. In your opinion would it have reduced the risk of that operation?

A. I don't know. I don't believe so.

Q. Did you -- are you involved with the procedure of how to route the mud when you're circulating out the riser?

A. No, sir.

Q. Were you aware if they -- who was responsible to monitor the circulating of the riser? Do you know if anybody at BP removed someone from monitoring levels on the well?

A. The monitoring is all done at the rig site. I'm not sure who -- there's multiple people from all parties that monitor that mud flow.

Q. Is it common for BP, from reading the morning reports, to remove someone from monitoring a mud logger from monitoring the returns?

A. If they made a decision on the rig site to change people I'm not aware of that.

Q. Do you have any specific well control training, sir?

A. Yes, sir.

Q. And what is that?

A. I've been, per kind of BP's plan with the MMS, we do recurring well control training. My last school was kind of within the last two years with wild well control.

Q. Have you ever witnessed a BOP test on the DEEPWATER HORIZON?

A. I have not like personally overseen a complete BOP test.

Q. Were you aware of any BOP problems while they were drilling that well?

A. No. Every test had been satisfactory during the drilling of this well to my knowledge.

Q. Were you aware --

A. The MARIANAS had BOP problems while we were drilling the first section with that -- you know, the first section of The MARIANAS. In fact, the BOP problems was why that rig was kind of on standby when Hurricane Ida occurred. So --

Q. So, you weren't aware of any problems before they splashed that BOP stack of any leaks?

A. On the HORIZON?

Q. Yes, sir.

A. No, nope.

Q. Can you please explain what a dead man function on a BOP stack is?

A. It is if you lose full communications with the stack for whatever reason the stack has power and hydraulic capabilities to close in certain functions automatically.

Q. How about an auto shear, can you explain that too?

A. That's part of the dead man system that the shear rams would close.

Q. Does BP require any testing on those systems?

A. I'm not aware of any requirement, but I don't -- I don't get involved in the BOP testing. That's something that's done with Transocean and the well site leaders.

Q. So, you're not familiar with any of the BOP functionalities? Like you're not familiar with any of the type of components of the stack and what roles they play in and what types of lock outs or any type of bypasses or anything that they can have on it?

A. I have a general knowledge of subsea BOP systems, but that is not one of my primary

duties.

Q. I'm going to take some notes here. According to the mud log on the DEEPWATER HORIZON, the drilled the formation just below the productive zone and lost full returns when they weighed up to 14.4 pounds per gallons. Did you take this lost circulation zone into consideration when you were designing the cement job for this well?

A. Absolutely.

Q. And what did you take into consideration? What was the end result of what happened with your work on that? Did you continue to go forward with the --

A. I'm not sure what specific part you're asking about.

Q. You design a cement job and you had full loss returns in that zone, did you change your cement job at that time?

A. We never -- we designed the cement job after we had the real well data to give us the best chance of giving a successful cement job with the actual well data that was given to us both pressures and lost circulation.

Q. And who was giving that to you?

A. Who gave us that cement design?
Q. Yes.
A. Halliburton, we worked with Halliburton to design that. Halliburton has the piece of software. They run the model, we review the model, we adjust the model parameters until we're satisfied that the model has been prepared as well as possible.
Q. Do you know if they had any specific additives in that cement that would mitigate loss returns?
A. I believe they had planned to use lost circulation material in that cement, yes.
Q. How about hydrocarbon influx, was there any special additives for that, do you know?
A. I'm not sure.
Q. Reduced annular space?
A. Don't understand what that means.
Q. Do you -- yeah, the friction reduction of the -- on the cement job?
A. I'm not sure.
Q. Why was specifically nitrogen used on this job?
A. Nitrogen is used to lighten the weight of the cement.

Q. And who approved the -- did you approve the use of the nitrogen in the job or was that Halliburton?

A. The recommendations were from both the drilling engineering department and Halliburton. The approval process would be the people above us.

Q. How many previous nitrogen jobs had you reviewed or approved?

A. Two on this particular well.

Q. Two on this well?

A. Yeah.

Q. And those were the first two?

A. The 28 inch and the 22 inch casing. Nitrogen jobs are used primarily on those two strings on every deep water well because it's the best way to combat shallow water flow.

Q. Did you have any loss returns while displacing that nitrified cement?

A. Not to --

Q. For the production casing?

A. I was not made aware of any.

Q. Did you look at any data that would indicate that there was loss returns?

A. No, sir.

Q. Did you run any bond or temperature logs?

A. No, sir.

Q. Why not?

A. We had not gotten to that point in the well plan before the incident occurred.

Q. Did you have a good cement job on that 9 and 7/8th by 7 inch casing?

A. All the indicators that I was told about would indicate that it was a good cement job.

Q. And what data did you review to get that assessment?

A. I was given verbal communications that we had full returns, that we had cement lift pressure and that we had bumped the plug. All of which those three parameters are very important to get a primary cement job.

Q. And whose verbal indication did that come from?

A. Brian Morrel.

Q. Who?

A. Brian Morrel.

Q. And who does he work with?

A. He's a BP drilling engineer.

Q. Do you feel that the failure of the possible nitrogen cement job possibly led to -- was directly related to this blow out?

A. I can't speculate on that because the investigation's not complete.

MR. MATHEWS:

That's all I have, sir.

THE WITNESS:

Thank you.

EXAMINATION

BY MR. McCARROLL:

Q. Can we go back and just cover a couple of items real quick. Specifically the pore pressure frac gradient, can you elaborate how that is effected in a deep water well for the shallow casings? Is there something specific that needs to be looked at for deep water drilling for pore pressure frac gradient for shallow casing?

A. Because you've got -- the deeper the water the lower those frac gradients are in the shallow strings. So, occasionally, you know, you have to take that into consideration when you plan your casing points.

Q. So, how's that different than a shelf

well?

A. A shelf well you would have very high frac gradients, very shallow. In deep water you have very low frac gradients.

Q. And what does that mean in plain English? Do you wind out setting more casing strings in deep water than you do in the shelf?

A. It's not necessarily always the case, but kind of generally speaking deep water wells going to an equivalent depth probably would require more casing strings than an equivalent depth in the shelf.

Q. So, does that bring the possibility of casing yourself out of the hole in drilling terms in deep water?

A. I've never heard the term "Casing yourself out", but –

Q. Well –

A. Running out of strings of pipe not reaching your objectives, absolutely.

Q. When you get so small at the bottom it's not productive to produce the well?

A. It's never happened to BP in our deep water group, but I can imagine that case

happening.

Q. Isn't that what you have to be careful for in deep water though?

A. Well, I think that's what you have to be careful for in any well.

Q. Well, in deep water the cost is a lot more expensive then it is for shallow wells. You need a higher flow rate to justify those wells.

A. I don't get involved in the economics.

Q. Well, I mean I would think you would be involved in the casing design and the casing design leads to the economics.

A. When we're -- when we're doing the objectives for a well we're given a minimum hole size that we're expected to deliver.

Q. And what was that minimum hole size in this case?

A. 8 and a half inch hole.

Q. With a production casing of what?

A. 7 inch.

Q. Okay. And you delivered that?

A. We delivered that.

Q. Don't you think that for that size casing and that small a hole that you

essentially set up your Halliburton cementer for failure?

A. Not at all.

Q. Especially when you have a loss return zone right below the productive zone?

A. Not at all.

Q. Do you think that's normal to expect someone to be able to cement 7 inch casing inside an 8 and a half inch hole with a severe loss return below the production zone?

A. I believe it is possible to get a successful cement job in that casing.

Q. Do you think that is a good idea?

A. I think that it's done everyday on wells –

Q. Is that a good engineering practice?

A. I believe it is a sound engineering practice.

Q. Okay. Personally I would not want to try to attempt that myself.

A. Understood.

Q. And what was the result of this particular job when you did that?

A. All indications were that we had an adequate cement job.

Q. What was the ultimate result?
A. I'm not sure I understand the question.
Q. What happened to the well?
A. I'm not sure what conclusion you're trying to draw.
Q. Well, in order for the well to flow the cement has to fail; is that correct?
A. That's not entirely correct in my opinion.
Q. So, you think the cement job was successful, but then the well flowed --
A. The indications that I have were --
Q. -- 11 people were killed, but you still think the cement job was successful?
A. I don't have any data that says that the cement job was not successful.
Q. The fact that the well flowed doesn't tell you something?
A. The fact that the well flowed tells me that the well became out of control at some point after the cement job and that the data from the investigation has not yet proven why the well became out of control.
Q. So, what is the purpose of the cement job if not to control the flow from the

productive interval?

A. The purpose of the cement job is to isolate the reservoir for future production.

Q. And control the flow until you perforate, correct?

A. The cement, the mud, the seal assembly all control the flow of the well after the cement job.

Q. The cement and the mud controls the flow before you perforate?

A. The cement, the mud and the seal assembly control the flow.

Q. Okay. Then why do you need cement at all?

A. Because you're going to do a completion and you couldn't isolate the various reservoirs for perforating without the cement in place.

Q. Right. So, essentially the cement prevents the flow until you perforate?

A. It is one of the mechanisms.

Q. Right. So, if the well flowed it would be logical to I think everybody here that the cement didn't do that?

A. I will wait for the conclusion of the

investigation to prove that.

Q. That would be my logic that the cement didn't work.

MR. LANSDEN:

I'm going to object. I understand that you're asking questions --

MR. McCARROLL:

Yes. I agree with you Counselor.

BY MR. McCARROLL:

Q. Let me just check my notes here real quick. The ballooning, do you think the ballooning had something to do with the fact that you set two extra casing strings?

A. No, sir.

Q. So, why did you have to set two extra casing strings that wasn't in your original plan if it wasn't because of the ballooning? I mean ballooning -- I read the daily reports and it looks like to me the trouble you had besides the kicks was ballooning.

A. I cannot recall every section of the well that had ballooning.

Q. Well, you are the drilling engineer, aren't you?

A. Yes, I am one of the drilling

engineers.

Q. One of the drilling engineers?

A. Yes.

Q. Who is the other drilling engineer?

A. Brian Morrel.

Q. And does he write or design the casing?

A. He's involved in that process also.

Q. And is he a senior drilling engineer and you're a junior drilling engineer?

A. The opposite is true.

Q. Oh, you're the senior?

A. Yes.

Q. And he's like the trainee?

A. He is not a trainee. He is a junior drilling engineer.

Q. Okay. Do you get calls from the rig directly?

A. Occasionally.

Q. Occasionally. Do you get calls in the middle of the night?

A. Occasionally.

Q. And do they call you when they have trouble?

A. Depending on the type of trouble, yes.

Q. So, if they'd have a severe ballooning

problem, would the rig call you and ask you for advice?

A. Possibly.

Q. Okay. Would your advice be to set casing?

A. No.

Q. What would your advice be?

A. Let's find out why the wellbore is ballooning and what we can do to fix that ballooning to still reach the objective casing points.

Q. And then ultimately, if you cannot fix it through loss control material or some other means cutting back mud weight, then what would your suggestion be?

A. You would have to set a string of casing.

Q. And you did set two extra strings of casing in this well?

A. Yes, sir.

Q. Okay. So, my assumption from looking at that and reading the daily reports is ballooning resulted in you setting these two extra casing strings directly --

A. I -- I would not go to the same

conclusion.

Q. Okay. Thank you.

A. If you're using ballooning and loss circulation events as the same terminology then possibly, but we had major loss circulation events up the hole and in multiple hole sections.

Q. Alright.

A. So, those were not ballooning events because we lost thousands of barrels of mud that never came back.

Q. So, could you tell me the most severe formation in this well where you had a loss returns problem?

A. I can't remember the exact hole section, but it was way up the hole. The productive interval was not the worst lost circulation event.

Q. Okay. How about the second to worst?

A. Second to worst I cannot recall exactly which hole section that was, but it may be kind of a tie between the productive interval and one up the hole.

Q. Okay. So, you did have severe loss returns near the productive interval?

A. 3,000 barrels.
Q. Okay. And how did you address that?
A. Loss circulation material, cutting the mud weight, reducing ECD through lower circulation rates.
Q. Do you think the loss circulation material for addressing it's rear loss returns is a permanent fix?
A. It depends on the material and how it's applied, it can be a permanent fix.
Q. Or is it just a temporary fix?
A. It can be both.
Q. Okay. Loss returns material invades the formation or does it just plaster on the face of the formation?
A. It depends on the material pump.
Q. Okay. And what material did you pump?
A. We pump our standard 84 pound per barrel kind of a 200 barrel of loss circulation material that has a variety of products in it. Then we pump an MI product called Forma Squeeze Forma Set, which is kind of a two stage process. That -- the last part of that is actually kind of a product that goes from a liquid to a semi-solid state that

does both, attach to the outside of the wellbore as well as go into the potential fracture or permeable zone to seal that up.

Q. Okay. When you got to the very bottom of the hole and you decide to cement, did you inform Halliburton about the severe loss returns?

A. Halliburton was aware of the loss circulation in that hole section.

Q. And who in Halliburton did you inform specifically?

A. In BP's office we have a desk engineer from Halliburton, Jessie Gagliano.

Q. And what's his name?

A. Jessie Gagliano.

Q. Jessie Gagliano?

A. Uh-huh (affirmative reply).

Q. Okay. And did he design the cement job specifically with that in mind?

A. I believe that the model was created with that in mind, yes.

Q. And did he come back and discuss that with you in detail?

A. He discussed that with several groups of people over that week while we were

wireline

Q. Did he discuss that with you?

A. Yes, I was in those meetings with those discussions.

Q. And did you have any concerns?

A. Not specifically.

Q. Did anybody have any concerns?

A. We were concerned that the pore pressure and frac gradient window for that cement job was going to be a narrow window to execute that cement job. That's why we spent five days --

Q. Did anybody consider stopping, you know, because of safety and not proceeding?

A. No one believed that there was going to be a safety issue with pumping that cement job.

Q. Okay. So, y'all did discuss your concerns, right?

A. Absolutely.

Q. Alright. And you went ahead and proceeded with the job anyway?

A. All of the risks had been addressed, all of the concerns had been addressed. We had a model that suggested that if executed

properly we would be able to get a successful cement job on this string of pipe.

Q. Did anyone in the group express any concerns to you after the meeting?

A. Not that I can recall.

Q. Okay. Anyone on the rig express any concerns to you after you sent the procedure out there?

A. Not that I recall.

Q. Okay. So, when the job was pumped and they had some loss returns, did anyone consider running cement bond logs or temperature logs to find out where the top of the cement was?

A. I was not made aware of any losses during the cement job.

Q. Well, the data we received from BP showed that you had some loss returns.

A. I don't -- I have not seen that data. I've not been shown that data.

Q. So, did anyone from the rig talk to you about running a cement bond log or a temperature log?

A. No one from the rig discussed that.

Q. Thank you.

EXAMINATION

BY MR. MATHEWS:

Q. I just have one question: Earlier in your testimony you said that you had visited the DEEPWATER HORIZON in March for what you thought was going to be a weekend trip and actually turned out to be a week. Why did it take so long and what happened for that to --

A. Well, the problem I went out there to kind of oversee the correction was done successfully. I like to be offshore, it had been two or three years since I had been on the rig previously. Engineers don't get the opportunity to go offshore that often and I know -- I mean I've known a bunch of the guys that died a long time. And, you know, it's kind of a reunion if you will. Those guys spend half their lives offshore. And many of those people were involved in a big kind of pre-job meeting three or four years ago for a well that I was engineer on. So, I have a personal tie with some of those people. And, once you're out there, it's easy to stay. People don't really want you to go in. When the engineer comes out they give you plenty of

things to do because they like having you around. You're part of the team.

Q. Okay. So, there was no problem with the well?

A. I did not stay because of additional problems.

Q. I know. I was trying to get a clarification earlier. Thank you.

A. Uh-huh (affirmative reply).

EXAMINATION

BY CAPT NGUYEN:

Q. Mr. Hafle, I have a couple of questions for you. Did you review the case file for the DEEPWATER HORIZON before you came here to testify?

A. I'm not sure I understand the question.

Q. Did you review the case file, the BP case file, on the design case file for the DEEPWATER HORIZON in terms of this particular drilling operation?

A. Are you talking about the casing design?

Q. Whatever files you have, engineering files, design files, you have on the drilling operation there.

A. Sorry, I'm not sure what –

Q. You drill a hole –

MR. LANSDEN:

Excuse me, with all due respect, this is delicate information. I'm going to object to you asking him about anything that he discussed with me, any documents I went through with him. So, I'm not sure really –

CAPT NGUYEN:

No, no. My question is that he works for BP. He's a design engineer. We have a situation here and he come here to testify. Did he review the case file for this particular job before he came here to testify.

THE WITNESS:

I'm familiar with all of the design aspects of the well. Did I review those prior to coming here? I mean people in the BP office have been asking me questions since the hour the incident occurred. So, I've reviewed various aspects of the well absolutely.

BY CAPT NGUYEN:

Q. Because -- is BP certified ISO--9000, 9001?

A. I believe they are, yes.

Q. Okay. So, I want to make a linkage -- well, my understanding is that one of the questions that Mr. Mathews had for you was that -- I believe it was a revision change to some procedure.

CAPT NGUYEN:

Is that correct, Mr. Mathews?

MR. MATHEWS:

Yes.

BY CAPT NGUYEN:

Q. And you didn't remember what the latest version was for that particular procedure.

A. Do you have that procedure that has the revision? I mean there are dozens of procedures that have revisions during the drilling of a well.

CAPT NGUYEN:

Mr. Mathews, can you clarify which procedure you were talking about and what revision?

MR. MATHEWS:

There was multiple revisions submitted to the MMS through March and April. Four revisions to the original approved APD and the last six days there was actually three revisions submitted to changing the program. Unfortunately I can't release that because it has proprietary information in it, but the prognosis was changed and I'll give you the dates if you want to go back and -- we can call you back to testify upon --

THE WITNESS:

I can summarize what --

MR. MATHEWS:

Okay.

THE WITNESS:

You know, you're describing the changes what I would describe as additions to the permit.

BY CAPT NGUYEN:

Q. No, I was just looking at -- BP's ISO-9000, 9001 certified organization. And you, as a design engineer, and you cannot -- oh, well maybe -- I would think that you would

have the latest -- what the latest revision to a particular procedure that Mr. Mathews talked about.

A. I probably wrote all of those EPD additions, but, you know, if you want to ask me about a specific one I can answer a question. But if there's seven or eight of them there --

MR. MATHEWS:

I can touch on just really some of the stuff, just a synopsis of what happened. On March 26th after the original approval you revised the casing program which changed to include an 9 and 7/8ths liner. You then came back and revised your casing program again on April 14th to include a 7 inch production casing. Then you came in on April 15th to correct the casing program again to 7 and 9 and 7/8th inch and 7 inch are actually tapered casing. And you corrected your well design information on that application. And then on the same day it came back that you inadvertently

removed the 9 and 7/8th inch liner from the well design information in the earlier one that you submitted on the 15th and you have reincorporated it in the two applications submitted to the MMS on 4/15.

THE WITNESS:

I'm familiar with every one of those.

BY CAPT NGUYEN:

Q. You what?

A. I'm familiar with every one of those changes. You call them changes, I would call them additions to the permit. Some of those repeats were because of the person actually entering into the well, e-wells, in the MMS system. That person is new to the system. Sherrie Douglas is the primary person that inputs that data. I believe these were being input by Heather Powell and, just due to the nature of the additions, she made some typos that we corrected. There is no substantial change to the well program. These were additional casing strings that were required to reach objective depths. The 7 by 9 and

7/8ths casing was the planned production casing that you have to permit before you run it on the well type. So, there's not changes. They are additional permit steps that are required to complete the well.

Q. I just want to make sure that whatever the design engineer changed his modification, addition, whatever you've done, that same version is on the rig itself for execution? That's all I'm trying to get to.

A. Absolutely.

Q. That's what I'm trying to get to here. And when you answer is that you don't remember which revision --

A. Well, I'm not at the rig site.

Q. That's what I want to get clarification.

A. I don't know what version they have at the rig site, but I know our regulatory department is responsible for insuring that they have that right version on the rig site.

Q. Yes, sir. As you can see with my uniform you know I'm in the Coast Guard.

A. Yes, sir.

Q. But I'm also a marine technical

officer. And the Coast Guard approves vessel designs and our engineer, such as myself in my younger days, deal directly with the engineer of the vessel owner. I was surprised to hear that in this case you are a design engineer for BP, but didn't you have to go through your regulatory people to get the MMS drilling engineer? I'm just surprised that -- not surprised, but that's just a little bit different than what I'm familiar with without process. Can you tell me something about qualifications of your regulatory people who act in the intermediary between you and the regulatory folks? What are their capability?

A. So, due to the size of BP we are given the luxury of having somebody that facilitates that conversation between drilling at BP and drilling at the MMS. Sherrie Douglas is like that single point of contact so that you don't have multiple people talking to the MMS without everybody knowing who's talking to MMS and then you don't end up with two different stories if I talk to John versus if I talk to Frank versus if I talk to David at the MMS. And then I fail to tell somebody else within

the organization. So, that person is a single point contact that we're given that luxury of having at BP.

Q. What is her technical qualifications?

A. She does not have any technical qualification nor does she need any because the drilling engineer supplies the data for the permit, the permit is transferred electronically to the engineer in MMS, they review it. Either approve it or disapprove it. She is a liaison, if you will, between those two drilling engineers.

Q. So, she has no role in reviewing or approving your proposal?

A. No. She knows the regulations, so if she sees a blatant error in something that one of the engineers proposes she can -- through her knowledge of the regulations. She's been in regulatory for a long, long time. She would know some of the CFR regulations to be able to say 'Hey, you know, that's not right.'

Q. But the regulations have technical aspects to it and if she does not have any technical qualifications how can she ensure compliance with the technical aspect of the

regulation?

A. She has her work history and years of experience.

Q. What would those be?

A. She's been in regulatory for probably a couple of decades, without giving away her age. I'm not sure how old she is and how many years she's worked, but she's got a lot of experience in regulatory both within BP and prior to her work at BP.

Q. My line of questioning is I want to make sure that this process is different than the process that I'm used to. And I want to make sure that – that the linkage -- the critical linkage between you and the government reviewer that performs some function not just, you know, handing off the information without any additional review for regulatory compliance.

A. Okay. So, when I do a permit or any engineer does a permit, it gets submitted through the e-wells system. If we know there's going to be some issue that perhaps the engineer at the regulatory department at the MMS would not be aware of, we would have a

face to face or a phone conference with myself in the meeting, with Sherrie in the meeting or Heather. We have talked -- I have personally talked to many of the drilling engineers at the MMS, both face to face and over the phone, when there's issues that need to have technical discussions about.

Q. Okay. So, you know, for our own knowledge here: So, you are the senior well design engineer; is that right?

A. I've never had the title of well design engineer, but senior drilling engineer, yes.

Q. Senior engineer. So, who's above you? I'm just trying to look at the review and approval process here.

A. I report -- I mean if you want to see the org chart, I'm sure somebody can provide you with that. But I report to a engineering team leader who reports to an engineering manager who reports to, you know, a vice president of drilling I believe.

Q. Okay. From that -- so, if a project, just as the one that the DEEPWATER HORIZON was involved in, you design the well, you send it up and how many levels of review and approval

-- is that what you just described? Is that the various level review and approval?

A. It's also reviewed, in additional to the engineering review side, there would be an operation review side. The people that report to the rig side is operations. So, the well site leaders get a chance to review the drilling program. The wells team leader gets a chance to review and approve the drilling program. The drilling operations manager gets to approve the drilling program and those two sides kind of meet at a few levels above me to the vice president of drilling at BP.

Q. Are there independent safety review within BP to ensure that -- it sounds to me that's a technical reviewing chain. Are there also safety reviewing chain that would provide input to the process?

A. Absolutely. During the design phase of the well both the casing design is reviewed by independent folks. Most of those work in the technology department in the other building at BP. So, there's casing, there's cement experts that check the cement designs, there's fluid experts that check the mud designs,

there's rock strength experts that check kind of the geo--mechanics aspects of the well, there's loss circulation specialists within BP that review the plans. All the -- in fact, all these people were involved in this Macondo well.

Q. Yes, sir. Okay, thank you.

EXAMINATION

BY LT BUTTS:

Q. Sir, you said this was an exploratory well?

A. Yes.

Q. What -- again, I think you mentioned two criteria that you use in the plan. What were those two criteria again?

A. The pore pressure and fracture gradient.

Q. I think you said something like geology data in a nearby well --

A. So, offset information, geologic predictions, if you will. When you first obtain a lease from the U.S. Government they've shot seismic across that lease, somebody had shot spec seismic across that lease. BP has acquired that seismic. The

geologists and geophysicists have to analyze that data and determine that there's a viable prospect on that block, so we acquire that block.

Q. And how old is that data? In this area in Mississippi Canyon-252?

A. Some of it's very new, but I don't know the exact vintage. But, yeah, I know that -- I mean while the well is drilling there's a seismic boat shooting new seismic right on location.

Q. Okay.

A. So, there's a lot of new technology in seismic that's being done as we're drilling wells even.

Q. Okay. And nearby wells, how many nearby wells do you have that you actually looked back to to

A. Multiple. In fact, on this block there's two wells.

Q. Two wells?

A. Drilled many years ago, but at much shallower depth. There's actually a producing gas field on this block.

Q. Alright.

A. So, we had some good offset information for the upper hole sections. The deeper hole sections you then are stretching, you know, tens and twenty miles away for the nearest wellbore.

Q. Okay, thank you.

EXAMINATION

BY MR. MATHEWS:

Q. Just for the record, earlier I heard you say that you've been doing day to day reviews and internal talks with BP. You've never looked at the cement information on that casing string?

A. Not specifically, no. Not that I can recall. I mean –

Q. You don't recall, yes or no, if you've looked at any type of logs on the cement --

A. Post job data?

Q. Yes, sir.

A. No, I don't recall.

Q. Thank you.

CAPT NGUYEN:

Flag state?

MR. LINSIN:

No questions, thank you, Captain.

CAPT NGUYEN:

Yes, sir. BP, do you have questions for your witness?

MR. GODFREY:

No questions at this time.

CAPT NGUYEN:

Yes, sir. Transocean?

MR. KOHNKE:

Thank you.

EXAMINATION

BY MR. KOHNKE:

Q. Good morning, Mr. Hafle. You said that you had extended your stay when you visited the HORIZON. You extended it to a week.

A. Ten days actually.

Q. How many?

A. Ten days.

Q. Ten days. And, when asked the reason for that, you said that you had come to know some of the deceased by the well and you enjoyed being around them and I understand I think what you mean. But let me ask you this: Which of the deceased were you particularly referring to? Which ones were you closest to?

A. The people that I knew from the meeting

in Galveston several years ago: Jason, Dewey.

Q. Was -- Jason Anderson the toolpusher, correct?

A. I believe. I'm not sure exactly his title.

Q. Alright.

A. But I believe he was the toolpusher, yes.

Q. And Dewey, do you know Dewey's last name?

A. Revette.

Q. And he was the driller, was he not?

A. Yes.

Q. Okay. These were good men, weren't they?

A. Very good.

Q. They knew their job?

A. Absolutely.

Q. And you knew that -- you knew that they knew their job? There was no doubt in your mind about that?

A. No doubt.

Q. Okay. And they perished in this accident trying to do their job; isn't that correct?

A. That is correct.
Q. You don't criticize them for any of the things that they were trying to do, do you?
A. No, sir.
Q. Okay. Now --
CAPT NGUYEN:
Mr. Kohnke, I'm not sure Mr. Hafle has knowledge of what these crew members did on the HORIZON during the casualty. So, I don't think that he can confirm that they can confirm that they did everything right. I just want to make sure of that. Is that --
MR. KOHNKE:
Well, I'm not asking if they did everything right. I'm saying does he have any criticisms of what they did.
CAPT NGUYEN:
Based on what -- we don't know what they did.
MR. KOHNKE:
Right.
CAPT NGUYEN:
He just --
THE WITNESS:

In the general terms I know those gentlemen and during the ten days I was out there I can say that they were doing the job that they were out there to do.

CAPT NGUYEN:

Okay. So, you feel that they are qualified to do the job, based on your experience?

THE WITNESS:

I feel the did their job. I don't know their background and qualifications.

CAPT NGUYEN:

But not specifically to this particular casualty? You have no knowledge of what happened?

THE WITNESS:

I have no knowledge of what happened --

CAPT NGUYEN:

Alright. Thanks, sir.

THE WITNESS:

-- while that event was going on on the rig that night.

BY MR. KOHNKE:

Q. Now, at the time of this blowout, let me get this clear: All of the casing that was to be run had been run; is that correct?

A. That is correct.

Q. And all of the cementing of that casing that was to be cemented had been completed; is that correct?

A. That is not correct. We still had to set a surface cement plug.

Q. Okay. With respect to the surface plug, other than that, all of the down hole below that surface plug that was to be at what depth?

A. The surface cement plug?

Q. Yes.

A. I don't remember the exact depth, but it's permitted roughly 3,000 feet below the mud line.

Q. Okay. And so everything below what was to be the location of the surface plug had been cemented; is that correct?

A. That's correct.

Q. Okay. The seal assembly at the well head had been set?

A. To my knowledge, yes.
Q. Alright. And then at that point you had a sealed wellbore; is that correct?
A. The information that I was given is that that wellbore had been pressure tested successfully to 2500 PSI, which would indicate it sealed because that would be well above the fracture gradient of any of the formations that would be exposed, yes.
Q. And, in addition to the pressure testing which seeks to determine if you have in fact a sealed wellbore, there were also two negative tests, are you aware of that today?
A. I'm aware that they were going to be doing negative tests. I'm not sure if they did two or if they did one or if they did three, to be honest.
Q. And the testimony on this record has been that the negative tests, both of them, were successful?
A. That is my indication from the information that I was given from the rig also.
Q. So, in this point, in BP's judgement it was – because it's a sealed wellbore, because

it's been tested it's safe to displace the mud with seawater on the riser?

A. That's why we do those tests.

Q. That's correct, alright. Now, the next step in this process after displacing the mud in the riser was to set the surface plug; isn't that correct?

A. That's correct.

Q. Alright. And, when you set the surface plug, that is a cement plug or filler of what dimension? How long or deep would this cement plug be?

A. This plug was planned to be 300 feet long.

Q. Okay. And it would have been how many feet below the mud line?

A. Approximately 3,000.

Q. And how many feet above the total vertical depth?

A. Roughly 10,000.

Q. Okay. And at some point you said -- you were asked a question about the CBL and the temperature log. How is a CBL run?

A. On wire line.

Q. And how do you get the wire line down

to the bottom?

A. You rig up the equipment in the derrick and it goes over a set of shivs and the wire line operator allows it to free fall into the wellbore.

Q. Do you need an open wellbore to get down to the bottom in order to run a CBL?

A. Yes.

Q. Were y'all planning to drill a separate parallel hole to get down or were you planning to go down through the existing wellbore?

A. You run a CBL on the cement job that you just performed inside of that casing. You would go directly inside that.

Q. Alright. Well, what were you going to do about the surface plug that they were about to set through several hundred feet of cement and how were you going to get passed that?

A. Because of the conditions of the cement job there's not a requirement to run a CBL.

Q. That's not my questions.

A. There was no plans to run a CBL.

Q. Well, you said earlier that the CBL was in waiting – I thought you said -- those weren't your words, those are my words. That

the CBL was something that you were considering doing, but this blowout occurred before it could be done, didn't you say that?

A. I don't recall saying that.

Q. Okay. Well, the fact is that once the surface plug is set there's no plan to run a CBL, is there?

A. That surface plug will be removed in the future and a CBL will be run in the future.

Q. Well, we're talking about a year from now or whenever BP decides to produce the well?

A. Some date in the future, yes.

Q. Well, I'm talking about in terms of this well, this well. Up until the blowout was there a plan to run a CBL?

A. If the cement job was unsuccessful --

Q. The cement job for the plug --

A. For the casing, for the casing. The cement job for the 7 inch casing if that cement job had been deemed unsuccessful there is a decision tree process that has conditions that which we perhaps would have run a CBL. If you don't have those documents I'm sure

somebody can supply those to you.

Q. Isn't the CBL a means for determining if the cement job is successful? Isn't that what it does?

A. It's one of the methods.

Q. Okay. And so why did BP have the equipment sent out to the rig if it didn't intend to use that equipment?

A. It's my belief and knowledge that there was no equipment at the rig site to run that.

Q. Okay. There has been a report in the Times Picayune, the local paper, that there was a -- the equipment necessary to do the log and that the workers were sent back to the shore some hours before it, do you have any knowledge of that?

A. I believe that's inaccurate.

Q. Okay. So, you do not believe that there was any equipment to run the CBL on the rig at the time of this blowout?

A. I'm unaware of whether there was or was not to be honest.

Q. Okay. But the purpose of a CBL, let's be clear about this, what does a CBL give you? What information with respect to the quality

and sufficiency of a cement job?

A. So, CBL is an abbreviation for cement bond log.

Q. Alright.

A. It gives you some indication of whether or not there is cement to casing contact, cement bonding to the pipe.

Q. In other words: Whether it's holding, correct?

A. It's a qualitative not a quantitative means of determining whether or not that cement has completely sealed against the casing.

Q. So, you determine from a qualitative standpoint whether or not the job that you intended the cement to perform is going to be performed?

A. You're going to have to repeat that question.

Q. Sure. Qualitatively you want to know is this cement, which is meant to be a barrier, is it going to work? That's what qualitative means, doesn't it?

A. Possibly.

Q. Possibly you said?

A. Well, I'm still not sure I understand your question.

Q. Okay. You want the cement to be a barrier, don't you?

A. Cement is put in every casing string to be a barrier, yes.

Q. Okay. So, for it to be a barrier, it's got to work?

A. It has to be in place above the zone that you're trying to isolate, absolutely.

Q. So, you would agree that it has to work? It has to be fulfilling it's intended purpose?

A. It is one of the barrier methods, yes.

Q. And the cement bond log gives you that information qualitatively?

A. Sometimes.

Q. It doesn't give it to you quantitatively, it gives it to you qualitatively as I appreciate your testimony?

A. Yes. I'm not a cement bond log expert.

Q. Now, wouldn't it always be a good idea to do a cement bond log?

A. It depends on whose opinion you're asking.

Q. I'm asking yours.

A. In my opinion it's not always necessary to run a cement bond log.

Q. Not always necessary, alright. Well, you had some -- let me see if I can get the right language here. You had some loss return at the production interval, did you not?

A. Yes, sir.

Q. Now, loss return at the production interval, what does that mean in plain everyday English?

A. While drilling that hole section we lost over 3,000 barrels of mud while drilling.

Q. Okay. Now, when you're using nitrified cement it makes the cement lighter, doesn't it?

A. Yes, sir.

Q. Was there any concern that some of that cement may have been lost at this interval?

A. The model that was done would indicate that it could all be put in place without losses.

Q. When was that model done?

A. The week prior to running casing.

Q. Okay. But that's a model. That only

gives you a hypothetical or a projection, if you will.

A. That's correct.

Q. The reality can only be determined by running a cement bond log; isn't that correct?

A. That's not correct.

Q. Temperature log, is that part of the cement bond log or is that a separate log?

A. Some say that bond logs probably have a temperature function built into them. I'm not sure what logging tool would have actually been run on this well, but both those tools are both -- you can have a cement bond log with temperature measurements more than likely and you can have just a single temperature log also.

Q. Now, you said the cement bond log was under consideration when the blow out occurred. Tell me: What was the consideration?

A. I did not say that.

Q. Oh, I'm sorry. I thought you said it was still under consideration. Had it been ruled out? Had BP decided "We don't need a cement bond log for this well"?

A. I believe that decision had been made based on the management of change document that has a decision tree path depending on how the cement job execution occurred that a bond log was not required for this well.

Q. Not required by MMS or not required by BP?

A. Both.

Q. Okay. Now, for this well to have begun to flow, what had to happen? What had to fail, in other words?

A. I'm not sure.

Q. Well, let's talk about the possibilities. There are only a couple; isn't that correct?

A. There's multiple failure points. Every joint of casing is screwed together and there's several hundred joints of casing that have a thread that any of those threads could leak.

Q. Okay. Well, let's -- for hydrocarbons to enter there has to be a failure at a point, at some point, correct?

A. When the investigation's finished we'll perhaps know. I don't believe you're going to

ever find out exactly how the hydrocarbons got in the wellbore.

Q. Well, if I ask you "How did it get in?" that will be your answer, but that wasn't my question. My question was: There has to be a failure at some point for this well to flow; isn't that correct?

A. Not necessarily.

Q. Excuse me?

A. Not necessarily.

Q. So, I guess this well didn't flow and it didn't blowout?

A. The well did flow and blow out, yes, sir.

Q. Well, there had to be a failure at some location; isn't that correct?

A. It is a possibility that the initial flow and expiration was not caused by a failure of any of the tubulars or cement.

Q. Okay. Well, let's -- then let me get back to my original question: Give me the different possibilities that would have allowed this well to flow. What failures would have occurred?

A. I am not going to speculate on all of

the mechanisms of the failure.

Q. Mr. Hafle, I'm not asking --

A. There will be an official investigation, which is on going, which is why we're here to answer questions to try to find out what happened on this well.

Q. Mr. Hafle, I'm not asking you to speculate about the cause. Do you understand that? That's not my question. My question is: Among the causes, what are they? For example: A cement failure, that's one of the causes; isn't that correct?

A. Possibly.

Q. Alright. It could have been a collapse of the casing?

A. Possibly.

Q. Okay. And if -- what are the other possible causes down hole for the hydrocarbons to enter this drill string?

A. The hydrocarbons could have been in the wellbore prior to the casing being run.

Q. Okay. And, if that's the case, then there would have to be a failure of the seal, the well head seal; isn't that correct?

A. No.

Q. Okay. Now, were you and are you now or have you been a part of the BP investigation team looking into the actual causes of this failure?

A. I'm not part of the investigation team.

Q. Okay.

A. I've been interviewed by one. I mean I'm not part of the investigation team.

Q. Okay. Let me ask you about these casing strings. We've established that the original APD called for I think you said six strings; is that correct, and that it ultimately had eight?

A. The original design back in January of 2009 --

Q. Yes.

A. -- is when we started working earnest on this wellbore, wellbore design. Probably prior to 2009. The original design had seven strings. Upon review in the process that we go through about planning a well within the expiration department and within BP's drilling department we go through a series of peer reviews, peer assists, technical data reviews, risk assessments. The design changed from

seven strings to six strings based on our understanding.

Q. I just want the number. You can shorten it if you wish.

A. Six strings was what was permitted initially.

Q. And ultimately how many were run? How many strings?

A. Eight strings were required to reach the objective depth.

Q. And each string has a certain length or distance that each string covers; is that correct?

A. Yes, sir.

Q. And how are they -- within a given string, a given diameter of casing, how are these casings put together? Are they threaded?

A. Every string is threaded, yes, sir.

Q. Okay. And then it ultimately looks like -- if you look at the well diagram it ultimately looks like an old 19th century pirate's spy glass or telescope. It's larger and then it gets smaller and smaller and smaller; isn't that correct?

A. Somebody might infer that's what it looks like, yes.

Q. Somebody who's not a petroleum engineer might make that conclusion?

A. Yes.

Q. Alright. And the widest is at the top and then it gets smaller and smaller. And where these overlaps occur as it comes down it's wider and then it's -- there's a narrower or smaller diameter casing string inside that, the one above it; isn't that the way it works?

A. Yes, yes.

Q. And part of the cementing that takes place that we've been talking about, cement at -- every time a casing string is run cement is then run out of a shoe at the bottom and hopefully run up the sides; isn't that correct?

A. That's always the plan, yes.

Q. Alright. And my question to you now is: The last -- the very last of these casing strings that -- the tapered string down to the 7 inch string --

A. -- the production casing string, yes.

Q. Correct. Where it fitted into the

casing string above it was cement run up into that interval?

A. There was no plans to bring cement back inside of the 9 and 7/8ths liner.

Q. But there was above that, correct?

A. No, I don't believe so. Only on the surface casing is it required to bring cement back to the surface.

Q. And the cementing that took place was down at the production interval at the bottom, cement was run out of the very bottom and up the sides to cover or close off the production interval; is that right?

A. That was part of the job of cement. It also covered up additional sands that were in that hole section.

Q. And by regulation the cement has to extent 500 feet above the upper limits of that production zone?

A. If that's the only hydrocarbon zone in the wellbore, yes, that would be correct.

Q. And in this case was that deemed to be the only hydrocarbons and did the cement go 500 feet above the production zone?

A. There was actually a higher hydrocarbon

zone in the wellbore that we brought cement much higher above --

Q. At a much higher level?

A. Yes.

Q. Okay. Now, between that top of the cement and the next section where casing met -- excuse me, where it joined, was there any cement in that joint?

A. This long string of casing does not touch the other strings of casing until you're back to the mud line at the water depth. There's no hang off procedures, there's no additional equipment. It's a long string you hang off at the well head.

Q. Do you have a copy of the -- the drilling program for this well in front of you?

A. No, sir.

Q. Let me hand you a copy and ask if you can identify this. I don't know if the board has this or not, but this is what I'm showing him (indicating). I guess MMS has this in their files. And quite frankly I think we got this from MMS.

Q. This is the drilling program that we --

LT BUTTS:

It's dated January 10th?

MR. KOHNKE:

Yes, well January -- it doesn't have a day. January 10, 2010 I should say.

MR. LINSIN:

Captain, may I inquire: Is there a Bates number on this document? It would be very helpful if --

MR. KOHNKE:

No, there isn't.

MR. LINSIN:

-- we had some way of identifying this document.

MR. KOHNKE:

Unfortunately there are no Bates numbers.

BY MR. KOHNKE:

Q. Okay. This is a document you've seen before?

A. Yes, sir.

Q. And you have signed it I believe as "Senior drilling engineer" --

MR. MATHEWS:

Mr. Kohnke, before we go further
I'm sorry, but you asserted that you got that from the MMS.

MR. KOHNKE:

No, I said "I think". I'm not sure --

MR. MATHEWS:

Okay.

MR. KOHNKE:

-- where we got it.

MR. MATHEWS:

Okay. We just want to clarify that we never released that for the record.

THE WITNESS:

Well, for the record this document was not given to the MMS. It's not required to be given to the MMS, so you got it from another source.

BY MR. KOHNKE:

Q. Perhaps so. That's why I said "I believe". I don't know the source, but that's your signature indicating that it was prepared by Brian Morrel and reviewed by you, among others?

A. Absolutely.

Q. In addition to being reviewed by you it's reviewed by Brett Cocollas (phonetic), is that his –

A. It's reviewed by Brett Cocollas, it's approved by David Sims, it's approved by John Guy (phonetic) and it's approved by Ian Lill (phonetic), who was the drilling manager at the time.

Q. Alright. And in this document there is an indication on the second page, if you'll turn to it please.

A. (Witness complies.)

CAPT NGUYEN:

Mr. Kohnke, you know, with my MMS counterparts that are right here, the board has never seen this document. So, in order to address this document, you need to, you know, submit it to the board for consideration before we discuss it here. Because the Parties In Interest, I don't know whether they have received it from the board or not and we haven't received it so therefore we shouldn't be talking about this document which we have no idea

what you're referring to.
MR. KOHNKE:
Well, can we take a break and I'll get some copies made?
CAPT NGUYEN:
That's not going to give us enough --
THE WITNESS:
It's a lot of pages in length.
CAPT NGUYEN:
-- opportunity. We will have additional hearings on this and we can do this properly in terms of providing it to the board and --
MR. KOHNKE:
As long as Mr. Hafle or one of the individuals who signed this is back and I can cross examine them, that's fine.
CAPT NGUYEN:
You can request a witness to the board and we can consider it with appropriate evidence to discuss this matter. Thank you, sir.
MR. KOHNKE:

I will do that then. Let me make sure I understand what you're saying. When we resume and one of these witnesses are here and I have made copies of this BP document and given it to the board then I'll be permitted to cross examine the witness at that time?

CAPT NGUYEN:

You can request the board to consider witnesses and evidence and if we believe that the witnesses that you offer or the evidence that you offer have relevance to this investigation we will provide that to the PIIs and we can have this discussion during this hearing.

MR. KOHNKE:

Alright.

CAPT NGUYEN:

Yes, sir.

BY MR. KOHNKE:

Q. Just for purposes of identification and for the board's understanding this is the drilling program for this well and it says "Final drilling program" on it, does it not?

A. This document may in fact not be a complete copy of the drilling program. This is the second drilling program created for the well specific for the DEEPWATER HORIZON. There's another version of this program that was created for the MARIANAS back in 2009.

Q. Alright. But – and I understand there may be an earlier version created for the MARIANAS. To understand: Is this the version that was created for when the HORIZON came on location?

A. The cover page appears to --

Q. Okay.

A. – warrant that statement.

Q. So, if we wanted to know what directions BP had given it's company men and Transocean, it would be found -- Transocean for the work of the HORIZON it would be found in this document or it's ultimate version; is that correct?

A. That would be correct.

Q. Alright. Okay. Most of my questions were going to be derived from this document. So, let me – I just have a few more and then I'll sit down. The production zone was

between what depth and what depth? Can you give me the perimeters or the dimensions of it?

A. I cannot give you the exact depths, but roughly it's in the last hole section at or about 18,200 feet plus or minus.

Q. The shoe on the very bottom string of casing, did that extend down below the production zone?

A. Yes, it did.

Q. It did. How far below?

A. I'm not exactly sure how many feet, but several feet below the production zone.

Q. Okay. And what's the reason for doing that?

A. When you go to complete a well you need -- you need casing below the bottom perforation so that when you perforate the well you get perforation debris that falls in. This is commonly known as rat hole. And this rat hole you like to have as much as possible so you try to set that casing as deep as possible below the productive interval.

Q. Do you know how long the shoe track was on that 7 inch casing?

A. Approximately 200 feet.
Q. Excuse me?
A. Approximately 200 feet.
Q. 200 feet, okay. And what was the pressure rating of the float equipment?
A. I don't recall the exact rating.
Q. Alright. One second please. Now, there was a question or two from the board dealing with BOPs and BOP testing. Do you understand that when a BOP is tested that the company men onboard sign off on that test, you know that don't you?
A. I'm aware of that, yes.
Q. Okay. So, that test when it's performed and the pressures that are read on that test are then signed off by a variety of people in addition to whoever performs the test on the BOP and that would include the rig management and the BP company men?
A. I've never signed off on one of those tests, so I don't know exactly who does sign off on those tests, but I'm sure that there is a set of Transocean people and BP folks that sign off on that test.
Q. And, in looking at the daily reports

that are coming from the rig, you see when those tests are performed yourself? You may not track it, but you see --

A. I see that there's been BOP test done, we know that we're required to test at least every 14 days, so it's a date that's kept track of very closely during the drilling of a well.

Q. Now, you indicated you were given some sort of a verbal communication from Brian Morrel and I don't -- and I'm not sure what that verbal communication included. Can you repeat what you said earlier?

A. You're going to have to tell me. I talked to Brian a lot on this well. It was a 160 plus days. So --

Q. I thought it had something to do with the surface plug.

A. I don't recall.

Q. Okay. Okay, thank you.

A. Your welcome.

CAPT NGUYEN:

Thank you, sir.

MR. DYKES:

I've got a couple of follow up

questions to Mr. Kohnke.

EXAMINATION

BY MR. DYKES:

Q. With respect to the cement bond log, would a cement bond log tell you where the top of the cement was?

A. Possibly.

Q. If it was good or if it was bad or would it show up?

A. Cement bond logs are often times very inconclusive. So, it is likely that you might get a top of cement, but it's not guaranteed.

Q. Okay. But in an 8 and a half inch hole with 7 inch casing it would probably be a pretty good indication that you would see the top of the cement?

A. I think from my experience having run less than a handful of cement bond logs. But, with my knowledge, I would say that you would be able to tell where the top of the cement was, yes.

Q. Okay, thank you.

MR. McCARROLL:

Can I follow up on that, too?

EXAMINATION

BY MR. McCARROLL:

Q. I just want to clarify your testimony when you were being questioned about a decision to run or not run a bond log. You said that BP and MMS both had concurred, is that your testimony?

A. I don't recall saying that, but I don't believe there's anything in the CFRs that say that a cement bond log is required.

Q. But I want you to clarify: To my knowledge MMS was not involved in any decision to run or not run a bond log or temperature log.

A. That is correct. We never requested permission nor do I think we have to request permission to run a bond log.

Q. Okay, thank you.

EXAMINATION

BY LT BUTTS:

Q. And that's a good point. If it's not in the CFRs then perhaps it does need to be. Is this CBL is it an integrity test? I understand there's pressure negative and I guess you bump it actually with pressure. What exactly is this telling us?

A. A CBL is run most usually -- when you have a production casing you run a CBL. A CBL would have been run on this well. Some day in the future when we bring another rig out to do the completion you would run a cement bond log to find out if the cement across the productive interval had enough integrity to warrant perforating the casing during the completion and allowing this well to flow back to a platform. If that cement bond log in the future showed that there was poor cement you would do a remedial cement job because you have to have a good cement job for a production. So, that cement bond log is an evaluation tool that is not always 100 percent right. There's many factors that can effect it's quality. It's not a quantitative tool. It does not tell you the exact percentage of cement at any given point. So, it's kind of like it's a tool in the engineering tool box that has to be used with a bit of caution. But if it shows there's no cement two or three years from now when we come to do the completion we will do a remedial cement job on that casing.

Q. And forgive me I don't know of this tool or it's purpose and I was just kind of trying to relate it to perhaps a weld procedure. When there's a bonding moment between two plates we can no destructively test through non-particle or we could test radiography and then we can actually determine if a weld was in fact bonded and I didn't know if this was a tool similar to radiography where we could determine 'Wow, this cement job was good deal' and then move on.

A. I think if it's a really good cement job a cement bond log tells you it's a really good cement job. It doesn't -- it's not very good at telling you if it's less than a good cement job.

Q. Okay.

A. It kind of is up to the experience of the people reading it, the conditions the tool was run in, how long the cement has had to cure.

Q. Okay. Thanks for the education.

CAPT NGUYEN:

Cameron?

COUNSEL REPRESENTING CAMERON, INC.:

No questions.

CAPT NGUYEN:

Thank you. Halliburton?

MR. GODWIN:

Yes.

CAPT NGUYEN:

Yes, sir.

EXAMINATION

BY MR. GODWIN:

Q. Good morning, Mr. Hafle.

A. Good morning.

Q. My name is Don Godwin. I represent Halliburton. We've never spoken before have we, sir?

A. No, sir.

Q. Let me clarify something if I can. The decision about running the cement bond log was not a decision that Halliburton was involved in, was it?

A. Halliburton does not direct what logging tools we run on a well. They can make recommendations.

Q. Right. That was BP's decision as to whether or not to run a cement bond log, correct?

A. That is correct.

Q. Thank you. And, sir, are you aware that Schlumberger actually had a crew out on the rig to run the cement bond log, are you not, sir?

A. I am not aware if that crew was on the rig.

Q. Okay, sir. In terms of the centralizers, let me go back there again. You talked about that.

A. I have not talked about centralizers today, sir.

Q. Okay. Sir, well let me talk with you a little bit about it briefly if I might please. You said -- you talked about gas flow pressures and you mentioned that Jessie Gagliano knew about the gas flow pressures in the well, did you not?

A. I have not talked about gas flow pressures today either.

Q. Okay, sir. Do you know Jessie Gagliano?

A. I do.

Q. Okay, sir. Are you aware that Jessie Gagliano and others at Halliburton designed a

plan with regard to the cement job?

A. Jessie Gagliano was the primary desk engineer for Halliburton that did the model runs, yes.

Q. Alright, sir. And are you aware that Halliburton recommended 21 centralizers be used in this well?

A. I'm aware that the final model that was agreed upon had perhaps 21 centralizers. I can't remember the exact number, but it was in that ballpark.

Q. Okay. Halliburton recommended the use of 21 centralizers, how many centralizers were actually in the well at the time that it blew out?

A. To be honest I'm not sure how many centralizers they ran.

Q. Are you aware that that number was 6?

A. I've heard various discussions that that is the case, yes.

Q. Thank you, sir.

MR. GODWIN:

Nothing further, Captain.

CAPT NGUYEN:

Thank you, sir. M-I SWACO?

COUNSEL REPRESENTING M-I SWACO:

No questions.

CAPT NGUYEN:

Yes, sir. Dril-Quip?

MR. KAPLAN:

Just a few questions, Captain.

CAPT NGUYEN:

Yes, sir.

EXAMINATION

BY MR. KAPLAN:

Q. Good morning, sir.

A. Morning.

Q. My name is Lee Kaplan. I represent Dril-Quip. Do you know what a lock down sleeve is?

A. I'm familiar with it, but I've never run one.

Q. Do you know what it does?

A. It's part of the equipment that gets run in the well prior to doing a tree installation for completions.

Q. Do you know how it works in conjunction with the casing hanger and the seal assembly?

A. Not the details of that equipment, no.

Q. Do you know if a lock down sleeve was

part of the design for this well?

A. It was.

Q. And do you know if it had been installed at the time of the accident?

A. It had not been installed.

Q. Thank you. No further questions.

MR. KAPLAN:

Thank you, Captain.

CAPT NGUYEN:

Yes, sir. Thank you. Weatherford?

COUNSEL REPRESENTING WEATHERFORD, INC.:

No thank you, Captain.

CAPT NGUYEN:

Yes, sir. Anadarko?

COUNSEL REPRESENTING ANADARKO PETROLEUM CORPORATION:

No questions, Captain.

CAPT NGUYEN:

Yes, sir. MOEX?

COUNSEL REPRESENTING MOEX USA:

(No response.)

CAPT NGUYEN:

Douglas Brown?

MR. SEELY:

No questions.

CAPT NGUYEN:

Okay, thank you. Any additional questions from the board?

EXAMINATION

BY MR. DYKES:

Q. Mr. Hafle, in general terms back to the centralizers, who makes the final decision on deviations and changes to that well design?

A. It's a team decision on engineering decisions. We make recommendations and people sign off on that, approve those design changes.

Q. Okay. But I guess my question is: It's a group of you? It's a team?

A. I would say it's always not -- it's usually not a single person making a decision for a change on a well of this magnitude. Ultimately there is a top signature, but on this procedure here, for instance, there's three approvals.

Q. Okay.

A. There's not a top approval. If you look at the org chart I guess you could say the highest ranking BP official would be the

top approver of that change.

Q. Who would be looking at the daily drilling reports, either the IADC reports or the BP daily reports to make sure that the well is going as planned according to the procedures?

A. There'd be fifteen or twenty people that would be looking at that report.

Q. So, who would have the ultimate decision in when you removed certain things or add certain things, such as centralizers, where you reduce it from 21 down to 6?

A. I'm not sure who would have the ultimate. It depends on at the time who decided that a change was required. I'm not sure why a change was required. I mean somebody made that determination. I don't believe it was made by a single person, but I really don't have the facts as to who made that decision that day.

Q. Okay, thank you.

A. Yep.

MR. McCARROLL:

Can I do a follow up on the --

EXAMINATION

BY MR. McCARROLL:

Q. And I don't want to stay on this bond log too long, but I think it is a critical part of the decision making here as to why the well blew out. So, I would like to just go back over it just briefly. You stated that you would run a cement bond log or a temperature log as part of the evaluation of perforation and producing the well; is that correct?

A. I've never run a cement bond log personally for that purpose, but I know that cement bond logs are used to evaluate the production casing cement prior to doing the perforating completion, yes.

Q. I thought your testimony was that you were planning to run one in the future before you completed the --

A. Someone that's going to complete this well will run a bond long on this well in the future.

Q. That wasn't your testimony that you were planning to --

A. Not me personally. I will not be involved in the completion of this well

because I'm in the exploration drilling department.

Q. Okay. Let me get to my question and maybe you can help me with this: If you're going to run a temperature bond log before you produce a well, wouldn't you also want to run a temperature bond log to make sure it's safe to leave the well in the current condition?

A. No, sir. We have never done that. We've suspended hundreds and hundreds of wells. Every operator in the Gulf of Mexico does that without running a bond log.

Q. Even in a well that had a severe loss return zone that, by your own testimony, took 3,000 barrels of mud and you had to pump loss returns material so you had a severe condition here, you had a very technical cement job with nitrogen, which I don't think is a standard cement design for production casing. So, you had some clues here that you may have a cementing problem and to me to be safe as an operator you should then take some steps to make sure it's safe to leave the well in that condition. Do you feel like BP did that?

MR. LANSDEN:

I'm going to object. You've included a whole -- with all due respect, your own facts, your own testimony. He's given facts, he's given facts, he's come here today --

MR. McCARROLL:

I'm asking for his conclusion.

MR. LANSDEN:

Well, I think you've --

MR. McCARROLL:

His recommendation as a drilling engineer for the rig.

MR. LANSDEN:

You've added so many things and it's so convoluted I don't think he can answer it. If you want to ask the question by steps I will ask him to answer it. We want to cooperate, but I think your question is just over broad asking for conclusions on which he hasn't testified on this entire basis for answering. Could you break it down a little bit?

MR. McCARROLL:

I'll withdraw the question. Thank you.

MR. LANSDEN:

Thank you.

CAPT NGUYEN:

Mr. Hafle, thank you very much for being here.

THE WITNESS:

Thank you.

CAPT NGUYEN:

Are there any questions that we didn't ask or any information with relevance to the investigation that you think we should know?

THE WITNESS:

I'm sure the gentleman from Transocean will have additional questions, but I have nothing. I have nothing to add.

CAPT NGUYEN:

Okay. If we need you to come back to -- if we need some additional information, will you make yourself available to the board?

THE WITNESS:

I'm fully available. Yes, sir.

CAPT NGUYEN:

Yes, sir. Thank you very much.

THE WITNESS:

Thank you.

CAPT NGUYEN:

You are dismissed. We will take a break. We will resume at 9:45. Thank you.

(Whereupon, a short break was taken off the record.)

CAPT NGUYEN:

The board will now call on Mr. Christopher Pleasant with Transocean. Mr. Pleasant, please rise and raise your right hand so I can put you under oath.

MR. PLEASANT:

(Witness complies.)

* * * * * *

CHRISTOPHER PLEASANT,

after being first duly sworn in the cause, testified as follows:

CAPT NGUYEN:

Thank you, sir, for being here.