

EXHIBIT #

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WIT: _____

From: Corser, Kent
Sent: Sat Jun 26 13:30:58 2010
To: Corser, Kent; Kellingray, Daryl S; Cunningham, Erick; Winters, Warren J
Subject: RE: ACTION - proposal for slurry tests
Importance: Normal

PS: The other big issue we have not been able to understand is that the surface pressure continued to drop once the bottom plug entered the 7" casing. The total circulating pressure was well below the planned. It has been compared against OtiCem & Virtual Hydraulics and we cannot come close to a match. This could point to either lost returns or taking an influx or could it be foam becoming de-stabilized? But we have checked pits gains, flow out and do NOT find any problems. This is one reason for the rheology test.

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From: Corser, Kent
Sent: Saturday, June 26, 2010 8:24 AM
To: Kellingray, Daryl S; Cunningham, Erick; Winters, Warren J
Subject: ACTION - proposal for slurry tests

A few comments on the testing. Its apparent we are not going to get any samples from Halliburton with out going to court or having the USA investigation office force them into testing.

The key issues that CSI has brought forward are:

- The foam quality required for a job at this depth/temp is ~19%. This is on the edge of any design and they have big concerns about stability.
- They added de-foamer to the cement (dry blend) this could of caused de-stabilization of the foam. KCL also an issue.
- The job was pumped at near balance conditions. Gas flow could be an issues with all the additives, no fluid loss, channeling etc.
- The cap cement was 16.94 ppg. No fluid loss additive. We were using a 14.5 ppg foam cement to push a 16.9 ppg cement. Could have channeling. What would this do to the design, stability
- We only used ~7bbl of tail at 16.9 ppg. If foam stability was an issue did we get N2 comingled in the tail?
- We have NO lab test from Halliburton on the final design. We do not know if they tested with base oil, spacer, mud etc.

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CSI has purchased equipment to be able to test at full down hole pressure and temperature. We do not have the true samples from Halliburton but it would be great to be able to say that we tested representative samples and found the following issues So until the products get released nothing else we can do. We are trying to get draft report mid July so we really need this testing.

On another note - Do any of you have or know if Halliburton has a cementing manual? We would like to get hold of this to see if Halliburton has followed their own manual.

I am giving you a call about the testing so we can get this landed.

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From: Kellingray, Daryl S
Sent: Saturday, June 26, 2010 7:00 AM
To: Cunningham, Erick; Corser, Kent; Winters, Warren J
Subject: RE: ACTION - proposal for slurry tests

Agree with Erick's comments and it seems a lot of work and I am not 100% clear what questions we are answering, I believe the key objective of the work is to assess (based on the predicted channelling and risk of contamination) what happens to the cement slurry. We can predict what will happen based on experience but need to confirm this in the proposed laboratory programme.

Foam Cement + Base oil / OBM

Its generally accepted that a foam cement slurry contacting an oil based fluid will "flatten" the foam i.e. cause the foam cement to destabilise..

Cement + small levels of OBM

Generally small levels of contamination reduce pumping time and accelerate strength development but reduce ultimate compressive strength (the brine phase in the OBM causing the acceleration)

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Cement + spacer

Reduces rate of strength development and ultimate strength, I'm assuming we had a dual spacer system (volume with surfactant and a volume without surfactant) since its generally not wise to pump a surfactant based spacer in contact with foam cement. I'm not sure what the surfactant in a Halliburton system would do to a foam cement but suspect if its got musol in it it might also destabilize the foam.

I'm assuming this programme will confirm these effects

I'm a little unclear on the focus on rheology of the foam cement since the slurry volume was so small unless the pressure trace showed some strange behaviour when the cement hit the open hole (I'm assuming we had a bottom plug) I'm not clear what all the rheology data points will help us explain. If we are interested in the surface pressure before cement hits open hole its possible you could leave out the contaminated rheology testing.

Obviously its key to reconfirm the original testing but in Table 1 are these chemical equivalents to the Halliburton products ?, if not what conclusions will we be able to draw from the confirmation testing ?.

Is it correct that we did not employ a fluid loss aid in this slurry design as highlighted in the CSI document, this is very unusual and most suppliers argue that its necessary for foam stability, do we know why it was not used in this case ?. In theory fluid loss of a foam slurry is very low but few people have ever done any testing to confirm this (and I suspect its quite hazardous) and generally wisdom (to my knowledge) where there is a gas migration risk you would include a fluid loss aid even in foam slurry. I am amazed that there was no fluid loss in the cap slurry (and with the total job volume being so small surprised we foamed the cement as I assume the cap was 16.4 ppg), was this really a cap or a volume of cement pumped until density reached and nitrogen introduced ?).

Hazards in the testing programme

- If we make cubes with various levels of foam we will need a clear depressurisation strategy when the cubes are removed from the curing chamber such the cube is not damaged invalidating the results
- If when we combine foam cement with OBM / base oil we get nitrogen breakout what's going to go into the cube moulds (or the UCA), I would recommend we record the density of everything we test before starting any tests to be sure we have what we believe we have.

Regards
Daryl Kellingray

BP-HZN-BLY00110177

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Cementing Documentation in BP

<https://epti.bpglobal.com/sites/cementdoc/default.aspx>

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From: Cunningham, Erick

Sent: 25 June 2010 22:24

To: Corser, Kent; Kellingray, Daryl S; Winters, Warren J

Subject: RE: ACTION - proposal for slurry tests

Kent,

My comments are place inside the document,

Regards,

Erick

Erick Cunningham

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From: Corser, Kent

Sent: Friday, June 25, 2010 11:19 AM

To: Cunningham, Erick; Kellingray, Daryl S; Winters, Warren J; Corser, Kent

Subject: ACTION - proposal for slurry tests

Eric/Daryl - Sorry but need quick turnaround. We are trying to get lab test over the next two weeks to get a basic understanding of foam stability. This results will go into draft report with target date of 15 July. Could you both take a look at the proposal & let me know if 1.) It is missing anything 2.) Should we cut out any testing.

I have also asked GoM to get liquid samples (if possible) from one of the rigs drilling. Mainly the surfactant & retarder.

Let me know your thoughts as I would like to get them started this weekend.

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From: Sabins, Fred [mailto:fsabins@csi-tech.net]
Sent: Friday, June 25, 2010 10:45 AM
To: Winters, Warren J; Corser, Kent
Cc: jwatters@csi-tech.net; psonnier@csi-tech.net; lwatters@csi-tech.net
Subject: proposal for slurry tests

Guys, attached the proposal for the scope of work for slurry testing. We can make some substantial head way in a couple of weeks on a lot of the tasks.

I have outlined all the tests that we probably could run but may not. We would begin to run tests and see the results and change or modify as we go. We are prepared to put as many people on the tests as possible. We are getting materials and are starting on the base slurry designs today. We will start on the slurry stability very quickly.

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