
From: Pat Campbell
To: Freddy L. Gebhardt
CC: Bill Mahler; Terry L. Foster; Steve Norris; David Barnett; David W Moody; William Burch; Kerry L. Girlinghouse; Fred Ng; Mike Cargol
Sent: 8/15/2010 11:38:23 PM
Subject: BP Macondo Update 15 August 2010
Attachments: BP Macondo Update 15aug10.pdf

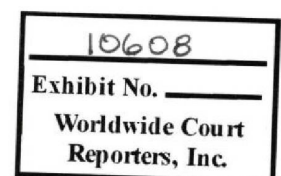
If anyone sees anything strikingly out of whack, or incorrect, let me know. This is what I plan to send to management as an update.

Thanks,

Pat Campbell
Executive Vice President
Technology Solutions Group
Superior Energy Services, Inc.
2202 Oil Center Court
Houston, Texas 77073
Phone 281-784-4700
Fax 281-784-4750
Cell [REDACTED]
E-Mail: pcampbell@wildwell.com
Visit us at: www.superiorenergy.com
NYSE: SPN

The contents of this message are provided for informational purposes only. Superior Energy Services, Inc. does not guarantee the accuracy or completeness of the contents and assumes no liability whatsoever for loss or damage arising out of recipient's reliance on or use of the information provided herein. This message contains confidential information and is intended solely for the named recipient(s). If you are not the intended recipient, please immediately contact the sender by return e-mail and destroy all copies of the original message. Thank you.

CONFIDENTIAL



WW-MDL-00143431

TREX 010608.0001

TREX-010608.0001



Technology Solutions Group

WSD - EPM - WWCI/BTI

Interoffice Memo

Date: 15 August 2010	Time: 6:31 PM	Ref:
To: Pat Bernard	From: Pat Campbell	
CC: PZuber; KBlanchard; DDuniap; THall; Superior		
Subject: BP Macondo Update 15 August 2010		

Recent Status:

Prior to the execution of the hydrostatic kill :

A Relief well kill vs. a surface bullhead/hydrostatic kill

WWCI Comments:

1. BP claims that the well has produced no solid particulate matter to their knowledge throughout the entire 100+ day event. BP doesn't believe erosion due to acceleration of wellbore fluids passing DP tool joints lying adjacent to casing wall is any concern. Flow velocity of xxx/second is lower than in some of the production wells in the GoM (which exhibit no such erosion). I agreed that the well was not flowing at sonic velocity. If there is no solid particulate matter in the produced media, they need to write a paper for SPE because it is unique in the history of blowouts. Also, why do you spend +- 1MM on gravel packing every production well in the area? Save it and go to Baskin & Robbins for a party.
2. Issues raised that were not included in my letter, with the objective of not detracting from the overall purpose of the letter. They were:
 - a. If the DP dropped down hole: Hard banded tool joints (TJ's) on DP often damage the casing as it falls.
 - b. If the DP dropped downhole it would suggest a train wreck where the first 5 1/2" DP TJ encountered the 9 7/8" x 7" casing crossover.
 - c. Their response was: Who said the DP fell? They indicated that they thought it was hanging in the VBRS in the DH BOP stack.
 - d. My response was: How do you know? Their response was: We don't. But it's as likely as your theory. OK.

A Relief Well bottom - kill vs. a Bullhead/Hydrostatic top - kill

BP's Comments:

- e. It would require the Macondo well be opened to the sea again.
- f. BP made it clear that that is not going to be authorized for any reason.
- g. BP's explanation for their decision was based on their belief that the cumulative capacity of the surface vessels (Q-4000, Enterprise/Clear Leader/ Helix Producer) were not capable of **A**) handling the open flow volume and **B**) not able to process the 'dirty end of the kill' with mud/chemicals, spacers, etc. Only the Helix producer is a true production flowback vessel and The Producer is only designed for clean hydrocarbons. Apparently, during the testing phase, dirty production keeps tripping all the Pop-Off and relief valves.
- h. It's true that the 'dirty end of the kill' and subsequent circulations from the DD III through the MC 252 well would be both inconvenient and as BP suggested, difficult to manage.
- i. Relief well mud weight is severely overbalanced vs. current column of formation fluid forces between the intercept depth and the sea floor in the annulus of the MC 252 blowout well. Communication between the two wells at intersect would potentially create an instant pressure increase at the wellhead/capping assembly of the Macondo well of as much as +- 8,500 PSI (assuming the Macondo well is shut in at intercept). Est. DDIII RW mud hydrostatic [from surface] applied to column of hydrocarbons from intercept to sea floor in the DH Macondo well.
 - i. If MC 252 is being flowed to the surface collection vessels - the flowing seafloor pressure would be considerably less than the shut-in pressure at the seafloor - and the surge at intercept (the surge would still exist even if flowing) wouldn't exceed the maximum safe pressure containment range for the flex joint.

15 August 2010

1

BP Macondo Update 15aug10.docx

CONFIDENTIAL

WW-MDL-00143432

TREX 010608.0002

TREX-010608.0002

- ii. It's true that if the total combined capacity of the surface collection vessels is not sufficient to handle open flowback of the Macondo 252 #1 well, then **A)** Some hydrocarbons would have to be vented to the sea during the kill, or alternatively, **B)** some system backpressure (choking) would be required.
- iii. WWCI believed that the MC 252 would be in flowback mode at the time of the intercept and kill. That's what had been previously planned in detail.
- iv. WWCI also thought that application of choke induced control of the flowrate would make it possible to control the volume returned to the surface; the flowing pressure, and the kill rate from the DD III. Once initial pressures at the open flow Kill-Rate have reduced the flowing pressure on the Macondo well to a safe operating level, one could even go to a barrel-in – barrel out method between the relief well and the Macondo 252 #1 well.
- v. The CDP seafloor manifold has ROV manipulated subsea hydraulic chokes on it. No surface control. It's true that's cumbersome, and ill-suited to handle the adjustments due to latency between relay periods to surface (10 to 20 seconds), and rather long lag-times in pressure response to orifice size. BP's assessment and observations are correct about that.
- vi. Everything is presently rigged up and tested. It'd be a humongous job to revamp for a flowing relief well kill.
- vii. BP couldn't possibly have a more unsuitable hookup for a relief well kill.
- viii. BP expressed concern about substantial additional cumulative risk as a result of having to have the +- 1500 people in the field working and the number of vessels and proximity of vessels to each other during a relief well kill and cementing operation. One can't argue with elevated human risks in this procedure (BP operated with +- 1500 people for about 60 days out of the 100+ days safely and without any LTI's).

Relief Well Kill:

Inconvenient; messy; expensive; some elevated exposure for personnel safety. Has no ambiguous failure modes to create further significant downside or catastrophic consequence.

Hydrostatic Kill:

Less problematic hookups at surface/subsea arrangement. Cleaner procedurally; far less time in preparation. Has potential failure mode that could be very problematic. No idea where the kill fluid/cement is going.

Current Status:

- The Hydrostatic kill was performed on the 4th of August 2010.
- Mud was injected into the wellbore with starting pressure of +- 7,200 PSI at 2 BPM and increased rate to 5BPM as injection pressure continued to fall.
 - A total of > 1200 BBL 13.2 PPG mud was followed by 150 BBL spacer; 536 BBL Cement; 150 BBL Spacer; then was displaced with 313 BBL of 13.2 PPG mud. A 5 stage hesitation squeeze was applied at the end of the cementation. A pressure increase was recorded.
 - The well was shut in for observation and pressure recording.
 - The TOC is theoretically @ 12,800 ft. depth - or 14,200 ft. depth, depending on the following assumptions:
 - A) DP is hung off in DH BOP or
 - B) DP fell to X-Over inside the 9 7/8" x 7" combination string.
 - The wellbore casing was not in communication with the annulus at any point above TD
 - Due to issues with weather, WOC, observing any fluctuation in Sea floor SIP, and significant differences of opinion, nothing has been done since the Hydrostatic Kill.
 - In order to elevate the confidence in the cementation an "Ambient Pressure" test was ordered. The simple translation is a negative test of the Macondo wellbore/cement job, but for obvious reasons BP did not wish to call it a negative test due to association with the negative test that affected the original blowout, as well as the general public reaction to anything called "negative".
 - The test was conducted and no one - **NO ONE** - of WWCI's team leaders were offshore, nor informed of the results, not updated. Even the BP team leader for the forthcoming work was not present offshore, nor had he been advised as of Friday morning, the 13th of August.
 - Apparently the test was successful – but didn't satisfy the USCG or the Dept of Energy. The so-called 'ambient test' did not reduce the system shut-in pressure at the sea floor to that of sea water hydrostatic (it doesn't require an atomic scientist – actually there are some working on this – but they aren't needed to figure out that they're trying to determine in advance if they could open

the well for direct re-entry with Rig and drill string, without first doing anything as far as the relief well is concerned).

- o They will now flush out the kill line(s) to the surface to remove base oil and whatever else remains in the lines with sea water. That will reduce the internal pressure to the lowest value we can achieve Sea water = +- 2300 psi).
- o As far as David Barnett (WWCI Team Leader in charge of Relief well kill) advises me they continue with get- ready work, but no authorization to proceed as of now.

Conclusion:

The situation is what we call in the oilfield being 'Two-Blocked' (Hard to go forward or back). If the results of the hydrostatic kill have been successful, then there is no circulating path up the annulus of the DH Macondo well.

- **With no flow path and no means of reducing the hydrostatic force present in the bore of the relief well, the intercept will do nothing if there is cement in the annulus above the intercept point..**
- **If there is a flow path to the seafloor in the annulus of the DH Macondo well an excessive shock load will occur (if Macondo is shut in at intercept)**
- **There are many unknowns: Is the casing hanger seal in place and holding in the Macondo wellhead?**
- **Is there a bridge in the annulus between the intercept point and the seafloor? Would the resulting loading precipitate an Underground Blowout (UGBO) at a shallow casing shoe in the annulus of the Macondo well?**

I'm sorry the update is so long. If it was easy the sock monkey would be doin' this.

As always - this is OBAW..... "One Bad A#@ Well".

Regards

Pat Campbell

Executive Vice President

Technology Solutions Group

Superior Energy Services, Inc.