

**From:** "O'Sullivan, Donald Q" <dqsulli@lanl.gov>  
**To:** "O'Sullivan, Donald Q" <dqsulli@lanl.gov>, "Rees, William S Jr" <wsr@lanl.gov>, "Burns, Michael J" <burns\_michael\_j@lanl.gov>, "Richardson, Isaac E III" <richardson@lanl.gov>  
**Cc:** "Black, Stephen J" <sblack@lanl.gov>, "Gibbs, Scott W" <>wxg@lanl.gov>, "Cate, James Ten A" <tencate@lanl.gov>, "Benner, John C" <benner@lanl.gov>, "Ammerman, Curtt N" <ammerman@lanl.gov>  
**Bcc:**  
**Date:** Wed, 26 May 2010 09:01:35 PM  
**Subject:** "End" of Day Update  
**Attachments:**

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"End" of Day Update: 5-26-10

Since I have inundated everyone with continual updates today – I will keep my update here "brief" and address items not addressed in my earlier updates.

Morning diagnostic and engineering meetings were canceled in preparation for the kill shot.

A joint meeting amongst the Labs and DOE leadership was held to discuss conclusions of the diagnostics. In general – it was agreed that the kill shot should be executed, and to have higher assurance that the flow will primarily go down the annulus – the test ram should be opened and pressure should be placed on the upper pipe ram. This independent analysis agreed with the conclusions drawn by BP (noting that they had not thought of closing the upper pipe ram – which they then included in their procedure).

An interesting note was that Secretary Chu was carefully considering the radiographs at the kink (which he saw for the first time the night before). He had his post-doc analyzing the images all night with the notion that a potential drill pipe joint was identified in the kink (special thanks to Jim Ten Cate who came in to the Lab at midnight to get the post doc the raw data necessary to perform his analysis). It was clear that the Secretary wanted this data prior to making a final decision – but he did not have time to complete this analysis. Disappointed – he concurred with the rest of the group and moved forward – with a final comment that he wished he had asked to see the radiographs earlier.

Most of the day was spent tracking and analyzing the results of the kill – see previous string of updates. A brief engineering meeting was held at 18:00 essentially reviewing the efforts of the day – with the net conclusion being that reasonable control has been exerted over the well (without any major problems) – but it is not killed yet.

It appears that the efforts to kill the well and learn more with each step will continue at full speed all night. More mud is being ferried out to the pumping ships in case more mud is required as this top kill may span multiple 12 hour periods.

People Status:

Steve Black – Departed this morning after providing a tireless 8 days of leadership and support

Curtt Ammerman – Departed this afternoon after providing excellent insight into the fluid dynamics of the system

Don O'Sullivan – Remains on sight.

Donald Q. O'Sullivan  
Program Manager

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TREX-141758.0001

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From: O'Sullivan, Donald Q  
Sent: Wednesday, May 26, 2010 4:58 PM  
To: O'Sullivan, Donald Q; Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III  
Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; Ammerman, Curtt N; McPherson, Timothy N; Doyle, James C Jr  
Subject: RE: Top Kill - Update

For past 30 minutes are so they have not been adding any new mud. The pressures in the choke, kill and below BOP have all been completely flat (but about 1000psi apart?! - could be a gage issue?).

There is still flow out the riser and kink - but unclear how much. Is the system still just equalizing?

More questions than answers at the moment - but all signs are generally positive due to the steady state of the system (I'm far from a victor dance).

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Subject: RE: Top Kill - Update

They just closed off all mud flow and are seeing whether the well will go stagnant. So far (4 minutes) the pressures are all going down slowly (a very good sign - but not conclusive).

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From: O'Sullivan, Donald Q  
Sent: Wednesday, May 26, 2010 4:20 PM  
To: O'Sullivan, Donald Q; Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III  
Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; Ammerman, Curtt N; McPherson, Timothy N; Doyle, James C Jr  
Subject: RE: Top Kill - Update

They have essentially backed off pumping for the past 35 minutes - letting gravity feed the flow (pressure created by column of mud from surface to mudline is about 3600psi - pressure below BOP is less than 3000psi). This is creating a flow rate of about ~10 to 20Bbls/min of mud into the system. In this configuration the pressures have been essentially steady - not a bad sign - but still not conclusive.

They will either try to put more mud in (just in case) or they will try to stop the flow to see if the well goes static. We are currently playing the waiting game.

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Sent: Wednesday, May 26, 2010 3:36 PM  
To: O'Sullivan, Donald Q; Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III  
Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; Ammerman, Curtt N  
Subject: RE: Top Kill - Update

They have started to back off the pumping (to about 30bpm) to see what the pressures will do. Indications are good - but not conclusive. The pressures are not trending up - they are currently at 2850psi below the BOP - which is about 600psi to 700psi lower than before any mud was pumped. This is a good sign - but not a conclusive sign.

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Sent: Wednesday, May 26, 2010 3:19 PM  
To: O'Sullivan, Donald Q; Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III  
Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; Ammerman, Curtt N  
Subject: RE: Top Kill - Update

The situation appears to be relatively steady. They have been pumping mud at 60 to 70 bpm for the past hour and a half (about 4500Bbbls total). There are no indications that things are getting worse - but it is not clear that the kill has been (or will be) successful. It is an art to know when to stop pumping and see if the situation settles to a steady state of essentially zero flow. Chances are they will err on the side of putting too much mud in rather than too little.

Stay tuned. I will continue to send out notices (but at a lower rate) as the situation evolves.

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From: O'Sullivan, Donald Q  
Sent: Wednesday, May 26, 2010 2:24 PM  
To: Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III

Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; O'Sullivan, Donald Q  
Subject: Re: Top Kill - Update

They seem to be having trouble outrunning the well (pumping in faster than well can spit it back out). They have increased the kill flow rate to 70bpm.

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----- Original Message -----

From: O'Sullivan, Donald Q  
To: Rees, William S Jr; Burns, Michael J; Richardson, Isaac E III  
Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; O'Sullivan, Donald Q  
Sent: Wed May 26 14:13:03 2010  
Subject: Re: Top Kill - Update

So far it is a tie - the mud being pumped in seems to be mostly coming out the riser. We have not yet hit the tipping point that indicates a killed well (where more mud goes down well than comes back up drill pipe and otherwise).

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; O'Sullivan, Donald Q  
Sent: Wed May 26 13:55:48 2010  
Subject: Re: Top Kill - Update

Backing kill flow rate off to 40bpm. Pressures (choke and kill) down to 5200psi.

No visibility at end of riser. Kink leaks (4) blowing lots of mud.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; O'Sullivan, Donald Q  
Sent: Wed May 26 13:50:58 2010  
Subject: Re: Top Kill - Update

50bpm holding steady for about past 12min. Pressure at choke and kill lines staying steady (slowly curving down) at ~6000psi. We want pressures to stay steady or decrease.

Lots of mud coming out leaks and riser (though riser visibility is lost).

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C; O'Sullivan, Donald Q  
Sent: Wed May 26 13:39:26 2010  
Subject: Re: Top Kill - Update

Kill flow rate back up to 50bpm (kill and choke line pressure at about 6200psi).

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; Benner, John C  
Sent: Wed May 26 13:36:02 2010  
Subject: Re: Top Kill - Update

All was going along fine - and then they had a problem with the one of the pumping systems at the surface.

Flow at zero again - will have to restart with a new boat - seems to be happening quickly.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A  
Sent: Wed May 26 13:25:47 2010  
Subject: Re: Top Kill - Update

Just reached ~50bpm (5800psi at base of BOP).

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A;  
O'Sullivan, Donald Q  
Sent: Wed May 26 13:22:23 2010  
Subject: Re: Top Kill - Update

Current kill flow rate is at 30bpm. They are cycling up the rate and pressure in a semi-stair step process (more like a roller coaster).

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A;  
O'Sullivan, Donald Q  
Sent: Wed May 26 13:16:22 2010  
Subject: Re: Top Kill - Update

They are ramping up the mud flow rate now - in approximately 5bpm increments - at 20 bpm as email is being sent.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A;  
O'Sullivan, Donald Q  
Sent: Wed May 26 12:47:53 2010  
Subject: Re: Top Kill - Update

After completing the priming of the system they paused to ensure that the state of the valves and gauges match all requirements and expectations. They checked the operation of each valve visually with an ROV (a rod on the valve pops in and out of the valve - depending on the position). This extra check may have occurred due to a higher measured pressure when the flow was initiated - a situation LANL folks predicted would occur when they tightened the pipe ram and restricted the flow up the annulus (but creates a condition perhaps BP did not expect because it was different than last night's tests).

Apologies for possibly building up expectations - this is occurring slower than everyone expected.

Will keep you informed.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A;  
O'Sullivan, Donald Q

Sent: Wed May 26 11:56:59 2010

Subject: Top Kill - Update

Update:

After an unexplained pause of about an hour and 20min (control is offshore) - the top kill is recommencing.

They are starting to commence with a 6Bbl/min flow to prime the system and once the system is primed they will open the test ram and go to 50Bbl/min.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A

Sent: Wed May 26 10:34:53 2010

Subject: Re: Go/No Go on Top Kill

Sorry about that last misfired email.

Clarification on last update.

They have started the kill procedure - but not the 50Bbl/min kill flow. That comes in about 15min (or so).

I'll send updates when important changes occur unless you say otherwise.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A; O'Sullivan, Donald Q

Sent: Wed May 26 10:11:14 2010

Subject: Re: Go/No Go on Top Kill

Update:

They have been authorized and are proceeding with the top kill.

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Cc: Black, Stephen J; Gibbs, Scott W; Erickson, George A; Dasari, Venkateswara R; Cate, James Ten A

Sent: Wed May 26 09:54:14 2010

Subject: Go/No Go on Top Kill

Update:

The DOE teams and BP have conferred and have separately come to the same conclusion - namely that the top kill should be performed.

Both teams essentially agreed as to the status of the system - namely that the best approach is to tighten the pipe rams and open the test rams and go for full kill flow.

There is still a question that the Secretary is considering on whether the drill pipe drops and flow increases dramatically - what is the next step/contingency if things go bad.

Assuming the above gets answered - the off shore commander will be given permission to start the top kill at ~11:15am Houston time.

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