

From: Wulf, Gary T

Sent: Sun Jun 27 22:57:34 2010

To: Mason, Mike C; Merrill, Robert C; Liao, Tony T; Willson, Stephen SM; Levitan, Michael M.

Cc: Tooms, Paul J; Baker, Kate H (Swift); Brookes, David

Subject: How important are knowing the actual flow rates

Importance: Normal

Mike,

One key question – do we need know the actual flow rate to estimate the final shut-in pressure or determine the presence of leak in the well? E.g. can we reasonably project to the final SIP or determine if a leak is present from pressure data and only knowing relative rate reduction?

If we need to know the actual flow rate this means:

- Rate > 32 - 37 MBD no waiting / no venting – shut-in
- Rate > 47- 55 MBD wait on Enterprise to hook-up to capping stack
- Rate > 55+ further waiting

We have a meeting Monday afternoon and this would be good to land this Monday morning.

Thanks

Gary

Gary Wulf

D&C Project Leader

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From: Mason, Mike C

Sent: Sunday, June 27, 2010 3:02 PM

To: Baker, Kate H (Swift); Wulf, Gary T; Tooms, Paul J; Merrill, Robert C; Liao, Tony T; Willson, Stephen SM; Levitan, Michael M.

Subject: Fw: Simulation of Rupture Disks...

All

Please see the attached work done by Tony this weekend - (Bob you and I can have Mike Levitan run cases for this for siwlp with crossflow prior to our meeting).

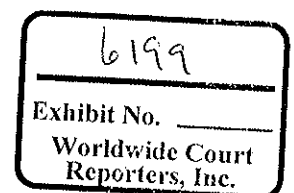
Bob is preparing a slide for siwlp for tomorrow - Steve if you plan to have one can you send it to me by in the morning?

Bob, Mike and Tony please plan on being in early -

Thanks

Mike

Sent from my BlackBerry Wireless Handheld



From: Liao, Tony T
To: Mason, Mike C
Cc: Levitan, Michael M.
Sent: Sun Jun 27 20:01:48 2010
Subject: Simulation of Rupture Disks...

Hi Mike,

I have some simulation results for the problems we discussed yesterday.

Problem 3 (top priority): Potential flow rates at the rupture discs.

I built a new GAP model for this purpose. The simulator models flow in drill pipes (3450ft of 5 1/2" + 831 ft 3 1/2"), and annulus between drill pipes and casing string. In addition, the opening between the 9 7/8" casing (ID = 8.5") and the coupling (OD=8.25") of the 5 1/2" drill pipe at the top of BOP is included.

If all the rupture discs are closed (not burst), Qo_Annulus = 26,314 BOPD, Qo_DrillPipe=26,620 BOPD as the base case. The total rate is ~63,000 BOPD.

If the top disc (ID=0.41") is open, Qdisc = 3440 BPOD, Qo-Annulus=23,744 BOPD, and Qo_drillPipe=26,330 BOPD.

If the top disc (ID=0.125") is open, Qdisc = 323 BPOD, Qo-Annulus=26,159 BOPD, and Qo_drillPipe=26,588 BOPD.

If all the discs are open, each would flow about 3500 BOPD for discs with 0.41" ID, ~325 BOPD for discs with 0.125" ID.

Problem 2: What liquid rates would be in the annulus opening between 9-7/8" casing and coupling of drill pipes, and inside drill pipes during top kill operation?

The same simulator for the previous problem can be used for this purpose by adding the top kill pump.

For pump rate of 80 BPM (115200 BL/D), the pump pressure required at the BOP is 5407 psi (in the ballpark of the observed values between 5500 - 6000 psi), 77,900 B/D of drill mud would flow out of the opening between casing and coupling of the drill pipe, the remaining 36,700 B/D mud would flow out of the drill pipe. During this top kill operation, minimum oil would flow out of the well from the reservoir.

Problem 3: Assess the effect on production rate by the additional 900ft 5 1/2" drill pipe.

For the case for annulus and flow into drill pipe only, the liquid rate would reduce to 24 MBOPD from 31 MBOPD in a test case.

The new dimensions of the drill pipes should be used in the future models.

Michael L.

Would you please estimate the SIWHP (Shut In Well Head Pressure) for the case with one rupture disc open? As the rate is too small for 1/8" disc ID, I'd suggest that you only investigate the case with disc ID of 0.41". Please note the total rate for this case is ~63,000 BOPD (=3440 at disc, 23,700 BOPD at annulus, and 26,300 BPOD in the drill pipe).

Mike Mason has suggested that you run this case early tomorrow morning before our meeting. You can call Mike's mobile at (713)-301-3745 if you'd like to discuss this with him.

Please let me know if you have any questions.

Best regards,

Tony T. Liao, Ph.D.

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EPT, Base Management, Technology Specialist Support Team