02055468

Andrews, David

From: Andrews, David
Sent: Sunday, April 08, 2012 9:23 AM
To: 'Kelly Claussen'
Cc: Longworth, Mike; Kellerby, Shaun; Krabacher, Jay; Weems, Mark; King, Kevin; 'Wayne Bankert'
Subject: RE: Emailing: Fletcher Gulch 4-24H Plug Backv2_CustomerCopy.pdf
Attachments: Fletcher Gulch 4-24H Plug Backv2_CustomerCopy.pdf

RE: API No. 103-11888

Kelly,

Thanks, and please proceed.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

State of Colorado
Oil and Gas Conservation Commission
707 Wapiti Court, Suite 204
Rifle, Colorado 81650
Office Phone: (970) 625-2497 Ext. 1
Cell Phone: (970) 456-5262
Fax: (970) 625-5682
E-mail: David.Andrews@state.co.us
Website: http://www.colorado.gov/cogcc

-----Original Message-----
From: Kelly Claussen [mailto:kelly@walck.com]
Sent: Sunday, April 08, 2012 9:02 AM
To: Andrews, David
Subject: Emailing: Fletcher Gulch 4-24H Plug Backv2_CustomerCopy.pdf

Hello Dave, This is a planned plug-back of the pilot hole prior to going hrozontal. Let me know if there is anything else you may need. Kelly Claussen, 208-8205 The message is ready to be sent with the following file or link attachments:

Fletcher Gulch 4-24H Plug Backv2_CustomerCopy.pdf

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Cementing Best Practices

1. Cement quality and weight: You must choose a cement slurry that is designed to solve the problems specific to each casing string.
2. Waiting time: You must hold the cement slurry in place and under pressure until it reaches its' initial set without disturbing it. A cement slurry is a time-dependent liquid and must be allowed to undergo a hydration reaction to produce a competent cement sheath. A fresh cement slurry can be worked (thickening or pump time) as long as it is in a plastic state and before going through its' transition phase. If the cement slurry is not allowed to transition without being disturbed, it may be subjected to changes in density, dilution, settling, water separation, and gas cutting that may lead to a lack of zonal isolation and possible bridging in the annulus.
3. Pipe movement: Pipe movement may be one of the single most influential factors in mud removal. Reciprocation and/or rotation mechanically breaks up gelled mud and changes the flow patterns in the annulus to improve displacement efficiency.
4. Mud properties (for cementing):

Rheology:

Plastic Viscosity (PV) < 15 centipoise (cp) Yield Point (YP) < 10 lb/100 ft2

These properties should be reviewed with the Mud Engineer, Drilling Engineer, and Company Representative(s) to ensure no hole problems are created.

Gel Strength:

The 10-second/10-minute gel strength values should be such that the 10-second and 10-minute readings are close together or flat (i.e., 5/6). The 30-minute reading should be less than 20 lb/100 ft^2. Sufficient shear stress may not be achieved on a primary cement job to remove mud left in the hole if the mud were to develop more than 25 lb/100 ft^2 of gel strength.

Fluid Loss:

Decreasing the filtrate loss into a permeable zone enhances the creation of a thin, competent filter cake. A thin, competent filter cake created by a low fluid loss mud system is desirable over a thick, partially gelled filter cake. A mud system created with a low fluid loss will be more easily displaced. The fluid loss value should be < 15 cc's (ideal would be 5 cc's).

5. Circulation: Prior to cementing circulate full hole volume twice, or until well conditioned mud is being returned to the surface. There should be no cutting in the mud returns. An annular velocity of 260 feet per minute is optimum (SPE/IADC 18617), if possible.
6. Flow rate: Turbulent flow is the most desirable flow regime for mud removal. If turbulence cannot be achieved pump at as high a flow rate that can practically and safely be used to create the maximum flow energy. The highest mud removal is achieved when the maximum flow energy is obtained.
7. Pipe Centralization: Cement will take the path of least resistance; therefore, proper centralization is important to help prevent the casing from contacting the borehole wall. A minimum standoff of 70% should be targeted for optimum displacement efficiency.
8. Rat hole: A weighted viscous pill placed in the rat hole prior to cementing will minimize the risk of higher density cement mixing with lower density mud when the well is static.
9. Top and Bottom plugs: A top and bottom plug are recommended to be run on all primary casing jobs. The bottom plug should be run after the spacer and ahead of the first cement slurry.
10. Spacers and flushes: Spacers and/or flushes should be used to prevent contamination between the cement slurry and the drilling fluid. They are also used to clean the wellbore and aid with bonding. To determine the volume, either a minimum of 10 minutes contact time or 1000 ft. of annular fill, whichever is greater, is recommended.

Well Name: Fletcher Gulch	Well #: 4-24H
Intermediate Casing	0 - 4081 ft (MD)
Outer Diameter	7.000 in
Inner Diameter	6.366 in
Linear Weight	23 lbm/ft
Casing Grade	J-55
Pilot Hole Plug Back	4081 - 8600 ft (MD)
Inner Diameter	6.250 in
Job Excess	40 %
Drill Pipe	0 - 7700 ft (MD)
Outer Diameter	4.000 in
Inner Diameter	3.340 in
Linear Weight	14 lbm/ft
Stinger 7700 - 8600 ft (MD)	
Outer Diameter	2.375 in
Inner Diameter	1.995 in
Linear Weight	4.70 lbm/ft
Cement Plug	8600 ft (MD)
Cement Plug	7850 ft (MD)
Cement Plug	7100 ft (MD)
Cement Plug	6350 ft (MD)

***Actual Excess to be 30% over Caliper Log

Mud Weight	9 lbm/gal

Total Pipe Capacity: (8600.00 ft MD) = 504.02 ft^3

Plug 1

Mud: (7473.53 ft fill)

4081.00 ft * 0.221 ft^3/ft * 0 % = 902.04 ft^3
3392.53 ft * 0.2131 ft^3/ft * 40 % = 1011.90 ft^3
Total Mud = 1913.95 ft^3
= 340.89 bbl

Spacer:

376.47 ft * 0.2131 ft^3/ft * 40 % = 112.29 ft^3
Total Spacer = 112.29 ft^3
= 20.00 bbl

Cement : (750.00 ft fill)

750.00 ft * 0.2131 ft^3/ft * 40 % = 223.71 ft^3
Plug Cement = 223.71 ft^3
= 39.84 bbl

Total Pipe Capacity: (8600.00 ft MD) = 488.04 ft^3

Plug 2

Mud: (6723.53 ft fill)

4081.00 ft * 0.221 ft^3/ft * 0 % = 902.04 ft^3
2642.53 ft * 0.2131 ft^3/ft * 40 % = 788.20 ft^3
Total Mud = 1690.24 ft^3
= 301.04 bbl

Spacer:

376.47 ft * 0.2131 ft^3/ft * 40 % = 112.29 ft^3
Total Spacer = 112.29 ft^3
= 20.00 bbl

Cement : (750.00 ft fill)

750.00 ft * 0.2131 ft^3/ft * 40 % = 223.71 ft^3
Plug Cement = 223.71 ft^3
= 39.84 bbl

Total Pipe Capacity: (7850.00 ft MD) = 471.76 ft^3

Plug 3

Mud: (5973.53 ft fill)

4081.00 ft * 0.221 ft^3/ft * 0 % = 902.04 ft^3
1892.53 ft * 0.2131 ft^3/ft * 40 % = 564.49 ft^3
Total Mud = 1466.53 ft^3
= 261.20 bbl

Spacer:

376.47 ft * 0.2131 ft^3/ft * 40 % = 112.29 ft^3
Total Spacer = 112.29 ft^3
= 20.00 bbl

Cement : (750.00 ft fill)

750.00 ft * 0.2131 ft^3/ft * 40 %	= 223.71 ft^3
Kickoff	= 223.71 ft^3
	= 39.84 bbl

Total Pipe Capacity: (7100.00 ft MD) = 431.99 ft^3

Plug 4

Mud: (5223.53 ft fill)

4081.00 ft * 0.221 ft^3/ft * 0 %	= 902.04 ft^3
1142.53 ft * 0.2131 ft^3/ft * 40 %	= 340.79 ft^3
Total Mud	= 1242.83 ft^3
	= 221.36 bbl

Spacer:

376.47 ft * 0.2131 ft^3/ft * 40 %	= 112.29 ft^3
Total Spacer	= 112.29 ft^3
	= 20.00 bbl

Cement : (750.00 ft fill)

750.00 ft * 0.2131 ft^3/ft * 40 %	= 223.71 ft^3
Plug Cement	= 223.71 ft^3
	= 39.84 bbl

Total Pipe Capacity: (6350.00 ft MD) = 386.36 ft^3

Fluid Instructions

Cement Plug 8600 ft (MD)

Plug 1

Fluid 1: Mud

Mud		Fluid Density:	9 lbm/gal

Fluid 2: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Ahead:	16.49 bbl

Fluid 3: Plug Cement

PLUGCEM (TM) SYSTEM		Fluid Weight	15.80 lbm/gal
0.2 %	CFR-3 (Dispersant)	Slurry Yield:	1.15 ft3/sk
0.2 %	HR-5 (Retarder)	Total Mixing Fluid:	4.96 Gal/sk
0.07 %	SA-1015 (Suspension Agent)	Top of Fluid:	7850 ft
		Calculated Fill:	750 ft
		Volume:	39.84 bbl
		Calculated Sacks:	195 sks
		Proposed Sacks:	195 sks

Fluid 4: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Behind:	3.51 bbl

Fluid 5: Mud

Mud Displacmeent		Fluid Density:	9 lbm/gal
		Fluid Volume	80.43 bbl

Cement Plug 7850 ft (MD)

Plug 2

Fluid 1: Mud

Mud		Fluid Density:	9 lbm/gal

Fluid 2: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Ahead:	15.52 bbl

Fluid 3: Plug Cement

PLUGCEM (TM) SYSTEM		Fluid Weight	15.80 lbm/gal
0.2 %	HR-5 (Retarder)	Slurry Yield:	1.15 ft3/sk
0.2 %	CFR-3 (Dispersant)	Total Mixing Fluid:	4.96 Gal/sk
0.07 %	SA-1015 (Suspension Agent)	Top of Fluid:	7100 ft
		Calculated Fill:	750 ft
		Volume:	39.84 bbl
		Calculated Sacks:	195 sks
		Proposed Sacks:	195 sks

Fluid 4: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Behind:	4.48 bbl

Fluid 5: Mud

Mud Displacement	Fluid Density:	9 lbm/gal
	Fluid Volume	71.78 bbl

Cement Plug 7100 ft (MD)

Plug 3

Fluid 1: Mud

Mud	Fluid Density:	9 lbm/gal

Fluid 2: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Ahead:	15.52 bbl

Fluid 3: Kickoff

PLUGCEM (TM) SYSTEM		Fluid Weight	15.80 lbm/gal
0.2 %	CFR-3 (Dispersant)	Slurry Yield:	1.15 ft3/sk
0.2 %	HR-5 (Retarder)	Total Mixing Fluid:	4.96 Gal/sk
0.07 %	SA-1015 (Suspension Agent)	Top of Fluid:	6350 ft
		Calculated Fill:	750 ft
		Volume:	39.84 bbl
		Calculated Sacks:	195 sks
		Proposed Sacks:	195 sks

Fluid 4: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Behind:	4.48 bbl

Fluid 5: Mud

Mud Displacement	Fluid Density:	9 lbm/gal
	Fluid Volume	63.55 bbl

Cement Plug 6350 ft (MD)

Plug 4

Fluid 1: Mud

Mud	Fluid Density:	9 lbm/gal

Fluid 2: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Ahead:	15.52 bbl

Fluid 3: Plug Cement

DENSECEM (TM) SYSTEM		Fluid Weight	17.50 lbm/gal
0.3 %	CFR-3 (Dispersant)	Slurry Yield:	0.94 ft3/sk
0.3 %	HR-5 (Retarder)	Total Mixing Fluid:	3.36 Gal/sk
		Top of Fluid:	5600 ft
		Calculated Fill:	750 ft

		Volume:	39.84 bbl
		Calculated Sacks:	239 sks
		Proposed Sacks:	239 sks

Fluid 4: Rheologically Enhanced Spacer

TUNED SPACER III		Fluid Density:	12 lbm/gal
175.4 lbm/bbl	Barite (Heavy Weight Additive)	Volume Behind:	4.48 bbl

Fluid 5: Mud

Mud Displacement	Fluid Density:	9 lbm/gal
	Fluid Volume	55.42 bbl

Detailed Pumping Schedule

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate bbl/min	Downhole Volume
Plug 1					
1	Mud	Mud	9.0		222.77 bbl
2	Spacer	TUNED SPACER III	12.0		16.49 bbl
3	Cement	PlugCem	15.8		195 sks
4	Spacer	TUNED SPACER III	12.0		3.51 bbl
5	Mud	Mud Displacmeent	9.0		80.43 bbl
Plug 2					
1	Mud	Mud	9.0		192.79 bbl
2	Spacer	TUNED SPACER III	12.0		15.52 bbl
3	Cement	PlugCem	15.8		195 sks
4	Spacer	TUNED SPACER III	12.0		4.48 bbl
5	Mud	Mud Displacement	9.0		71.78 bbl
Plug 3					
1	Mud	Mud	9.0		164.24 bbl
2	Spacer	TUNED SPACER III	12.0		15.52 bbl
3	Cement	PlugCem	15.8		195 sks
4	Spacer	TUNED SPACER III	12.0		4.48 bbl
5	Mud	Mud Displacement	9.0		63.55 bbl
Plug 4					
1	Mud	Mud	9.0		136.05 bbl
2	Spacer	TUNED SPACER III	12.0		15.52 bbl
3	Cement	DenseCem	17.5		239 sks
4	Spacer	TUNED SPACER III	12.0		4.48 bbl
5	Mud	Mud Displacement	9.0		55.42 bbl