

HALLIBURTON

iCem[®] Service

BILL BARRETT CORPORATION E-BILL

For:

Date: Monday, April 20, 2015

Anschutz State 5-62-26-3225BH2

Case 1

Job Date: Wednesday, April 08, 2015

Sincerely,

Derek Trier

Sold To #: 343492		Ship To #: 3590603		Quote #: 0022030472		Sales Order #: 0902309445					
Customer: BILL BARRETT CORPORATION E-BILL				Customer Rep: curtis							
Well Name: ANSCHUTZ STATE			Well #: 5-62-26-3225BH2			API/UWI #: 05-123-40221-00					
Field: WATTENBERG		City (SAP): KERSEY		County/Parish: WELD			State: COLORADO				
Legal Description: SW NW-26-5N-62W-1553FNL-350FWL											
Contractor: CADE DRLG					Rig/Platform Name/Num: CADE 24						
Job BOM: 7528											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX40837					Srcv Supervisor: Vaughn Oteri						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST						
Job depth MD		4400ft			Job Depth TVD						
Water Depth					Wk Ht Above Floor						
Perforation Depth (MD)		From			To						
Well Data											
Description	New / Used	Size	ID	Weight	Thread	Grade	Top MD	Bottom MD	Top TVD	Bottom TVD	
Fluid Data											
Stage/Plug #: 1											
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Plug Cement	Premium Cement			86	sack	15.8	1.15		6	4.98
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	10.5 lb/gal Tuned Spacer III	Tuned Spacer III			30	bbl	10.5	6.17			
Cement Left In Pipe		Amount			Reason			Shoe Joint			
Comment Set 4 pta plugs 1 st @4400ft 2 nd @825ft 3 rd @400ft last one set at 50 to surface											

1.2 Planned Pumping Schedule

Bill Barrett Corp.**Well #: Anschutz State 5-62-26-3225BH2****Plug to Abandon Procedure****Given Information:**

- 7" 26 # Intermediate Casing
- 4" XT 39 DP 3.34" ID
- Plugs
 - 4400' – 4200'
 - 825' – 725'
 - 400' – 300'
 - 50' – 0'

Job Procedure:**Plug #1 (4400' – 4200')**

1. Arrive at location
2. Meet with Company Man
3. Assessment of location
4. Spot equipment
5. Pre rig up safety meeting (assignment of rig up)
6. Pre job safety meeting with Halliburton and rig crew
7. TIH to 4400'
8. Rig up surface iron to DP
9. Prime up cement pump
10. Fill lines with water
11. Pressure test cement lines to 4000 psi
12. Pump 6 bbls of 10.5 ppg TSIII
13. Pump 7.8 bbl 15.8 ppg PlugCem (Off of mix water)
 - a. In the displacement tank, mix 10.7 lbs of CFR-3 and 7.1 lbs of HR-5 in 4.5 bbls of mix water
 - b. 38 sks 15.8 ppg PlugCem
 - i. Class G
 - ii. Pump Time of 3 hrs to 70 Bc
 - c. Volumes calculated off 1.15 ft³/sk yield.
 - d. TOC figured at 4200' DP out
 - e. Volumes may vary based off final yield
14. Pump 3 bbls of 10.5 TSIII
15. Pump 42 bbls displacement
16. Shutdown
17. POOH to 3700'
 - a. Max 30 ft/min
18. Reverse out 2x DP volume

Plug #2 (825' – 725')

1. POOH to 825'
2. Pump 6 bbls of 10.5 ppg TSIII
3. Pump 3.9 bbl 15.8 ppg PlugCem (Off of mix water)
 - a. Use 2.3 bbls of mix water
 - b. 19 sks 15.8 ppg PlugCem
 - i. Class G
 - ii. Pump Time of 3 hrs to 70 Bc
 - c. Volumes calculated off 1.15 ft³/sk yield.
 - d. TOC figured at 725' DP out
 - e. Volumes may vary based off final yield
4. Pump 3 bbls of 10.5 TSIII
5. Pump 2.5 bbls displacement
6. Shutdown
7. POOH to 200'
 - a. Max 30 ft/min
8. Reverse out 2x DP volume

Plug #3 (400' – 300')

1. POOH to 400'
2. Pump 6 bbls of 10.5 ppg TSIII
3. Pump 3.9 bbl 15.8 ppg PlugCem (Off of mix water)
 - a. Use 2.3 bbls of mix water
 - b. 19 sks 15.8 ppg PlugCem
 - i. Class G
 - ii. Pump Time of 3 hrs to 70 Bc
 - c. Volumes calculated off 1.15 ft³/sk yield.
 - d. TOC figured at 300' DP out
 - e. Volumes may vary based off final yield
4. Pump 3 bbls of 10.5 TSIII
5. Pump 1 bbls displacement
6. Shutdown
7. POOH to 200'
 - a. Max 30 ft/min
8. Reverse out 2x DP volume

Plug #4 (50' – 0')

1. POOH to 50'
2. Pump 2 bbl 15.8 ppg PlugCem (Off of mix water)
 - a. Use 1.2 bbls of mix water
 - b. 10 sks 15.8 ppg PlugCem
 - i. Class G
 - ii. Pump Time of 3 hrs to 70 Bc

- c. Volumes calculated off 1.15 ft³/sk yield.
 - d. TOC figured at 0' DP out
 - e. Volumes may vary based off final yield
3. Pump 1 bbls displacement
 4. Shutdown
 5. POOH

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	40
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.5
4	Actual mud Plastic Viscosity (PV)	cP	
5	Actual mud Yield Point (YP)	lb _f /100ft ²	
6	Actual mud 30 min Gel Strength	lb _f /100ft ²	
7	Time circulated before job	HH:MM	
8	Mud volume circulated	bbls	
9	Rate at which well was circulated	bpm	
10	Pipe movement during hole circulation	Y/N	N
11	Rig pressure while circulating	psi	
12	Time from end mud circulation to start of job	HH:MM	
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	bbls	42
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	N
17	Annular flow after job	Y/N	N
18	Length of rat hole	ft	
19	Units of gas detected while circulating	units	
20	Was lost circulation experienced at any time?	Y/N	N

1.4 Plug Job Information

		Units	Description
1	Density of well fluid exiting well prior to job	lb/gal	9.5
2	Density of well fluid entering well prior to job	lb/gal	9.5
3	Was the well full prior to cementing?	Y/N	Y
4	How many joints of workstring pulled wet?	# Joints	
5	Depth of workstring for circulation after the plug?	ft	
6	Calculated Plug Height (workstring out)	ft	

1.5 Water Field Test

Item	Recorded Value	Units	Max Acceptable Limit	Potential Problems in Exceeding Limit
pH	8	-	6.0-8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	<200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	12	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	-	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	12	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	-	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	-	ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron	0	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	50	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by:

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comments
Event	1	Safety Meeting - Service Center or other Site	Safety Meeting - Service Center or other Site	4/8/2015	19:00:00	USER				Journey Management Meeting with HES Crew prior to departing Service Center
Event	2	Arrive At Loc	Arrive At Loc	4/8/2015	20:30:00	USER				Arrive on Location @ 2030 (Requested @ 2130) Rig Tripping out of hole and laying down drill pipe)
Event	3	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	4/8/2015	23:30:00	USER				Safety Meeting with HES Crew, prior to spotting trucks, and rigging up lines.
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	4/9/2015	01:00:00	USER	0.00	0.27	19.00	Pre-Job Safety Meeting with HES Crew and all 3rd Party EE's
Event	5	Start Job	Start Job	4/9/2015	01:22:59	COM6	0.00	8.27	7.00	Mixing Water Provided by Rig, tested good for mixing cement.
Event	6	Other	Other	4/9/2015	01:23:00	USER	0.00	8.26	7.00	1st Plug (D.P. Set @ 4400')
Event	7	Test Lines	Test Lines	4/9/2015	01:26:18	COM6	0.00	8.34	4169.00	Pressure Test Lines to 4169 PSI (Pressure Holding, No Visible Leaks)
Event	8	Pump Spacer 1	Pump Tuned Spacer	4/9/2015	01:36:54	COM6	2.10	10.89	12.00	Mix and Pump 6 BBLS Tuned Spacer @ 10.5 lb/gal (Density Verified by Pressurized Scales)
Event	9	Pump Cement	Pump Cement	4/9/2015	01:45:18	COM6	1.90	15.54	114.00	Mix and Pump 38 sks (7.8) bbls HalCem Cement @ 15.8 lb/gal (CFR-3, and HR-5 Additives added to mix

Event	Event ID	Event Name	Equipment	Date	Time	User	Volume	Weight	Height	Description
										water) Density Verified by Pressurized Scales.
Event	10	Pump Spacer 2	Pump Tuned Spacer	4/9/2015	01:50:12	COM6	1.20	9.26	-11.00	Pump 3 BBLs Tuned Spacer @ 10.5 lb/gal (Density Verified by Pressurized Scales)
Event	11	Pump Displacement	Pump Mud Displacement	4/9/2015	01:52:18	COM6	2.00	9.19	24.00	Pump 42 bbls Mud Displacement
Event	12	Shutdown	Shutdown	4/9/2015	02:01:50	COM6	0.00	10.42	-15.00	
Event	13	Other	Clean Lines	4/9/2015	02:06:08	COM6	1.20	1.06	-16.00	Wash-Up to 3-sided tank
Event	14	Other	Other	4/9/2015	03:21:50	USER	0.00	8.54	-2.00	Rig POOH to 825'
Event	15	Other	Other	4/9/2015	03:23:22	USER	0.00	8.51	-3.00	2nd Plug (D.P. Set @ 825')
Event	16	Pump Spacer 1	Pump Spacer 1	4/9/2015	03:26:26	COM6	1.20	8.43	0.00	Mix and Pump 6 bbls Tuned Spacer @ 10.5 lb/gal (Density Verified by Pressurized Scales)
Event	17	Mix Cement	Mix Cement	4/9/2015	03:34:43	USER	0.00	11.78	25.00	Mix 3.9 bbls (19 sks) Cement @ 15.8 lb/gal
Event	18	HES or HES Sub-Contractor Equipment Problem - Start Time	HES or HES Sub-Contractor Equipment Problem - Start Time	4/9/2015	03:45:00	USER				After mixing the 3.9 bbls of 15.8 lb/gal cement, the Road Engine on the Pump truck died. We attempted to repair and re-start engine, but were unable to get tractor running again. HES Supervisor notified Cement FSM, and requested a replacement pump truck, and ordered additional cement to replace the product we had mixed but were unable to pump downhole. HES supervisor notified Customer Rep. of issue, and informed him of the estimated arrival of the

							replacement truck and additional cement.
Event	19	HES or HES Sub-Contractor Equipment Problem - End Time	HES or HES Sub-Contractor Equipment Problem - End Time	4/9/2015	06:15:00	USER	Replacement truck arrives on location @ 0615. Truck broke down @ 0345, Replacement arrived @ 0615 (2.5 HRS)
Event	20	Other	Other	4/9/2015	06:17:05	USER	Unable to read Data for Chart, Once replacement pump truck arrived. Will retrieve Data, and provide to Customer Rep.
Event	21	Other	Other	4/9/2015	06:58:00	USER	2nd Plug (D.P. Set @ 825')
Event	22	Rig-Up Equipment	Rig-Up Equipment	4/9/2015	07:00:00	USER	Rig-Up Replacement Pump Truck, and Ready to Pump @ 0700. Held Safety Meeting with HES and Rig Crew.
Event	23	Pump Spacer	Pump Tuned Spacer	4/9/2015	07:19:00	USER	Mix and Pump 6 bbls Tuned Spacer @ 10.5 lb/gal (Density Verified by pressurized scales.)
Event	24	Pump Cement	Pump Cement	4/9/2015	07:23:00	USER	Mix and Pump 3.9 bbls (19 sks) Cement @ 15.8 lb/gal (Density Verified by Pressurized Scales)
Event	25	Pump Spacer	Pump Tuned Spacer	4/9/2015	07:26:00	USER	Pump 3 bbls Tuned Spacer
Event	26	Pump Displacement	Pump Displacement	4/9/2015	07:27:00	USER	Pump 2.5 bbls Mud Displacement
Event	27	Shutdown	Shutdown	4/9/2015	07:31:00	USER	Shut-Down, Break off Iron from Drill Pipe
Event	28	Other	Other	4/9/2015	07:33:00	USER	Rig POOH to 400'
Event	29	Other	Other	4/9/2015	07:57:00	USER	3rd Plug (D.P. Set @ 400')
Event	30	Pump Spacer	Pump Tuned Spacer	4/9/2015	08:00:00	USER	Mix and Pump 6 bbls Tuned

							Spacer @ 10.5 lb/gal (Density Verified by Pressurized Scales)
Event	31	Pump Cement	Pump Cement	4/9/2015	08:10:00	USER	Mix and Pump 3.9 bbls (19 sks) Cement @ 15.8 lb/gal (Density Verified by Pressurized Scales)
Event	32	Pump Spacer	Pump Tuned Spacer	4/9/2015	08:12:00	USER	Pump 3 bbls Tuned Spacer
Event	33	Pump Displacement	Pump Displacement	4/9/2015	08:15:00	USER	Pump 1 bbl Mud Displacement
Event	34	Shutdown	Shutdown	4/9/2015	08:15:50	USER	Shut-Down, Break-Off Iron from Drill Pipe
Event	35	Other	Other	4/9/2015	08:17:00	USER	Rig POOH to 50'
Event	36	Other	Other	4/9/2015	08:30:00	USER	Rig reaches plug-setting depth, however HES Bulk truck with additional cement has not arrived. Wait for Bulk Truck to perform 4th plug.
Event	37	HES Resources on Location and Available to Perform Job	HES Resources on Location and Available to Perform Job	4/9/2015	09:30:00	USER	Bulk truck with additional cement arrives on location, and HES ready to pump @ 0930.
Event	38	Other	Other	4/9/2015	09:37:00	USER	4th Plug (D.P. Set @ 50')
Event	39	Pump Cement	Pump Cement	4/9/2015	09:40:00	USER	Mix and Pump 2 bbls (10 sks) Cement @ 15.8 lb/gal (Density Verified by Pressurized Scales)
Event	40	Pump Displacement	Pump Displacement	4/9/2015	09:42:00	USER	Pump 1 bbl Fresh Water Displacement
Event	41	Shutdown	Shutdown	4/9/2015	09:42:30	USER	Shut-Down, Break-Off Iron from Drill Pipe
Event	42	End Job	End Job	4/9/2015	09:45:00	USER	End Job

Event	43	Other	Other	4/9/2015	09:50:00	USER	Rig POOH
Event	44	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	4/9/2015	09:50:01	USER	Safety Meeting with HES Crew, prior to rigging-down lines.
Event	45	Other	Other	4/9/2015	09:55:00	USER	Samples of Spacer and Cement taken on job, were left on location, and returned to Service Center.
Event	46	Safety Meeting - Departing Location	Safety Meeting - Departing Location	4/9/2015	10:30:00	USER	Journey Management Meeting with HES Crew, Prior to Departing Location. 14 Total Hours on Location. 2.5 HRS of Downtime, due to mechanical issue with Pump truck, and 1 HR of downtime waiting for the required additional Cement to arrive due to the loss of product, when the pump truck broke down. Once replacement Pump Truck arrived, crew was able to perform plugs 2, and 3. There was not sufficient cement to perform 4th, so crew had to wait for Bulk truck to arrive.