

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

For: Larry Siegel

Date: Thursday, March 05, 2015

Thornton 3 Surface

Thornton 3 Surface

Job Date: Friday, February 20, 2015

Sincerely,

Sebastian Estenssoro

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Thornton 3**, cement **Surface** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton

Job Times

	Date	Time
Requested Time On Location:	2/19/2015	2300
Called Out Time:	2/19/2015	1800
Arrived On Location At:	2/19/2015	2250
Job Started At:	2/20/2015	0454
Job Completed At:	2/20/2015	0600
Departed Location At:	2/20/2015	0930

1.2 Planned Pumping Schedule

Event	Pressure (psi)	Rate (bpm)	Volume (bbl)	Sacks	Density (ppg)	Yield (ft3/sk)	WR (gal/sk)
Start Job							
Test Lines	3500						
Pump Spacer FW		4	10		8.33		
Pump Spacer MF		4	12		8.33		
Pump Spacer FW		4	10		8.33		
Pump Cement		6	96		14.2	1.54	7.66
Shutdown							
Drop Top Plug							
Pump Displacement		6	61.3		8.33		
Bump Plug	282						
Check Floats							
Cement to Surface			13				

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Cementing Job Summary



The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3593017		Quote #:		Sales Order #: 0902138408					
Customer: EXTRACTION OIL & GAS				Customer Rep: Larry Siegel							
Well Name: THORNTON		Well #: 3		API/UWI #: 05-123-40257-00							
Field: WATTENBERG		City (SAP): AULT		County/Parish: WELD		State: COLORADO					
Legal Description: NW SW-8-7N-66W-1409FSL-330FWL											
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 280							
Job BOM: 7521											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA/HB60191				Srv Supervisor: Steven Markovich							
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST							
Job depth MD		865ft		Job Depth TVD							
Water Depth				Wk Ht Above Floor							
Perforation Depth (MD)		From		To							
Well Data											
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft	
Casing		9.625	8.921	36	LTC	J-55	0	835		0	
Open Hole Section			13.5				0	865		0	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	9.625	1		865		Top Plug	9.625	1	HES		
Float Shoe	9.625	1				Bottom Plug	9.625	1	HES		
Float Collar	9.625	1				SSR plug set	9.625	1	HES		
Insert Float	9.625	1				Plug Container	9.625	1	HES		
Stage Tool	9.625	1				Centralizers	9.625	1	HES		
Miscellaneous Materials											
Gelling Agt		Conc		Surfactant		Conc	Acid Type		Qty	Conc	
Treatment Fld		Conc		Inhibitor		Conc	Sand Type		Size	Qty	
Fluid Data											
Stage/Plug #: 1											
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Mud Flush III (Powder)	Mud Flush III			12	bbl	8.4			6	
42 gal/bbl		FRESH WATER									

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Cementing Job Summary

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	Lead Cement	SWIFTCEN (TM) SYSTEM	350	sack	14.2	1.54		6	7.66
7.66 Gal		FRESH WATER							
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
3	Displacement	Displacement	61.3	bbl	8.33			6	
Cement Left In Pipe		Amount	42 ft		Reason		Shoe Joint		
Comment 13bbls of Cement to surface									

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	34
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	Wbm
3	Actual mud density	lb/gal	9
7	Time circulated before job	HH:MM	1:00
10	Pipe movement during hole circulation	Y/N	N
14	Calculated displacement	bbls	61
15	Job displaced by	Rig/HES	Hes
16	Annular flow before job	Y/N	N
17	Annular flow after job	Y/N	N
20	Was lost circulation experienced at any time?	Y/N	N

1.4 Water Field Test

Item	Recorded Value	Units	Max Acceptable Limit	Potential Problems in Exceeding Limit
pH	6	-	6.0-8.0	Chemicals in the water can cause severe retardation
Chlorides	500	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		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		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH \geq 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	42	°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	DH Density (ppg)	PS Pump Press (psi)	Driv-Side Pump Rate (bbl/min)	Comments
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	2/19/2015	23:00:00	USER				Arrived on location rig just hit TD and started oulling DP
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	2/19/2015	23:10:00	USER				JSA and Hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	2/20/2015	04:00:00	USER				Rigged up HES lines and equipment
Event	4	Pre-Job Safety Meeting	Pre-Job Safety Meeting	2/20/2015	04:30:00	USER	0.08	4.00	0.00	JSA with HES and rig crew on job procedure
Event	5	Start Job	Start Job	2/20/2015	04:56:16	COM8	1.99	19.00	0.00	
Event	6	Test Lines	Test Lines	2/20/2015	05:00:03	COM8	8.58	3429.00	0.00	Test lines to 3500psi
Event	7	Pump Spacer 1	Pump Spacer 1	2/20/2015	05:05:37	COM8	8.48	-12.00	0.00	Pump 10bbls of Water
Event	8	Pump Spacer 2	Pump Spacer 2	2/20/2015	05:09:25	COM8	8.33	50.00	4.00	Pump 12bbls of Mud Flush
Event	9	Pump Spacer 2	Pump Spacer 2	2/20/2015	05:12:26	COM8	8.32	46.00	4.00	Pump 10bbls of Water
Event	10	Check Weight	Check weight	2/20/2015	05:19:05	COM8	8.29	-3.00	0.00	Weighed cement 14.2ppg
Event	11	Pump Lead Cement	Pump Lead Cement	2/20/2015	05:19:34	COM8	9.17	4.00	1.90	Pump 96bbls of 14.2ppg cement
Event	12	Check Weight	Check Weight	2/20/2015	05:28:00	USER	14.29	189.00	7.80	Checked weight again 14.3
Event	13	Shutdown	Shutdown	2/20/2015	05:37:54	COM8	1.19	17.00	0.00	
Event	14	Drop Top Plug	Drop Top Plug	2/20/2015	05:43:02	COM8	-0.13	-12.00	0.00	Plug pre loaded in HES head
Event	15	Pump Displacement	Pump Displacement	2/20/2015	05:43:57	COM8	-0.13	-12.00	0.30	Pump 61.3bbls of water. Cement to surface ar 49 giving us 13bbls of cement to surface
Event	16	Bump Plug	Bump Plug	2/20/2015	05:56:14	COM8	8.37	840.00	0.00	Bumped plug at 282psi took 500 over and held. checked floats, floats good
Event	17	End Job	End Job	2/20/2015	06:14:48	COM8	8.41	28.00	1.00	Thank you Markovich and crew

3.0 Attachments

3.1 Thornton 3 Surface -Custom Results.png



