

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Date: Sunday, March 01, 2015

Kodak 3

Frontier 10

Job Date: Saturday, February 21, 2015

Sincerely,
Jennifer Dattolo

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Kodak 3** cement **Intermediate** 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 Brighton

Job Times

	Date	Time	Time Zone
Called Out	2/20/2015	2100	MST
On Location	2/21/2015	0230	MST
Job Started	2/21/2015	1130	MST
Job Completed	2/21/2015	1300	MST
Departed Location	2/21/2015	1600	MST

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3647448	Quote #:	Sales Order #: 0902150725							
Customer: EXTRACTION OIL & GAS		Customer Rep: Hugh								
Well Name: KODAK	Well #: 3	API/UWI #: 05-123-41120-00								
Field: WATTENBERG	City (SAP): WINDSOR	County/Parish: WELD	State: COLORADO							
Legal Description: NW NW-27-6N-67W-1245FNL-1043FWL										
Contractor: FRONTIER DRLG		Rig/Platform Name/Num: FRONTIER 10								
Job BOM: 7522										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB60191		Srvc Supervisor: Keaton Simmons								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST	225 degF							
Job depth MD	7580ft	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	0	9.625	8.921	36	BTC	J-55	0	805	0	0
Casing	0	7	6.276	26	BTC	P-110	0	7580	0	0
Open Hole Section			8.75				805	7595	0	0
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	7			7580		Top Plug	7		HES	
Float Shoe	7					Bottom Plug	7		HES	
Float Collar	7					SSR plug set	7		HES	
Insert Float	7					Plug Container	7		HES	
Stage Tool	7					Centralizers	7		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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	Fresh Water	Fresh Water	0	bbl	8.33	0		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 ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.76	24.2	6	
149.34 lbm/bbl		BARITE, BULK (100003681)							
36.20 gal/bbl		FRESH WATER							
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
3	Lead Cement	ECONOCER (TM) SYSTEM	490	sack	12.7	1.89		6	9.99
9.99 Gal		FRESH WATER							
61.10 lbm		TYPE I / II CEMENT, BULK (101439798)							
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
4	Tail Cement	EXPANDACER (TM) SYSTEM	290	sack	13.8	1.67		6	7.73
0.10 %		HR-5, 50 LB SK (100005050)							
7.73 Gal		FRESH WATER							
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
5	Displacement	Displacement	0	bbl	8.33				
Cement Left In Pipe		Amount	42 ft	Reason		Shoe Joint			
Mix Water: pH ##		Mix Water Chloride: ## ppm		Mix Water Temperature: ## °F °C					
Cement Temperature: ## °F °C		Plug Displaced by: ## lb/gal kg/m ³ XXXX		Disp. Temperature: ## °F °C					
Plug Bumped? Yes/No		Bump Pressure: #### psi MPa		Floats Held? Yes/No					
Cement Returns: ## bbl m ³		Returns Density: ## lb/gal kg/m ³		Returns Temperature: ## °F °C					
Comment 50 bbls cement back to surface									



last updated on 2/21/2015 2:57:07 PM

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1.3 Planned Pumping Schedule

- 1. Fill Lines with Water**
 - a. Density = 8.33ppg
 - b. Volume = 2bbl
- 2. Pressure Test Lines to 4000 psi**
- 3. Pump Tuned Spacer**
 - a. Density = 11.5 lb/gal
 - b. Volume = 40 bbl
 - c. Rate = 5.0 bpm
- 4. Drop Bottom Plug**
- 5. Pump EconoCem (Lead)**
 - a. Density = 12.7 lb/gal
 - b. Yield = 1.89 ft³/sk
 - c. Water Requirement = 9.99 gal/sk
 - d. Volume = 490 sks (165 bbls)
 - e. Rate = 6.0 bpm
- 6. Pump ExpandaCem (Tail)**
 - a. Density = 13.8 lb/gal
 - b. Yield = 1.67 ft³/sk
 - c. Water Requirement = 7.73 gal/sk
 - d. Volume = 290 sks (86 bbls)
 - e. Rate = 5.0 bpm
- 7. Drop Top Plug**
- 8. Start Displacement**
- 9. Pump Displacement Mud**
 - a. Density = 9.9 lb/gal
 - b. Volume = 283 bbls
 - c. Rate = 8.0 bpm
- 10. Land Plug – Anticipated Final Circulation Pressure 2000 psi**

Calculated Total Displacement = 283 bbls

1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	45
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	wbm
3	Actual mud density	lb/gal	10
4	Time circulated before job	HH:MM	30
5	Mud volume circulated	Bbls	240
6	Rate at which well was circulated	Bpm	8
7	Pipe movement during hole circulation	Y/N	n
8	Rig pressure while circulating	Psi	1100
9	Time from end mud circulation to start of job	HH:MM	15
10	Pipe movement during cementing	Y/N	n
11	Calculated displacement	Bbls	286
12	Job displaced by	Rig/HES	282 by HES 4 by rig
13	Annular flow before job?	Y/N	n
14	Annular flow after job?	Y/N	n
15	Length of rat hole	Ft	18
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time ?	Y/N	n

1.5 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	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	425	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	0	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	0	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	52	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	7	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: Keaton Simmons

1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Downhole Density (ppg)	Pass-Side Pump Pressure (psi)	Combined Pump Rate (bbl/min)	Comments
Event	1	End Job	End Job	2/21/2015	01:55:00	USER				
Event	2	Start Job	Start Job	2/21/2015	11:38:41	COM7	8.33	0.00	0.00	
Event	3	Start Job	Test Lines	2/21/2015	11:39:21	COM7	8.33	4000.00	0.00	Rig water no additives
Event	4	Pump Spacer 1	Tuned Spacer III @11.5 PPG	2/21/2015	11:42:54	COM7	11.50	23.00	5.00	added red dye last 10 bbls spacer
Event	5	Pump Lead Cement	Econocem mixed @ 12.7PPG	2/21/2015	11:49:43	COM7	12.70	43.00	6.00	490 sks 1.89 ft3/sk and 9.99 gal/sk
Event	6	Check Weight	Check weight	2/21/2015	11:55:19	COM7	12.70	247.00	6.00	
Event	7	Check Weight	Check weight	2/21/2015	11:59:33	COM7	12.70	264.00	6.00	
Event	8	Check Weight	Check weight	2/21/2015	12:12:00	COM7	12.70	252.00	6.00	
Event	9	Pump Tail Cement	Expandacem mixed @ 13.8PPG	2/21/2015	12:20:18	COM7	13.80	224.00	5.00	290 sks 1.67 ft3/sk and 7.73 gal/sk
Event	10	Check Weight	Check weight	2/21/2015	12:25:17	COM7	13.80	295.00	5.00	
Event	11	Shutdown	Shutdown	2/21/2015	12:41:12	COM7	13.80	47.00	0.00	washed on top of plug per company rep
Event	12	Drop Top Plug	Drop Top Plug	2/21/2015	12:42:21	COM7	13.80	5.00	0.00	Preloaded HWE top plug
Event	13	Pump Displacement	Drilling Mud @ 10 PPG	2/21/2015	12:42:25	COM7	9.90	5.00	8.00	Caught cement at 90 bbls away Spcr back 195 away CMT back @ 243 away.transmisson on Deck motor went out with 3bbls left to bump, turned over to rig and the bumped on calculated

2.0 Attachments

2.1 Job Results

