

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

**For:**

Date: Wednesday, February 18, 2015

**THORNTON 9 902037280**

Case 1

Job Date: Tuesday, January 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 9**, 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
Requested Time On Location:	1/20/2015	1500
Called Out Time:		1230
Arrived On Location At:		1500
Job Started At:		2224
Job Completed At:	1/21/2015	0055
Departed Location At:		0830

## 1.2 Planned Pumping Schedule

Event	Pressure (psi)	Rate (bpm)	Volume (bbl)	Sacks	Density (ppg)	Yield (ft3/sk)	WR (gal/sk)
TEST LINES	3968				8.3		
SPACER	419	6	40		11.5	3.76	24.2
LEAD CMT	267	5.5	159	472	12.7	1.89	9.99
TAIL CMT	324	5.5	99	335	13.8	1.67	7.73
DROP TOP PLUG							
DISPLACE	877	6	302		9.3		
BUMP PLUG	1754						
CHECK FLOATS							
END JOB							

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## Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3593048	Quote #:	Sales Order #: 0902037280							
Customer: EXTRACTION OIL & GAS		Customer Rep:								
Well Name: THORNTON	Well #: 9	API/UWI #: 05-123-40271-00								
Field: WATTENBERG	City (SAP): AULT	County/Parish: WELD	State: COLORADO							
Legal Description: SW SW-8-7N-66W-1241FSL-331FWL										
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 280								
Job BOM: 7522										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB21661		Srvc Supervisor: JOSEPH ROMERO								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST	225 degF							
Job depth MD	7955ft	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	843	0	0
Casing	0	7	6.276	26	BTC	P-110	0	7955	0	0
Open Hole Section			8.75				843	7960	0	0
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	7			7955	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 ft <sup>3</sup> /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								
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	

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## Cementing Job Summary

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 <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
3	Lead Cement	ECONOCEM (TM) SYSTEM	472	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 <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
4	Tail Cement	EXPANDACEM (TM) SYSTEM	335	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 <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
5	Displacement	Displacement	302	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 <sup>3</sup> XXXX		Disp. Temperature: ## °F °C						
Plug Bumped? Yes/No		Bump Pressure: ##### psi MPa		Floats Held? Yes/No						
Cement Returns: ## bbl m <sup>3</sup>		Returns Density: ## lb/gal kg/m <sup>3</sup>		Returns Temperature: ## °F °C						
Comment										

## 1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	32
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	Wbm
3	Actual mud density	lb/gal	9.3
4	Actual mud Plastic Viscosity (PV)	cP	
5	Actual mud Yield Point (YP)	lb <sub>f</sub> /100ft <sup>2</sup>	
6	Actual mud 30 min Gel Strength	lb <sub>f</sub> /100ft <sup>2</sup>	
7	Time circulated before job	HH:MM	00:30
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	302
15	Job displaced by	Rig/HES	Hes
16	Annular flow before job	Y/N	
17	Annular flow after job	Y/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 Water Field Test

Item	Recorded 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		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	100	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	200	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	67	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by:

## 2.0 Attachments

### 2.1 Case 1-Custom Results.png



