

# HALLIBURTON

iCem<sup>®</sup> Service

## **ADVANCED EXTRACTION TECHNOLOGIES**

**For:**

Date: Tuesday, February 24, 2015

**EXTRACTION THORNTON 6 SURFACE**

EXTRACTION THORNTON 6 SURFACE

Job Date: Wednesday, February 04, 2015

Sincerely,

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Table of Contents

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1.0    Cementing Job Summary ..... 4

    1.1    Executive Summary .....4

    1.2    Planned Pumping Schedule .....**Error! Bookmark not defined.**

    1.3    Job Overview .....9

    1.4    Water Field Test.....10

2.0    Real-Time Job Summary ..... 11

    2.1    Job Event Log .....11

3.0    Attachments..... 13

    3.1    EXTRACTION THORNTON 6 SURFACE-Custom Results.png .....13

## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Extraction Oil and Gas Thornton 6** 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 [Brighton]**

	Date	Time (24hr)
Callout:	2/4/2015	1200
On Location:	2/4/2015	1900
Job Started:	2/4/2015	2200
Job Completed:	4-Feb	2330
Departed Location:	2/5/2015	100

HALLIBURTON

The Road to Excellence Starts with Safety											
Sold To #: <b>369404</b>			Ship To #: <b>3592904</b>			Primary Sales Order #: <b>0902105732</b>					
Customer: <b>EXTRACTION OIL &amp; GAS</b>						Job Purpose: <b>7521 CMT SURFACE CASING BOM</b>					
Well Name: <b>THORNTON</b>						Well #: <b>6</b>			API/UWI #: <b>05-123-40269-00</b>		
Field: <b>WATTENBERG</b>			City: <b>AULT</b>			Country/Parish: <b>WELD</b>			State/Prov: <b>COLORADO</b>		
Legal Description:											
Rig Name & Number / Phone Number: <b>H &amp; P 280 / 720-402-6217</b>									Location: <b>LAND</b>		
myCem id#: <b>150934</b>			Job Criticality Status: <b>GREEN</b>			iFacts Request id #: <b>2208659</b>					
Contacts											
Type		Name			Email			Phone			
Account Rep		Nicholas Wilson			Nicholas.Wilson@halliburton.com			+13037203334			
Service Coordinator		Daniel Wille			Daniel.Wille@halliburton.com			+16613915308			
PPE, Safety Huddles, JSA's, HOC & Near Miss Reporting, BBP Observations											
Distance/Mileage(1 way)		50 mile			Distance/Mileage(1 way) Mtls:		50 mile				
Srvcs:					Rqstd Job Start Date/Time:		02/01/2015				
HSE Information											
H2S Present:		Unknown			CO2 Present:		Unknown				
<b>Drive Safely. Lights On for Safety. Wear Seat Belts. Observe all HES / Customer Safety Policies.</b>											
Directions:											
Hwy 14 West to 27 North .25mi East Into											
Instruction											
Bring 100# of Sugar, 1 Bag of Mud Flush and Top Plug											
General Equipment											
3rd Party / Inventory Items											
SAP Number		Description			Quantity		UoM		Pricing Enabled		
101214575		PLUG,CMTG,TOP,9 5/8,HWE,8.16 MIN/9.06 MA			1		EA		Yes		
Job Info / Well Data											
Job Depth (MD) ft		Job Depth (TVD) ft		Well Fluid Type		Well Fluid Weight lbm/gal		Displacement Fluid		Displ Fluid Weight lbm/gal	
825				Fresh Water		8.4		Displacement		8.33	
BHST degF		BHCT degF		Log Temp degF				Time Since Circ Stopped HH:MM:SS			
Job Tubulars/Tools											
Description	Size in	Weight lbm/ft	ID in	Thread	Grade	Top MD ft	Btm MD ft	Top TVD ft	Btm TVD ft	Shoe Jnt ft	% Excess
13.5" Open Hole			13.5			0	825		0		25

<b>Section</b>											
<b>9.625" Surface Casing</b>	<b>9.625</b>	<b>36</b>	<b>8.921</b>	<b>LTC</b>	<b>J-55</b>	<b>0</b>	<b>825</b>		<b>0</b>	<b>42</b>	

<b>Mud conditioning plan</b>										
The condition of the drilling fluid is one of the most important variables in achieving a cement barrier. Prior to cementing, circulate the mud at the planned highest displacement rate for the cement job for at least 2 bottoms-up until the well is clean, mud is free of gas and pump pressures have stabilized.										
<b>Materials</b>										
Stage/Plug #: 1										
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft <sup>3</sup> /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time
1	Mud Flush III (Powder)		10	bbl	8.4			6		
<b>Fluid Loss</b>										
<b>iFacts Test id #</b>										
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft <sup>3</sup> /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr
2	Lead Cement	SWIFTCM (TM) SYSTEM	350	sack	14.2	1.54	7.66	6	7.66	
7.66 Gal		FRESH WATER Mix-On-Fly to Slurry								
<b>iFacts Test id #</b>		2214673								
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft <sup>3</sup> /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time
3	Displacement		62.5	bbl	8.33			6		
<b>Fluid Loss</b>										
<b>iFacts Test id #</b>										
Caution: Displacement quantities and densities are estimates ONLY! Do not use them for the actual job.										
<b>Packaged Materials</b>										
SAP #	Material		Qty	UOM	Comments					
	FRESH WATER		3101	Gal						
<b>Casing Equipment</b>										


**Pre-Job Customer Review Risk Assessment for Call Sheet:**

The following risks must be reviewed and discussed with the Customer Representative before the job. If all of the steps of the listed Mitigation Plans or Contingency Plans cannot be followed, conducting a Management of Change (reference ST-GL-HAL-HMS-712) invoking your Stop Work Authority (reference ST-GL-HAL-HSE-0612) may be appropriate. Contact the Halliburton office to discuss how to resolve any issues, including whether Contingency Plans can be applied or whether you should exercise your Stop Work Authority so that any changes can be managed with the Customer.

**Reminder: You are empowered to exercise Stop Work Authority any time (reference ST-GL-HAL-HSE-0612), even before contacting the Halliburton office.**

Note: This pre-job customer review risk assessment does not replace the need to complete and review the job specific JSA's.



## 1.2 Job Overview

## Job OverView

		Units	Description
1	Surface temperature at time of job	°F	32
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	OBM
3	Actual mud density	lb/gal	8.6
4	Time circulated before job	HH:MM	30 MIN
5	Mud volume circulated	bbls	240
6	Rate at which well was circulated	bpm	8
7	Pipe movement during circulation	Y/N	N
8	Rig pressure while circulating	psi	150
9	Time from end mud circulation to start of job	HH:MM	15 MIN
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	bbls	59
12	Job displaced by	Rig/HES	HES
13	Annular before Job	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	ft	30
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time?	Y/N	N

## 1.3 Water Field Test

## Cement Mix Water Requirements

Item	Recorded Test Value	Max Acceptable Limin	Potential Problems in Exceeding Limit
pH	7	5 to 8.5	Chemicals in water can cause severe retardation
Chlorides	0	3000 mg/L	Can accelerate the set time on cement 1% ~ 4800 mg/L
Sulfates	<200	1500 mg/L	Will greatly decrease its strength to the point where it may not set up at all
Total Hardness or Alkalinity	0	500 mg/L	Will retard cement and decrease its strength (only occurs @ pH ≥ 8.3)
Calcium	0	500 mg/L	High concentrations will accelerate the set of cement
Bicarbonates	0	1000 mg/L	Will greatly decrease its strength to the point where it may not set up at all
Iron	0	300 mg/L	High concentrations will accelerate the set of cement
Potassium	0	5000 ppm	High concentrations will accelerate the set of cement
Water Temp	50	50F to 80F	High temps will accelerate; Low temps may risk freezing in cold weather

## Notes:

1. High concentrations of Carbonates and Bicarbonates may also cause slurry gelation in some situations
2. If the water's pH is greater than or equal to 8, avoid using it since Magnesium may be present (there are not field test strips for Magnesium)

Submitted Respectfully by:

## 2.0 Real-Time Job Summary

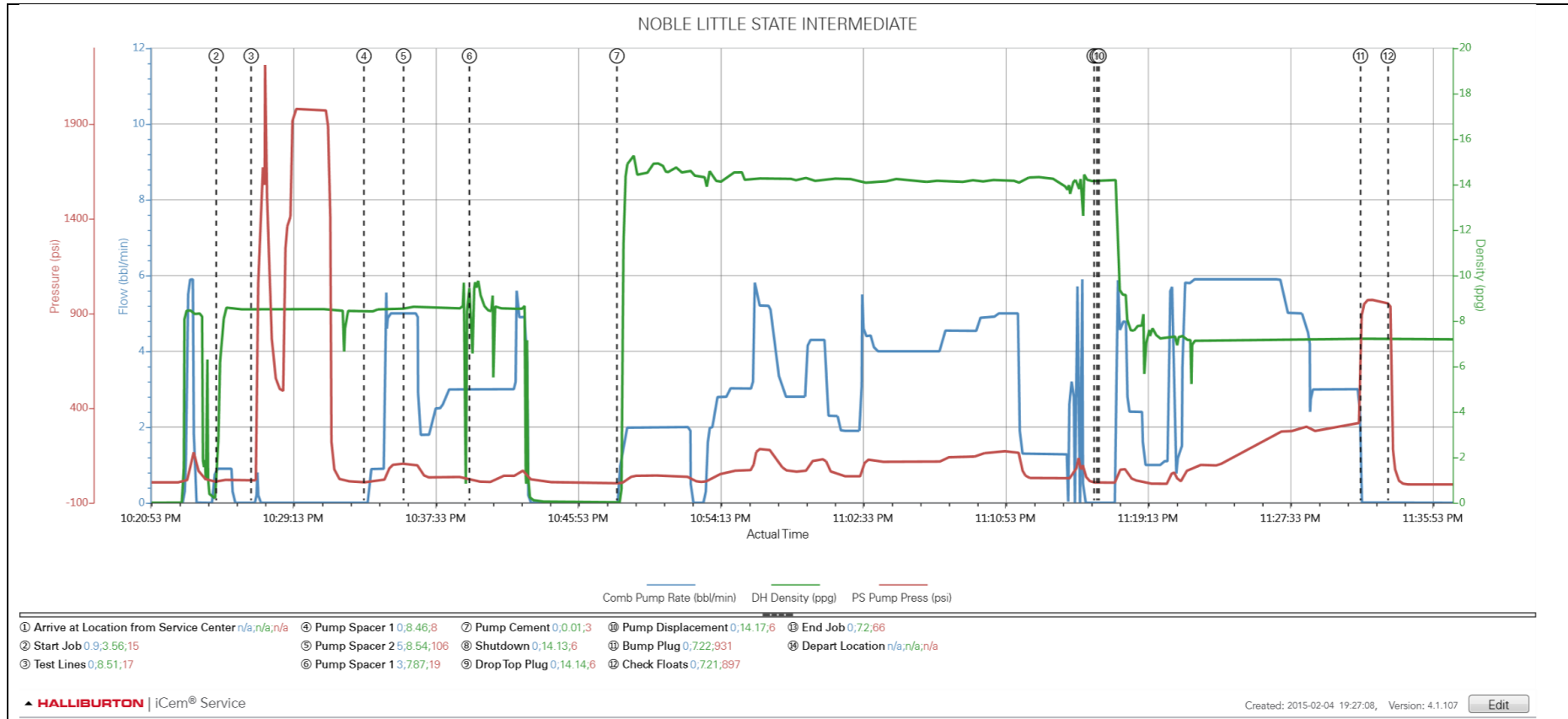
## 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	2/4/2015	18:00:00	USER					ARRIVED AT LOCATION, RIG WAS RIGGIG UP TO RUN CASING HELD SITE ASSESMENT AND PRE RIG UP SAFETY MEETING
Event	2	Start Job	Start Job	2/4/2015	22:24:50	COM4	0.90	3.56	15.00	2.6	PRE JOB SAFETY MEETING WITH EVERYONE PRIOR TO STARTING JOB
Event	3	Test Lines	Test Lines	2/4/2015	22:26:52	COM4	0.00	8.51	17.00	3.3	TESTED LINES TO 1900 PSI
Event	4	Pump Spacer 1	Pump Spacer 1	2/4/2015	22:33:28	COM4	0.00	8.46	8.00	0.0	PUMPED 5 BBLS FRESH WATER SPACER
Event	5	Pump Spacer 2	Pump Spacer 2	2/4/2015	22:35:47	COM4	5.00	8.54	106.00	0.1	PUMPED 10 BBLS MUD FLUSH
Event	6	Pump Spacer 1	Pump Spacer 1	2/4/2015	22:39:38	COM4	3.00	7.87	19.00	0.0	PUMPED 5 BBLS FRESH WATER SPACER WITH RED DYE
Event	7	Pump Cement	Pump Cement	2/4/2015	22:48:16	COM4	0.00	0.01	3.00	0.0	PUMPED 90 BBLS 14.2 PPG SWIFTCM (350 SKS)
Event	8	Shutdown	Shutdown	2/4/2015	23:16:11	COM4	0.00	14.13	7.00	84.0	WASHED PUMP AND LINES
Event	9	Drop Top Plug	Drop Top Plug	2/4/2015	23:16:21	COM4	0.00	14.13	6.00	84.0	PLUG PRE LOADED WITNESSED BY COMPANY MAN
Event	10	Pump Displacement	Pump Displacement	2/4/2015	23:16:28	COM4	0.00	14.17	6.00	0.0	PUMPED 59 BBLS FRESH WATER DISPLACEMENT, GOOD RETURNS THROUGHOUT, APPROX 5 BBLS CEMENT BACK TO SURFACE.

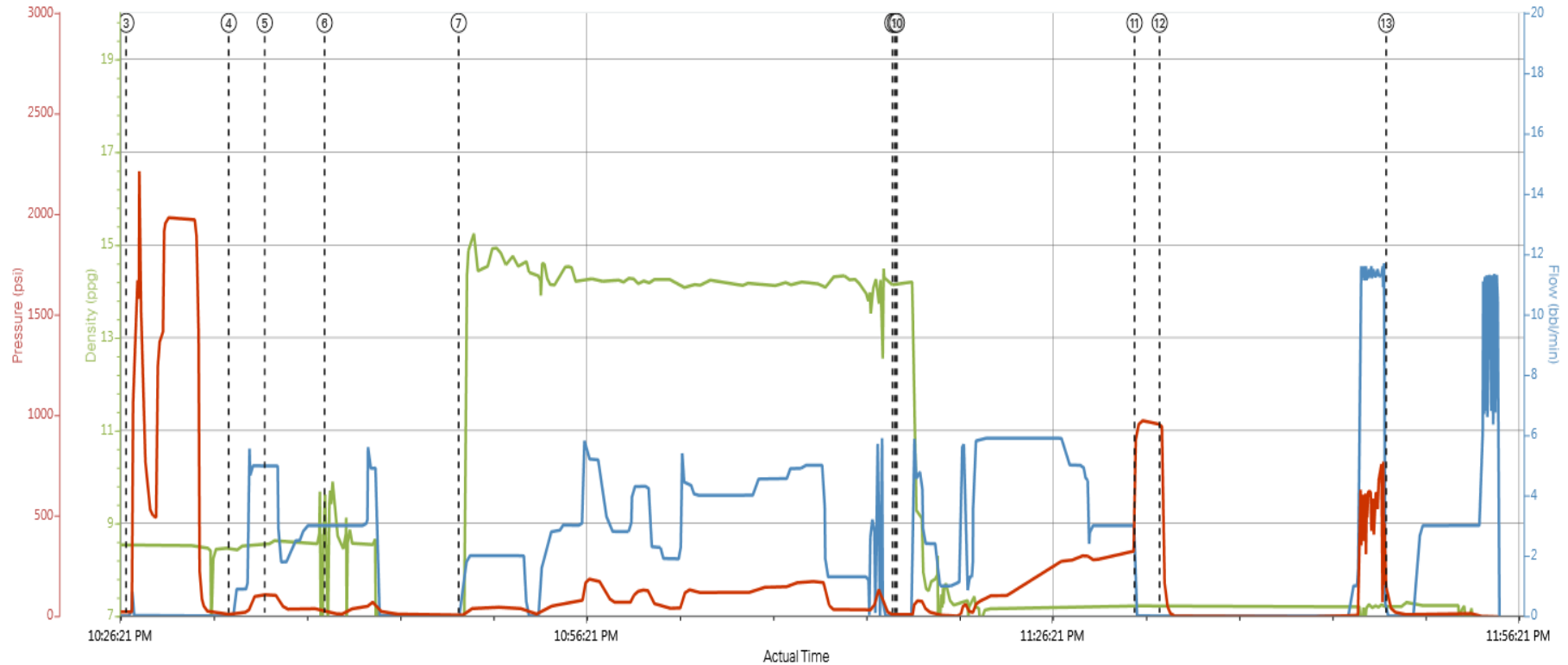
Event	11	Bump Plug	Bump Plug	2/4/2015	23:31:46	COM4	0.00	7.22	925.00	60.3	PLUG LANDED AT 300 PSI. BROUGHT PRESSURE TO 971 PSI AND HELD FOR 2 MINUTES.
Event	12	Check Floats	Check Floats	2/4/2015	23:33:23	USER	0.00	7.21	897.00	60.3	FLOATS HELD 1 BBL BACK
Event	13	End Job	End Job	2/4/2015	23:47:58	COM4	0.00	7.19	69.00	79.4	PERFORMED PRE RIG DOWN SAFETY MEETING
Event	14	Depart Location	Depart Location	2/5/2015	01:00:00	USER					JOURNEY MGMT PRIOR TO LEAVING LOCATION

## 3.0 Attachments

### 3.1 EXTRACTION THORNTON 6 SURFACE-Custom Results.png



## Custom Results



DH Density (ppg) Comb Pump Rate (bbl/min) PS Pump Press (psi)

① Arrive at Location from Service Center n/a;n/a;n/a ④ Pump Spacer 1 8.46;0.8 ⑦ Pump Cement 0.01;0.3 ⑩ Pump Displacement 14.17;0.6 ⑬ End Job 7.19;0.69  
 ② Start Job 3.56;0.9;15 ⑤ Pump Spacer 2 8.54;5.106 ⑧ Shutdown 14.13;0.7 ⑪ Bump Plug 7.22;0.925 ⑭ Depart Location n/a;n/a;n/a  
 ③ Test Lines 8.51;0.17 ⑥ Pump Spacer 1 7.87;3.19 ⑨ Drop Top Plug 14.13;0.6 ⑫ Check Floats 7.21;0.897