

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

For:

Date: Saturday, March 07, 2015

6

Interemdiante

Job Date: Saturday, February 07, 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 6**, 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:		
Called Out Time:	2/7/2015	1700
Arrived On Location At:		2100
Job Started At:	2/8/2015	0020
Job Completed At:		0302
Departed Location At:		

1.2 Planned Pumping Schedule

Event	Pressure (psi)	Rate (bpm)	Volume (bbl)	Sacks	Density (ppg)	Yield (ft3/sk)	WR (gal/sk)
START JOB							
FILL LINES			2		8.3		
PRESSURE TEST	4000						
WATER SPACER		2	10		8.3		
TUNED SPACER		4	40		11.5	3.76	24.2
LEAD CEMENT		6	160	475	12.7	1.89	9.99
TAIL CEMENT		6	100	335	13.8	1.67	7.73
DROP TOP PLUG							
DISPLACEMENT		8	312.2		10		
SLOW RATE		4					
BUMP PLUG							
CHECK FLOATS							
END JOB							

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3592904	Quote #:	Sales Order #: 0902117025
Customer: EXTRACTION OIL & GAS		Customer Rep: JOE SCILEPPI	
Well Name: THORNTON	Well #: 6	API/UWI #: 05-123-40269-00	
Field: WATTENBERG	City (SAP): AULT	County/Parish: WELD	State: COLORADO
Legal Description: NW SW-8-7N-66W-1325FSL-330FWL			
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 280	
Job BOM: 7522			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB60191		Srvc Supervisor: JOE SCILEPPI	

Job

Formation Name	
Formation Depth (MD)	Top Bottom
Form Type	BHST 225 degF
Job depth MD	7953ft 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	812	0	0
Casing	0	7	6.276	26	BTC	P-110	0	7953	0	0
Open Hole Section			8.75				812	7973	0	0

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	7			7953	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	10	bbl	8.33	0		6		
42 gal/bbl		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	

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Cementing Job Summary

2	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbbl	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 ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	Lead Cement	ECONOCEM (TM) SYSTEM	475	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 ft3/sack	Mix Fluid Gal	Rate bbl/mi n	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 ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement	Displacement	312.2	bbbl	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/m3 XXXX			Disp. Temperature: ## °F °C			
Plug Bumped?	Yes/No	Bump Pressure: #### psi MPa			Floats Held? Yes/No				
Cement Returns:	## bbl m3		Returns Density: ## lb/gal kg/m3			Returns Temperature: ## °F °C			
Comment									

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	46
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	10
7	Time circulated before job	HH:MM	01:00
10	Pipe movement during hole circulation	Y/N	N
12	Time from end mud circulation to start of job	HH:MM	00:20
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	bbls	302.2
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	Y
17	Annular flow after job	Y/N	N
18	Length of rat hole	ft	20
19	Units of gas detected while circulating	units	0
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	5	-	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		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 ≥ 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		°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

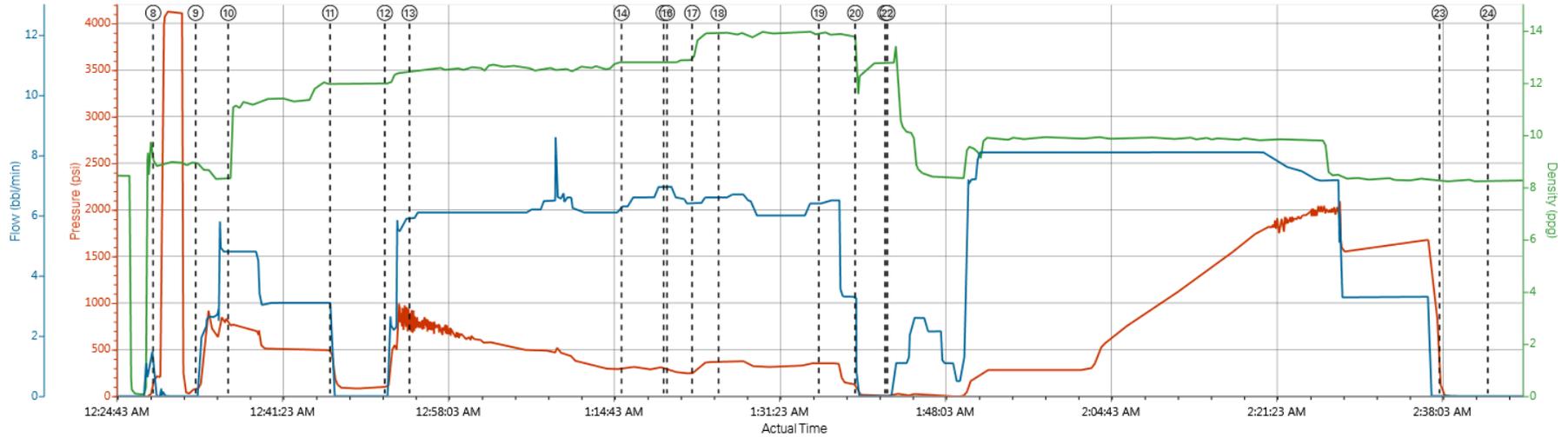
2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	2/7/2015	17:00:00	USER				
Event	2	Crew Leave Yard	Crew Leave Yard	2/7/2015	20:00:00	USER				
Event	3	Arrive At Loc	Arrive At Loc	2/7/2015	21:30:00	USER				RIG HAD ABOUT 20 JOINTS LEFT UPON ARRIVAL.
Event	4	Rig-up Lines	Rig-up Lines	2/7/2015	22:30:00	USER				
Event	5	Rig-Up Completed	Rig-Up Completed	2/7/2015	23:40:00	USER				
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	2/8/2015	00:00:00	USER	0.00	0.07	-10.00	JSA WITH ALL INVOLVED PERSONS.
Event	7	Start Job	Start Job	2/8/2015	00:20:46	COM5	0.00	8.51	-6.00	
Event	8	Test Lines	Test Lines	2/8/2015	00:28:35	COM5	0.00	8.82	225.00	TESTED LINES TO 4000 PSI NO VISIBLE LEAKS
Event	9	Pump Spacer 1	Pump Spacer 1	2/8/2015	00:32:51	COM5	0.00	8.94	80.00	10 BBL FRESH WATER PUMPED AT 3 BPM AND 950 PSI
Event	10	Pump Spacer 2	Pump Spacer 2	2/8/2015	00:36:08	COM5	4.80	8.36	774.00	40 BBL TUNE SPACER MIXED @ 11.5 PPG WITH FRESH WATER. PUMPED AT 3 BPM AND 500 PSI.
Event	11	Drop Bottom Plug	Drop Bottom Plug	2/8/2015	00:46:23	COM5	0.00	11.97	356.00	SHUT DOWN AND DROPPED PLUG. PLUG PRE LOADED WITNESSED BY COMPANY REP.
Event	12	Pump Lead Cement	Pump Lead Cement	2/8/2015	00:51:53	COM5	0.00	12.00	101.00	475 SKS OR 160 BBL ECONOCEM MIXED @ 12.7 PPG WITH FRESH WATER. PUMPED AT 6 BPM AND 549 PSI
Event	13	Check Weight	Check weight	2/8/2015	00:54:22	COM5	5.90	12.46	758.00	
Event	14	Check Weight	Check weight	2/8/2015	01:15:42	COM5	6.30	12.79	303.00	
Event	15	Check Weight	Check weight	2/8/2015	01:19:56	COM5	6.90	12.79	296.00	
Event	16	Check Weight	Check weight	2/8/2015	01:20:16	COM5	6.90	12.81	293.00	
Event	17	Pump Tail Cement	Pump Tail Cement	2/8/2015	01:22:48	COM5	6.40	13.11	255.00	335 SKS OR 99.6 BBL EXPANDACEM MIXED @ 13.8 PPG WITH FRESH WATER. PUMPED AT 6 BPM AND 390 PSI.
Event	18	Check Weight	Check weight	2/8/2015	01:25:27	COM5	6.60	13.86	371.00	

Event	19	Check Weight	Check weight	2/8/2015	01:35:33	COM5	6.40	13.92	358.00	
Event	20	Shutdown	Shutdown	2/8/2015	01:39:12	COM5	0.00	11.47	51.00	
Event	21	Drop Top Plug	Drop Top Plug	2/8/2015	01:42:13	COM5	0.00	12.76	3.00	PLUG PRE LOADED WITNESSED BY COMPANY REP.
Event	22	Pump Displacement	Pump Displacement	2/8/2015	01:42:26	COM5	0.00	12.75	3.00	20 BBL WATER 262.2 BBL MUD @ 10 PPG, AND 20 BBL WATER. PUMPED AT 8 BPM AND 916 PSI., PUMPED 10BBL OVER CALCULATED PER COMPANY REP'S REQUEST
Event	23	Other	Other	2/8/2015	02:38:00	USER	0.00	8.25	40.00	DID NOT BUMP PLUG, CHECKED FLOATS AT 1600PSI WITH 1BBL BACK TO TRUCK
Event	24	Shutdown	Shutdown	2/8/2015	02:42:51	COM5	0.00	8.26	-7.00	
Event	25	End Job	End Job	2/8/2015	03:02:28	COM5	0.00	-0.11	-10.00	

3.0 Job Chart

Custom Results



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

① Call Out n/a;n/a;n/a	④ Rig-up Lines n/a;n/a;n/a	⑦ Start Job -6;8.51;0	⑩ Pump Spacer 2.774;8.36;4.8	⑬ Check weight 758;12.46;5.9	⑮ Check weight 293;12.81;6.9	⑲ Check weight 358;13.92;6.4	⑳ Pump Displacement 3;12.75;0	⑳ End Job -10;-0.11;0
② Crew Leave Yard n/a;n/a;n/a	⑤ Rig-Up Completed n/a;n/a;n/a	⑧ Test Lines 225;8.82;0	⑪ Drop Bottom Plug 356;11.97;0	⑭ Check weight 303;12.79;6.3	⑯ Pump Tail Cement 255;13.11;6.4	㉑ Shutdown 51;11.47;0	㉒ Other 40;8.25;0	
③ Arrive At Loc n/a;n/a;n/a	⑥ Pre-Job Safety Meeting -10;0.07;0	⑨ Pump Spacer 1.80;8.94;0	⑫ Pump Lead Cement 101;12;0	⑰ Check weight 296;12.79;6.9	⑰ Check weight 371;13.86;6.6	㉓ Drop Top Plug 3;12.76;0	㉔ Shutdown -7;8.26;0	