

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

Date: Sunday, June 04, 2017

### **RBF #4 Production**

Job Date: Saturday, May 27, 2017

Sincerely,

**Justin Lansdale**

## Legal Notice

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## 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 **RBF #4** cement **Production** 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 [Fort Lupton]**

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3788390	Quote #:	Sales Order #: 0904056754
Customer: EXTRACTION OIL & GAS		Customer Rep:	
Well Name: RBF	Well #: 4	API/UWI #: 05-123-44447-00	
Field: WATTENBERG	City (SAP): WINDSOR	County/Parish: WELD	State: COLORADO
Legal Description: SE NE-22-6N-67W-1993FNL-300FEL			
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 346	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Bryan Kraft	

**Job**

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	16838ft	Job Depth TVD	6870ft
Water Depth		Wk Ht Above Floor	4ft
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		J-55	0	1555	0	1555
Casing		5.5	4.778	20		P-110	0	16838	0	6870
Open Hole Section			8.5				1555	16853	1555	6870

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make	
Guide Shoe					Top Plug	5.5	1	KLX	
Float Shoe	5.5	1		16838	Bottom Plug				
Float Collar	5.5	1		16793	SSR plug set				
Insert Float					Plug Container	5.5		HES	
Stage Tool					Centralizers				

**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	Spacer	Tuned Spacer III	50	bbl	11.5	3.78	23.5	3	1745	
		147.42 lbm/bbl	<b>BARITE, BULK (100003681)</b>							
		35.40 gal/bbl	<b>FRESH WATER</b>							
		0.60 gal/bbl	<b>MUSOL A, 330 GAL TOTE - (790828)</b>							

0.60 gal/bbl		<b>DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)</b>								
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	
2	ElastiCem	ELASTICEM (TM) SYSTEM	2680	sack	13.2	1.57	7.54	8	20207	
0.30 %		<b>SCR-100 (100003749)</b>								
7.54 Gal		<b>FRESH WATER</b>								

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	Displacement	Fresh Water	371	bbl	8.34			10	15582	

Cement Left In Pipe	Amount	0 ft	Reason	Wet Shoe	
Mix Water:	pH 6.0	Mix Water Chloride:	<20 ppm	Mix Water Temperature:	55 °F
Cement Temperature:	N/A	Plug Displaced by:	8.3 lb/gal Fresh Water	Disp. Temperature:	55 °F
Plug Bumped?	Yes/No	Bump Pressure:	#### psi	Floats Held?	Yes/No
Cement Returns:	## bbl	Returns Density:	N/A	Returns Temperature:	N/A

**Comment:**  
 Cement returned to surface @ 311 BBLS into displacemet, 60 BBLS of cement to surface.  
 Plug bumped @ calculated displacement, bump pressure of 2400 PSI, shutdown @ 2900 PSI.  
 Disc burst @ 3687 PSI.  
 Floats held, 2.25 BBLS back.

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comments
Event	1	Call Out	Call Out	5/27/2017	00:30:00	USER	CREW CALLED OUT AT 00:30 5/27/2017, REQUESTED ON LOCATION 6:30 5/27/2017. CREW PICKED UP CEMENT, CHEMICALS (30 GAL MUSOL, 30 GAL DUAL SPACER B, 20 GAL D-AIR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11562546/11023106, PUMP ELITE: 12644845/11826999.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/27/2017	04:45:00	USER	DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	5/27/2017	05:00:00	USER	STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location	5/27/2017	06:00:00	USER	END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1555', CASING: 5.5" 20# @ 16838', 45' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6870', 9.2 PPG WELL FLUID, FRESH WATER DISPLACEMENT. CASING LANDED @ 09:20 5/27/2017.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	5/27/2017	06:10:00	USER	HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	5/27/2017	06:15:00	USER	CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	5/27/2017	12:00:00	USER	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.

Event	8	Start Job	Start Job	5/27/2017	12:15:38	COM5	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	5/27/2017	12:18:27	COM5	PRESSURE TESTED IRON TO 4500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 580 PSI, 5TH GEAR STALL OUT @ 1410 PSI.
Event	10	Pump Spacer 1	Pump Tuned Spacer @ 11.5 ppg	5/27/2017	12:31:01	COM5	PUMP 50 BBLS OF TUNED SPACER @ 11.5 LB/GAL, DENSITY VERIFIED BY PRESSURIZED MUD SCALES. ADDED 30 GAL MUSOL, 30 GAL DUAL SPACER B, AND 20 GAL D-AIR TO SPACER.
Event	11	Pump Lead Cement	Pump Cement @ 15.8 ppg	5/27/2017	12:45:30	COM5	PUMP 2680 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.54 GAL/SK, 749 BBLS, TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Other	Other	5/27/2017	13:06:19	USER	MIXING SYSTEM PACKED OFF WITH DRY CEMENT, HES SHUTDOWN, RESOLVED THE ISSUE, AND RESUMED PUMPING AS SCHEDULED.
Event	13	Shutdown	Shutdown	5/27/2017	14:41:01	COM5	SHUTDOWN TO WASH PUMPS AND LINES, DROP TOP PLUG.
Event	14	Drop Plug	Drop Plug	5/27/2017	14:46:06	COM5	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. AND TOOL HAND.
Event	15	Pump Displacement	Pump Fresh Water Displacement	5/27/2017	14:49:58	COM5	BEGIN CALCULATED DISPLACEMENT OF 371 BBLS WITH FRESH WATER.
Event	16	Cement Returns to Surface	Cement Returns to Surface	5/27/2017	15:25:30	USER	CEMENT RETURNS TO SURFACE @ 311 BBLS INTO DISPLACEMENT. 60 BBLS OF CEMENT TO SURFACE.
Event	17	Bump Plug	Bump Plug	5/27/2017	15:34:39	USER	PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED 500 PSI OVER FINAL CIRCULATING PRESSURE OF 2400 PSI.
Event	18	Shutdown	Shutdown	5/27/2017	15:34:50	USER	SHUTDOWN @ 2900 PSI.

Event	19	Pressure Up	Pressure Up	5/27/2017	15:36:08	USER	PRESSURE UP WELL TO BURST DISC.
Event	20	Other	Other	5/27/2017	15:36:39	USER	DISC BURST @ 3687.
Event	21	Pump Displacement	Pump Wet Shoe	5/27/2017	15:36:47	USER	PUMP 5 BBL WET SHOE.
Event	22	Check Floats	Check Floats	5/27/2017	15:38:31	USER	RELEASED PRESSURE, FLOATS HELD, 2.25 BBLs BACK.
Event	23	End Job	End Job	5/27/2017	15:40:55	COM5	STOP RECORDING JOB DATA.
Event	24	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/27/2017	15:50:00	USER	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	25	Rig-Down Completed	Rig-Down Completed	5/27/2017	16:45:00	USER	ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	26	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/27/2017	17:15:00	USER	DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.

Event	27	Depart Location	Depart Location	5/27/2017	17:30:00	USER	THANK YOU FOR USING HALLIBURTON - BRYAN KRAFT AND CREW.
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3.0 Attachments

3.1 Extraction Production RBF 4-Events.png



