

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

United States of America, COLORADO

**For: Extraction**

**Berthoud Farms 8E-10-9N Production**

Job Date: Monday, April 30, 2018

Sincerely,

**Ryan Keeran**

## Legal Notice

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### Disclaimer:

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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 Berthoud Farms 8E-10-9N 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.

40 bbls of cement circulated to surface

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*

<b>Sold To #:</b> 369404		<b>Ship To #:</b> 3833880		<b>Quote #:</b>		<b>Sales Order #:</b> 0904817756				
<b>Customer:</b> EXTRACTION OIL & GAS				<b>Customer Rep:</b> Jose Torres						
<b>Well Name:</b> BERTHOUD FARMS			<b>Well #:</b> 8E-10-9N		<b>API/UWI #:</b> 05-123-45732-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> MEAD		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO				
<b>Legal Description:</b> NE SE-7-4N-68W-1547FSL-966FEL										
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> Patterson 901						
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> Thomas Haas						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		<b>Top</b>		<b>Bottom</b>						
<b>Form Type</b>				<b>BHST</b>						
<b>Job depth MD</b>		10574ft		<b>Job Depth TVD</b>		6175				
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		5				
<b>Perforation Depth (MD)</b>		<b>From</b>		<b>To</b>						
<b>Well Data</b>										
<b>Description</b>	<b>New / Used</b>	<b>Size in</b>	<b>ID in</b>	<b>Weight lbm/ft</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD ft</b>	<b>Bottom MD ft</b>	<b>Top TVD ft</b>	<b>Bottom TVD ft</b>
Casing	0	9.625	8.921	36		J-55	0	1554	0	0
Casing	0	5.5	4.778	20	BTC	P-110	0	10574	0	0
Open Hole Section			8.5				1554	10595	0	6175
<b>Tools and Accessories</b>										
<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	
<b>Guide Shoe</b>	5.5					<b>Top Plug</b>	5.5	1	KLX	
<b>Float Shoe</b>	5.5	1	KLX	10574		<b>Bottom Plug</b>	5.5			
<b>Float Collar</b>	5.5	1	KLX	10569		<b>SSR plug set</b>	5.5			
<b>Insert Float</b>	5.5					<b>Plug Container</b>	5.5	1	HES	
<b>Stage Tool</b>	5.5					<b>Centralizers</b>	5.5			
<b>Fluid Data</b>										
<b>Stage/Plug #:</b> 1										
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft<sup>3</sup>/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>	
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	11.5	3.73	23.4	6	1760	
149.34 lbm/bbl		<b>BARITE, BULK (100003681)</b>								
35 gal/bbl		<b>FRESH WATER</b>								

0.50 gal/bbl		<b>MUSOL A, 330 GAL TOTE - (790828)</b>							
0.50 gal/bbl		<b>DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
2	ElastiCem	ELASTICEM (TM) SYSTEM	1450	sack	13.2	1.57	7.53	5	10919
0.40 %		<b>SCR-100 (100003749)</b>							
7.53 Gal		<b>FRESH WATER</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
3	Displacement	Displacement	234	bbl	8.34				
<b>Cement Left In Pipe</b>									
<b>Amount</b>	5 ft				<b>Reason</b>			<b>Shoe Joint</b>	
<b>Mix Water:</b>	pH 7	<b>Mix Water Chloride:</b>	<300 ppm			<b>Mix Water Temperature:</b>	60°F		
<b>Cement Temperature:</b>	NA	<b>Plug Displaced by:</b>	8.33 lb/gal			<b>Disp. Temperature:</b>	60 °F		
<b>Plug Bumped?</b>	Yes	<b>Bump Pressure:</b>	2360 psi			<b>Floats Held?</b>	Yes		
<b>Cement Returns:</b>	40 bbl	<b>Returns Density:</b>	NA			<b>Returns Temperature:</b>	NA		
<b>Comment</b> Pumped calculated displacement, bumped plug at 2360 psi, burst wet shoe disk, burst at 3860, pumped 5 bbl wet shoe, 40 bbl cement to surface, 1.5 bbl back to truck.									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	4/29/2018	15:00:00	USER					CREW CALLED OUT AT 15:00 4/29/2018, REQUESTED ON LOCATION 19:00 4/29/2018. CREW PICKED UP CEMENT, CHEMICALS (25 GAL MUSOL, 25 GAL DUAL SPACER B, 10 GAL D-AIR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. Bulk 660: 11138996/10866497 PUMP ELITE: 11897034/11645460
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	4/29/2018	17:45:00	USER					DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	4/29/2018	18:00:00	USER					STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	4/29/2018	19:30:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1554', CASING: 5.5" 20# @ 10574', 5' SHOE JOINT, 7.875" OPEN HOLE, TVD @ 6175', 9 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	4/29/2018	19:45:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH

											LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	4/29/2018	20:00:00	USER					CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	4/29/2018	23:00:00	USER	8.47	0.00	0.00	0.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	4/29/2018	23:38:44	COM4	0.39	0.00	0.00	0.00	START DATA RECORDING
Event	9	Test Lines	Test Lines	4/29/2018	23:40:35	COM4	8.31	0.00	27.00	3.10	PRESSURE TESTED IRON TO 4800 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 700 PSI, 5TH GEAR STALL OUT @ 2280 PSI.
Event	10	Pump Spacer 1	Pump Spacer 1	4/29/2018	23:44:38	COM4	8.30	0.00	10.00	0.00	PUMP 50 BBLS OF TUNED SPACER @ 11.5 LB/GAL, DENSITY VERIFIED BY PRESSURIZED MUD SCALES. ADDED 25 GAL MUSOL, 25 GAL DUAL SPACER B, AND 10 GAL D-AIR TO SPACER.
Event	11	Pump Cement	Pump Cement	4/29/2018	23:58:49	COM4					PUMP 1450 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.53 GAL/SK, 664 BBLS, TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Shutdown	Shutdown	4/30/2018	00:53:08	COM4					SHUTDOWN TO DROP TOP PLUG.
Event	13	Drop Top Plug	Drop Top Plug	4/30/2018	00:53:31	COM4					PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. AND TOOL HAND.



Event	14	Pump Displacement	Pump Displacement	4/30/2018	00:55:19	COM4					BEGIN CALCULATED DISPLACEMENT OF 234BBLS WITH FRESH WATER.
Event	15	Displ Reached Cement	Displ Reached Cement	4/30/2018	00:58:06	USER	8.39	10.00	1039.00	24.30	DISPLACEMENT REACHRD CEMENT
Event	16	Cement Returns to Surface	Cement Returns to Surface	4/30/2018	01:15:08	USER	8.44	8.90	2809.00	187.00	CEMENT RETURNS TO SURFACE @ 194 BBLS INTO DISPLACEMENT. TOTAL AMOUNT OF 40 BBLS OF CEMENT TO SURFACE.
Event	17	Bump Plug	Bump Plug	4/30/2018	01:22:25	USER	8.44	5.00	2365.00	237.20	PLUG BUMPED AT CALCULATED DISPLACEMENT.
Event	18	Other	Burst wet shoe disk	4/30/2018	01:23:28	USER	8.45	0.10	2613.00	238.60	WET SHOE DISK BURST AT 3850 PSI, PUMPED 5 BBL WET SHOE AT 5 BBL/MIN
Event	19	Check Floats	Check Floats	4/30/2018	01:25:42	USER	8.45	4.60	2232.00	246.70	RELEASED PRESSURE, FLOATS HELD, 1.5 BBLS BACK.
Event	20	End Job	End Job	4/30/2018	01:28:06	COM4					STOP JOB DATA RECORDING
Event	21	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	4/30/2018	01:45:00	USER	1.69	4.10	33.00	64.70	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	22	Rig-Down Completed	Rig-Down Completed	4/30/2018	02:30:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	23	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	4/30/2018	02:45:00	USER					DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	24	Crew Leave Location	Crew Leave Location	4/30/2018	03:00:00	USER					THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

## 3.0 Job Chart

### 3.1 Job Chart

