

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

**TC Moiser Hill 3-9-11 Production**

Job Date: Monday, June 05, 2017

Sincerely,

**Fort Lupton District Cement**

## Legal Notice

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Table of Contents

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1.0    Cementing Job Summary ..... 4

    1.1    Executive Summary .....4

2.0    Real-Time Job Summary ..... 7

    2.1    Job Event Log .....7

3.0    Job Chart ..... 11

    3.1    Job Chart.....11

## 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 TC Moiser Hill 3-9-11 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.

43 bbls of cement circulated to surface

Well was shut in after job because floats did not hold. Pressure was applied and shut in on the well to wait on cement

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> 3762927		<b>Quote #:</b>		<b>Sales Order #:</b> 0904067535					
<b>Customer:</b> EXTRACTION OIL & GAS				<b>Customer Rep:</b> Kalyn Holgate							
<b>Well Name:</b> TC MOISER HILL			<b>Well #:</b> 3-9-11		<b>API/UWI #:</b> 05-123-43742-00						
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> GREELEY		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO					
<b>Legal Description:</b> SE NE-8-5N-66W-2439FNL-1195FEL											
<b>Contractor:</b> PATTERSON-UTI ENERGY				<b>Rig/Platform Name/Num:</b> PATTERSON 341							
<b>Job BOM:</b> 7523 7523											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> Nicholas Roles							
<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>		20426ft		<b>Job Depth TVD</b>							
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>							
<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		9.625	8.921	36			0	1554	0	1554	
Casing		5.5	4.67	23			0	20426	0	7090	
Open Hole Section			8.5				1554	20444	1554	7090	
<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		HES		
<b>Float Shoe</b>	5.5			20426		<b>Bottom Plug</b>	5.5		HES		
<b>Float Collar</b>	5.5					<b>SSR plug set</b>	5.5		HES		
<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		HES		
<b>Fluid Data</b>											
<b>Stage/Plug #: 1</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>
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III			50	bbl	11.5	3.74		4	
0.30 gal/bbl		<b>MUSOL A, 330 GAL TOTE - (790828)</b>									
149.34 lbm/bbl		<b>BARITE, BULK (100003681)</b>									

35.40 gal/bbl		<b>FRESH WATER</b>							
0.30 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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	ElastiCem Lead	ELASTICEM (TM) SYSTEM	3175	sack	13.2	1.57		8	7.54
13.20 Gal		<b>FRESH WATER</b>							
0.30 %		<b>SCR-100 (100003749)</b>							
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
3	Displacement	Displacement	430.8	bbl	8.33			10	
Cement Left In Pipe		Amount	0ft	Reason				Wet Shoe	
<b>Comment</b> Got 43bbls cement to surface. Company used Davis Lynch Floats. Floats Did Not Hold. Left Cement head on location, held pressure at 2000psi for recommended 6-8hrs.									

## 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)	Comments
Event	1	Call Out	Call Out	6/4/2017	12:00:00	USER				Crew call out for o/l at 2100
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/4/2017	18:00:00	USER				Started journey management.
Event	3	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/4/2017	18:45:00	USER				All crew aware of hazards and directions. All fit to drive.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	6/4/2017	19:00:00	USER				Met with company man to discuss job details and procedure. Performed hazard hunt and site assessment.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	6/4/2017	19:15:00	USER				All hse present. Discussed bulk and iron placement and all red zone areas. Caution taped high pressure zones.
Event	6	Other	Other	6/4/2017	20:00:00	USER				Water Test- PH-6 Chlo-0 Temp-67 Cement temp-72
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	6/5/2017	03:00:00	USER	8.49	0.00	12.00	Discussed job associated hazards, contingencies and job procedure with all job associated personel. Rig circulated ~4000stks at 430gpm 2190psi.
Event	8	Start Job	Start Job	6/5/2017	04:15:00	COM4	8.49	0.00	11.00	TD-20444', TP-20426' 5.5" 23#, FC-20421', TVD-7090', OH-8.5", SURF-1554' 9.625" 36#, MUD-9.8#
Event	9	Test Lines	Test Lines	6/5/2017	04:20:41	COM4				Pumped 5bbls fresh water

										to fill lines at 2bpm 97psi, shut manifold, and performed 500psi k/o function test, followed with 5th gear stall at 1820psi, proceeded to bring pressure to 4800psi, held well and no leaks.
Event	10	Pump Spacer 1	Pump Spacer 1	6/5/2017	04:25:08	COM4	8.57	2.00	50.00	Pumped 50bbls of 11.5# 3.74y 23.7g/s Tuned Spacer III with 15g Musol A, 15g Dual Spacer B and 20g D-air at 4bpm 300psi.
Event	11	Check Weight	Check Weight	6/5/2017	04:26:02	COM4	11.54	4.00	181.00	Weight verified with pressurized mud scales.
Event	12	Pump Lead Cement	Pump Lead Cement	6/5/2017	04:36:17	COM4				Pumped 3175sks or 887.8bbls of 13.2# 1.57y 7.53g/s Elasticem at 8bpm 720psi.
Event	13	Check Weight	Check Weight	6/5/2017	04:39:03	COM4	13.28	7.00	1092.00	Weight verified with pressurized mud scales.
Event	14	Check Weight	Check Weight	6/5/2017	05:08:25	COM4				Weight verified with pressurized mud scales.
Event	15	Check Weight	Check Weight	6/5/2017	05:28:33	COM4	13.24	8.00	753.00	Weight verified with pressurized mud scales.
Event	16	Check Weight	Check Weight	6/5/2017	06:10:30	COM4	13.28	7.90	768.00	Weight verified with pressurized mud scales.
Event	17	Pump Spacer 2	Pump Spacer 2	6/5/2017	06:38:06	COM4	13.36	5.10	720.00	Pumped 10bbls fresh water with 3.75g MMCR before plug for wet shoe
Event	18	Other	Other	6/5/2017	06:41:54	COM4	8.13	0.00	6.00	Shutdown washed up pump with 5bbls fresh water to clean any residual cement left in truck and pump in 4 sided tank.



Event	19	Drop Top Plug	Drop Top Plug	6/5/2017	06:45:17	COM4	8.13	0.00	13.00	Dropped by KLX tool hand, witnessed by company man and HES supervisor.
Event	20	Pump Displacement	Pump Displacement	6/5/2017	06:45:26	COM4	8.13	0.00	13.00	Pumped 430.8bbls fresh water at 10bpm-3200psi with 1.25gMMCR in first 10bbls.
Event	21	Bump Plug	Bump Plug	6/5/2017	07:48:57	COM4	8.31	0.00	1930.00	Slowed down at 400bbls away to 4bpm, final circulating pressure- 2498psi. Saw a pressure spike about calculated to 2640psi, leveled off and did not continue climbing. Shutdown at calculated and pressure fell off slowly.
Event	22	Other	Other	6/5/2017	07:54:12	COM4	8.30	0.00	58.00	Released pressure and got 6bbls back to truck, shut in valve and pressure came up to 400psi. Continued to pump 6bbls back into well.
Event	23	Other	Other	6/5/2017	08:01:55	COM4				Pressure held around 2500psi while pumping back to well at 5bpm. Shut down and waited, once released pressure, flow slowed down after 3bbls back but continued to flow back. Shut in well at 5bbls back.
Event	24	Other	Other	6/5/2017	08:04:22	COM4	8.33	0.00	1924.00	Pumped the 5bbls back into well and shut in well to WOC for recommended 6-8hrs. Held at 2000psi.
Event	25	End Job	End Job	6/5/2017	08:10:56	COM4				Got 43bbls cement to surface.
Event	26	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	6/5/2017	08:30:00	USER				All HSE present. Discussed red zone areas and trapped

pressure hazards. Watch for suspended loads and rig down procedures, including hand placement, lifting techniques, and swing radius.

Event	27	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/5/2017	09:45:00	USER	All HSE present and fit to drive. Aware of directions and hazards.
Event	28	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/5/2017	10:00:00	USER	Pre journey managment prior to departure.

## 3.0 Job Chart

### 3.1 Job Chart

