

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

United States of America

Date: Sunday, January 22, 2017

TC Aims C5-9-11

Production

Job Date: Tuesday, January 03, 2017

Sincerely,

Justin Lansdale

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **TC Aims C5-9-11** 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.

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]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3762942	Quote #:	Sales Order #: 0903745543							
Customer: EXTRACTION OIL & GAS		Customer Rep: Hans Cary								
Well Name: TC AIMS	Well #: C5-9-11	API/UWI #: 05-123-43744-00								
Field: WATTENBERG	City (SAP): GREELEY	County/Parish: WELD	State: COLORADO							
Legal Description: SE NE-8-5N-66W-2606FNL-1192FEL										
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 341								
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HX38199		Srvc Supervisor: Nicholas Roles								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST								
Job depth MD	20262ft	Job Depth TVD	7278ft							
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		9.625	8.921	36			0	1565	0	1565
Casing		5.5	4.778	20			0	20262	0	7278
Open Hole Section			8.5				1565	20275	1565	7278
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	5.5				Top Plug	5.5		HES		
Float Shoe	5.5			20262	Bottom Plug	5.5		HES		
Float Collar	5.5				SSR plug set	5.5		HES		
Insert Float	5.5				Plug Container	5.5	1	HES		
Stage Tool	5.5				Centralizers	5.5		HES		
Fluid Data										
Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	11.5	3.74		5		
0.30 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)								
149.34 lbm/bbl		BARITE, BULK (100003681)								
36.09 gal/bbl		FRESH WATER								
0.30 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								

last updated on 1/4/2017 3:26:07 AM

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Created: Sunday, January 22, 2017

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Cementing Job Summary

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 W/O CBL	ELASTICEM (TM) SYSTEM	150	sack	13.2	1.57		6	7.48
7.48 Gal		FRESH WATER							
0.90 %		HR-5, 50 LB SK (100005050)							
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	ElastiCem	ELASTICEM (TM) SYSTEM	3070	sack	13.2	1.57		8	7.49
7.49 Gal		FRESH WATER							
0.80 %		HR-5, 50 LB SK (100005050)							
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
4	Displacement	Displacement	447.6	bbl	8.33			10	
Cement Left In Pipe		Amount	0ft	Reason				Wet shoe	
Comment Got 10bbbls cement back to pits.									

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)	DS Pump Press (psi)
Event	1	Call Out	Call Out	1/3/2017	08:00:00	USER	Crew call out for o/l at 1400		
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/3/2017	12:45:00	USER	all crew aware of hazards and directions. all fit to drive.		
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	1/3/2017	14:00:00	USER	Met with company man to discuss job details and procedure. Performed hazard hunt and site assessment. Rig had 2000' left to run.		
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/3/2017	14:30:00	USER	All hse present. Discussed bulk and iron placement and all red zone areas. Caution taped high pressure zones.		
Event	5	Other	Other	1/3/2017	15:00:00	USER	Water Test- PH-6 Chlo-0 Temp-60 Cement temp- 64		
Event	6	Start Job	Start Job	1/4/2017	22:03:37	COM2	TD-20275', TP-20262' 5.5" 20#, FC-20255', TVD-7278', OH-8.5", SURF-1565' 9.625" 36#.		
Event	7	Test Lines	Test Lines	1/4/2017	22:23:58	COM2	Filled lines with 3bbls fresh water, shutdown, closed 2" valves on manifold and performed k/o function test at 500psi, proceeded to bring pressure up to 4800psi. Held good no leaks.		
Event	8	Pump Spacer 1	Pump Spacer 1	1/4/2017	22:35:09	COM2	Pumped 50bbls Tuned Spacer III with 15g Musol A, 15g Dual Spacer B and 10g D-Air at 5bpm 200psi.		
Event	9	Start Job	Start Job	1/4/2017	22:38:45	COM2	Flecs screen froze up and had to restart flecs to begin job again.		
Event	10	Pump Spacer 1	Pump Spacer 1	1/4/2017	22:39:30	COM2			
Event	11	Check Weight	Check Weight	1/4/2017	22:46:34	COM2	Weight verified by pressurized mud scales.		

Event	12	Pump Lead Cement	Pump Lead Cement	1/4/2017	22:51:51	COM2	Pumped 150sks or 42bbls Elasticem w/o CBL at 5bpm 240psi.
Event	13	Check Weight	Check Weight	1/4/2017	22:52:49	COM2	Weight verified by pressurized mud scales.
Event	14	Pump Tail Cement	Pump Tail Cement	1/4/2017	22:59:01	COM2	Pumped 3070sks or 858bbls of 13.2# 1.57y 7.48g/s Elasticem w/CBL at 8bpm 470psi.
Event	15	Check Weight	Check Weight	1/4/2017	23:02:57	COM2	Weight verified by pressurized mud scales.
Event	16	Check Weight	Check Weight	1/4/2017	23:31:12	USER	Weight verified by pressurized mud scales.
Event	17	Check Weight	Check Weight	1/4/2017	23:58:12	COM2	Weight verified by pressurized mud scales.
Event	18	Check Weight	Check Weight	1/4/2017	00:38:24	COM2	
Event	19	Drop Top Plug	Drop Top Plug	1/4/2017	01:11:51	COM2	Dropped by KLX tool hand, witnessed by HSE supervisor and company man.
Event	20	Pump Displacement	Pump Displacement	1/4/2017	01:11:57	COM2	Pumped 447.6 bbls fresh water at 10bpm 2580psi.
Event	21	Bump Plug	Bump Plug	1/4/2017	02:02:09	USER	Slowed to 5bpm 15bbls from calculated bump and final circulating pressure at 5bpm 2703psi. Bumped plug at 3100psi. As we bumped disc burst at 3118psi.
Event	22	Circulate Well	Circulate Well	1/4/2017	02:03:36	USER	Once we burst disc, made sure it was indeed burst and pumped 2bbls at 2bpm to see if pressure rose and it didnt so we proceeded to pump 5bbls total for wet shoe at 5bpm 2895psi.
Event	23	Other	Other	1/4/2017	02:07:19	COM2	Checked floats and got 3.5bbls back and floats held.
Event	24	End Job	End Job	1/4/2017	02:09:26	COM2	Got 10bbls cement back to pits.
Event	25	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	1/4/2017	02:15:00	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	26	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/4/2017	09:00:00	USER	All HSE present and fit to drive. Aware of

							directions and hazards.
Event	27	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/4/2017	09:30:00	USER	Pre journey managment prior to departure.

2.2 Custom Graph

