

HALLIBURTON

iCem[®] Service

PDC ENERGY EBUS

Date: Monday, January 29, 2018

Boulter Farms 27H-302 PRODUCTION

Job Date: Sunday, January 14, 2018

Sincerely,

Julia Nichols

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Boulter Farms 27H-302** 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.

No spacer or cement returned 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]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 304535		Ship To #: 3754872		Quote #:		Sales Order #: 0904563295					
Customer: PDC ENERGY-EBUS				Customer Rep: Chris & Vaughn							
Well Name: BOULTER FARMS			Well #: 27H-302		API/UWI #: 05-123-43535-00						
Field: WATTENBERG		City (SAP): GREELEY		County/Parish: WELD		State: COLORADO					
Legal Description: NW SW-27-5N-65W-1651FSL-410FWL											
Contractor:				Rig/Platform Name/Num: Ensign 152							
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		14075ft			Job Depth TVD		6890ft				
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			0	1629	0	1629	
Casing		5.5	4.778	20	BUTTRESS	HCP110	0	14075	0	6890	
Open Hole Section			8.5				1629	14085	1629	6890	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe						Top Plug	5.5	1	WF		
Float Shoe	5.5	1	WF	14075		Bottom Plug					
Float Collar	5.5	1	WF	14061		SSR plug set					
Insert Float						Plug Container	5.5	1	HES		
Stage Tool						Centralizers					
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	Spacer	MUD FLUSH III			50	bbl	8.4			6.5	2100
		42 gal/bbl			FRESH WATER						
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
2	Spacer	CLEANSPACER III			50	bbl	12	2.27	12.4	6.5	1534
		0 gal/bbl			FRESH WATER						

last updated on 1/29/2016 1:59:24 PM

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Cementing Job Summary

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
3	Cement	ELASTICEM (TM) SYSTEM	1757	sack	13.2	1.57	7.53	6.5	13230
7.53 Gal		FRESH WATER							
0.40 %		HALAD(R)-344, 50 LB (100003670)							
0.32 %		HR-5, 50 LB SK (100005050)							
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
4	Displacement	FRESH WATER	312	bbl	8.33			6.5	13104
0.25 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
Cement Left In Pipe	Amount	0 ft			Reason			Wet Shoe Joint	
Mix Water:	pH 7	Mix Water Chloride:	<300 ppm		Mix Water Temperature:	58 °F			
Cement Temperature:	N/A	Plug Displaced by:	8.3 lb/gal Fresh Water			Disp. Temperature:	58 °F		
Plug Bumped?:	Yes	Bump Pressure:	2300 psi			Floats Held?:	Yes		
Cement Returns:	N/A	Returns Density:	N/A			Returns Temperature:	N/A		
<p>Comment: The plug bumped @ calculated displacement @ 2300 PSI, shutdown for 5 minutes @ 2800 PSI. The sleeve opened @ 3840 PSI and pumped a 5 BBL wet shoe. The floats held and received 2.5 BBLs back to the truck. Nothing returned to surface.</p>									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Comments
Event	1	Call Out	Call Out	1/14/2018	03:30:00	USER				CREW CALLED OUT AT 03:30 1/14/2018, REQUESTED ON LOCATION 9:30 1/14/2018. CREW PICKED UP CEMENT, CHEMICALS (15 GAL D-AIR, 15 GAL MMCR), 200 LBS OF MUD FLUSH III, 100 LBS OF SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11610427/10867096, BULK 660: 12154546/10025027, PUMP 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/14/2018	07:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	1/14/2018	08:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	1/14/2018	09:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 36# 9.625" @ 1629', CASING: 5.5" 20# @ 14075.35', 14.19' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6890', 10.6 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/14/2018	09:15:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	1/14/2018	09:20:00	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	1/14/2018	13:30:00	USER	8.55	0.00	6.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	1/14/2018	14:00:14	COM6	8.45	0.00	2.00	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	1/14/2018	14:15:19	COM6	8.43	0.00	4998.00	PRESSURE TEST IRON TO 4500 PSI. SET KICKOUTS TO 500 PSI, KICKED OUT @ 600 PSI. 5TH GEAR STALL @ 1920 PSI.
Event	10	Pump Spacer 1	Pump Mud Flush III	1/14/2018	14:20:31	COM6	8.52	6.30	625.00	PUMP 50 BBLs OF MUD FLUSH III, ADDED 5 GAL DE-AIR.
Event	11	Pump Spacer 2	Pump CleanSpacer @	1/14/2018	14:28:36	COM6	12.04	6.20	976.00	PUMP 50 BBLs OF CLEANSPACER @ 12.0 LB/GAL, 2.27 YIELD,

			12.0 ppg							12.4 GAL/SKS, ADDED 10 GAL DE-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Pump Cement	Pump Cement @ 13.2 ppg	1/14/2018	14:42:30	COM6	13.18	6.40	1123.00	PUMP 1757 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.53 GAL/SK, 491 BBLS, CALCULATED TOC @ 2041', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Shutdown	Shutdown	1/14/2018	16:06:19	COM6				SHUTDOWN TO WASH PUMPS AND LINES/ DROP TOP PLUG.
Event	14	Drop Top Plug	Drop Top Plug	1/14/2018	16:16:50	COM6				PLUG LEFT LANDING JOINT, VERIFIED BY TOOL HAND.
Event	15	Pump Displacement	Pump Fresh Water Displacement	1/14/2018	16:17:46	COM6	7.83	2.40	19.00	BEGIN CALCULATED DISPLACEMENT OF 312 BBLS WITH FRESH WATER. ADDED 15 GAL MMCR AND BIOCIDES TO 1ST 40 BBLS OF DISPLACEMENT. ADDED BIOCIDES THROUGH REST OF DISPLACEMENT.
Event	16	Bump Plug	Bump Plug	1/14/2018	17:08:47	COM6	8.38	4.10	2270.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED 500 PSI OVER FINAL CIRCULATING PRESSURE OF 2300 PSI.
Event	17	Shutdown	Shutdown	1/14/2018	17:09:03	USER	8.38	0.00	2903.00	SHUTDOWN FOR 5 MINUTES @ 2800 PSI.
Event	18	Other	Open Sleeve	1/14/2018	17:15:00	COM6	8.28	1.90	3802.00	PRESSURE UP TO SHIFT SLEEVE. SLEEVE OPENED @ 3840 PSI.
Event	19	Pump Displacement	Pump Wet Shoe	1/14/2018	17:15:11	USER	8.38	2.10	2210.00	PUMP 5 BBLS FRESH WATER FOR A WET SHOE.
Event	20	Check Floats	Check Floats	1/14/2018	17:16:55	USER	8.32	0.00	1575.00	RELEASED PRESSURE, FLOATS HELD, 1.5 BBLS BACK.
Event	21	End Job	End Job	1/14/2018	17:18:06	COM6				STOP RECORDING JOB DATA.
Event	22	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/14/2018	17:20:00	USER	8.23	0.00	89.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	23	Rig-Down Completed	Rig-Down Completed	1/14/2018	18:15:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	24	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/14/2018	18:25:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	25	Crew Leave Location	Crew Leave Location	1/14/2018	18:30:00	USER				THANK YOU FOR USING HALLIBURTON - BRYAN KRAFT AND CREW.