

HALLIBURTON

iCem[®] Service

PDC ENERGY-EBUS

Date: Sunday, November 19, 2017

HIGH PLAINS 25A-241 PRODUCTION

Job Date: Wednesday, November 15, 2017

Sincerely,

JULIA NICHOLS

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 **HIGH PLAINS 25A-241** 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 #: 304535	Ship To #: 3806150	Quote #: 0022371800	Sales Order #: 0904423086							
Customer: PDC ENERGY-EBUS		Customer Rep: Phillip Alvarado								
Well Name: HIGH PLAINS	Well #: 25A-241	API/UWI #: 05-123-44974-00								
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO							
Legal Description: NW NW-25-5N-65W-1039FNL-748FWL										
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 158								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Luke Kosakewich								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type	BHST									
Job depth MD	17547ft	Job Depth TVD	6780ft							
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	1662		1662
Casing		5.5	4.778	20			0	17545	0	6782
Open Hole Section			8.5				1662	17547	1662	6782
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			17545		Bottom Plug				
Float Collar	5.5			17515		SSR plug set				
Insert Float						Plug Container	5.5	1	HES	
Stage Tool						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	Mud Flush III (Powder)	Mud Flush III	70	bbl	8.4			4		
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	Mud Flush III 2x	Mud Flush III	30	bbl	8.4			4		

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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	
3	Clean Spacer III	CLEANS PACER III	50	bbl	12	2.27		6		
0 gal/bbl		FRESH WATER								
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	13.2# ElastiCem Lead	ELASTICEM (TM) SYSTEM	150	sack	13.2	1.57		7	7.52	
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	
5	13.2# ElastiCem	ELASTICEM (TM) SYSTEM	2380	sack	13.2	1.57		8	7.53	
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	
6	MMCR Displacement	MMCR Displacement	30	bbl	8.34			5		
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	
7	Displacement fluid	Fresh water W/ Biocide	358.8	bbl	8.34			8		
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe		
Comment Had full returns throughout the job. Got 90 of Mud Flush III spacer to surface. Floats held. Got 4 bbls. of fluid back to truck. Estimated TOL is 1,253'. TOT 2,209'.										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Downhole Density (ppg)	Driv-Side Pump Pressure (psi)	Combined Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	11/15/2017	12:00:00	USER				Crew was called out at 12:00 for an on location time of 18:00.
Event	2	Depart Location Safety Meeting	Depart Location Safety Meeting	11/15/2017	16:15:00	USER				Crew held a pre journey safety meeting and JSA.
Event	3	Depart Shop for Location	Depart Shop for Location	11/15/2017	16:20:00	USER				Started journey management with dispatch and left the yard.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	11/15/2017	17:10:00	USER				Crew performed a site assessment and hazard hunt on location. Checked in with the customer and discussed the job procedures, rig up and well bore schematics to calculate the job. The rig was running casing.
Event	5	Other	Other	11/15/2017	17:15:00	USER				Well bore: MD: 17,547', TP: 5.5" 20# set at 17,545', FC: 17,515', TVD: 6,760', SC: 9.625" 36# set at 1,662', OH: 8.5", Mud # 10, Water test: PH: 7.2, Chlorides: 0, Temp: 41 degrees.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/15/2017	17:20:00	USER				Held a pre rig up safety meeting and JSA with the crew.
Event	7	Rig-Up Equipment	Rig-Up Equipment	11/15/2017	17:30:00	USER				The crew rigged up all lines, hoses and equipment for the job.
Event	8	Safety Meeting	Safety Meeting	11/15/2017	20:00:00	USER				Held a pre job safety meeting and JSA with all personnel on location.
Event	21	Test Lines	Test Lines	11/15/2017	20:54:58	RTD Import	0.00	162.63	0.00	Pressure tested lines to 4,600 psi. with a 500 psi. electronic kick out test
Event	27	Pump Spacer 1	Pump Spacer 1*	11/15/2017	21:02:18	RTD Import	8.45	-18.13	0.00	Pumped 70 bbls. of Mud Flush III.
Event	38	Pump Spacer 2	Pump Spacer2*	11/15/2017	21:22:23	RTD Import	8.62	746.56	4.54	Pumped 30 bbls. of Mud Flush III with double concentration.

Event	91	Pump Spacer 1	Pump Spacer 1*	11/15/2017	21:32:53	RTD Import	8.53	715.33	0.00	Pumped 50 bbls. of Clean Spacer III mixed at 12 ppg. Yield 2.27 ft3/sk, 12.4 gal/sk. Density was verified by pressurized scales.
Event	134	Pump Lead Cement	Pump Lead Cement*	11/15/2017	21:41:40	RTD Import	11.82	1412.81	7.08	Pumped 42 bbls. (150 sks.) of Elasticem W/O Super CBL mixed at 13.2 ppg., Yield: 1.57 ft3/sks, 7.52 gal/sks. Density was verified by pressurized scales.
Event	169	Pump Tail Cement	Pump Tail Cement*	11/15/2017	21:48:16	RTD Import	13.20	1145.93	7.08	Pumped 665 bbls. (2380 sks.) of Elasticem mixed at 13.2 ppg., Yield: 1.57 ft3/sks, 7.53 gal/sks. Density was verified by pressurized scales.
Event	173	Mud Cup Sample	Mud Cup Sample Pulled	11/15/2017	21:50:07	RTD Import	13.47	1119.43	7.08	Cement weight up at 13.2 ppg.
Event	382	Shutdown	Shutdown	11/16/2017	23:49:54	RTD Import	13.85	-9.61	0.00	Loaded the top plug witnessed by the customer.
Event	395	Clean Lines	Clean Lines	11/16/2017	23:55:03	RTD Import	13.77	-9.61	0.00	Washed pumps and lines until clean.
Event	409	Drop Top Plug	Drop Top Plug	11/16/2017	00:03:29	RTD Import	7.94	-17.18	0.00	Dropped the top plug witnessed by the customer.
Event	410	Pump Displacement	Pump Displacement*	11/16/2017	00:06:08	RTD Import	7.96	45.28	2.51	Pumped 388.8 bbls. of fresh water with MMCR in the first 30 bbls. and Biocide throughout the rest.
Event	412	Bump Plug	Bump Plug	11/16/2017	01:05:20	RTD Import	8.02	2908.11	0.00	Bumped the plug 500 psi. over 2,400 psi. at 4 bpm. Finale pressure was 2,900 psi. Held pressure for 5 minutes . Got 90 bbls. of spacer to surface.
Event	414	Pressure Up Well	Pressure Up Well	11/16/2017	01:10:31	USER	8.00	3105.90	0.48	Pressured up the well to 4,000 psi to shift the sub wet shoe. Pumped 7 bbls. of fresh water for a wet shoe.
Event	415	Other	Other	11/16/2017	01:15:35	RTD Import	7.94	-10.55	0.00	Bled off pressure to check floats. Floats held. Got 4 bbls. of fluid back to truck. Estimated TOL is 1,253', TOT 2,209'.
Event	417	End Job	End Job	11/16/2017	01:15:44	USER	7.94	-12.45	0.00	Washed pumps and lines until clean.
Event	419	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/16/2017	01:20:00	USER				Held a pre rig down safety meeting and JSA.
Event	420	Rig-Down Equipment	Rig-Down Equipment	11/16/2017	01:25:00	USER				Rigged down all lines hoses and equipment.
Event	421	Depart Location Safety	Depart Location Safety	11/16/2017	04:30:00	USER				Held a pre journey safety meeting and JSA.

		Meeting	Meeting					
Event	422	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	11/16/2017	04:40:00	USER	Started journey management with dispatch and the crew left the yard.	