

# HALLIBURTON

iCem<sup>®</sup> Service

## **PDC ENERGY EBUS**

### **High Plains 25F-301 Production**

Job Date: Saturday, December 16, 2017

Sincerely,

**Fort Lupton District Cement**

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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 **High Plains 25F-301** 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.

20 bbls of mud flush back 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**

**HALLIBURTON**

### *Cementing Job Summary*

The Road to Excellence Starts with Safety

Sold To #: 304535	Ship To #: 3806251	Quote #: 0022384965	Sales Order #: 0904503114
Customer: PDC ENERGY-EBUS		Customer Rep: SHAWN DAVIS	
Well Name: HIGH PLAINS	Well #: 25F-301	API/UWI #: 05-123-44970-00	
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO
Legal Description: NW NW-25-5N-65W-994FNL-749FWL			
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 158	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Robert Davis	
Job			

Formation Name			
Formation Depth (MD)	Top	1675	Bottom 17876
Form Type	BHST		
Job depth MD	17863ft	Job Depth TVD	6823
Water Depth			Wk Ht Above Floor 5
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	1675		1675
Casing		5.5	4.778	20			0	17863		6823
Open Hole Section			8.5				1675	17876	6152	6823

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	5.5			17863		Top Plug	5.5		HES
Float Shoe	5.5					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 ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
1	Mud Flush III (Powder)	Mud Flush III	50	bbl	8.4			5	
42 gal/bbl		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal

## HALLIBURTON

## Cementing Job Summary

2	CLEANSPEC R III	CLEANSPECER III	50	bbl	12	2.27		6.5	
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/mi n	Total Mix Fluid Gal
3	13.2# ElastiCem	ELASTICEM (TM) SYSTEM	2395	sack	13.2	1.57		6.5	7.52
7.52 Gal		FRESH WATER							
0.40 %		HALAD(R)-344, 50 LB (100003670)							
0.35 %		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/mi n	Total Mix Fluid Gal
4	MMCR Displacement	MMCR Displacement	30	bbl	8.34			7	
0.25 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement fluid		394	bbl	8.34			7	
Cement Left In Pipe		Amount	33 ft			Reason		Shoe Joint	
Mix Water:		pH 7	Mix Water: Chloride:		500 ppm		Mix Water Temperature:		50 °F °C
Cement Temperature:## °F °C		Plug Displaced by:			8.33 lb/gal kg/m3 XXXX		Disp. Temperature:## °F °C		
Plug Bumped?		Yes	Bump Pressure:			2350-2900 psi MPa		Floats Held?Yes	
Cement Returns:		N/A bbl m3	Returns Density:## lb/gal kg/m3			Returns Temperature:## °F °C			
Comment BUMPED PLUG @ 388 BBLS FULL RETURNS THOUGHOUT THE JOB, FLOATS HELD 1 ½ BBLS BACK RUPTURED WET SHOE SUB @ 3830 PSI, 20 BBLS OF MUD FLUSH RETURNS TO SURFACE.									

## 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)	Recirc Density (ppg)	Comments
Event	1	Call Out	Call Out	12/16/2017	02:00:00	USER					CALLED OUT FROM FT. LUPTON COLORADO
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/16/2017	04:30:00	USER					LEAVE YARD AFTER SAFTEY MEETING
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	12/16/2017	06:00:00	USER					ARRIVED ON LOCATION AND TALKED TO COMPANY MAN ABOUT JOB FIGURES AND THE SPOTTING OF OUR EQUIPMENT
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	12/16/2017	06:15:00	USER					ASSESSED LOCATION AN TOOK WATER SAMPLE
Event	5	Rig-Up Equipment	Rig-Up Equipment	12/16/2017	06:30:00	USER					SPOTTED EQUIPMENT AND RIGGED UP TO FLOOR RIG IS RUNNING CASING
Event	6	Other	Other	12/16/2017	06:45:00	USER					Water test=pH: 7____, Cl: _500____, temp _50____degrees Tannin-Lignin: __NEG.____; Sulfate: _200____
Event	7	Other	Other	12/16/2017	07:30:00	USER					Rig Circulation: ____ bbls Circulation Rate: ____ bbl/min Mud Density _10.1____ lb/gal Mud YP/PV: _____
Event	8	Other	Other	12/16/2017	07:45:00	USER					Spacer: _100____ bbl TOS____0____ Lead Cement: __670____ bbl, _2395____ sks, TOC__1467____ Tail Cement:

										____ bbl, ____ sks, TOC____ Displacement: __394__ bblCMT left in Pipe_3/4____ Reason__SHOE____		
Event	9	Other	Other	12/16/2017	08:00:00	USER					TD: __17876__, TP __17863__, SJ: __33__, OH: __8.5__, Casing: Size/Weight/Grade: __5.5/20#/P110____ , Previous Casing Shoe: __1675__	
Event	10	Rig-Up Completed	Rig-Up Completed	12/16/2017	14:30:00	USER	0.00	-0.01	54.00	0.00	RIG UP COMPLETE SAFETY MEETING WITH RIG HANDS AND HALLIBURTON ABOUT THE DANGERS OF OUR EQUIPMENT AND WENT OVER JOB FIGURES. READY TO TEST LINES	
Event	11	Start Job	Start Job	12/16/2017	14:41:59	COM4						
Event	12	Test Lines	Test Lines	12/16/2017	15:16:48	COM4	0.00	8.24	5497.00	0.00	FLOOD LINES W/ 2 BBLS OF FRESH WATER, LOW PSI TEST TO 500 PSI, HIGH PSI TEST TO 5500 PSI	
Event	13	Pump Spacer 1	Pump Spacer 1	12/16/2017	15:21:04	COM4						MUD FLUSH III, 50 BBLS PUMPED @ 5 BPM @ 413 PSI
Event	14	Pump Spacer 2	Pump Spacer 2	12/16/2017	15:32:25	COM4						CLEAN SPACER III, 50 BBLS, @ 12 PPG, YEILD @ 2.27, GAL/SK @ 12.4, PUMPED @ 6.5 BPM @ 860 PSI, HOS- 1043, TOS-424 FT
Event	15	Pump Cement	Pump Cement	12/16/2017	15:39:26	COM4						ELASTICEM, 2395 SKS @ 13.2 PPG, YEILD @ 1.57, GAL/SK @ 7.52, 3760.15

FT3, 670 BBLS, 429 BBLS OF  
WATER TO MIX, PUMPED @  
6.7 @ 500 PSI, HOC-16396,  
TOC-1467

Event	16	Drop Top Plug	Drop Top Plug	12/16/2017	17:33:53	COM4						KLX TOP PLUG FOR WET SHOE
Event	17	Pump Displacement	Pump Displacement	12/16/2017	17:41:46	COM4						394 BBLS CALCULATED DISPLACEMENT, FIRST 20 BBLS MMCR, PUMPED @ 7 BPM @ 250 PSI, THE REST BIOCIDE, PUMPED @ 7 BPM @ 2000 PSI, SLOWED RATE LAST 20 BBLS TO 5 BPM @ 2170 PSI, 20 BBLS OF MUD FLUSH RETURNS TO SURFACE.FULL RETURNS THOUGHOUT THE JOB.
Event	18	Bump Plug	Bump Plug	12/16/2017	18:39:19	COM4						BUMPED PLUG 500 PSI OVER, BUMPED @ 2350 PSI TOOK TO 2900 PSI
Event	19	Other	Other	12/16/2017	18:41:38	COM4						RUPTURED WET SHOE SUB @ 3830 PSI
Event	20	Other	Other	12/16/2017	18:42:36	COM4						PUMPED 5 BBL WET SHOE @ 4 BPM @ 2025 PSI, CHECKED FLOATS, FLOATS HELD 1 1/2 BBLS BACK
Event	21	Other	Other	12/16/2017	18:45:00	USER	0.00	8.19	112.00	0.17		WAIT ON RIG TO NIPPLE DOWN AND RIG DOWN FLOOR SO WE CAN TEST BACK SIDE.
Event	22	Test Lines	Test Lines	12/16/2017	20:46:48	COM4						TEST BACKSIDE, 1.4 BBLS @ 489 PSI HELD
Event	23	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig- Down	12/16/2017	21:00:00	USER	0.00	-0.05	-5.00	0.17		SAFETY MEETING OVER RIGGING DOWN
Event	24	Rig-Down Equipment	Rig-Down Equipment	12/16/2017	21:15:00	USER						RIG DOWN EQUIPMENT AND HOSES

Event	25	Rig-Down Completed	Rig-Down Completed	12/16/2017	21:45:00	USER	RIG DOWN COMPLETE
Event	26	Safety Meeting - Departing Location	Safety Meeting - Departing Location	12/16/2017	22:00:00	USER	SAFETY MEETING OVER DEPARTURE AND JOURNEY HOME
Event	27	Depart Location for Home	Depart Location for Home	12/16/2017	22:30:00	USER	LEAVE LOCATION