

HALLIBURTON

iCem[®] Service

PDC ENERGY EBUS

Date: Monday, March 14, 2016

Spaur 10L-301

Production

Job Date: Sunday, March 06, 2016

Sincerely,

Lauren Roberts

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Spaur 10L-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.

24 bbls. of Mud Flush III 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 [Ft. Lupton]

The Road to Excellence Starts with Safety

Sold To #: 304535		Ship To #: 3700235		Quote #:		Sales Order #: 0903164857				
Customer: PDC ENERGY - EBUS				Customer Rep: Dean Haight						
Well Name: SPAUR			Well #: 10L-301			API/UWI #: 05-123-42331-00				
Field: WATTENBERG		City (SAP): MILLIKEN		County/Parish: WELD			State: COLORADO			
Legal Description: SE SW-10-4N-67W-300FSL-1583FWL										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 121						
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB71271				Srcv Supervisor: Kendall Broom						
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type					BHST					
Job depth MD		11490.8ft			Job Depth TVD					
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	LTC	J-55	0	1367		
Casing		5.5	4.778	20		P-110	0	11491	0	
Open Hole Section			8.5					11495	1369	
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5	1				Top Plug				
Float Shoe	5.5	1		11497		Bottom Plug				
Float Collar	5.5	1				SSR plug set				
Insert Float	5.5	1				Plug Container				
Stage Tool	5.5	1				Centralizers				
Miscellaneous Materials										
Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc				
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty				
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/min	Total Mix Fluid Gal
1	Mud Flush III (Powder)	Mud Flush III	40	bbl	8.4			6	
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/min	Total Mix Fluid Gal
2	ElastiCem	ELASTICEM (TM) SYSTEM	919	sack	13.2	1.57		6	7.51
7.53 Gal		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
3	EconoCem	ECONOCEM (TM) SYSTEM	914	sack	13.5	1.653		4	7.87
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	MMCR Displacement	MMCR Displacement	20	bbl	8.34				
0.50 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/min	Total Mix Fluid Gal
5	Water	Water	254	bbl	8.33				
Cement Left In Pipe		Amount	16ft		Reason		Shoe Joint		
Comment									

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>	PS Pump Press <i>(psi)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	3/6/2016	03:30:00	USER				Called crew out to be on location at 0700, then pushed to 0900
Event	2	Depart Shop for Location	Depart Shop for Location	3/6/2016	07:45:00	USER				Held a safety meeting before leaving for location
Event	3	Arrive At Loc	Arrive At Loc	3/6/2016	08:30:00	USER				Arrived on location and met with the company man. Rig still had 10 joints to go
Event	4	Rig-up Lines	Rig-up Lines	3/6/2016	08:45:00	USER				Held a hazard hunt before spotting in trucks and rigging up
Event	5	Other	Water Sample	3/6/2016	09:15:00	USER				Temp 60, Hardness 250, Iron 0, PH 7, Chloride 0, Sulfate <200.
Event	6	Rig-up Lines	Safety Meeting	3/6/2016	12:00:00	USER				Held a safety meeting with the rig crew to discuss the operation and safety
Event	7	Start Job	Start Job	3/6/2016	12:51:52	COM4	8.33	3.00	1.10	Filled lines with 2 bbl water
Event	8	Test Lines	Test Lines	3/6/2016	12:53:40	COM4	8.17	71.00	0.00	Tested lines to 4548 psi.
Event	9	Pump Spacer 1	Pump Spacer 1	3/6/2016	12:59:21	COM4	8.26	13.00	0.00	Pumped 10 bbl water spacer with Red Dye. Pumped at 3bpm and 274 psi
Event	10	Pump Spacer 2	Pump Spacer 2	3/6/2016	13:02:47	COM4	8.13	311.00	4.00	Pumped 40 bbl mudd flush spacer. Pumped at 5bpm and 509 psi.
Event	11	Pump Spacer 1	Pump Spacer 1	3/6/2016	13:11:41	COM4	8.22	494.00	5.30	Pumped 10 bbl water, Pumped at 5 bpm and 523 psi.
Event	12	Pump Lead Cement	Pump Lead Cement	3/6/2016	13:17:18	COM4	8.27	279.00	0.00	Pumped Elasticem 919 sks, 256.96 bbl, 13.2#, 1.57 yield, 7.51 gal/sks. Pumped at 7.8 bpm and 343 psi
Event	13	Pump Tail Cement	Pump Tail Cement	3/6/2016	13:51:00	USER				Pumped Econocem 914 sks, 268.59 bbl, 13.5#, 1.65 yield, 7.87 gal/sks. Pumped at 7.9 bpm and 320 psi.
Event	14	Shutdown	Shutdown	3/6/2016	14:32:54	COM4	13.28	39.00	0.00	
Event	15	Clean Lines	Clean Lines	3/6/2016	14:39:45	COM4	13.75	-7.00	0.00	Washed cement head and lines

Event	16	Drop Top Plug	Drop Top Plug	3/6/2016	14:44:35	COM4	8.03	-8.00	0.00	Broke cap and loaded plug, witnessed by tool hand and engineer.
Event	17	Pump Displacement	Pump Displacement	3/6/2016	14:44:50	COM4	8.04	-8.00	0.00	Pumped 254bbl water displacement with Biocide added. Got 24bbl mud flush back but no cement back to surface
Event	18	Bump Plug	Bump Plug	3/6/2016	15:21:09	COM4	8.63	2569.00	0.00	Bumped plug at 2500psi final lift was at 2100 psi. held pressure for 15 min casing test climbed to 2918psi.got 2.5 bbl back on the truck and floats held
Event	19	End Job	End Job	3/6/2016	15:37:09	COM4	8.68	40.00	0.00	
Event	20	Rig Down Lines	Rig Down Lines	3/6/2016	15:42:09	USER				Held a safety meeting before rigging down lines
Event	21	Depart Location	Depart Location	3/6/2016	16:30:00	USER				Held a safety huddle before leaving location