

HALLIBURTON

iCem[®] Service

PDC ENERGY EBUS

Date: Sunday, April 10, 2016

Spaur 10L-201

Production

Job Date: Wednesday, March 23, 2016

Sincerely,

Justin Lansdale

Legal Notice

Warning Disclaimer

Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

Limitations of Liability

Except as expressly set forth herein, there are no representations or warranties by Halliburton, express or implied, including implied warranties of merchantability and/or fitness for a particular purpose. In no event will Halliburton or its suppliers be liable for consequential, incidental, special, punitive or exemplary damages (including, without limitation, loss of data, profits, use of hardware, or software). Customer accepts full responsibility for any investment made based on results from the Software. Any interpretations, analyses or modeling of any data, including, but not limited to Customer data, and any recommendation or decisions based upon such interpretations, analyses or modeling are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional may differ. Accordingly, Halliburton cannot and does not warrant the accuracy, correctness or completeness of any such interpretation, recommendation, modeling or other products of the Software Product. As such, any interpretation, recommendation or modeling resulting from the Software for the purpose of any drilling, well treatment, production or financial decision will be at the sole risk of Customer. Under no circumstances will Halliburton or its suppliers be liable for any damages.

Table of Contents

Cementing Job Summary	4
Executive Summary	4
Real-Time Job Summary	7
Job Event Log	7
Custom Graph.....	9

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Spaur 10L-201** 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]

The Road to Excellence Starts with Safety

Sold To #: 304535	Ship To #: 3700233	Quote #:	Sales Order #: 0903198269
Customer: PDC ENERGY - EBUS		Customer Rep: .	
Well Name: SPAUR		Well #: 10L-201	API/UWI #: 05-123-42333-00
Field: WATTENBERG	City (SAP): MILLIKEN	County/Parish: WELD	State: COLORADO
Legal Description: SE SW-10-4N-67W-345FSL-1583FWL			
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 121	
Job BOM: 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB71271		Srvc Supervisor: Nathaniel Moore	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	11430ft		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	1371		1369
Casing		5.5	4.778	20		P-110	0	11430	0	7220
Open Hole Section			8.5				1371	11430	1371	7220

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			11430	Bottom Plug	5.5		HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5		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	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	957	sack	13.2	1.57		6	7.51	
7.51 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	978	sack	13.5	1.65		4	7.86	
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	40	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	219.9	bbl	8.33					
Cement Left In Pipe		Amount	42 ft		Reason			Shoe Joint		
Mix Water:		pH ##	Mix Water Chloride:## ppm			Mix Water Temperature:## °F °C				
Cement Temperature:		## °F °C	Plug Displaced by:## lb/gal kg/m3 XXXX			Disp. Temperature:## °F °C				
Plug Bumped?		Yes/No	Bump Pressure:#### psi MPa			Floats Held?Yes/No				
Cement Returns:		## bbl m3	Returns Density:## lb/gal kg/m3			Returns Temperature:## °F °C				
Comment										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comments
Event	1	Call Out	Call Out	3/23/2016	01:00:00	USER	
Event	2	Other	Verify equipment/materials	3/23/2016	02:00:00	USER	
Event	3	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	3/23/2016	04:30:00	USER	
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/23/2016	04:45:00	USER	
Event	5	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/23/2016	05:30:00	USER	
Event	6	Start Job	Start Job	3/23/2016	06:09:07	COM1	
Event	7	Test Lines	Test Lines	3/23/2016	06:13:25	COM1	4000 psi
Event	8	Pump Spacer 1	Pump Dyed water 5 bbl	3/23/2016	06:19:21	COM1	Dyed water
Event	9	Pump Spacer 2	Pump Mud flush III 40 bbl	3/23/2016	06:21:10	COM1	
Event	10	Pump Lead Cement	Pump Lead Cement 267 bbl	3/23/2016	06:31:42	COM1	957 sks 13.2 ppg 1.57 ft3/sk 7.51 gal/sk
Event	11	Check Weight	Check weight 13.4 ppg	3/23/2016	06:31:52	COM1	
Event	12	Check Weight	Check weight 13.2 ppg	3/23/2016	06:41:35	COM1	
Event	13	Check Weight	Check weight 13.2 ppg	3/23/2016	06:55:53	COM1	
Event	14	Pump Tail Cement	Pump Tail Cement 287 bbl	3/23/2016	07:07:35	COM1	978 sks 13.5 ppg 1.65 ft3/sk 7.86 gal/sk
Event	15	Check Weight	Check weight 13.5 ppg	3/23/2016	07:10:46	COM1	
Event	16	Check Weight	Check weight 13.5 ppg	3/23/2016	07:27:19	COM1	
Event	17	Check Weight	Check weight 13.5 ppg	3/23/2016	07:42:08	COM1	
Event	18	Shutdown	Shutdown	3/23/2016	07:48:02	COM1	

Event	19	Drop Top Plug	Drop Top Plug	3/23/2016	08:04:13	COM1	
Event	20	Pump Displacement	Pump Displacement 252 bbl	3/23/2016	08:04:18	COM1	MMCR in first 40. Biocide and stayclear in all.
Event	21	Other	Cement to surface	3/23/2016	08:38:00	COM1	18 bbl to surface total
Event	22	Bump Plug	Bump Plug	3/23/2016	08:45:07	COM1	2350 psi final circulating. Pressured up to 2850.
Event	23	Pressure Up Well	Pressure Up Well	3/23/2016	08:47:33	COM1	Casing pressure test for 15 minutes. Gained 100 psi
Event	24	Other	Check floats	3/23/2016	09:00:14	USER	2.5 bbl back
Event	25	End Job	End Job	3/23/2016	09:01:49	COM1	
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/23/2016	09:05:00	USER	
Event	27	Other	Meet with customer rep	3/23/2016	09:46:58	USER	TD 11402. TP 11392. TVD 6989. 5.5" 20 # P-110 casing. SJ 16'. Previous casing 9.625" 36# at 1371'. MW 9.6 ppg PV 12 YP 8