

HALLIBURTON

iCem[®] Service

PDC ENERGY - EBUS

Bath Schmier 4N Production

Sincerely,
Bryce Hinsch

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 **Bath Schmier 4N 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.

Approximately 20bbls of spacer 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 #: 3809954	Quote #:	Sales Order #: 0905178982
Customer: PDC ENERGY-EBUS		Customer Rep: Tony Barantos	
Well Name: BATH-SCHMIER		Well #: 4N	API/UWI #: 05-123-45074-00
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO
Legal Description: NW SW-32-5N-64W-2305FSL-379FWL			
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 152	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA/HX38199		Srvc Supervisor: Kamereon White	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	17111ft	Job Depth TVD	6235
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	0	9.625	8.921	36			0	1673	0	1673
Casing	0	5.5	4.778	20			0	17111	0	6235
Open Hole Section			8.5				1673	6235	1673	6235
Open Hole Section			8.5				6235	17120	6235	6235

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
					Top Plug	5.5	1	KLX
Float Shoe	5.5	1		17111	Bottom Plug	5.5	1	KLX
Float Collar	5.5	1		17079				
					Plug Container	5.5	1	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	12.5 lb/gal Tuned Spacer III	Tuned Spacer III	150	bbl	12.5	2.72	16.8	8		

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	Gasstop B1	GASSTOP (TM) SYSTEM	615	sack	13.2	1.57		6	7.72	
3	EconoCem	ECONOCEM (TM) SYSTEM	1490	sack	13.5	1.68		8	8	
4	MMCR Displacement	MMCR Displacement	20	bbl	8.34					
5	Displacement fluid		357	bbl	8.34			10		
Cement Left In Pipe		Amount	34 ft		Reason			Shoe Joint		
Mix Water:	pH 7	Mix Water Chloride:	< 400 ppm			Mix Water Temperature:	47 deg			
		Plug Displaced by:	8.33 ppg							
Plug Bumped?	Yes	Bump Pressure:	2200 psi			Floats Held?	Yes			
Spacer Returns	20 bbl	Returns Density:	12.5 ppg							
Comment										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	10/4/2018	13:20:00	USER					Crew called out and was requested on location @ 2200 RTP.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	10/4/2018	17:30:00	USER					Crew left the yard and supervisor called in a journey management.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	10/4/2018	18:45:00	USER					Crew arrived on location early and the rig was running casing. Supervisor called and closed out journey management.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	10/4/2018	18:50:00	USER					Assessed location and discussed spot in procedure. Supervisor met with the customer and got well information.OH-8.5" TD-17,120',TP-17,111', SJ-32',FC17,079', Cas-5.5" 20 # P110 ,TVD-6235' PC-9.625" 36# Set @ 1673', Mud # - 10.4 WBM, Wet Shoe 5 bbl. Rig circulated from 20:30 on 10-04-2018 to 01:45 on 10-05-2018.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	10/4/2018	18:55:00	USER					Discussed the JSA and rig up procedures.
Event	6	Other	Rig Up Equipment	10/4/2018	19:00:00	USER					Rig up all HES equipment and lines.
Event	7	Other	Rig Up Completed	10/4/2018	21:00:00	USER					All HES equipment and lines rigged up safely no one got

Event	Order	Description	Activity	Date	Time	User	Cost	Rate	Volume	Weight	Notes
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	10/5/2018	01:45:00	USER	-4.00	8.49	0.00	9.90	hurt. Discussed the job procedures and psi with all personnel involved with the cement job.
Event	9	Other	Other	10/5/2018	02:14:41	COM4	-7.00	8.50	0.00	9.90	Loaded the bottom plug and dropped before we filled the lines with 3 bbls of water 3 bpm 450 psi.
Event	10	Check Weight	Check Weight	10/5/2018	02:17:20	COM4	67.00	8.66	0.00	13.00	Checked the weight of the tuned spacer with the pressurized mud scales, scaled @ 12.5 ppg.
Event	11	Test Lines	Test Lines	10/5/2018	02:18:15	COM4	5205.00	8.75	0.00	13.00	Tested Halliburton lines to 500 psi to test the psi kick outs, and then we performed a high pressure test to 5000 psi and held for 5 min no leaks.
Event	12	Pump Spacer 1	Pump Spacer 1	10/5/2018	02:25:28	COM4	690.00	13.13	4.10	0.00	Pumped 150 bbls of Tuned spacer III @ 12.5 ppg, 2.72 yield 16.80 gal/sks (310 sks) 8 bpm 860 psi.
Event	13	Check Weight	Check Weight	10/5/2018	02:52:17	COM4	165.00	13.12	3.80	144.80	Checked the weight of the Latex Lead Cement with the pressurized mud scales, scaled @ 13.2 ppg.
Event	14	Pump Lead Cement	Pump Lead Cement	10/5/2018	02:52:45	COM4	174.00	13.20	3.80	146.60	Pumped 172 bbls of Latex Lead cement @ 13.2 ppg, 1.57 yield, 7.72 gal/sk (615 sks) 6 bpm 380 psi.
Event	15	Check Weight	Check Weight	10/5/2018	03:02:40	COM4	227.00	13.92	4.10	39.90	Checked the weight of the Tail Cement with the pressurized mud scales, scaled @ 13.5 ppg.
Event	16	Pump Tail Cement	Pump Tail Cement	10/5/2018	03:28:18	COM4	312.00	13.45	6.00	191.60	Pumped 446 bbls of Tail

cement @ 13.5 ppg, 1.68
 yield, 8.0 gal/sk (1490 sks) 8
 Bpm 740 psi.

Event	17	Check Weight	Check Weight	10/5/2018	03:29:22	COM4	625.00	13.49	7.90	7.40	Checked the weight of the Tail Cement with the pressurized mud scales, scaled @ 13.5 ppg.
Event	18	Check Weight	Check Weight	10/5/2018	03:34:08	COM4	647.00	13.31	8.00	45.30	Checked the weight of the Tail Cement with the pressurized mud scales, scaled @ 13.5 ppg.
Event	19	Shutdown	Shutdown	10/5/2018	04:26:14	COM4	79.00	13.46	0.40	441.10	Shutdown to blow lines back to the wash up tank and to wash up pumps and lines, and to pre load the top latch down plug.
Event	20	Drop Top Plug	Drop Top Plug	10/5/2018	04:36:45	COM4	-4.00	8.17	0.00	459.20	Dropped KLX latch down plug.
Event	21	Pump Displacement	Pump Displacement	10/5/2018	04:36:47	COM4	-4.00	8.15	0.00	459.20	Pumped 377 bbls of water for displacement, with the first 20 bbls with MMCR and the remainder of displacement with biocide and stay clear and left the last 10 bbls of fresh.
Event	22	Displ Reached Cement	Displ Reached Cement	10/5/2018	04:41:29	COM4	1220.00	8.31	10.10	34.90	@ 30 bbls away caught the plug and maintained 10 bpm.
Event	23	Bump Plug	Bump Plug	10/5/2018	05:25:11	COM4	2740.00	8.35	0.00	385.90	Bumped the plug with 377 bbls away. @ 357 bbls away we got spacer back to surface which gave a total of 20 bbls of spacer back to surface. Final circulating pressure was 2200 psi and took 500 psi over to 2700 psi and shut down and

											watched for 5 min.
Event	24	Other	Other	10/5/2018	05:30:16	COM4	2918.00	8.34	0.00	385.90	Pressured up @ 2 bpm to rupture the disk, the disk ruptured @ 3700 psi.
Event	25	Other	Other	10/5/2018	05:32:54	COM4	2012.00	8.33	0.00	392.60	Pumped a 5 bbl wet shoe as per customer request. Checked the floats and the floats held got 2.5 bbls back.
Event	26	End Job	End Job	10/5/2018	05:33:00	USER	1969.00	8.33	0.00	392.60	Cement job complete. EST TOTC-6201' TOLC-1940' TOS- 20 Bbl to surface.
Event	27	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	10/5/2018	05:35:00	USER	-1.00	8.31	0.00	392.60	Discussed the rig down, blow down procedure of lines and equipment to prevent from freezing.
Event	28	Rig Down Lines	Rig Down Lines	10/5/2018	05:40:00	USER	-5.00	8.30	0.00	392.60	Rig down all HES equipment and lines.
Event	29	Rig-Down Completed	Rig-Down Completed	10/5/2018	07:40:00	USER					All HES equipment and lines rigged down safely.
Event	30	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	10/5/2018	08:00:00	USER					Kamereon White and Crew would like to thank you for your business and choosing Halliburton Cement, Please give us a call if you have any questions.