

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Friday, December 29, 2017

Launer 5 PRODUCTION

Job Date: Saturday, December 09, 2017

Sincerely,

Julia Nichols

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **LAUNER 5** 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 55 barrels of cement were 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 [Fort Lupton]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 389404	Ship To #: 3818091	Quote #:	Sales Order #: 0904484812							
Customer: EXTRACTION OIL & GAS		Customer Rep: Todd Stephens								
Well Name: LAUNER	Well #: 5	API/UWI #: 05-123-45172-00								
Field: WATTENBERG	City (SAP): WINDSOR	County/Parish: WELD	State: COLORADO							
Legal Description: SE SE-26-7N-67W-815FSL-333FEL										
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 346								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Bryan Kraft								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST								
Job depth MD	14774ft	Job Depth TVD	7103ft							
Water Depth		Wk Ht Above Floor	4ft							
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		J-55	0	1565	0	1565
Casing	0	5.5	4.778	20		P-110	0	14774	0	7103
Open Hole Section			8.5				1565	14806	1565	7103
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	1	HES	14774		Bottom Plug				
Float Collar	5.5	1	HES	14769		SSR plug set				
Insert Float						Plug Container	5.5	1	HES	
Stage Tool						Centralizers				
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	Spacer	TUNED SPACER III	50	bbl	11.5	3.73	23.4	5	1761	
149.34 lbm/bbl		BARITE, BULK (100003681)								
35 gal/bbl		FRESH WATER								
0.50 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)								
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003685)								

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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/mi n	Total Mix Fluid Gal
2	Cement	ELASTICEM (TM) SYSTEM	2375	sack	13.2	1.57	7.53	8	17884
0.40 %		SCR-100 (100003749)							
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/mi n	Total Mix Fluid Gal
3	Displacement	FRESH WATER	327	bbl	8.33			8	13734
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe Joint	
Mix Water:		pH 7.1	Mix Water Chloride:		< 300 ppm		Mix Water Temperature:		56 °F
Cement Temperature:		N/A	Plug Displaced by:		8.3 lb/gal Fresh Water		Disp. Temperature:		56 °F
Plug Bumped?		Yes	Bump Pressure:		2346 psi		Floats Held?		Yes
Cement Returns:		55 bbl	Returns Density:		N/A		Returns Temperature:		N/A
Comment: The plug bumped @ calculated displacement @ 2346 PSI, shutdown @ 2739 PSI. The disc ruptured @ 3804 PSI and pumped a 5 BBL wet shoe. The floats held and received 2 BBLS back to the truck. Cement returned to surface @ 277 BBLS into displacement, total of 55 BBLS cement to surface with the 5 BBL wet shoe.									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	12/8/2017	06:00:00	USER				CREW CALLED OUT AT 18:00 12/8/2017, REQUESTED ON LOCATION 3:00 12/9/2017. CREW PICKED UP CEMENT, CHEMICALS (25 GAL MUSOL, 25 GAL DUAL SPACER B, 10 GAL D-AIR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11062210/10991603 BULK BODY LOAD: 11036295, PUMP ELITE: 11360879/11189145.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/8/2017	21:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	12/8/2017	22:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	12/8/2017	23:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1565', CASING: 5.5" 20# @ 14774', 5' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 7103', 9.3 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/8/2017	23:05:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	12/8/2017	23:10:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/9/2017	05:30:00	USER				MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	12/9/2017	06:02:36	COM5	8.72	0.00	2.00	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	12/9/2017	06:10:59	COM5	8.57	0.00	4609.00	PRESSURE TESTED IRON TO 4500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 400 PSI, 5TH GEAR STALL OUT @ 1780 PSI.
Event	10	Pump Spacer 1	Pump Tuned Spacer @ 11.5 ppg	12/9/2017	06:15:41	COM5	11.67	3.00	123.00	PUMP 50 BBLs OF TUNED SPACER @ 11.5 LB/GAL, DENSITY VERIFIED BY PRESSURIZED MUD SCALES. ADDED 25 GAL MUSOL, 25 GAL DUAL SPACER B, AND 10 GAL D-AIR TO SPACER. 300 PSI WHILE PUMPING SPACER.

Event	11	Pump Cement	Pump Cement @ 13.2 ppg	12/9/2017	06:31:27	COM5	13.21	8.30	375.00	PUMP 2375 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.53 GAL/SK, 664 BBLs, TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES. 500 PSI WHILE PUMPING CEMENT.
Event	12	Shutdown	Shutdown	12/9/2017	08:04:41	COM5	5.67	0.00	103.00	SHUTDOWN TO WASH PUMPS AND LINES, DROP TOP PLUG.
Event	13	Drop Top Plug	Drop Top Plug	12/9/2017	08:07:10	COM5	13.13	0.00	90.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. AND TOOL HAND.
Event	14	Pump Displacement	Pump Fresh Water Displacement	12/9/2017	08:13:05	COM5	6.79	1.80	20.00	BEGIN CALCULATED DISPLACEMENT OF 327 BBLs WITH FRESH WATER. 930 PSI WHEN CEMENT WAS CAUGHT, MAX OF 2930 PSI WHILE @ 10 BPM, 2280 PSI WHEN SLOWED RATE TO 5 BPM.
Event	15	Cement Returns to Surface	Cement Returns to Surface	12/9/2017	08:43:05	USER	8.68	9.00	2852.00	CEMENT RETURNS TO SURFACE @ 277 BBLs INTO DISPLACEMENT. CALCULATED AMOUNT OF 55 BBLs OF CEMENT TO SURFACE WITH THE 5 BBL WET SHOE.
Event	16	Bump Plug	Bump Plug	12/9/2017	08:51:16	COM5	8.66	5.00	2346.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED 393 PSI OVER FINAL CIRCULATING PRESSURE OF 2346 PSI.
Event	17	Shutdown	Shutdown	12/9/2017	08:51:42	USER	8.68	0.00	2739.00	SHUTDOWN FOR 1 MINUTE @ 2739 PSI.
Event	18	Other	Rupture Disc	12/9/2017	08:53:24	USER	8.71	2.00	3804.00	DISC BURST @ 3804 PSI.
Event	19	Pump Displacement	Pump Wet Shoe	12/9/2017	08:53:33	USER	8.67	5.00	2521.00	PUMP 5 BBL WET SHOE.
Event	20	Check Floats	Check Floats	12/9/2017	08:55:30	USER	8.64	0.00	1799.00	RELEASED PRESSURE, FLOATS HELD, 2 BBLs BACK.
Event	21	End Job	End Job	12/9/2017	08:56:48	COM5	8.62	0.00	-2.00	STOP RECORDING JOB DATA.
Event	22	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/9/2017	09:00:00	USER	8.62	0.00	56.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	23	Rig-Down Completed	Rig-Down Completed	12/9/2017	10:15:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	24	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/9/2017	10:25:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	25	Crew Leave Location	Crew Leave Location	12/9/2017	10:30:00	USER				THANK YOU FOR USING HALLIBURTON - BRYAN KRAFT AND CREW.

3.0 Attachments

3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

