

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Wednesday, August 28, 2019

Livingston S19-25-6N Production

Job Date: Saturday, August 10, 2019

Sincerely,
Tyler Hill

Legal Notice

Disclaimer:

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Table of Contents

1.0	Cementing Job Summary	4
1.1	Executive Summary	4
2.0	Real-Time Job Summary	8
2.1	Job Event Log	8
3.0	Attachments.....	12
3.1	Extraction Production Livingston S19-25-6N.png.....	12

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Livingston S19-25-6N** 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 Ft. Lupton

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3883776		Quote #:		Sales Order #: 0905892034					
Customer: EXTRACTION OIL & GAS-EBUS					Customer Rep: Manny Parras						
Well Name: LIVINGSTON			Well #: S19-25-6N			API/UWI #: 05-014-20747-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD			State: COLORADO				
Legal Description: NW SE-7-1S-68W-2332FSL-1438FEL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srv Supervisor: Thomas Haas						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST						
Job depth MD		20999ft			Job Depth TVD		8058				
Water Depth					Wk Ht Above Floor		3				
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	1628	0	1628	
Casing	0	5.5	4.892	17	BTC	P-110	0	20999	0	8058	
Open Hole Section			8.75				1628	8800	1628	8058	
Open Hole Section			8.5				8800	21010	0	0	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5					Top Plug	5.5	1	NCS		
Float Shoe	5.5	1	CIT	20999		Bottom Plug	5.5	1	NCS		
Float Collar	5.5	1	CIT	20994							
Insert Float	5.5					Plug Container	5.5	1	HES		
Stage Tool	5.5										
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	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	12.5	2.74	16.6	8	1701
5 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)							
205.22 lbm/bbl		BARITE, BULK (100003681)							
5 lbm/bbl		SEM-93P, 35 LB SACK - (1023977)							
1 lbm/bbl		FE-2 (100001615)							

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	585	sack	13.2	1.59	7.92	8	4633
0.85 %		SCR-100 (100003749)							
7.92 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	GasStop	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.59	7.89	8	4846
0.85 %		SCR-100 (100003749)							
5.39 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
4	ElastiCem	ELASTICEM (TM) SYSTEM	2138	sack	13.2	1.59	7.88	8	17083
7.88 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
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8	
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
6	Displacement	Displacement	467	bbl	8.33			8	

Cement Left In Pipe	Amount	N/A	Reason	Shoe Joint
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Mix Water:	pH 7	Mix Water Chloride:	<300 ppm	Mix Water Temperature:	74 °F
Cement Temperature:	N/A	Plug Displaced by:	8.33 lb/gal F.W.	Disp. Temperature:	74 °F
Plug Bumped?	Yes	Bump Pressure:	2150 psi	Floats Held?	Yes
Cement Returns:	N/A	Returns Density:	N/A	Returns Temperature:	N/A
Comment Plug bumped at calculated displacement, final circulating pressure of 2150 psi, no cement to surface, floats held, 3 bbl back to truck.					

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	8/10/2019	06:30:00	USER				CREW CALLED OUT AT 06:30 8/10/2019, REQUESTED ON LOCATION 12:00 8/10/2019. CREW PICKED UP CEMENT, CHEMICALS (40 GAL D-AIR, 10 GAL MMCR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 112350112/10866484 Bulk 660: 112644881/10866489 CHEM: 11027111/120511659 PUMP ELITE: 12644645/11826999
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/10/2019	11:00:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	8/10/2019	11:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	8/10/2019	12:30:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1628', CASING: 5.5" 17# @ 20999', 5' SHOE JOINT, 8.75" OPEN HOLE 1628-8800, 8.5" OPEN HOLE 8800-21010, TVD @ 8058', 9.6 PPG WELL FLUID, WATER DISPLACEMENT.

Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/10/2019	12:40:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	8/10/2019	12:50:00	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	8/10/2019	14:45:00	USER	8.55	0.00	0.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	8/10/2019	15:05:14	COM4	8.53	0.00	-1.00	START JOB DATA RECORDING.
Event	9	Test Lines	Test Lines	8/10/2019	15:07:34	COM4	8.38	0.00	45.00	PRESSURE TESTED LINES TO 4800 PSI, 500 PSI KICK OUT AT 1000 PSI, 5TH GEAR STALL AT 1590 PSI.
Event	10	Pump Spacer 1	Pump Spacer 1	8/10/2019	15:18:05	COM4	8.47	0.00	2.00	PUMP 50 BBLS OF FDP SPACER @ 12.5 LB/GAL, ADDED 5 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	11	Pump Cap Cement	Pump Cap Cement	8/10/2019	15:24:10	COM4	12.19	8.30	491.00	PUMP 585 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.59 YIELD, 7.92 GAL/SK, 165.7 BBLS, CALCULATED TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Pump Lead Cement	Pump Lead Cement	8/10/2019	15:45:09	COM4	12.80	8.50	590.00	PUMP 615 SKS OF GASSTOP @ 13.2 LB/GAL, 1.59 YIELD, 7.89 GAL/SK, 174.1 BBLS, CALCULATED TOL 2347',

										MIX WATER MIXED WITH 1538 GAL OF LATEX AND 20 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Shutdown	Shutdown	8/10/2019	15:46:31	USER	12.98	8.50	460.00	SHUTDOWN, TRUCK MALFUNCTION, FIXED ON FLY.
Event	14	Pump Tail Cement	Pump Tail Cement	8/10/2019	16:09:53	COM4	12.93	8.50	688.00	PUMP 2168 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.59 YIELD, 7.88 GAL/SK, 613.9 BBLS, CALCULATED TOT @ 6731', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Shutdown	Shutdown	8/10/2019	17:34:21	COM4	13.87	0.00	111.00	SHUTDOWN TO CLEAN PUMPS/LINES, AND DROP TOP PLUG.
Event	16	Drop Top Plug	Drop Top Plug	8/10/2019	17:43:17	COM4	0.08	0.00	4.00	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	17	Pump Displacement	Pump Displacement	8/10/2019	17:43:20	COM4	0.05	0.00	4.00	BEGIN CALCULATED DISPLACEMENT OF 487 BBL FRESH WATER, 10 GAL MMCR IN FIRST 20 BBL.
Event	18	Bump Plug	Bump Plug	8/10/2019	18:51:58	COM4	8.36	0.00	2622.00	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2150 PSI. TRACES OF INTERFACE TO SURFACE.
Event	19	Other	Rupture Disk	8/10/2019	18:53:15	USER	8.36	0.80	2687.00	PRESSURE UP TO RUPTURE WET SHOE DISK, DISK RUPTURED AT 3200 PSI.
Event	20	Other	Wet Shoe	8/10/2019	18:54:25	USER	8.35	4.10	2187.00	PUMP A 5 BBL WET SHOE.

Event	21	Check Floats	Check Floats	8/10/2019	18:56:55	USER	8.33	0.00	1854.00	RELEASE PRESSURE BACK TO TRUCK, FLOATS HELD, 3 BBL BACK.
Event	22	End Job	End Job	8/10/2019	18:58:18	COM4	8.31	0.00	-3.00	END JOB DATA RECORDING.
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	8/10/2019	19:00:00	USER	8.31	0.00	-4.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	24	Rig-Down Completed	Rig-Down Completed	8/10/2019	20:15:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	25	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/10/2019	20:20:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	26	Crew Leave Location	Crew Leave Location	8/10/2019	20:30:00	USER				THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

3.0 Attachments

3.1 Extraction Production Livingston S19-25-6N.png

