

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Wednesday, November 20, 2019

Livingston S19-25-15N Production

Job Date: Thursday, November 14, 2019

Sincerely,
Tyler Hill

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 **Livingston S19-25-15N** 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 56bbls 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 Ft. Lupton

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 9007664		Quote #:		Sales Order #: 0906101220					
Customer: EXTRACTION OIL & GAS-EBUS						Customer Rep: Danny Herrera					
Well Name: LIVINGSTON				Well #: S19-25-15N		API/UWI #: 05-014-20847-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO					
Legal Description: NE SE-7-1S-68W-2331FSL-1276FEL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srv Supervisor: Adam Covington						
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type					BHST						
Job depth MD		20962ft			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			0	1639	0	1639	
Casing		5.5	4.892	17			0	20952	0	8077	
Open Hole Section			8.5				1639	20962	0	8077	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5			20952		Top Plug	5.5	1	HES		
Float Shoe	5.5					Bottom Plug	5.5	1	HES		
Float Collar	5.5					SSR plug set	5.5		HES		
Insert Float	5.5					Plug Container	5.5	1	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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal

1	Tuned Prime Cement Spacer Base - RKS/SE	TUNED PRIME CEMENT SPACER SYS	50	dbl	11.5	3.74		5	23.4
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate dbl/min	Total Mix Fluid Gal
2	Cap	ELASTICEM (TM) SYSTEM	775	sack	12.5	1.75		8	8.95
8.95 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate dbl/min	Total Mix Fluid Gal
3	GasStop B1	GASSTOP (TM) SYSTEM	615	sack	13.2	1.56		8	7.63
5.13 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate dbl/min	Total Mix Fluid Gal
4	ElastiCem	ELASTICEM (TM) SYSTEM	1820	sack	13.2	1.56		8	7.62
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate dbl/min	Total Mix Fluid Gal
5	MMCR Displacement	MMCR Displacement	0	dbl	8.33			8	
0.50 gal/dbl		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 dbl/min	Total Mix Fluid Gal
6	Displacement	Displacement	0	dbl	8.33			8	
Cement Left In Pipe		Amount	13 ft		Reason			Shoe Joint	

Mix Water:	pH 7	Mix Water Chloride:	0 ppm	Mix Water Temperature:	55 °F
Cement Temperature:	60 °F	Plug Displaced by:	8.33 lb/gal	Disp. Temperature:	55 °F
Plug Bumped?	Yes	Bump Pressure:	3050 psi	Floats Held?	Yes
Cement Returns:	56 bbl	Returns Density:	12.5 lb/gal	Returns Temperature:	89 °F
Comment PUMPED 486 BBLS OF FRESH WATER DISPLACEMENT. FIRST 20 BBLS OF DISPLACEMENT HAD MMCR MIXED IN. STARTED OFF GOING 6 BPM UNTIL WE CAUGHT PRESSURE. AT 30 BBLS AWAY WE TOOK RATE TO 9.8 BPM, 1640 PSI. WALKED IT DOWN AS PRESSURE STARTED RISING. SLOWED RATE. SLOWED RATE TO 3 BPM AT 460 AWAY. BUMPED PLUG. FCP-3080 PSI. TOOK UP TO 3500 PSI. PUMPED .5 BBL TO BURST AT 1 BPM, 3750 PSI. THEN IMMEDIATELY WENT INTO PUMPING A 5 BBL WET SHOE. AT 4 BPM, 3226 PSI. BLED PRESSURE BACK TO THE TRUCK. GOT 4.5 BBLS BACK WHEN FLOW STOPPED, INDICATING THAT THE FLOATS HELD. 56 BBLS OF CEMENT BACK TO SURFACE. TOTC-8560' TOLC-4369'					

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	11/13/2019	08:00:00	USER				ALL HES CREW MEMBERS WERE CALLED OUT BY SERVICE COORDINATOR FOR AN ON LOCATION TIME OF 1500.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/13/2019	13:50:00	USER				MET WITH ALL HES CREW MEMBERS AND DISCUSSED DIRECTIONS, FOLLOWING DISTANCES AND POSSIBLE TRAFFIC.
Event	3	Depart Shop for Location	Depart Shop for Location	11/13/2019	14:00:00	USER				DEPARTED YARD FOR LOCATION.
Event	4	Arrive At Loc	Arrive At Loc	11/13/2019	14:30:00	USER				PERFORMED HAZARD HUNT, SPOTTED IN AND GOT NUMBERS FROM CO. MAN. OH- 8.5" TD- 20962' TP-20952' 5.5" 17#, COLLAR- 20939' PC- 1639' 9 5/8" 36#, TVD 8077' MUD- 9.7#. WATER-- 55 DEGREES, CHLORIDES-0, PH-7.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/13/2019	14:40:00	USER				MET WITH CREW AND DISCUSSED PLAN FOR RIG UP, TEAM LIFTS AND CALLING OUT SWINGS. NO INCIDENTS RIGGING UP.
Event	6	Start Job	Start Job	11/13/2019	17:02:22	COM5				MIXED UP LATEX AND STARTED TO RECIRC LATEX TANK.

Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	11/13/2019	21:00:56	USER	8.42	0.00	12.00	MET WITH ALL HES AND RIG CREW MEMBERS. DISCUSSED EMERGENCY PROCEDURES, JOB SCHEDULE AND PRESSURES.
Event	8	Start Job	Start Job	11/13/2019	21:11:19	COM5	8.42	0.00	2.00	FILLED LINES WITH 3 BBLS OF FRESH WATER. 3 BPM, 346 PSI.
Event	9	Drop Bottom Plug	Drop Bottom Plug	11/13/2019	21:13:13	COM5	8.33	3.00	360.00	ADAM COVINGTON DROPPED HALLIBURTON 5.5" BOTTOM PLUG. CO. MAN, NICK ROLES AND TYLER HILL WITNESSED.
Event	10	Test Lines	Test Lines	11/13/2019	21:13:45	COM5	8.32	0.00	196.00	PERFORMED A 500 PSI KICK OUT TEST (1157 PSI) RESET KICKOUTS TO 6500 PSI AND WENT INTO A 5TH GEAR STALL OUT (2401 PSI) THEN PERFORMED A 6500 PSI PRESSURE TEST AND HELD FOR 3 MINUTES. NO LEAKS.
Event	11	Pump Spacer 1	Pump Spacer 1	11/13/2019	21:20:44	COM5	8.30	0.00	4.00	PUMPED 50 BBLS OF 11.5#, 3.74y, 23.4wr TUNED PRIME SPACER AT 3 BPM, 900 PSI. ADDED 10 GALLONS OF MUSOL A, 10 GALLONS OF DUAL B SPACER AND 15 GALLONS OF D-AIR.
Event	12	Check Weight	Check Weight	11/13/2019	21:31:54	COM5	11.41	5.70	500.00	USED PRESSURIZED MUD SCALES TO WEIGH UP SPACER. SPACER WEIGHED UP AT 11.5#.
Event	13	Pump Lead Cement	Pump Lead Cement	11/13/2019	21:34:15	COM5	11.35	5.70	458.00	PUMPED 242 BBLS (775 SKS) OF 12.5#, 1.75y, 8.95wr OF ELASTICEM CAP CEMENT AT 8 BPM, 637 PSI. (6936 GALLONS

										CALCULATED/ ACTUAL 6910 GALLONS)
Event	14	Check Weight	Check Weight	11/13/2019	21:35:45	COM5	12.35	5.70	512.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12.5#.
Event	15	Check Weight	Check Weight	11/13/2019	21:46:24	COM5	12.55	8.00	598.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12.5#.
Event	16	Check Weight	Check Weight	11/13/2019	21:53:51	COM5	12.55	8.00	560.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12.5#.
Event	17	Check Weight	Check Weight	11/13/2019	21:56:26	COM5	12.55	8.00	571.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12.4#.
Event	18	Check Weight	Check Weight	11/13/2019	22:02:27	COM5	12.38	8.00	534.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12.4#.
Event	19	Pump Cement	Pump Cement	11/13/2019	22:08:34	COM5	12.23	8.00	557.00	PUMPED 171 BBLS (615 SKS) OF 13.2#, 1.56y, 7.63wr GASSTOP LATEX CEMENT. AT 8 BPM, 827 PSI. MIXED WITH 1537.5 GALLONS OF FDP MIXED WITH 3154 GALLONS OF WATER. 15 GALLONS OF D-AIR WAS ALSO ADDED. (MIX GALLONS TOTAL 4,692 G/ ACTUAL 4574 G.)
Event	20	Check Weight	Check Weight	11/13/2019	22:10:35	COM5	13.21	7.90	760.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.2#.

Event	21	Check Weight	Check Weight	11/13/2019	22:23:55	COM5	13.13	8.00	810.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.13#.
Event	22	Check Weight	Check Weight	11/13/2019	22:25:14	COM5	13.19	8.00	777.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.19#.
Event	23	Pump Tail Cement	Pump Tail Cement	11/13/2019	22:32:15	COM5	12.99	4.30	364.00	PUMPED 506 BBLS (1820 SKS) OF 13.2#, 1.56y, 7.62wr ELASTICEM TAIL CEMENT. STARTED AT 5 BPM SO WE DIDN'T SLAM INTO THE BOTTOM PLUG (350-400 PSI) THEN AFTER 30 BBLS TOOK RATE BACK UP TO 8 BPM, 624 PSI. (MIX GALLONS 13,868 G /ACTUAL 13,480 G)
Event	24	Check Weight	Check Weight	11/13/2019	22:33:27	COM5	13.09	5.00	395.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.2#.
Event	25	Check Weight	Check Weight	11/13/2019	22:39:32	COM5	13.06	5.00	356.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.2#.
Event	26	Check Weight	Check Weight	11/13/2019	22:48:42	COM5	13.46	8.10	645.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.4#
Event	27	Check Weight	Check Weight	11/13/2019	22:54:30	COM5	13.34	8.10	650.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.3#
Event	28	Check Weight	Check Weight	11/13/2019	23:04:22	COM5	13.35	4.40	178.00	USED PRESSURIZED MUD SCALES TO WEIGH UP

										CEMENT. CEMENT WEIGHED UP AT 13.3#
Event	29	Check Weight	Check Weight	11/13/2019	23:23:38	COM5	13.23	7.40	600.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.2#
Event	30	Check Weight	Check Weight	11/13/2019	23:33:16	COM5	13.26	7.40	565.00	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.2#
Event	31	Shutdown	Shutdown	11/14/2019	00:00:27	COM5	13.90	0.00	100.00	SHUTDOWN TO GET READY TO DROP PLUG, WASH UP AND BLOW LINES DOWN TO THE PIT.
Event	32	Drop Top Plug	Drop Top Plug	11/14/2019	00:09:00	COM5	8.48	0.00	2.00	ADAM COVINGTON AND TYLER HILL DROPPED HALLIBURTON 5.5" TOP PLUG. CO. MAN WITNESSED.
Event	33	Pump Displacement	Pump Displacement	11/14/2019	00:09:04	COM5	8.47	0.00	2.00	PUMPED 486 BBLS OF FRESH WATER DISPLACEMENT. FIRST 20 BBLS OF DISPLACEMENT HAD MMCR MIXED IN. STARTED OFF GOING 6 BPM UNTIL WE CAUGHT PRESSURE. AT 30 BBLS AWAY WE TOOK RATE TO 9.8 BPM, 1640 PSI. WALKED IT DOWN AS PRESSURE STARTED RISING. SLOWED RATE. SLOWED RATE TO 3 BPM AT 460 AWAY.
Event	34	Bump Plug	Bump Plug	11/14/2019	01:28:33	COM5	8.53	0.80	3334.00	BUMPED PLUG. FCP-3080 PSI. TOOK UP TO 3500 PSI.

Event	35	Pressure Up Well	Pressure Up Well	11/14/2019	01:30:19	COM5	8.55	1.30	3713.00	PUMPED .5 BBL TO BURST AT 1 BPM, 3750 PSI. THEN IMMEDIATELY WENT INTO PUMPING A 5 BBL WET SHOE AT 4 BPM, 3226 PSI. SHUTDOWN.
Event	36	Other	Check Floats	11/14/2019	01:32:16	COM5	8.52	0.00	2918.00	bled pressure back to the truck. GOT 4.5 BBLs BACK WHEN FLOW STOPPED, INDICATING THAT THE FLOATS HELD.
Event	37	End Job	End Job	11/14/2019	01:34:14	COM5				56 BBLs OF CEMENT BACK TO SURFACE. TOTC-8560' TOLC-4369'
Event	38	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/14/2019	01:45:00	USER				MET WITH ALL HES EMPLOYEES AND DISCUSSED SWINGS, TEAM LIFTS AND STRETCHING DUE TO IT BEING COLDER.
Event	39	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/14/2019	03:15:00	USER				MET WITH ALL HES EMPLOYEES AND DISCUSSED HOS, DIRECTIONS AND DRIVING CONDITIONS.
Event	40	Depart Location	Depart Location	11/14/2019	03:30:00	USER				JOB COMPLETED SAFELY BY ADAM COVINGTON AND CREW. THANKS FOR CHOOSING HALLIBURTON.

3.0 Attachments

3.1 Livingston S19-25-15N Production.png

