

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

LIVINGSTON S19-25-7N PRODUCTION

Sincerely,
Meghan Jacobs

Legal Notice

Disclaimer:

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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 S19-25-7N 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 0 bbls of cement were returned to surface; lost returns 300 bbls into displacement.

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 #: 369404		Ship To #: 3883700		Quote #:		Sales Order #: 0905904805				
Customer: EXTRACTION OIL & GAS-EBUS					Customer Rep: DANNY HERRERA					
Well Name: LIVINGSTON			Well #: S19-25-7N			API/UWI #: 05-014-20751-00				
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD			State: COLORADO			
Legal Description: NW SE-7-1S-68W-2332FSL-1420FEL										
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901					
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199					Srvc Supervisor: Nikolaus Kornafel					
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type					BHST					
Job depth MD		21018ft			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	0	9.625	8.921	36			0	1634	0	0
Casing	0	5.5	4.892	17	BTC	P-110	0	21037	0	0
Open Hole Section			8.75				1634	9094	0	0
Open Hole Section			8.5				9094	21018	0	8175
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5	1	HES	21018		Top Plug	5.5	1	HES	
Float Shoe	5.5	1	HES			Bottom Plug	5.5	1	HES	
Float Collar	5.5	1	HES	21004						
						Plug Container	5.5	1	HES	
						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	SPACER	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	12.5	2.74	16.6	6	1,700
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
2	CAP CEMENT	ELASTICEM (TM) SYSTEM	770	sack	13.2	1.63	8.01	8	6,168
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
3	LATEX CEMENT	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.63	7.86	8	4,834
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
4	TAIL CEMENT	ELASTICEM (TM) SYSTEM	2163	sack	13.2	1.59	7.89	8	17,066
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
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8	
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
6	Displacement	Displacement	467	bbl	8.33			5	
Cement Left In Pipe									
Amount		8 ft			Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride: 0 ppm			Mix Water Temperature: 78 °F			
Cement Temperature:		N/A	Plug Displaced by: 8.33 lb/gal			Disp. Temperature: 78 °F			
Plug Bumped?		Yes	Bump Pressure: 2,170 psi			Floats Held? Yes			
Cement Returns:		0 bbl	Returns Density: N/A			Returns Temperature: N/A			
Comment PUMPED 50 BBLS OF SPACER FOLLOWED BY 223 BBLS OF CAP CEMENT FOLLOWED BY 179 BBLS OF LEAD LATEX CEMENT FOLLOWED BY 612 BBLS OF TAIL CEMENT. DROPPED TOP PLUG AND DISPLACED WITH 488 BBLS OF FRESH WATER. RETURNS WERE LOST AT 300 BBLS INTO DISPLACEMENT. BUMPED THE PLUG AND THE PRESSURED UP TO BURST THE DISK AND THE PUMPED A 7 BBL WET SHOE AND THEN RELEASED PRESSURE AND CHECKED FLOATS, FLOATS HELD, 3.5 BBLS BACK.									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Recirc Density <i>(ppg)</i>	Comments
Event	1	Displ Reached Cement	Call Out	8/20/2019	09:00:00	USER				CREW CALLED OUT AT 0900, REQUESTED ON LOCATION 18:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10867439, BULK 660 10866484, SOFTSIDE 12051659 AND PUMP 11826999.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/20/2019	13:15:00	USER				CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	8/20/2019	13:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	8/20/2019	15:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,634, 5.5" CASING: 17 LB/FT TOTAL 21,018', 8.5" HOLE, TD 21,037', 8.75 OH 1,634-9094 SHOE TRAC- 14', TVD- 8,175'. PUMP FRESH WATER DISPLACEMENT 488 BBLS. CASING LANDED @ 22:00 08/20/2019. RIG CIRCULATED BOTTOMS UP @ 466 GPM WHILE AT 1,557 PSI
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/20/2019	15:15:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	8/20/2019	15:30:00	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	8/20/2019	23:30:00	USER	0.00	-8.00	12.60	SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS.
Event	8	Start Job	Start Job	8/20/2019	23:42:09	COM5	0.00	-8.00	12.85	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	8/20/2019	23:45:35	COM5	0.00	55.00	12.84	PRESSURE TESTED IRON TO 5,000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 900 PSI, 5TH GEAR STALL OUT @ 2,100 PSI.
Event	10	Drop Bottom Plug	Drop Bottom Plug	8/20/2019	23:47:00	USER	0.00	3569.00	12.83	DROPPED BOTTOM PLUG.

Event	11	Pump Spacer 1	Pump Spacer 1	8/20/2019	23:50:43	COM5	0.00	21.00	12.24	PUMP 50 BBLS OF FDP SPACER @ 12.5 LB/GAL, 2.74 FT3/SK, 16.6 GAL/SK 10 GALLONS D-AIR. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 5 BBLS/MIN @ 440 PSI.
Event	12	Check Weight	Check Weight	8/20/2019	23:55:18	COM5	6.10	404.00	12.48	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Pump Lead Cement	Pump Lead Cement	8/20/2019	23:59:59	COM5	6.00	358.00	12.51	PUMPED 770 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.63 FT3/SK, 8.01 GAL/SK. 223 BBLS, ESTIMATED TOP OF CEMENT IS AT 1,556'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 680 PSI. 188 BBLS LOST TO FORMATION.
Event	14	Check Weight	Check Weight	8/21/2019	00:04:23	COM5	7.10	570.00	13.35	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Check Weight	Check Weight	8/21/2019	00:10:55	COM5	8.20	578.00	13.26	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	16	Pump Cement	Pump Cement	8/21/2019	00:34:41	COM5	8.30	571.00	13.21	PUMPED 615 SKS OF GASTOP @ 13.2 LB/GAL, 1.63 FT3/SK, 7.86 GAL/SK. 179 BBLS, 1,538 GALS LATEX. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 540 PSI.
Event	17	Check Weight	Check Weight	8/21/2019	00:36:06	COM5	8.30	578.00	13.21	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	18	Check Weight	Check Weight	8/21/2019	00:36:17	COM5	8.30	610.00	13.21	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	19	Pump Tail Cement	Pump Tail Cement	8/21/2019	01:07:36	COM5	4.30	230.00	13.23	PUMP 2,163 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.59 FT3/SK, 7.89 GAL/SK, 613 BBLS. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 650 PSI.
Event	20	Check Weight	Check Weight	8/21/2019	01:09:42	COM5	4.30	227.00	13.18	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	21	Check Weight	Check Weight	8/21/2019	01:43:52	COM5	8.20	607.00	13.23	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	22	Check Weight	Check Weight	8/21/2019	01:58:34	COM5	8.20	602.00	13.18	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	23	Check Weight	Check Weight	8/21/2019	02:02:18	COM5	8.20	588.00	13.21	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	24	Shutdown	Shutdown	8/21/2019	02:26:30	COM5	0.00	68.00	0.75	SHUTDOWN TO WASH PUMPS AND LINES.
Event	25	Drop Top Plug	Drop Top Plug	8/21/2019	02:36:59	COM5	0.00	-4.00	8.34	TOP PLUG LEFT PLUG CONTAINER, WITNESSED BY COMPANY MAN.
Event	26	Pump Displacement	Pump Displacement	8/21/2019	02:37:45	COM5	0.00	-8.00	8.34	BEGIN CALCULATED DISPLACEMENT OF 488 BBLS WITH FRESH WATER. 300 BBLS INTO DISPLACEMENT RETURNS

TO SURFACE WERE LOST AND NEVER CAME BACK. 188
 BBLS LOST TO FORMATION

Event	27	Displ Reached Cement	Displ Reached Cement	8/21/2019	02:45:55	COM5	8.00	1039.00	8.44	CAUGHT CEMENT @ 40 BBLS INTO DISPLACEMENT.
Event	28	Bump Plug	Bump Plug	8/21/2019	04:13:46	COM5	0.00	2509.00	8.44	SLOW RATE TO 3 BPM @ 460 BBLS INTO DISPLACEMENT. PLUG BUMPED AT CALCULATED DISPLACEMENT. 2,150 PSI PRESSURED UP 500 PSI OVER FINAL CIRCULATING PRESSURE.
Event	29	Pressure Up Well	Pressure Up Well	8/21/2019	04:13:49	COM5	0.00	2517.00	8.43	PRESSURED UP TO 3,392 PSI TO BURST THE DISK AND THEN PUMPED A 7 BBL WET SHOE.
Event	30	Other	Other	8/21/2019	04:16:42	COM5	0.00	1972.00	8.43	RELEASED PRESSURE, FLOATS HELD, 3.5 BBLS BACK.
Event	31	End Job	End Job	8/21/2019	04:18:18	COM5	0.00	-6.00	8.43	STOP RECORDING JOB DATA.
Event	32	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	8/21/2019	04:20:00	USER	0.00	-7.00	8.43	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	33	Rig-Down Completed	Rig-Down Completed	8/21/2019	06:00:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	34	Safety Meeting - Departing Location	Safety Meeting - Departing Location	8/21/2019	07:30:00	USER				CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW. THANK YOU FOR USING HALLIBURTON – NICK KORNAFEL AND CREW.

3.0 Attachments

3.1 LIVINGSTON S19-25-7N PRODUCTION – Job Chart

