

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Livingston S19-25-10N Production

Sincerely,
Meghan Jacobs

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 S19-25-10N** 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 40 bbls 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

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3883697		Quote #:		Sales Order #: 0905955889					
Customer: EXTRACTION OIL & GAS-EBUS						Customer Rep: Danny Herrera					
Well Name: LIVINGSTON				Well #: S19-25-10N		API/UWI #: 05-014-20748-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO					
Legal Description: NW SE-7-1S-68W-2331FSL-1366FEL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srv Supervisor: Michael Loughran						
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type					BHST						
Job depth MD		20916ft			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	1634			
Casing		5.5	4.778	20			0	20984		7353	
Open Hole Section			8.75				1634	8874		7353	
Open Hole Section			8.5				8874	20924		7353	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5					Top Plug	5.5	1	HES		
Float Shoe	5.5			20916		Bottom Plug	5.5	1	HES		
Float Collar	5.5			20902		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	bbbl	11.5	3.74		5	23.7	
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	Cap	ELASTICEM (TM) SYSTEM	805	sack	12.5	1.79		8	9.06	
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 B1	GASSTOP (TM) SYSTEM	615	sack	13.2	1.59		8	7.7	
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	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 bbl/min	Total Mix Fluid Gal	
5	MMCR Displacement	MMCR Displacement	20	bbbl	8.33			8		
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 1 GAL PAIL (100003780)								
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	465	bbbl	8.33			8		
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe		
Mix Water:		pH 7	Mix Water Chloride:			<200 ppm		Mix Water Temperature:		72 °F
Cement Temperature:			Plug Displaced by:			8.33 lb/gal		Disp. Temperature:		
Plug Bumped?		Yes	Bump Pressure:			psi		Floats Held?		Yes
Cement Returns:			Returns Density:					Returns Temperature:		
Comment										

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	Check Floats	Call Out	9/10/2019	09:30:00	USER				Crew called out for on location time of 1500 hrs 9/10/2019
Event	2	Crew Leave Yard	Crew Leave Yard	9/10/2019	12:55:00	USER				Crew Leaves Yard
Event	3	Arrive At Loc	Arrive At Loc	9/10/2019	13:51:00	USER				Arrive at location, Rig running casing, Meet with customer, TP 20916 17# P-110, TD 20924, 8.75 hole to 8874, 8.50 Hole to TD, FC 20902, TVD 7353, PC 1634' 9.625 J-55 36#, WF 9.7 OBM, Top and Bottom plug provided by customer, Water 72 Deg., PH 7, Chlorides and sulfates less that 200 ppm
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/10/2019	14:10:00	USER				Pre rig up safety meeting
Event	5	Rig-Up Equipment	Rig-Up Equipment	9/10/2019	14:20:00	USER				Rig up all service lines and iron to buffer zone
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/10/2019	21:45:00	USER	0.00	0.00	-11.00	Discuss job procedures, Discuss job hazards and hazards of Halliburton Equipment.
Event	7	Start Job	Start Job	9/10/2019	22:11:06	COM4	0.00	0.00	-11.00	Begin recording data. Rig circulates 10 bbl/min 1200-1300 psi
Event	8	Test Lines	Test Lines	9/10/2019	22:12:58	COM4	8.39	0.00	113.00	Test lines to 4900 psi
Event	9	Drop Bottom Plug	Drop Bottom Plug	9/10/2019	22:16:38	COM4	8.37	0.00	37.00	Verified by Danny
Event	10	Pump Spacer 1	Pump Spacer 1	9/10/2019	22:16:42	COM4	8.37	0.00	38.00	50 bbl Tuned Prime Spacer. 11.5#, 3.74 Yield, 23.7 gal/sack
Event	11	Pump Cap Cement	Pump Cap Cement	9/10/2019	22:24:19	COM4	11.76	8.00	629.00	805 sacks ElastiCem, 256.63 bbl, 12.5#, 1.79 yield, 9.06 gal/sack
Event	12	Pump Lead Cement	Pump Lead Cement	9/10/2019	22:58:14	COM4	12.85	8.00	479.00	615 sacks GasStop Lead w/latex, 174.16 bbl, 13.2#, 1.59 yield, 7.7 gal/sack. 1537.5 gal latex

Event	13	Pump Tail Cement	Pump Tail Cement	9/10/2019	23:23:36	COM4	13.28	7.00	500.00	1820 sacks ElastiCem Tail, 505.66 bbl., 13.2#, 1.56 yield, 7.62 gal/sack
Event	14	Shutdown	Shutdown	9/11/2019	00:35:19	COM4	3.56	0.00	56.00	Shutdown to wash pumps and lines
Event	15	Drop Top Plug	Drop Top Plug	9/11/2019	00:44:10	COM4	8.20	2.90	48.00	Verified by Danny
Event	16	Pump Displacement	Pump Displacement	9/11/2019	00:44:50	COM4	7.59	0.00	-6.00	485 bbl. fresh water displacement. 1st 20 bbl has 10 gal Micro Matrix Retarder
Event	17	Bump Plug	Bump Plug	9/11/2019	02:10:52	COM4	8.29	2.70	2816.00	FCP 2460 @ 3/bpm, Bump pressure 2900 psi. See cement @ 445 into displace. Calculated Top Tail 8562, Top Lead 4692, Top Cap Surface.
Event	18	Pressure Up Well	Pressure Up Well	9/11/2019	02:12:32	COM4	8.32	1.90	3272.00	Plug ruptures at 3300 psi, 5 bbl wet shoe
Event	19	Check Floats	Check Floats	9/11/2019	02:15:24	COM4	8.28	0.00	2234.00	6 bbl back, floats letting fluid through
Event	20	Other	Other	9/11/2019	02:18:27	COM4	8.23	0.00	33.00	Pump 6 bbl back in well
Event	21	Check Floats	Check Floats	9/11/2019	02:20:52	USER	8.29	0.00	2295.00	Floats hold, 4.5 bbl back
Event	22	End Job	End Job	9/11/2019	02:22:15	COM4	8.23	0.00	-15.00	Stop recording data
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/11/2019	02:30:00	USER				JSA safe Rig-Down
Event	24	Rig-Down Equipment	Rig-Down Equipment	9/11/2019	02:40:00	USER				Rig down equipment
Event	25	Crew Leave Location	Crew Leave Location	9/11/2019	05:00:00	USER				Thanks for choosing Halliburton Energy Services!

3.0 Attachments

3.1 Livingston S19-25-10N Production – Job Chart

