

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Date: Thursday, September 05, 2019

Livingston S19-25-9N Production

Job Date: Tuesday, September 03, 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 S19-25-9N 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 85 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 Ft. Lupton

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3883777		Quote #:		Sales Order #: 0905943788					
Customer: EXTRACTION OIL & GAS-EBUS					Customer Rep: MANNY PARRAS						
Well Name: LIVINGSTON			Well #: S19-25-9N			API/UWI #: 05-014-20746-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD			State: COLORADO				
Legal Description: NW SE-7-1S-68W-2331FSL-1384FEL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srv Supervisor: Vitali Neverdasov						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST						
Job depth MD		20826ft			Job Depth TVD			8040			
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	1638	0	1638	
Casing	0	5.5	4.892	17	BTC	P-110	0	20826	0	8040	
Open Hole Section			8.5				1638	20835	1638	8040	
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	1	HES	20826		Bottom Plug	5.5	1	HES		
Float Collar	5.5	1	HES	29816		SSR plug set	5.5				
Insert Float	5.5					Plug Container	5.5	1	HES		
Stage Tool	5.5					Centralizers	5.5				
Fluid Data											
Stage/Plug #: 1											
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft/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	bbl	11.5	3.84		5	
5 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)							
42 gal/bbl		FRESH WATER							
146.40 lbm/bbl		BARITE, BULK (100003681)							
1 lbm/bbl		FE-2 (100001615)							
5 lbm/bbl		SEM-93P, 35 LB SACK - (1023977)							

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	890	sack	12.5	1.79		8	9.06
9.06 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 B1	GASSTOP (TM) SYSTEM	615	sack	13.2	1.603		8	7.73
5.23 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	1860	sack	13.2	1.56		8	7.62
7.62 Gal		FRESH WATER							
0.45 %		HR-5, 50 LB SK (100005050)							

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, 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	462	bbl	8.33			8	

Cement Left In Pipe	Amount	0 ft	Reason	WET SHOE
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Comment : 85 BBLS OF CEMENT BACK TO SURFACE. CALCULATED TOP OF LEAD 2 @ 4313'. TOP OF TAIL @ 8209'.

HAD TO SLOW DOWN 4 BPM @ 320 BBLS AWAY DUE TO GETTING CLOSE TO MAX JOB PRESSURE OF 2500 PSI.

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>	DH Density <i>(ppg)</i>	PS Pump Press <i>(psi)</i>	Comments
Event	1	Call Out	Call Out	9/2/2019	17:00:00	USER				ON LOCATION @ 23:00.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	9/2/2019	20:30:00	USER				
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	9/2/2019	21:05:00	USER				23 MILES. RIG IS RUNNING CASING. DISCUSS NUMBERS AND JOB PROCEDURE WITH CUSTOMER. REST OF THE CREW ARRIVED @ 21:00
Event	4	Other	SPOT TRUCKS	9/2/2019	21:15:00	USER				SPOT TRUCKS
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/2/2019	21:25:00	USER				JSA PRIOR SPOTTING EQUIPMENT AND RIGGING UP
Event	6	Other	RIG UP	9/2/2019	21:35:00	USER				RIG UP ALL SURFACE LINES AND BULK . PRIME UP CEMENT PUMP TRUCK.
Event	7	Other	Verified cement and water	9/2/2019	22:30:00	USER				VERYFIED CEMENT AND WATER VOLUMES ON LOCATION.
Event	8	Casing on Bottom	Casing on Bottom	9/2/2019	23:00:00	USER				CASING LANDED. RIG IS CIRCULATING THRU CRT. VERYFIED RATE AND PRESSURE WITH DRILLER. 1700 PSI @ 12 BPM.
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/3/2019	00:35:00	USER	0.00	8.43	12.00	DISCUSS HAZARDS, JOB PROCEDURE AND CONTINGENCY PLAN WITH ALL PERSONAL INVOLVED.

Event	10	Start Job	Start Job	9/3/2019	00:54:40	COM4	0.00	8.41	12.00	
Event	11	Check Weight	Check Weight	9/3/2019	01:00:09	COM4	0.00	8.40	13.00	
Event	12	Drop Bottom Plug	Drop Bottom Plug	9/3/2019	01:02:00	USER	0.00	8.40	13.00	DROP BOTTOM PLUG VERIFYED BY CUSTOMER.
Event	13	Pressure Test	Pressure Test	9/3/2019	01:09:00	USER	0.00	8.46	2491.00	LOAD LINE WITH 3 BBLS OF FRESH WATER AND TEST TO 4880 PSI.
Event	14	Pump Spacer	Pump Spacer	9/3/2019	01:14:00	USER	2.90	11.05	374.00	BATCH/ WEIGHT/ PUMP 50 BBLS OF TUNED PRIME SPACER @ 11.5 PPG. 344 PSI @ 5.0 BPM.
Event	15	Check Weight	Check Weight	9/3/2019	01:20:39	COM4	5.80	11.12	361.00	
Event	16	Pump Lead Cement	Pump Lead 1 Cement	9/3/2019	01:24:00	USER	5.90	11.55	286.00	BATCH/ WEIGHT/PUMP 890 SKS (283.7 BBLS) OF ELASTICEM CAP CEMENT @ 12.5 PPG. 8.0 BPM/ 433 PSI.
Event	17	Check Weight	Check Weight	9/3/2019	01:27:44	COM4	8.10	12.69	642.00	
Event	18	Check Weight	Check Weight	9/3/2019	01:41:13	COM4	8.10	12.53	445.00	
Event	19	Pump Lead Cement	Pump Lead 2 Cement	9/3/2019	02:02:00	USER	8.10	12.24	440.00	WEIGHT/ PUMP 615 SKS (175.3 BBLS) OF GASSTOP CEMENT @ 13.2 PPG. 603 PSI @ 8.0 BPM. CALCULATED TOP @ 4313'.
Event	20	Check Weight	Check Weight	9/3/2019	02:03:25	COM4	8.10	13.35	537.00	
Event	21	Pump Tail Cement	Pump Tail Cement	9/3/2019	02:27:00	USER	8.00	13.17	555.00	WEIGHT/ PUMP 1160 SKS (516.8 BBLS) OF ELASTICEM @ 13.2 PPG. 511 PSI @ 8.0 BPM. CALCULATED TOP OF TAIL AT 8209'.
Event	22	Check Weight	Check Weight	9/3/2019	02:36:16	COM4	8.00	13.14	478.00	
Event	23	Check Weight	Check Weight	9/3/2019	03:23:33	COM4	8.00	13.23	473.00	

Event	24	Shutdown	Shutdown	9/3/2019	03:44:00	USER	2.20	13.11	167.00	FINISHED PUMPING CEMENT.
Event	25	Clean Lines	Clean Lines	9/3/2019	03:47:00	USER	0.00	13.51	31.00	BLOW DOWN AND WASH PUMPS AND LINES PRIOR TO DISPLACEMENT.
Event	26	Drop Top Plug	Drop Top Plug	9/3/2019	03:53:00	USER	4.20	-0.43	64.00	DROP TOP PLUG VERYFYED BY CUSTOMER.
Event	27	Pump Displacement	Pump Displacement	9/3/2019	03:56:00	USER	10.20	8.01	316.00	482.9 BBLS OF FRESH WATER DISPLACEMENT. FIRST 20 BBLS WIRH 10 GAL MMCR.
Event	28	Bump Plug	Bump Plug	9/3/2019	05:28:00	USER	3.00	8.40	2423.00	BUMP PLUG @ 2903 PSI 500 OVER FINAL LIFT PRESSURE OF 2560 PSI.
Event	29	Other	BURST DISC	9/3/2019	05:29:00	USER	0.00	8.42	2889.00	PRESSURE UP 3370 PSI @ 1.5 BPM TO BURST DISC AND PUMP 5 BBLS WET SHOE @ 3 BPM 2550 PSI.
Event	30	Shutdown	Shutdown	9/3/2019	05:33:00	USER	2.90	8.38	2501.00	
Event	31	Check Floats	Check Floats	9/3/2019	05:35:00	USER	0.00	8.33	149.00	FLOATS HELD. 4.5 BBLS BACK.
Event	32	End Job	End Job	9/3/2019	05:35:51	COM4	0.00	8.34	17.00	
Event	33	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/3/2019	05:40:00	USER	0.00	8.34	15.00	HELD JSA PRIOR TO RIG DOWN WITH CEMENT CREW.

3.0 Attachments

3.1 Livingston S19-25-9N Production.png

