

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Tuesday, November 12, 2019

Livingston S20-25-2C Production

Job Date: Friday, November 08, 2019

Sincerely,
Tyler Hill

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 S20-25-2C 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 #: 9007880		Quote #:		Sales Order #: 0906081831	
Customer: EXTRACTION OIL & GAS-EBUS				Customer Rep: Danny Herrera			
Well Name: LIVINGSTON			Well #: S20-25-2C			API/UWI #: 05-014-20848-00	
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO	
Legal Description: NE SE-7-1S-68W-2330FSL-1258FEL							
Contractor: PATTERSON-UTI ENERGY				Rig/Platform Name/Num: PATTERSON 901			
Job BOM: 7523 7523							
Well Type: HORIZONTAL OIL							
Sales Person: HALAMERICA\HX38199				Srvc Supervisor: Thomas Haas			

Job

Formation Name			
Formation Depth (MD)		Top	Bottom
Form Type		BHST	
Job depth MD		21671ft	Job Depth TVD 8354'
Water Depth			Wk Ht Above Floor 4'
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	1659	0	1659
Casing	0	5.5	4.892	17			0	21671	0	8354
Open Hole Section			8.75				1659	21685	1659	8354

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Float Shoe	5.5	1	HES	21671	Bottom Plug	5.5	2	HES
Float Collar	5.5	1	HES	21657	Plug Container	5.5	1	HES

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	3.74	23.7	8	1779
1 lbm/bbl		FE-2, 2000 LB BAG - (1005549)							
5 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)							
35.60 gal/bbl		FRESH WATER							
150.22 lbm/bbl		BARITE, BULK (100003681)							
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	835	sack	12.5	1.75	8.96	8	7481
8.96 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	1.56	7.61	8	4692
5.20 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	2170	sack	13.2	1.56	7.62	8	16535
7.63 Gal		FRESH WATER							
0.60 %		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, 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	482	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:	56 °F
Cement Temperature:	N/A	Plug Displaced by:	8.33 lb/gal F.W.	Disp. Temperature:	100 °F
Plug Bumped?	Yes	Bump Pressure:	2800 psi	Floats Held?	Yes
Cement Returns:	56 BBL	Returns Density:	N/A	Returns Temperature:	N/A
Comment Plug bumped at calculated displacement, final circulating pressure of 2800 psi, wet shoe disk ruptured at 3554 psi floats held, 4.5 bbl back to the truck. 56 bbl of cement to surface.					

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	Call Out	Call Out	11/8/2019	00:00:00	USER				CREW CALLED OUT AT 00:00 11/8/2019, REQUESTED ON LOCATION 07:00 11/8/2019. CREW PICKED UP CEMENT, CHEMICALS (40 GAL D-AIR, 10 GAL MMCR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 12635323/10784082 CHEM: 11139326/12051673 PUMP ELITE: 11897034/11645460
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/8/2019	04:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	11/8/2019	05:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	11/8/2019	06:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1659', CASING: 5.5" 17# @ 21671', 14' SHOE JOINT, 8.75" OPEN HOLE, TVD @ 8354', 10.6 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/8/2019	06:10:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH

										LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	11/8/2019	06:20:00	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	11/8/2019	09:00:00	USER				MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	11/8/2019	12:25:21	COM4	0.00	7.00	11.75	START JOB DATA RECORDING.
Event	9	Test Lines	Test Lines	11/8/2019	12:27:39	COM4	0.00	179.00	11.81	PRESSURE TESTED LINES TO 5500 PSI, 500 PSI KICK OUT AT 400 PSI, 5TH GEAR STALL AT 1800 PSI.
Event	10	Drop Bottom Plug	Drop Bottom Plug	11/8/2019	12:31:00	USER	0.00	59.00	11.81	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	11	Pump Spacer 1	Pump Spacer 1	11/8/2019	12:31:22	COM4	0.00	60.00	11.81	PUMP 50 BBLS OF FDP SPACER @ 11.5 LB/GAL, ADDED 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Pump Cap Cement	Pump Cap Cement	11/8/2019	12:42:33	COM4	8.20	1027.00	12.52	PUMP 835 SKS OF ELASTICEM @ 12.5 LB/GAL, 1.75 YIELD, 8.96 GAL/SK, 260.2 BBLS, CALCULATED TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Pump Lead Cement	Pump Lead Cement	11/8/2019	13:17:21	COM4	8.50	562.00	13.09	PUMP 615 SKS OF GASSTOP @ 13.2 LB/GAL, 1.56 YIELD, 7.63 GAL/SK, 170.8 BBLS, CALCULATED TOL 4475',

										MIX WATER MIXED WITH 1538 GAL OF LATEX AND 30 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Other	Truck Issue	11/8/2019	13:28:46	USER	8.10	676.00	13.20	4X4 LOST PRIME WHILE MIXING, HAD TO REPRIME 4X4 AND HT-400'S, ONCE LINED OUT TRUCK RAN FINE.
Event	15	Pump Tail Cement	Pump Tail Cement	11/8/2019	13:47:24	COM4	8.60	763.00	13.26	PUMP 2170 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.56 YIELD, 7.62 GAL/SK, 602.9 BBLs, CALCULATED TOT @ 8273', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	16	Other	Issue Fixed	11/8/2019	13:50:45	USER	8.40	669.00	13.21	4X4 AND HT-400'S PRIMED BACK UP, TRUCK MIXING FINE.
Event	17	Shutdown	Shutdown	11/8/2019	15:05:55	COM4	3.80	182.00	12.33	SHUTDOWN TO DROP TOP PLUG, CLEAN PUMPS AND LINES.
Event	18	Drop Top Plug	Drop Top Plug	11/8/2019	15:15:07	COM4	0.00	2.00	-0.01	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	19	Pump Displacement	Pump Displacement	11/8/2019	15:15:10	COM4	0.00	2.00	-0.01	DISPLACEMENT OF 502 BBL FRESH WATER, 10 GAL MMCR IN FIRST 20 BBL.
Event	20	Cement Returns to Surface	Cement Returns to Surface	11/8/2019	16:20:09	USER	5.00	3103.00	-0.01	CEMENT RETURNED TO SURFACE 446 BBL INTO DISPLACEMENT 56 BBL OF CEMENT TO SURFACE.
Event	21	Bump Plug	Bump Plug	11/8/2019	16:33:59	COM4	0.00	3028.00	-0.01	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL

										CIRCULATING PRESSURE OF 2800 PSI.
Event	22	Other	Rupture Disk	11/8/2019	16:35:09	USER	0.00	3311.00	-0.01	PRESSURE UP TO RUPTURE WET SHOE DISK, DISK RUPTURED AT 3554 PSI.
Event	23	Other	Wet Shoe	11/8/2019	16:35:57	USER	4.60	3044.00	-0.01	PUMP A 5 BBL WET SHOE.
Event	24	Check Floats	Check Floats	11/8/2019	16:37:56	USER	0.00	2584.00	-0.01	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, 4.5 BBL BACK.
Event	25	End Job	End Job	11/8/2019	16:39:05	COM4	0.00	15.00	-0.01	END JOB DATA RECORDING.
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/8/2019	16:40:00	USER	0.00	5.00	-0.01	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	27	Rig-Down Completed	Rig-Down Completed	11/8/2019	18:00:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/8/2019	18:20:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	29	Crew Leave Location	Crew Leave Location	11/8/2019	18:30:00	USER				THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

3.0 Attachments

3.1 Livingston S20-25-2C Production.png

