

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

LIVINGSTON S20-25-2C

Sincerely,

Alexandria Dionigi

Legal Notice

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Table of Contents

1.0 Cementing Job Summary 4

 1.1 Executive Summary4

2.0 Real-Time Job Summary 7

 2.1 Job Event Log7

3.0 Attachments..... 9

 3.1 Case 1-Custom Results.png.....9

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 **Surface** 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.

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 #: 9007880		Quote #:		Sales Order #: 0906068017					
Customer: EXTRACTION OIL & GAS -				Customer Rep: MANNY							
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: 7521 7521											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199				Srvc Supervisor: Lance Carpenter							
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST							
Job depth MD		1659ft		Job Depth TVD	1659						
Water Depth				Wk Ht Above Floor	3						
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	
OH		13.5					0	1664	0	1664	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	9.625			1659		Top Plug	9.625	1	HES		
Float Shoe	9.625					Bottom Plug	9.625		HES		
Float Collar	9.625			1617		SSR plug set	9.625		HES		
Insert Float	9.625					Plug Container	9.625	1	HES		
Stage Tool	9.625					Centralizers	9.625		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	Red Dye Spacer	Red Dye Spacer			10	bbl	8.33				

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	SwiftCem	SWIFTCEM (TM) SYSTEM	550	sack	13.5	1.74		5	9.17
9.17 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	Fresh Water	Fresh Water	125	bbl	8.33				

Cement Left In Pipe	Amount	42 ft		Reason	Shoe Joint
Mix Water:	pH 7	Mix Water Chloride:	400 ppm	Mix Water Temperature:	60 °F
Cement Temperature:	## °F °C	Plug Displaced by:	8.4 lb/gal Water	Disp. Temperature:	58 °F
Plug Bumped?	Yes	Bump Pressure:	540 psi	Floats Held?	Yes
Cement Returns:	22 bbl	Returns Density:	## lb/gal kg/m3	Returns Temperature:	## °F °C

Comment

JOB WENT WELL AND PUMPED AS DESIGNED. NO ACCIDENT, INJURY OR SPILL. CEMENT VOLUMES VERIFIED BY PRESSURIZED MUD BALANCE AND CHECKED WITH MIX WATER. DROPPED TOP PLUG AFTER CEMENT. RED DYE TO SURFACE AT 85 BBL AWAY. CEMENT TO SURFACE AT 103 BBL AWAY, 22 BBL CEMENT TO SURFACE. FINAL CIRCULATING PRESSURE 540 PSI AT 3 BPM. TOOK TO 900 PSI AND HELD FOR A FEW MINUTES. CHECKED FLOATS, FLOATS HELD, ½ BBL BACK.

10 BBL RED DYE SPACER TO SURFACE

22 BBL CEMENT TO SURFACE

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	10/30/2019	10:00:00	USER					CREW CALLED OUT. ON LOCATION 1500. ON THE WAY TO THE YARD ON LOCATION TIME CHANGED TO 1800
Event	2	Depart Shop for Location	Depart Shop for Location	10/30/2019	16:45:00	USER					PUMP WAS IN THE SHOP. FINISHED WORK AND CONFIRMATION TESTED UNIT. ONE BULK DRIVER SO ROUND TRIPPED THE BULK TRUCKS. JOURNEY MANAGEMENT WAS HAD BEFORE TRIPS DISCUSSING ROUTE, CONVOY ORDER, FOLLOWING DISTANCE, COMMUNICATION, ROAD CONSTRUCTION, WEATHER CONDITIONS, DRIVING RESTRICTIONS AND DRIVING TO CONDITIONS
Event	3	Arrive At Loc	Arrive At Loc	10/30/2019	17:15:00	USER					SUPERVISOR ARRIVES AT LOCATION. CREW CAN'T ARRIVE UNTIL 1810 BECAUSE OF DRIVING RESTRICTIONS. RIG RIH CASING
Event	4	Safety Meeting	Safety Meeting	10/30/2019	19:45:00	USER	83.00	0.42	0.00	0.00	CREW, RIG CREW AND CUSTOMER REP HAVE PRE JOB SAFETY MEETING WHILE WASHING DOWN THE LAST JOINT OF CASING DISCUSSING HAZARDS, MUSTER AREAS, COMMUNICATIONS, STOP WORK AUTHORITY, SLIPS TRIPS FALLS, THREE POINTS OF CONTACT, CLEAR SIGNALS, RED ZONES, CONTINGENCIES AND THE JOB PROCEEDURE
Event	5	Casing on Bottom	Casing on Bottom	10/30/2019	20:15:00	USER	82.00	0.43	0.00	0.00	CASING ON BOTTOM. RIG DOWN CASING CREW AND CIRCULATE WELL

350 GPM AT 150 PSI. THEN RIG UP HES
 PLUG CONTAINER AND LINES TO BEGIN

Event	6	Check Floats	Start Job	10/30/2019	20:58:19	COM6	10.00	6.27	0.90	14.50	START JOB
Event	7	Test Lines	Test Lines	10/30/2019	21:03:02	COM6	4082.00	6.58	0.00	4.00	FILL HES LINES WITH 3 BBL WATER. PRESSURE TEST TO 4000 PSI AND HELD FOR A FEW MINUTES. GOOD TEST
Event	8	Pump Spacer 1	Pump Spacer 1	10/30/2019	21:07:35	COM6	42.00	6.54	0.00	0.00	PUMP 10 BBL RED DYE SPACER
Event	9	Pump Cement	Pump Cement	10/30/2019	21:19:07	COM6	53.00	8.32	4.20	0.50	PUMP 170 BBL SWIFTCM 13.5# 1.74 YIELD 9.17 GAL 550 SACKS
Event	10	Shutdown	Shutdown	10/30/2019	21:48:35	USER	266.00	12.00	6.50	193.50	SHUTDOWN.
Event	11	Drop Top Plug	Drop Top Plug	10/30/2019	21:53:02	COM6	-47.00	14.29	0.00	194.00	DROP TOP PLUG
Event	12	Pump Displacement	Pump Displacement	10/30/2019	21:53:05	COM6	-47.00	14.29	0.00	0.00	PUMP 125 BBL WATER DISPLACEMENT WASHING UP ON TOP OF THE PLUG
Event	13	Cement Returns to Surface	Cement Returns to Surface	10/30/2019	22:10:58	USER	436.00	8.33	4.00	104.50	CEMENT RETURNS TO SURFACE. 22 GOOD BBL CEMENT BACK
Event	14	Bump Plug	Bump Plug	10/30/2019	22:18:09	USER	556.00	8.32	3.00	129.50	BUMP PLUG. FINAL CIRCULATING PRESSURE 540 PSI. TOOK TO 900 PSI AND HELD FOR A COUPLE MINUTES
Event	15	Check Floats	Check Floats	10/30/2019	22:19:32	USER	223.00	8.32	0.00	129.50	CHECKED FLOATS. 1/2 BBL BACK. FLOATS HELD
Event	16	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	10/30/2019	22:30:00	USER	-38.00	8.32	8.50	171.00	CREW HAS PRE RIG DOWN SAFETY MEETING DISCUSSING SLIPS TRIPS FALLS, WASHING UP TO THE CELLAR, COMMUNICATION, MIND ON TASK, PINCH POINTS, HAND PLACEMENT AND BEGIN RIGGING DOWN
Event	17	End Job	End Job	10/30/2019	23:30:00	USER					CREW IS RIGGED DOWN AND READY FOR THE NEXT JOB

3.0 Attachments

3.1 Case 1-Custom Results.png

