

w

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Ft. Lupton District, co

Date: Friday, July 05, 2019

Livingston S19-25-8C Surface

Job Date: Sunday, June 09, 2019

Sincerely,
Tyler Hill

Legal Notice

Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

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 Livingston S19-25-8C Surface.png.....9

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Livingston S19-25-8C** 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.

Approximately 18 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 #: 3883647		Quote #:		Sales Order #: 0905754398					
Customer: EXTRACTION OIL & GAS -				Customer Rep: Extraction Rep							
Well Name: LIVINGSTON			Well #: S19-25-8C			API/UWI #: 05-014-20754-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO					
Legal Description: NW SE-7-1S-68W-2331FSL-1402FEL											
Contractor:				Rig/Platform Name/Num: CARTEL 15							
Job BOM: 7521 7521											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199				Srv Supervisor: Michael Herbig							
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST							
Job depth MD		1620ft		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	
Open Hole Section			13.5				0	1622		0	
Casing		9.625	8.921	36			0	1620		0	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	9.625			1620		Top Plug	9.625		HES		
Float Shoe	9.625					Bottom Plug	9.625		HES		
Float Collar	9.625					SSR plug set	9.625		HES		
Insert Float	9.625					Plug Container	9.625		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	525	sack	13.5	1.74		5	9.2
9.20 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
3	Fresh Water	Fresh Water	119	bbl	8.33				
Cement Left In Pipe		Amount	ft	Reason			Shoe Joint		
Mix Water:		pH ##	Mix Water Chloride:## ppm			Mix Water Temperature:## °F °C			
Cement Temperature:		## °F °C	Plug Displaced by:## lb/gal kg/m3 XXXX			Disp. Temperature:## °F °C			
Plug Bumped?		Yes/No	Bump Pressure:#### psi MPa			Floats Held?Yes/No			
Cement Returns:		18 bbl	Returns Density:## lb/gal kg/m3			Returns Temperature:## °F °C			
Comment									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	DS Pump Press (psi)	Comments
Event	1	Check Floats	Call Out	6/9/2019	06:00:00	USER				Crew notified at 06:00
Event	2	Event	Pre-Convoy safety meeting	6/9/2019	07:30:00	USER				All personnel present. Discuss driving hazards
Event	3	Crew Leave Yard	Crew Leave Yard	6/9/2019	08:00:00	USER				Crew leave yard.
Event	4	Arrive At Loc	Arrive At Loc	6/9/2019	09:30:00	USER				Rig tripping DP when crew arrived.
Event	5	Assessment Of Location Safety Meeting	assessment of location	6/9/2019	09:45:00	USER				
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig up Safety Meeting	6/9/2019	10:00:00	USER				All personnel present. JSA signed.
Event	7	Rig-Up Equipment	Rig-Up Equipment	6/9/2019	10:15:00	USER				Rig up pump and lines.
Event	8	Start Job	Start Job	6/9/2019	16:11:37	COM4	0.00	8.37	-5.00	Start HES pumping unit
Event	9	Test Lines	Test Lines	6/9/2019	16:14:29	USER	0.00	8.28	38.00	Test lines 3500psi
Event	10	Pump Spacer	Pump Spacer	6/9/2019	16:20:58	USER	1.90	8.32	30.00	Pump 10bbls red dye spacer at 3.5bpm 80psi
Event	11	Pump Cement	Pump Cement	6/9/2019	16:23:06	USER	4.30	8.29	119.00	Pumped 173bbls cement at 7bpm 300psi at 13.5ppg, 1.74yld, 9.20gal/sk. Weight verified using pressurized mud scale.
Event	12	Check Weight	Check Weight	6/9/2019	16:30:59	COM4	7.00	13.52	274.00	Check weight. Weight verified using pressurized mud scale.
Event	13	Shutdown	Shutdown, End cement	6/9/2019	16:49:05	USER	0.00	18.04	15.00	Shutdown, End cement

Event	14	Drop Top Plug	Drop Top Plug	6/9/2019	16:50:33	USER	0.00	-0.27	4.00	Drop top plug, Witnessed by company man.
Event	15	Pump Displacement	Pump Displacement	6/9/2019	16:52:16	USER	0.80	-0.31	4.00	Pump displacement 7bpm 200psi
Event	16	Slow Rate	Slow Rate	6/9/2019	17:06:42	USER	4.40	7.70	520.00	Slow rate 3bpm prior to bump.
Event	17	Bump Plug	Bump Plug	6/9/2019	17:14:25	USER	3.10	7.71	496.00	Bump plug 1119bbls away. 520psi to 1080psi
Event	18	Check Floats	Check Floats	6/9/2019	17:16:14	USER	0.00	7.74	1105.00	Check floats. 1/2bbl back. Rig returned 18bbls cement to surface.
Event	19	End Job	End Job	6/9/2019	17:17:07	COM4	0.00	7.71	1.00	
Event	20	Pre-Rig Down Safety Meeting	Rig Down Lines	6/9/2019	18:45:00	USER				All personnel present. JSA signed.
Event	21	Rig-Down Equipment	Rig-Down Equipment	6/9/2019	19:00:00	USER				Rig down pump and lines.
Event	22	Event	Pre-Convoy safety meeting	6/9/2019	20:00:00	USER				All personnel present. Discuss driving hazards.
Event	23	Depart Location	Depart Location	6/9/2019	21:00:00	USER				Crew leave location.

3.0 Attachments

3.1 Livingston S19-25-8C Surface.png

