

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Date: Friday, September 08, 2017

Leonard 5C Surface

Job Date: Tuesday, August 29, 2017

Sincerely,

Julia Nichols

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. Accordingly, 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 Summary	4
2.0	Real-Time Job Summary	7
2.1	Job Event Log	7
3.0	Attachments.....	10
3.1	Custom Results – Job Chart with Events	10
3.2	Custom Results – Job Chart without Events.....	11

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Leonard 5C 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 24 barrels 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]

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3809744		Quote #:		Sales Order #: 0904262240					
Customer: EXTRACTION OIL & GAS -				Customer Rep: Shawn McIntyre							
Well Name: LEONARD			Well #: 5C		API/UWI #: 05-123-45048-00						
Field: WATTENBERG		City (SAP): FIRESTONE		County/Parish: WELD		State: COLORADO					
Legal Description: NW SW-21-2N-67W-1824FSL-494FWL											
Contractor: UNKNOWN				Rig/Platform Name/Num: WORKOVER RIG							
Job BOM: 7521 7521											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199				Srvc Supervisor: Bryce Muir							
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type											
BHST											
Job depth MD		1564ft			Job Depth TVD		1564				
Water Depth											
Wk Ht Above Floor 2 FT											
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	8 RD	J-55	0	1564	0	1564	
Open Hole Section			13.5				0	1564	0	1564	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	9.625					Top Plug	9.625	1	HES		
Float Shoe	9.625	1	WF	1564		Bottom Plug	9.625				
Float Collar	9.625	1	WF	1520		SSR plug set	9.625				
Insert Float	9.625					Plug Container	9.625	1	HES		
Stage Tool	9.625					Centralizers	9.625				
Fluid Data											
Stage/Plug #: 1											
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /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 ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	SwiftCem	SWIFTCEM (TM) SYSTEM			550	sack	13.5	1.74		5	9.2
9.20 Gal		FRESH WATER									

HALLIBURTON

Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
3	Fresh Water	Fresh Water	117.5	bbl	8.33					
Cement Left In Pipe		Amount	44 ft		Reason			Shoe Joint		
<p>Comment: WE ARRIVED ON LOCATION AT 0230 HOURS ON 08/29/2017. WE SPOTTED IN OUR EQUIPMENT AND RIGGED UP OUR IRON TO THE RED ZONE. THE RIG WAS STILL PERFORMING DRILLING OPERATIONS. WE WAITED ON LOCATION UNTIL THE WELL WAS DRILLED AND THE CASING WAS RAN. ON 08/29/2017 AT 1230 HOURS WE RIGGED UP THE PLUG CONTAINER AND BEGAN TO PERFORM THE CEMENT JOB. WE PUMPED 10 BBLs OF FRESH WATER SPACER WITH RED DYED ADDED TO THE 10 BBLs. WE THEN PUMPED OUR 170 BBLs OF PRIMARY CEMENT. WE PUMPED THE JOB AT 6 BARREL PER MINUTE MONITORING PRESSURE THROUGHOUT THE JOB. WHEN ALL THE CEMENT WAS PUMPED DOWNHOLE WE SHUTDOWN TO DROP THE TOP PLUG. 9.625" TOP PLUG WAS DROPPED BY BRYCE MUIR. WE WASHED UP ON TOP OF THE PLUG WITH THE FIRST 10 BBLs OF OUR 117.5 BBL DISPLACEMENT. WE SLOWED OUR RATE THE LAST 20 BBLs OF DISPLACEMENT TO 3 BARRELS PER MINUTE. WE GOT GOOD CEMENT TO SURFACE AT 93 BBLs DISPLACEMENT PUMPED FOR A TOTAL OF 24 BBLs OF CEMENT TO SURFACE. WE LANDED THE PLUG AT 117 BBLs PUMPED. PLUG WAS LANDED AT 472 PSI AND WE PRESSURED UP TO 1098 PSI. WE KICKED OUR PUMP BACK IN AND PRESSURED UP TO 1500 PSI TO PERFORM A FIVE MINUTE CASING TEST. CHECKED THE FLOATS AND THEY HELD. WE GOT 1 BBL OF FLUID BACK TO THE RED TIGER.</p>										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	8/29/2017	00:00:00	USER				CREW CALLED OUT FOR SURFACE CASING JOB. LOAD UP ALL MATERIALS AND EQUIPMENT REQUIRED FOR JOB.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/29/2017	01:45:00	USER				DISCUSS HAZARDS ASSOCIATED WITH DRIVING TRUCKS TO LOCATION. DISCUSS SAFEST ROUTE OF TRAVEL, CONVOY ORDER, AND PLACES TO PULL OVER IF NEEDED.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	8/29/2017	02:00:00	USER				
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	8/29/2017	02:30:00	USER				
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/29/2017	02:40:00	USER				ASSESS LOCATION TO IDENTIFY BEST WAY TO SPOT EQUIPMENT DURING DRILLING OPERATIONS. SPOT EQUIPMENT.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/29/2017	03:00:00	USER				DISCUSS HAZARDS ASSOCIATED WITH RIGGING UP AND PACKING IRON ON A DARK LOCATION DURING DRILLING OPERATIONS.
Event	7	Rig-Up Equipment	Rig-Up Equipment	8/29/2017	03:15:00	USER				
Event	8	Other	Other	8/29/2017	03:30:00	USER				WAIT FOR DRILLING RIG TO COMPLETE WELL AND RUN CASING.
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	8/29/2017	12:15:00	USER	15.30	8.35	0.00	DISCUSS HES SAFETY AND JOB PROCEDURES WITH RIG CREW. IDENTIFY CLOSEST HOSPITALS, MUSTER AREAS, AND FIRST AID LOCATIONS.
Event	10	Rig-Up Equipment	Rig-Up Equipment	8/29/2017	12:30:00	USER	-16.70	8.36	0.00	RIG UP PLUG CONTAINER AND PUMPING LINES ON RIG FLOOR. PRE LOAD 9.625" TOP PLUG. PLUG LOADED BY BRYCE MUIR AND WITNESSED BY THE DRILLER.
Event	11	Start Job	Start Job	8/29/2017	12:45:52	COM6	-17.70	0.66	0.00	
Event	12	Other	Other	8/29/2017	12:46:00	USER	-18.70	5.21	0.00	PUMP 2 BBLs FRESH WATER TO FILL PUMPS AND LINES.

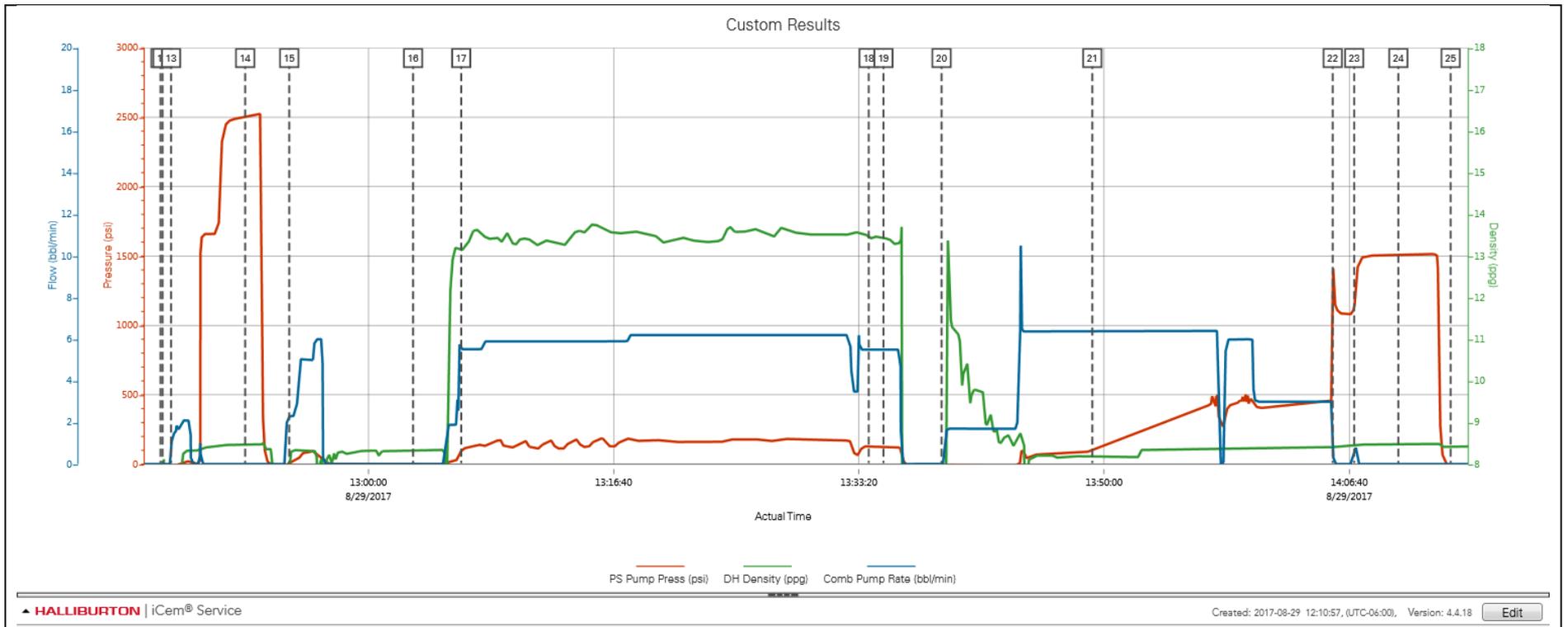
PUMPED AT 2 BPM AT 50 PSI.

Event	13	Test Lines	Test Lines	8/29/2017	12:46:35	USER	-14.70	0.20	0.60	CONDUCT A LOW PRESSURE TEST TO 500 PSI TO TEST RED TIGER PRESSURE KICKOUT.
Event	14	Test Lines	Test Lines	8/29/2017	12:51:37	USER	2504.30	8.47	0.00	CONDUCT A HIGH PRESSURE TEST TO 2500 PSI TO TEST PUMP AND LINES.
Event	15	Pump Spacer 1	Pump Spacer 1	8/29/2017	12:54:37	COM6	6.30	8.09	2.30	PUMP 10 BBLs OF DYED SPACER. PUMPED AT 5 BPM AT 105 PSI. WE HAD GREAT CIRCULATION.
Event	16	Check Weight	Check weight	8/29/2017	13:03:02	COM6	0.30	8.34	0.00	WEIGHT VERIFIED BY PRESSURIZED MUD BALANCE.
Event	17	Pump Cement	Pump Cement	8/29/2017	13:06:18	COM6	90.30	13.12	5.60	PUMPED 170 BBLs OF PRIMARY CEMENT. 550 SACKS AT 13.5 #/GAL 1.74 CUFT/SK 9.2 GAL/SK. CEMENT WAS PUMPED AT 6 BPM AT 195 PSI. WE HAD GOOD CIRCULATION DURING CEMENT.
Event	18	Shutdown	Shutdown	8/29/2017	13:34:00	USER	132.30	13.46	5.50	
Event	19	Drop Top Plug	Drop Top Plug	8/29/2017	13:35:00	USER	131.30	13.43	5.50	DROPPED 9.625" TOP PLUG. PLUG DROPPED BY BRYCE MUIR.
Event	20	Pump Displacement	Pump Displacement	8/29/2017	13:38:57	COM6	-20.70	0.56	0.00	PUMPED 117.5 BBLs OF FRESH WATER DISPLACEMENT. GOOD CIRCULATION DURING DISPLACEMENT.
Event	21	Displ Reached Cement	Displ Reached Cmnt	8/29/2017	13:49:12	COM6	100.30	8.17	6.40	TOP PLUG CAUGHT CEMENT AT 38 BBLs DISPLACEMENT PUMPED. WE GOT DYED SPACER TO SURFACE AFTER PUMPING 83 BBLs OF DISPLACEMENT. AT 93 BBLs OF DISPLACEMENT PUMPED WE GOT GOOD CEMENT TO SURFACE. WE GOT 24 BBLs OF GOOD CEMENT TO SURFACE. SLOWED RATE TO 3 BPM FOR THE LAST 20 BBLs TO LAND PLUG.
Event	22	Bump Plug	Bump Plug	8/29/2017	14:05:32	COM6	598.30	8.41	3.00	LANDED PLUG AT 472 PSI AND PRESSURED UP 500 PSI OVER FINAL CIRCULATING PRESSURE TO 1098 PSI.
Event	23	Other	Other	8/29/2017	14:07:00	USER	1135.30	8.44	0.60	PUMPED PRESSURE UP TO 1500 PSI AND HELD FOR 5 MINUTES TO PERFORM CASING TEST.
Event	24	Check Floats	Check Floats	8/29/2017	14:10:00	USER	1509.30	8.48	0.00	FLOATS HELD. WE GOT 1 BBL BACK TO THE RED TIGER.
Event	25	End Job	End Job	8/29/2017	14:13:33	COM6	-16.70	8.43	0.00	
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	8/29/2017	14:20:00	USER	-21.70	0.81	1.10	DISCUSS HAZARDS ASSOCIATED WITH RIGGING DOWN AND PACKING IRON ON LOCATION.

Event	27	Rig-Down Equipment	Rig-Down Equipment	8/29/2017	14:35:00	USER	
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/29/2017	15:30:00	USER	DISCUSS HAZARDS ASSOCIATED WITH DRIVING TRUCKS BACK TO THE SERVICE CENTER. DISCUSSED WHAT TO DO IF TOO TIRED TO DRIVE.
Event	29	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	8/29/2017	15:45:00	USER	JOB WAS SAFELY COMPLETED BY BRYCE MUIR AND CREW. THANK YOU AND STAY SAFE.

3.0 Attachments

3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

