

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Friday, July 05, 2019

INTERCHANGE B S22-30-15N Surface

Job Date: Friday, June 14, 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 Summary	4
2.0	Real-Time Job Summary	7
2.1	Job Event Log	7
3.0	Attachments.....	9
3.1	INTERCHANGE B S22-30-15N Surface.png	9

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Interchange B S22-30-15N** 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 70 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 #: 3901213		Quote #:		Sales Order #: 0905766949					
Customer: EXTRACTION OIL & GAS -					Customer Rep: MANNY						
Well Name: INTERCHANGE B			Well #: S22-30-15N			API/UWI #: 05-014-20780-00					
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD			State: COLORADO				
Legal Description: NE SW-10-1S-68W-2200FSL-1689FWL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7521 7521											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srv Supervisor: Lance Carpenter						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST						
Job depth MD		1665t			Job Depth TVD						
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	
Surface Casing		9.625		36			0	1665	0	1665	
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			1665		Bottom Plug	9.625		HES		
Float Collar	9.625					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 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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	SwiftCem	SWIFTCEM (TM) SYSTEM	550	sack	13.5	1.74	9.2	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	126	bbl	8.33				

Cement Left In Pipe	Amount	33 ft	Reason	Shoe Joint
Mix Water:	7PH	Mix Water Chloride:	200 ppm	Mix Water Temperature:## °F °C
Cement Temperature:## °F °C		Plug Displaced by:	8.34 lb/gal	Disp. Temperature:## °F °C
Plug Bumped?	Yes	Bump Pressure:	615 psi	Floats Held?Yes
Cement Returns:## bbl m3		Returns Density:## lb/gal kg/m3		Returns Temperature:## °F °C

Comment

JOB WENT WELL CEMENT WAS WEIGHED AND VERRIFIED OF SCALES THROUGHOUT JOB, PUMPED 126BLLS OF DISPLACEMENT WATER HAD CEMENT RETURN TO SURFACE AT 50 BBLS AWAY. SLOWED RATE TO 3BPM AT 110BBLS AWAY BUMPED PLUG AND TOOK 500 PSI OVER FIANL CIRCULATING PRESSURE 615 PSI, CHECKED FLOATS AND GOT 1 BBL BACK

70 BBLS OF CEMENT BACK 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 <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	6/14/2019	02:30:00	USER				CREW CALLED OUT FOR ON LOCATION 0830
Event	2	Crew Leave Yard	Crew Leave Yard	6/14/2019	08:45:00	USER				AFTER CHECKING CORRECT CEMENT VOLUMES WERE LOADED, HAD PRE CONVOY SAFETY MEETING WITH CREW AND DISCUSSED SAFE FOLLOWING DISTANCE WILD LIFE AND ROUTE TO LOCATION.
Event	3	Arrive At Loc	Crew Leave Yard	6/14/2019	09:30:00	USER				CREW ARRIVED ON LOCATION RIG WAS STILL PULLING OUT DRILL PIPE.
Event	4	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	6/14/2019	11:00:00	USER				HAD PRE RIG UP SAFETY MEETING WITH CREW AND DISCUSSED TEAM CARRY, PINCH POINTS, CALLING OUT HAMMER SWINGS, FOOTING PLACEMENT AND 40 FT BUFFER ZONE.
Event	5	Casing on Bottom	Casing on Bottom	6/14/2019	13:55:00	USER				RIG HAD CASING ON BOTTOM AND STARTED CIRCULATING
Event	6	Test Lines	Test Lines	6/14/2019	14:08:11	COM6	5.00	9.14	0.00	TEST LINES TO 3500PSI
Event	7	Start Job	Start Job	6/14/2019	14:08:58	COM6	12.00	8.98	1.60	
Event	8	Test Lines	Test Lines	6/14/2019	14:10:28	COM6	96.00	8.96	0.00	TESTED LINES TO 3500PSI
Event	9	Pump Spacer 1	Pump Spacer 1	6/14/2019	14:16:07	COM6	78.00	8.29	0.00	PUMPED 10 BBLs RED DYE 8.34 PPG

Event	10	Pump Cement	Pump Cement	6/14/2019	14:19:14	COM6	163.00	8.45	4.00	PUMPED 170 BBLS OF SWIFTCEM 13.5PPG 1.74YIELD 9.2 GAL 550SKS
Event	11	Drop Top Plug	Drop Top Plug	6/14/2019	14:47:31	COM6	115.00	17.63	0.00	DROPPED TOP PLUG WITH COMPANY MAN ON RIG FLOOR.
Event	12	Pump Displacement	Pump Displacement	6/14/2019	14:48:37	COM6	61.00	15.94	0.00	PUMPED 126BBLS OF DISPLACEMENT WATER GOT CEMENT TO SURFACE AT 50BBLS AWAY, SLOWED TO 3BPM AT 110BBLS AWAY.
Event	13	Bump Plug	Bump Plug	6/14/2019	15:19:33	COM6	977.00	8.51	0.00	BUMPED PLUG AND TOOK 500 PSI OVER FINAL CIRCULATING PRESSURE 615PSI
Event	14	Check Floats	Check Floats	6/14/2019	15:20:02	USER	1006.00	8.43	0.00	CHECKED FLOATS AND GOT 1 BBL BACK
Event	15	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	6/14/2019	15:30:00	USER				HAD PRE RIG DOWN SAFETY MEETING WITH CREW AND DISCUSSED TEAM CARRY, TEAM LIFT, PINCH POINTS, FOOTING PLACEMENT, 40 FT BUFFER ZONE.
Event	16	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/14/2019	18:00:00	USER				HAD PRE CONVOY SAFETY MEETING WITH CREW AND DISCUSSED DRIVING RESTRICTION TIMES, WILD LIFE, AND ROUTE BACK TO YARD.

3.0 Attachments

3.1 INTERCHANGE B S22-30-15N Surface.png

