

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Ft. Lupton District, COLORADO

INTERCHANGE B S22-30-17N

WELD, INTERCHANGE B S22-30-17N
Surface

Sincerely,

Andrew McIntosh

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	JOB CHART.png	9

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **INTERCHANGE B S22-30-17N** 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 22 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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3901285	Quote #:	Sales Order #: 0905977540
Customer: EXTRACTION OIL & GAS -		Customer Rep: EXTRACTION REP	
Well Name: INTERCHANGE B		Well #: S22-30-17N	API/UWI #: 05-014-20782-00
Field: WATTENBERG	City (SAP): BROOMFIELD	County/Parish: BROOMFIELD	State: COLORADO
Legal Description: NE SW-10-1S-68W-2209FSL-1724FWL			
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 147	
Job BOM: 7521 7521			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA/HX38199		Srvc Supervisor: Kyle Bath	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	1669ft		Job Depth TVD 1669
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
Casing	0	9.625	8.921	36			0	1669	0	1669
OH		13.5					0	1674	0	1674

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	9.625			1669	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	0	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	0	bbl	8.33				
Cement Left In Pipe		Amount	42 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:	## bbl m3	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	Date	Time	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Depart Yard Safety Meeting	9/14/2019	04:00:00					DISCUSS ROUTE AND HAZARDS
Event	2	Crew Leave Yard	9/14/2019	04:15:00					CREW DEPART YARD
Event	3	Call Out	9/14/2019	06:00:00					CREW CALLED OUT, REQUESTED ON LOCATION 12:00
Event	4	Arrive at Location from Service Center	9/14/2019	06:00:00					ARRIVE ON LOCATION, RIG DRILLING UPON HES ARRIVAL, RECIEVED NUMBERS FROM CO REP TD 1674, TP 1669.33, SJ 43.67, CSG 9 5/8 36#, PREV CSG 16" @ 108, HOLE 13.5, MUD 8.4
Event	5	Assessment Of Location Safety Meeting	9/14/2019	11:00:00					DISCUSS LOCATION HAZARDS AND HOW TO MITIGATE THEM, WATER TEST TEMP 65, CHLORIDES 0, PH 7
Event	6	Safety Meeting - Pre Rig-Up	9/14/2019	11:15:00					DISCUSS HAZARDS AND WAYS TO MITIGATE THEM
Event	7	Safety Meeting - Pre Job	9/14/2019	13:00:00					PRE JOB SAFETY MEETING WITH RIG CREW AND CO REP
Event	8	Start Job	9/14/2019	13:28:13					START RECORDING DATA
Event	9	Test Lines	9/14/2019	13:31:38					TEST LINES TO 3700 PSI

Event	10	Pump Spacer 1	9/14/2019	13:41:44	PUMP 10 BBLS FRESH WATER W/DYE 4 BPM 22 PSI
Event	11	Pump Cement	9/14/2019	13:48:02	PUMP 550 SKS 170 BBLS CEMENT 13.5 PPG, 1.74 FT3/SK, 9.17 GAL/SK 8 BPM 380 PSI, CALCULATED TOC SURFACE
Event	12	Drop Top Plug	9/14/2019	14:13:00	LAUNCH TOP PLUG
Event	13	Pump Displacement	9/14/2019	14:13:04	PUMP 126 BBLS FRESH WATER DISPLACEMENT 10 BPM 550 PSI, RECIEVED 22 BBLS CEMENT TO SURFACE
Event	14	Bump Plug	9/14/2019	14:30:19	BUMP PLUG AT 560 PSI TOOK TO 1060 PSI
Event	15	Check Floats	9/14/2019	14:31:49	FLOATS HELD TOOK 1 BBL BACK
Event	16	End Job	9/14/2019	14:33:01	
Event	17	Safety Meeting - Pre Rig-Down	9/14/2019	14:38:00	DISCUSS HAZARDS AND WAYS TO MITIGATE THEM
Event	18	Depart Location Safety Meeting	9/14/2019	15:50:00	DISCUSS HAZARDS AND ROUTE
Event	19	Crew Leave Location	9/14/2019	16:20:00	THANK YOU FOR USING HALLIBURTON, KYLE BATH AND CREW

3.0 Attachments

3.1 JOB CHART.png



