

# HALLIBURTON

iCem® Service

## **EXTRACTION OIL & GAS-EBUS**

United States of America, COLORADO

Date: Thursday, May 28, 2020

**United B S16-20-17N**

Surface Casing

Sincerely,

**Thomas Haas and Crew**

## Legal Notice

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### 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.

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the United B S16-20-17N surface casing. 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 20 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 #: 3909281		Quote #:		Sales Order #: 0906525208				
Customer: EXTRACTION OIL & GAS-EBUS				Customer Rep: Blaine Dunlavy						
Well Name: UNITED B			Well #: S16-20-17N			API/UWI #: 05-014-20809-00				
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO				
Legal Description: NE NE-9-1S-68W-436FNL-916FEL										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 147						
Job BOM: 7521 7521										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX41066				Srvc Supervisor: Thomas Haas						
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type				BHST						
Job depth MD		1622ft		Job Depth TVD		1622				
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
Casing	0	9.625	8.921	36			0	1622	0	1622
Open Hole Section			13.5				0	1625	0	1629
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
						Top Plug	9.625	1	HES	
Float Shoe	9.625	1	TOPCO	1622		Bottom Plug				
Float Collar	9.625	1	TOPCO	1578		SSR plug set				
						Plug Container	9.625	1	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	Water with dye	Water with dye		10	bbl	8.34				

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	SWIFTCEN (TM) SYSTEM	550	sack	13.5	1.74	9.17	8	5032
9.17 Gal		FRESH WATER							
0.1250 lbm		POLY-E-FLAKE (101216940)							
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	Displacement	Displacement	122	bbl	8.34			10	
Cement Left In Pipe		Amount	44 ft		Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		<300 ppm		Mix Water Temperature:		66 °F
Cement Temperature:			Plug Displaced by:		8.33 lb/gal Fresh Water		Disp. Temperature:		66 °F
Plug Bumped?		Yes	Bump Pressure:		580 psi		Floats Held?		Yes
Cement Returns:		20 bbl	Returns Density:				Returns Temperature:		
<b>Comment</b> Plug bumped at calculated displacement, final circulation pressure of 580 psi, floats held .5 bbl back. 20 bbl of cement to surface.									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	5/28/2020	05:00:00	USER					CREW CALLED OUT AT 05:00 5/28/2020, REQUESTED ON LOCATION 12:00 5/28/2020. CREW PICKED UP CEMENT, 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11562546/11633848 PUMP RED TIGER: 12645765.
Event	2	Arrive At Loc	Arrive At Loc	5/28/2020	06:00:00	USER					CREW HAULED CEMENT IN BETWEEN JOBS. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1629', 44' SHOE TRACK, OH 13.5", 8.7 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	3	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	5/28/2020	10:00:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	4	Rig-Up Equipment	Rig-Up Equipment	5/28/2020	10:10:00	USER					CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.

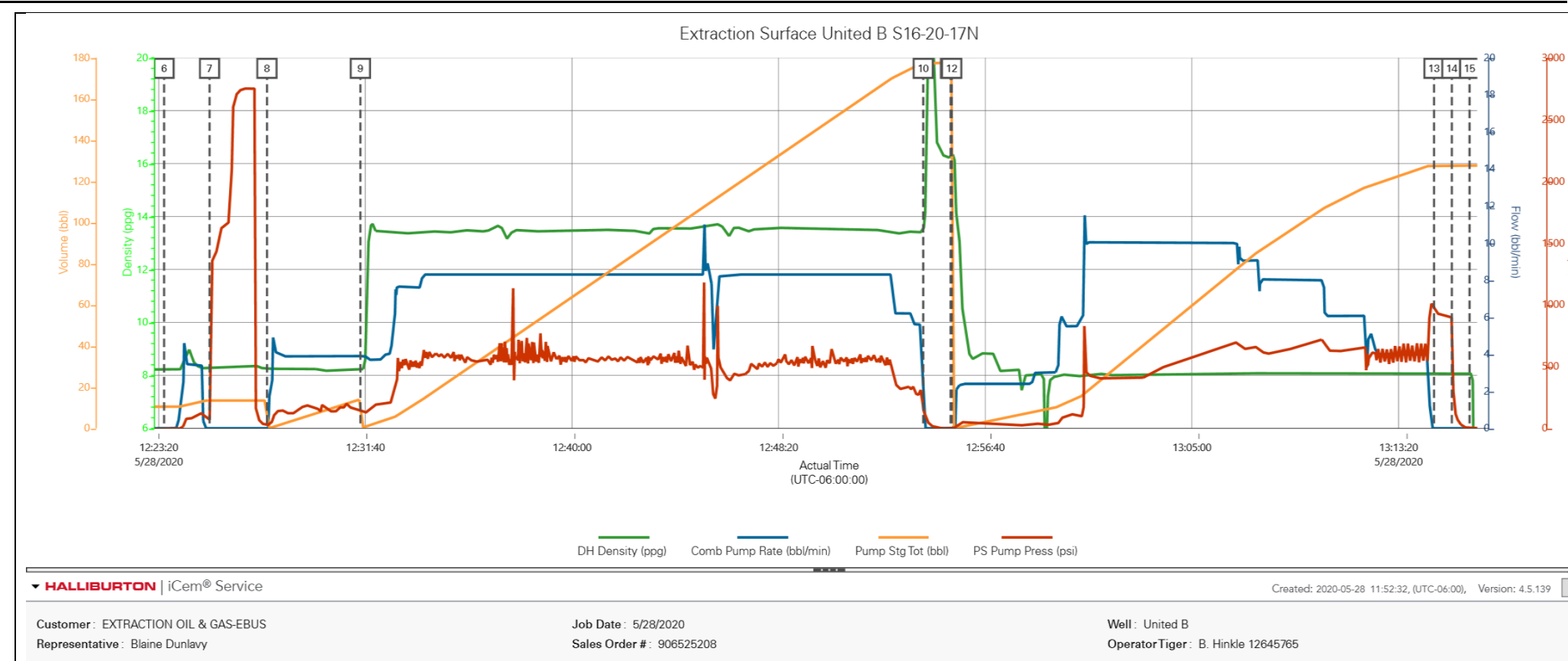
Event	5	Pre-Job Safety Meeting	Pre-Job Safety Meeting	5/28/2020	12:00:00	USER						MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	6	Start Job	Start Job	5/28/2020	12:23:33	COM10	8.23	0.00	10.50	-8.00		START JOB DATA RECORDING.
Event	7	Test Lines	Test Lines	5/28/2020	12:25:23	COM10	8.27	0.00	13.50	68.00		PRESSURE TESTED IRON TO 2700 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1280 PSI, 5TH GEAR STALL OUT @1650 PSI.
Event	8	Pump Spacer 1	Pump Spacer 1	5/28/2020	12:27:42	COM10	8.28	0.00	0.00	26.00		PUMP 10 BBL OF RED DYE SPACER.
Event	9	Pump Cement	Pump Cement	5/28/2020	12:31:28	COM10	8.21	3.90	14.10	148.00		PUMP 550 SKS OF SWIFTCEM @ 13.5 LB/GAL, 1.74 YIELD, 9.17 GAL/SK, 170 BBLs, TOL @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	10	Shutdown	Shutdown	5/28/2020	12:54:10	COM10	13.41	0.00	177.60	187.00		SHUTDOWN TO DROP TOP PLUG.
Event	11	Drop Top Plug	Drop Top Plug	5/28/2020	12:55:16	COM10	16.28	0.00	177.60	-4.00		PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	12	Pump Displacement	Pump Displacement	5/28/2020	12:55:19	COM10	16.36	0.00	0.00	-3.00		BEGIN PUMPING 122 BBL OF FRESH WATER DISPLACEMENT.
Event	13	Bump Plug	Bump Plug	5/28/2020	13:14:46	COM10	8.09	0.00	127.70	967.00		PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 580 PSI. 20 BBL OF CEMENT BACK TO SURFACE.



Event	14	Check Floats	Check Floats	5/28/2020	13:15:29	USER	8.10	0.00	127.70	886.00	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, .5 BB BACK.
Event	15	End Job	End Job	5/28/2020	13:16:12	COM10	8.07	0.00	127.70	-1.00	END JOB DATA RECORDING.
Event	16	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/28/2020	13:30:00	USER	2.05	0.00	151.80	-5.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	17	Rig-Down Completed	Rig-Down Completed	5/28/2020	14:00:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.

3.0 Attachments

3.1 Extraction Surface United B S16-20-17N-Job Chart.png



3.2 Extraction Surface United B S16-20-17N-Events.png

Extraction Surface United B S16-20-17N						
Description	Actual Time (UTC-06:00:00)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	PS Pump Press (psi)	
6 Start Job	12:23:33	8.23	0.00	10.50	-8.00	
7 Test Line	12:25:23	8.27	0.00	13.50	68.00	
8 Pump Sp	12:27:42	8.28	0.00	0.00	26.00	
9 Pump Ce	12:31:28	8.21	3.90	14.10	148.00	
10 Shutdow	12:54:10	13.41	0.00	177.60	187.00	
11 Drop Top	12:55:16	16.28	0.00	177.60	-4.00	
12 Pump Di:	12:55:19	16.36	0.00	0.00	-3.00	
13 Bump Plt	13:14:46	8.09	0.00	127.70	967.00	
14 Check Flc	13:15:29	8.10	0.00	127.70	886.00	
15 End Job	13:16:12	8.07	0.00	127.70	-1.00	

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Created: 2020-05-28 11:52:32, (UTC-06:00), Version: 4.5.139 

Edit

Customer: EXTRACTION OIL & GAS-EBUS  
Representative: Blaine Dunlavy

Job Date: 5/28/2020  
Sales Order #: 906525208

Well: United B  
OperatorTiger: B. Hinkle 12645765