

# HALLIBURTON

iCem<sup>®</sup> Service

## **VERDAD RESOURCES LLC-EBUS**

Ft. Lupton District, COLORADO

## **WUERTZ 1201-18H**

Production Casing

Job Date: Friday, June 11, 2021

Sincerely,

**KYLE BATH**

## 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 Wuertz 1201-18H 5.5" Production 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 43 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*

<b>Sold To #:</b> 380688		<b>Ship To #:</b> 3946464		<b>Quote #:</b>		<b>Sales Order #:</b> 0907195375				
<b>Customer:</b> VERDAD RESOURCES LLC-EBUS					<b>Customer Rep:</b> Verdad Rep					
<b>Well Name:</b> WUERTZ			<b>Well #:</b> 1201-18H			<b>API/UWI #:</b> 05-123-49733-00				
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> HUDSON		<b>County/Parish:</b> WELD			<b>State:</b> COLORADO			
<b>Legal Description:</b> SE SW-12-1N-65W-281FSL-2311FWL										
<b>Contractor:</b> PRECISION DRLG					<b>Rig/Platform Name/Num:</b> PRECISION 464					
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX41066					<b>Srv Supervisor:</b> Kyle Bath					
<b>Job</b>										
<b>Job depth MD</b>		17654ft			<b>Job Depth TVD</b>					
<b>Well Data</b>										
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		9.625	8.921	36			0	1803	0	1803
Casing		5.5	4.892	17			0	17654	0	7246
Open Hole Section			8.5				1803	17654	1803	7246
<b>Tools and Accessories</b>										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Float Shoe	5.5			17654		Top Plug	5.5		HES	
Float Collar	5.5			17564		Bottom Plug	5.5		HES	
Stage Tool	5.5					Plug Container	5.5		HES	

Fluid Data									
<b>Stage #: 1</b>									
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	Spacer	TUNED PRIME SPACER	100	bbl	11.5	3.71			
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	Cap Cement	ELASTICEM (TM) SYSTEM	200	sack	13.2	1.6		4	7.65
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	Lead Cement	ELASTICEM (TM) SYSTEM	1072	sack	13.2	1.6		4	7.66
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
4	Tail Cement	NeoCem TM	1159	sack	13.2	2.02		4	9.71
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
5	Displacement	MMCR Displacement	40	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
6	Displacement		362.2	bbl	8.34				
<b>Cement Left In Pipe</b>									
<b>Amount</b>		90 ft			<b>Reason</b>			Shoe Joint	
<b>Mix Water:</b>		<b>Mix Water Chloride:</b>			Mix Water Temperature:				
<b>Cement Temperature:</b>		<b>Plug Displaced by:</b>			Disp. Temperature:				
<b>Plug Bumped?</b> Yes		<b>Bump Pressure:</b>			Floats Held?			Yes	
<b>Cement Returns:</b>		<b>Returns Density:</b>			Returns Temperature:				
<b>Comment</b>									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Seq. No.	Activity	Date	Time	Comb Pump Rate (bbl/min)	DH Density (ppg)	DS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
1	Call Out	6/11/2021	04:00:00					CREW CALLED OUT, REQUESTED ON LOCATION 10:30
2	Depart Yard Safety Meeting	6/11/2021	07:00:00					PRE CONVOY SAFETY MEETING WITH ALL HES EE
3	Crew Leave Yard	6/11/2021	07:15:00					CREW DEPART YARD FOR LOCATION
4	Arrive At Loc	6/11/2021	08:30:00					ARRIVE ON LOCATION, RECIEVED NUMBERS FROM CO REP, TD 17824, TP 17808, SJ 17719, CSG 5.5 17#, PREV CSG 9 5/8 40# @ 1803, HOLE 8.5, MUD 9.6, TVD 7211, 188 CENTALIZERS, WATER TEST, TEMP 65, CHLORIDES 0, PH 7
5	Assessment Of Location Safety Meeting	6/11/2021	08:45:00					SAFETY MEETING WITH ALL HES EE TO ASSESS ALL HAZARDS
6	Safety Meeting - Pre Rig-Up	6/11/2021	09:00:00					PRE RIG UP SAFETY MEETING WITH ALL HES EE
7	Safety Meeting - Pre Job	6/11/2021	18:36:00	0.00	8.37	9.00	11.60	PRE JOB SAFETY MEETING WITH RIG CREW AND CO REP
8	Start Job	6/11/2021	19:06:26	0.00	8.37	11.00	0.00	START RECORDING DATA
9	Test Lines	6/11/2021	19:08:17	0.00	8.37	21.00	1.70	TEST LINES TO 4490 PSI
10	Pump Spacer 1	6/11/2021	19:11:04	0.00	8.37	20.00	1.70	PUMP 100 BBLs TUNED PRIME SPACER 11.5 PPG, 7 BPM, 700 PSI
11	Drop Bottom Plug	6/11/2021	19:27:16	0.00	16.88	13.00	88.80	LAUNCH BOTTOM PLUG

12	Pump Cap Cement	6/11/2021	19:28:22	0.00	16.96	10.00	88.80	MIX AND PUMP 200 SKS 56.9 BBLS CAP CEMENT 13.5 PPG, 1.6 FT3/SK, 7.65 GAL/SK 8 BPM 450 PSI, CALCULATED TOCC SURFACE
13	Pump Lead Cement	6/11/2021	19:36:16	8.10	13.17	458.00	0.10	MIX AND PUMP 1072 SKS 305.5 BBLS LEAD CEMENT 13.2 PPG, 1.6 FT3/SK, 7.66 GAL/SK, 9 BPM 580 PSI, CALCULATED TOLC 307
14	Pump Tail Cement	6/11/2021	20:15:32	8.50	13.17	530.00	0.10	MIX AND PUMP 1159 SKS 416.9 BBLS TAIL CEMENT 13.2 PPG, 2.02 FT3/SK, 9.71 GAL/SK, 8.5 BPM 740 PSI, CALCULATED TOTC 7589
15	Check Weight	6/11/2021	20:15:45	8.50	13.24	525.00	1.90	VERIFY WEIGHT ON PRESSURIZED MUD SCALES
16	Shutdown	6/11/2021	21:12:04	0.00	13.46	121.00	448.60	SHUTDOWN, WASH PUMPS AND LINES TO TANK
17	Drop Top Plug	6/11/2021	21:21:55	0.00	8.41	21.00	460.40	LAUNCH TOP PLUG
18	Pump Displacement	6/11/2021	21:21:59	0.00	8.41	21.00	0.00	PUMP 411 BBLS FRESH WATER DISPLACEMENT, FIRST 40 W/MMCR, ALL WITH BIOCIDES, 10 BPM 3000 PSI, RECEIVED 100 BBLS TUNED PRIME SPACER AND 43 BBLS CEMENT TO SURFACE
19	Bump Plug	6/11/2021	22:15:54	0.00	8.47	2957.00	412.30	BUMPED PLUG AT 2560 PSI TOOK TO 3000 PSI
20	Other	6/11/2021	22:20:09	0.00	8.47	3049.00	412.30	FLOATS HELD TOOK 4.5 BBLS BACK
21	End Job	6/11/2021	22:21:51	0.00	8.12	34.00	412.30	STOP RECORDING DATA
22	Safety Meeting - Pre Rig-Down	6/11/2021	22:25:00					PRE RIG DOWN SAFETY MEETING WITH ALL HES EE
23	Depart Location Safety Meeting	6/11/2021	23:30:00					PRE DEPARTURE SAFETY MEETING WITH ALL HES EE
24	Crew Leave Location	6/11/2021	23:45:00					THANK YOU FOR USING HALLIBURTON, KYLE BATH AND CREW

3.0 Attachments

3.1 Job Chart

