

# HALLIBURTON

iCem<sup>®</sup> Service

**VERDAD RESOURCES LLC**

United States of America, COLORADO

**For: Tobin Williams**

Date: Friday, March 01, 2019

**Verdad Production Boyd 24-1H**

H&P 290

Sincerely,

**Thomas Haas and Crew**

## Legal Notice

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### Disclaimer:

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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 cement 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 0 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 #: 380688	Ship To #: 3868214	Quote #:	Sales Order #: 0905512275
Customer: VERDAD RESOURCES LLC		Customer Rep: Tobin Williams	
Well Name: BOYD	Well #: 24-1H	API/UWI #: 05-123-46594-00	
Field: WATTENBERG	City (SAP): KEENESBURG	County/Parish: WELD	State: COLORADO
Legal Description: NE SW-24-2N-64W-1441FSL-2255FWL			
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 290	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Thomas Haas	

**Job**

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	17356ft	Job Depth TVD	6777'
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	1758	0	1758
Casing	0	5.5	4.778	20			0	17356	0	6777
Open Hole Section			8.75				1737	17361	1758	6777

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe					Top Plug	5.5	1	W.F.
Float Shoe	5.5	1	W.F.	17356	Bottom Plug	5.5	1	W.F.
Float Collar	5.5	1	W.F.	17250	SSR plug set			
Insert Float					Plug Container	5.5		HES
Stage Tool					Centralizers			

**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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.79	23.3	5	932	
147.42 lbm/bbl		<b>BARITE, BULK (100003681)</b>								
36.09 gal/bbl		<b>FRESH WATER</b>								

0.70 gal/bbl	<b>DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)</b>
0.70 gal/bbl	<b>MUSOL(R) A, 5 GAL PAIL (100064220)</b>
0.25 gal/bbl	<b>D-AIR 3000L, 5 GAL PAIL (101007444)</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
2	ElastiCem	ELASTICEM (TM) SYSTEM	1011	sack	13.2	1.57	7.55	8	7633

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	NeoCem	NeoCem TM	437.1	bbl	13.2	2.04	9.75	6	11729

9.75 Gal	<b>FRESH WATER</b>
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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	MMCR Displacement	MMCR Displacement	10	bbl	8.34				

0.10 gal/bbl	<b>MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)</b>
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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	FRESH WATER	372	bbl	8.33				

Cement Left In Pipe	Amount	N/A	Reason Wet Shoe	Shoe Joint	
Mix Water:	pH 7	Mix Water Chloride:	<300 ppm	Mix Water Temperature:	58°F
Cement Temperature:	N/A	Plug Displaced by:	8.33 lb/gal F.W.	Disp. Temperature:	54 °F
Plug Bumped?	Yes	Bump Pressure:	2600 psi	Floats Held?	Yes
Cement Returns:	N/A	Returns Density:	N/A	Returns Temperature:	N/A

**Comment** Plug bumped 373 bbl into displacement, final circulating pressure of 2600 psi, held 5 min casing test at 3250 psi, wet shoe sub ruptured at 4182 psi, floats held, 3 bbl back, nothing returned to surface.

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	2/28/2019	21:00:00	USER					CREW CALLED OUT AT 21:00 2/28/2019, REQUESTED ON LOCATION 1:00 3/1/2019. CREW PICKED UP CEMENT, CHEMICALS (30 GAL MUSOL, 30 GAL DUAL SPACER B, 10 GAL D-AIR 5, 5 GAL MMCR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11688508/11764054 Bulk 660: 10989865/10867098 PUMP ELITE: 11897034/11512092
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/1/2019	00:15:00	USER					DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	3/1/2019	00:30:00	USER					STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	3/1/2019	01:00:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 158', CASING: 5.5" 20# @ 17356', 106' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6777', 9.7 PPG WELL FLUID, FRESH WATER DISPLACEMENT.

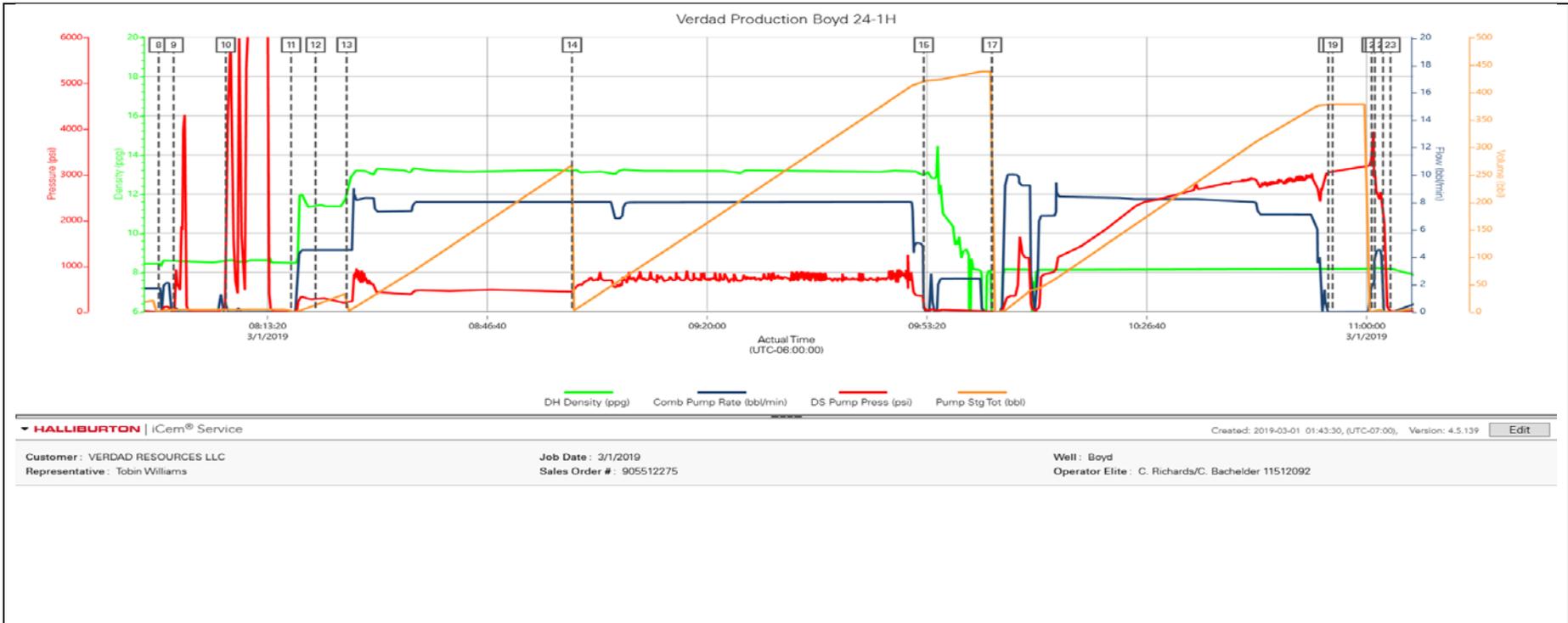
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/1/2019	01:10:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	3/1/2019	01:20:00	USER					CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/1/2019	02:00:00	USER					MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	3/1/2019	07:56:49	COM4	8.49	1.70	-4.00	1.20	START JOB DATA RECORDING.
Event	9	Test Lines	Test Lines	3/1/2019	07:59:05	COM4	8.61	0.00	13.00	3.90	PRESSURE TESTED IRON TO 6600 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 770 PSI, 5TH GEAR STALL OUT @ 2000 PSI.
Event	10	Other	Iron Leak	3/1/2019	08:07:00	USER	8.53	0.00	1780.00	4.40	IRON WAS MISSING A 2" GASKET IN IRON, PUT ONE IN AND SUCCESSFULLY TESTED LINES.
Event	11	Pump Spacer 1	Pump Spacer	3/1/2019	08:16:54	COM4	8.49	0.00	1.00	0.00	PUMP 40 BBLS OF TUNED SPACER @ 11.5 LB/GAL, ADDED 30 GAL MUSOL A, 30 GAL DUAL SPACER B, 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Drop Bottom Plug	Drop Bottom Plug	3/1/2019	08:20:37	COM4	11.40	4.50	293.00	12.60	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.

Event	13	Pump Lead Cement	Pump Lead Cement	3/1/2019	08:25:19	COM4	12.14	4.50	209.00	0.00	PUMP 1011 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.55 GAL/SK, 282.7 BBLS, CALCULATED TOL @ 17', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Pump Tail Cement	Pump Tail Cement	3/1/2019	08:59:30	COM4	13.15	8.00	434.00	266.90	PUMP 1203 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 YIELD, 9.75 GAL/SK, 437.1 BBLS, CALCULATED TOT @ 6643', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Shutdown	Shutdown	3/1/2019	09:52:51	USER	12.91	0.00	122.00	420.80	SHUTDOWN TO WASH PUMPS/LINES AND DROP TO PLUG.
Event	16	Drop Top Plug	Drop Top Plug	3/1/2019	10:03:09	COM4	8.02	0.00	16.00	437.80	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	17	Pump Displacement	Pump Displacement	3/1/2019	10:03:13	COM4	2.30	0.00	13.00	437.80	BEGIN CALCULATED DISPLACEMENT OF 382 BBL FRESH WATER, 5 GAL MMCR IN FIRST 20, 15 GAL BIOCIDES ADDED THROUGH OUT.
Event	18	Bump Plug	Bump Plug	3/1/2019	10:54:12	COM4	8.21	0.00	3052.00	377.70	PLUG BUMPED 373 BBL INTO DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2600 PSI. NOTHING RETURNED TO SURFACE.
Event	19	Pressure Test	Pressure Test	3/1/2019	10:54:51	USER	8.21	0.00	3056.00	377.70	5 MIN CASING TEST AT 3250 PSI.
Event	20	Resume	Shift Tool	3/1/2019	11:00:46	USER	8.21	2.00	3459.00	0.40	PRESSURE UP TO SHIFT WET SHOE TOOL, TOOL SHIFTED AT 4182 PSI.

Event	21	Resume	Wet Shoe	3/1/2019	11:01:16	USER	8.23	4.50	3078.00	0.30	PUMP A 5 BBL WET SHOE.
Event	22	Check Floats	Check Floats	3/1/2019	11:02:30	USER	8.20	0.00	2167.00	0.00	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, 3 BBL BACK.
Event	23	End Job	End Job	3/1/2019	11:03:38	COM4	8.17	0.00	16.00	0.00	END JOB DATA RECORDING.
Event	24	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/1/2019	11:10:00	USER					DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	25	Rig-Down Completed	Rig-Down Completed	3/1/2019	12:00:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	26	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/1/2019	12:15:00	USER					DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	27	Crew Leave Location	Crew Leave Location	3/1/2019	12:30:00	USER					THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

3.0 Attachments

3.1 Verdad Production Boyd 24-1H-Custom Results.png



3.2 Verdad Production Boyd 24-1H-Custom Results (1).png

Verdad Production Boyd 24-1H						
Description	Actual Time (UTC-06:00:00)	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Pump Stg Tot (bbl)	
8 Start Job	07:56:49	8.49	1.70	-4.00	1.20	
9 Test Lines	07:59:05	8.61	0.00	13.00	3.90	
10 Iron Leak	08:07:00	8.53	0.00	1780.00	4.40	
11 Pump Spacer	08:16:54	8.49	0.00	1.00	0.00	
12 Drop Bottom Plug	08:20:37	11.40	4.50	293.00	12.60	
13 Pump Lead Cement	08:25:19	12.14	4.50	209.00	0.00	
14 Pump Tail Cement	08:59:30	13.15	8.00	434.00	266.90	
15 Shutdown	09:52:51	12.91	0.00	122.00	420.80	
16 Drop Top Plug	10:03:09	8.02	0.00	16.00	437.80	
17 Pump Displacement	10:03:13	2.30	0.00	13.00	437.80	
18 Bump Plug	10:54:12	8.21	0.00	3052.00	377.70	
19 Pressure Test	10:54:51	8.21	0.00	3056.00	377.70	
20 Shift Tool	11:00:46	8.21	2.00	3459.00	0.40	
21 Wet Shoe	11:01:16	8.23	4.50	3078.00	0.30	
22 Check Floats	11:02:30	8.20	0.00	2167.00	0.00	
23 End Job	11:03:38	8.17	0.00	16.00	0.00	

▼ HALLIBURTON | iCem® Service Created: 2019-03-01 01:43:30 (UTC-07:00), Version: 4.5.139 [Edit](#)

Customer: VERDAD RESOURCES LLC	Job Date: 3/1/2019	Well: Boyd
Representative: Tobin Williams	Sales Order #: 905512275	Operator Elite: C. Richards/C. Bachelder 11512092