

# HALLIBURTON

iCem<sup>®</sup> Service

## **VERDAD RESOURCES LLC**

**For:**

Date: Thursday, April 04, 2019

**Timbro 9-59**

Verdad Timbro 9-59 8A-9-4

Job Date: Tuesday, March 26, 2019

Sincerely,

**Prince A. Perez**

## 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 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*

<b>Sold To #:</b> 380688	<b>Ship To #:</b> 3898730	<b>Quote #:</b>	<b>Sales Order #:</b> 0905577886
<b>Customer:</b> VERDAD RESOURCES LLC		<b>Customer Rep:</b> George Noegwa	
<b>Well Name:</b> TIMBRO 9-59		<b>Well #:</b> 8A-9-4	<b>API/UWI #:</b> 05-123-47557-00
<b>Field:</b> WILDCAT	<b>City (SAP):</b> KEOTA	<b>County/Parish:</b> WELD	<b>State:</b> COLORADO
<b>Legal Description:</b> SW NW-8-9N-59W-1755FNL-475FWL			
<b>Contractor:</b> H & P DRLG		<b>Rig/Platform Name/Num:</b> H & P 290	
<b>Job BOM:</b> 7523 7523			
<b>Well Type:</b> HORIZONTAL OIL			
<b>Sales Person:</b> HALAMERICA\HX38199		<b>Srvc Supervisor:</b> Prince Perez	

**Job**

<b>Formation Depth (MD)</b>	<b>Top</b> 0'	<b>Bottom</b>	16,377'
<b>Job depth MD</b>	16,367'	<b>Job Depth TVD</b>	6,212'
<b>Water Depth</b>		<b>Wk Ht Above Floor</b>	5'

**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		9.625	8.921	36			0	1934		1934
Casing		5.5	4.778	20			0	16367	0	6212
Open Hole Section			8.5				1934	16377	1934	6212

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5	1		16,367	Top Plug	5.5	1	WF
Float Shoe	5.5				Bottom Plug	5.5	1	WF
Float Collar	5.5	1		16,260	SSR plug set	5.5		
Insert Float	5.5				Plug Container	5.5	1	HES
Stage Tool	5.5				Centralizers	5.5	181	

**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	Spacer	Tuned Spacer III	40	bbl	11.5	3.77	23.1	4	1,376
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	Lead	ELASTICEM (TM) SYSTEM	616	sack	13.2	1.57	7.55	8	4,651

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	Tail	NeoCem TM	461.4	bbl	13.2	2.04	9.75	8	12,383
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	Displacement	MMCR Displacement	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
5	Displacement	Fresh Water	350.97	bbl	8.34				
<b>Cement Left In Pipe</b>									
<b>Amount</b>		0 ft			<b>Reason</b>			<b>Wet Shoe</b>	
Mix Water: pH 6		Mix Water Chloride: <300 ppm			Mix Water Temperature: 59 °F				
Cement Temperature: ## °F		Plug Displaced by: 8.33 lb/gal			Disp. Temperature: 59 °F				
Plug Bumped? Yes		Bump Pressure: 2,171 psi			Floats Held? Yes				
Cement Returns: 0 bbl m3		Returns Density: 10.2 lb/gal			Returns Temperature: ## °F °C				
<b>Comment</b>									
Pumped 40 bbls of Tuned Spacer III with 30 gallons of Dual B, 30 gallons of Musol A, and 10 gallons of D Air.									
Pumped 172.24 bbls of Elasticem.									
Pumped 461.42 bbls of Neocem.									
Pumped 360.97 bbls of fresh water Displacement with MMCR in the first 10 bbls.									
Pumped a 4 bbl wet shoe.									
1 bbl back on the floats.									

## 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>	PS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	3/25/2019	20:00:00	USER					CREW CALLED OUT AT 20:00, REQUESTED ON LOCATION 01:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660, 10025030, 10866799, 10867531, AND PUMP 11189145.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/25/2019	22:40:00	USER					CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Shop	Crew Leave Shop	3/25/2019	22:50:00	USER					STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	3/26/2019	01:00:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9/58" 36 LB/FT @ 1,934', 5.5" CASING: 20 LB/FT TOTAL 16,367.1', 8 1/2" HOLE, TD 16,377', 107.2' SHOE TRAC, TVD- 6,212'. PUMP FRESH WATER DISPLACEMENT. CASING LANDED @ 23:30 03/25/2019.
Event	5	Safety Meeting - Assessment of Location	Safety Meeting - Assessment of Location	3/26/2019	01:10:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH

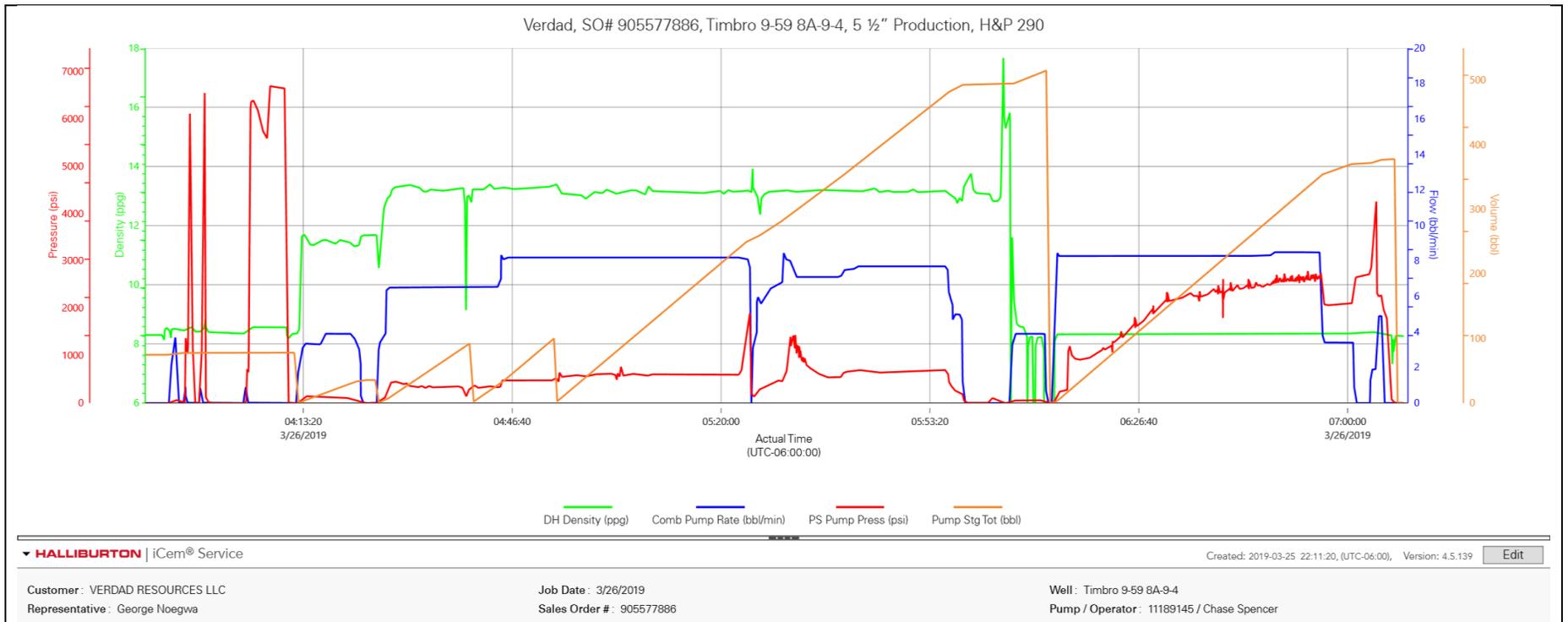
											LOCATION, RIG UP AND WEATHER.	
Event	6	Rig-Up Equipment	Rig-Up Equipment	3/26/2019	01:20:00	USER						RIG UP BULK AND MIXING EQUIPMENT.
Event	7	Rig-Up Completed	Rig-Up Completed	3/26/2019	03:10:00	USER	8.32	0.00	-8.00	74.70		
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/26/2019	03:20:00	USER	8.31	0.00	-7.00	74.70		MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	9	Start Job	Start Job	3/26/2019	03:51:05	COM4	8.26	0.00	-11.00	74.70		BEGIN RECORDING JOB DATA.
Event	10	Test Lines	Test Lines	3/26/2019	04:08:12	COM4	8.55	0.00	6686.00	78.00		PRESSURE TESTED IRON TO 6,500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 800 PSI, 5TH GEAR STALL OUT @ 2,400 PSI. 6,500 PRESSURE TEST KICKED OUT @ 6,400 PSI
Event	11	Pump Spacer 1	Pump Spacer 1	3/26/2019	04:12:11	COM4	8.34	0.00	-6.00	0.00		PUMP 40 BBLS OF TUNED SPACER III @ 11.5 LB/GAL, 3.77 CUFT/SK, 23.1 GALL/SK. 10 GALS D-AIR, 30 GALLONS OF DUAL B, 30 GALLONS OF MUSOL A. HOS CALCULATED @ 835.1' WITH TOS CALCULATED @ 163.8'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 4 BBLS/MIN @ 300 PSI.
Event	12	Pump Lead Cement	Pump Lead Cement	3/26/2019	04:25:02	COM4	11.69	0.00	-4.00	0.00		PUMPED 616 SKS OF GASSTOP @ 13.2 LB/GAL, 1.57 FT3/SK, 7.55 GAL/SK. 172.24 BBLS. HOL CALCULATED @ 4,058.9',

											TOL CALCULATED @ 998.9'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 450 PSI
Event	13	Pump Tail Cement	Pump Tail Cement	3/26/2019	04:53:33	COM4	13.45	8.20	467.00	0.10	PUMP 1,270 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 FT3/SK, 9.75 GAL/SK, 461.42 BBLS. HOT CALCULATED @ 11,309.3', TOT CALCULATED @ 5,057.8'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 640 PSI.
Event	14	Shutdown	Shutdown	3/26/2019	05:58:39	COM4	13.05	0.00	102.00	493.60	SHUTDOWN TO WASH LINES.
Event	15	Drop Top Plug	Drop Top Plug	3/26/2019	06:12:00	COM4	0.23	0.00	4.00	515.40	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	16	Pump Displacement	Pump Displacement	3/26/2019	06:12:08	COM4	0.10	0.00	2.00	515.40	BEGIN CALCULATED DISPLACEMENT OF 360.97 BBLS WITH FRESH WATER. MMCR IN THE FIRST 10. PUMP RATE 8.5 BPM @ 2,700 PSI. CAUGHT CEMENT @ 20 BBLS INTO DISPLACEMENT. SLOW RATE TO 3.5 BPM @ 340 BBLS INTO DISPLACEMENT.
Event	17	Bump Plug	Bump Plug	3/26/2019	07:01:19	COM4	8.37	0.00	2671.00	371.80	PLUG BUMPED AT CALCULATED DISPLACEMENT. 2,071 PSI PRESSURED 500 PSI OVER BUMP. HELD PRESSURE FOR 5 MINUTES.
Event	18	Shift Tool - Lower	Shift Tool - Lower	3/26/2019	07:04:36	USER	8.42	1.90	4263.00	373.60	SHEARED TOOL @ 4,263 PSI FOLLOWED BY A 4 BBL WET SHOE.

Event	19	Check Floats	Check Floats	3/26/2019	07:06:49	USER	8.31	0.00	403.00	377.90	RELEASED PRESSURE, FLOATS HELD, 1 BBLS BACK.
Event	20	End Job	End Job	3/26/2019	07:08:04	COM4	8.28	0.00	-2.00	0.00	STOP RECORDING JOB DATA.
Event	21	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	3/26/2019	07:10:00	USER					DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	22	Rig-Down Equipment	Rig-Down Equipment	3/26/2019	07:20:00	USER					RIG DOWN BULK AND MIXING EQUIPMENT.
Event	23	Rig-Down Completed	Rig-Down Completed	3/26/2019	09:25:00	USER					
Event	24	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/26/2019	09:35:00	USER					CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	25	Crew Leave Location	Crew Leave Location	3/26/2019	09:45:00	USER					THANK YOU FOR USING HALLIBURTON – PRINCE PEREZ AND CREW.

## 3.0 Attachments

### 3.1 Verdad Timbro 9-59 8A-9-4-Custom Results (2).png



3.2 Verdad Timbro 9-59 8A-9-4-Custom Results.png

Description	Actual Time (UTC-06:00:00)	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)
1 Start Job	03:51:05	8.26	0.00	-11.00	74.70
2 Test Lines	04:08:12	8.55	0.00	6686.00	78.00
3 Pump Spacer 1	04:12:11	8.34	0.00	-6.00	0.00
4 Pump Lead Cement	04:25:02	11.69	0.00	-4.00	0.00
5 Pump Tail Cement	04:53:33	13.45	8.20	467.00	0.10
6 Shutdown	05:58:39	13.05	0.00	102.00	493.60
7 Drop Top Plug	06:12:00	0.23	0.00	4.00	515.40
8 Pump Displacement	06:12:08	0.10	0.00	2.00	515.40
9 Bump Plug	07:01:19	8.37	0.00	2671.00	371.80
10 Shift Tool - Lower	07:04:36	8.42	1.90	4263.00	373.60
11 Check Floats	07:06:49	8.31	0.00	403.00	377.90
12 End Job	07:08:04	8.28	0.00	-2.00	0.00

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3.3 Verdad Timbro 9-59 8A-9-4-Custom Results (1).png

