

# HALLIBURTON

iCem<sup>®</sup> Service

## **HALLIBURTON**

Ft. Lupton District, COLORADO

### **For:**

Date: Sunday, April 14, 2019

### **TIMBRO 9-59**

WELD

VERDAD RESOURCES LLC

Job Date: Sunday, April 14, 2019

Sincerely,

## 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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*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 380688		<b>Ship To #:</b> 3898699		<b>Quote #:</b>		<b>Sales Order #:</b> 0905620538					
<b>Customer:</b> VERDAD RESOURCES LLC						<b>Customer Rep:</b> JASON HANSEN					
<b>Well Name:</b> TIMBRO 9-59				<b>Well #:</b> 8A-9-5		<b>API/UWI #:</b> 05-123-47560-00					
<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-1784FNL-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>Srv Supervisor:</b> Lance Carpenter						
<b>Job</b>											
<b>Formation Name</b>											
<b>Formation Depth (MD)</b>		<b>Top</b>		<b>Bottom</b>							
<b>Form Type</b>				<b>BHST</b>							
<b>Job depth MD</b>		16228		<b>Job Depth TVD</b>		6216					
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		4					
<b>Perforation Depth (MD)</b>		<b>From</b>		<b>To</b>							
<b>Well Data</b>											
<b>Description</b>	<b>New / Used</b>	<b>Size in</b>	<b>ID in</b>	<b>Weight lbm/ft</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD ft</b>	<b>Bottom MD ft</b>	<b>Top TVD ft</b>	<b>Bottom TVD ft</b>	
Casing		9.625	8.921	36			0	1917		1917	
Casing		5.5	4.778	20			0	16228		6216	
Open Hole Section			8.5				0	16238		6216	
<b>Tools and Accessories</b>											
<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>		
<b>Guide Shoe</b>	5.5					<b>Top Plug</b>	5.5	1			
<b>Float Shoe</b>	5.5					<b>Bottom Plug</b>	5.5	1			
<b>Float Collar</b>	5.5			16125.82		<b>SSR plug set</b>	5.5				
<b>Insert Float</b>	5.5					<b>Plug Container</b>	5.5	1	HES		
<b>Stage Tool</b>	5.5					<b>Centralizers</b>	5.5				
<b>Fluid Data</b>											
<b>Stage/Plug #:</b> 1											
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>			<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
1	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS			60	bbl	12.5	2.78	16.7		
201.71 lbm/bbl		<b>BARITE, BULK (100003681)</b>									

0.25 gal/bbl		D-AIR 3000L, 5 GAL PAIL (101007444)							
6 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)							
6 lbm/bbl		SEM-93P, 35 LB SACK - (1023977)							
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	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	60	bbl	12.5	2.71	16		
0.70 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
0.70 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)							
207.29 lbm/bbl		BARITE, BULK (100003681)							
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	ElastiCem	ELASTICEM (TM) SYSTEM	625	sack	13.2	1.57	7.55	4	7.55
0.30 %		SCR-100 (100003749)							
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	NeoCem	NeoCem TM	463.3	bbl	13.2	2.04	9.75	4	9.75
9.75 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
5	MMCR Displacement	MMCR Displacement	20	bbl	8.34				
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
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		337	bbl	8.34				
Cement Left In Pipe		Amount	102.2 ft			Reason		Shoe Joint	

Mix Water:	7 PH	Mix Water Chloride:	100 ppm	Mix Water Temperature:	60°F
Cement Temperature:		Plug Displaced by:	8.34 lb/gal	Disp. Temperature:	
Plug Bumped?	Yes	Bump Pressure:	2140 psi	Floats Held?	Yes
Cement Returns:		Returns Density:		Returns Temperature:	
<b>Comment</b>  <p>JOB WENT WELL, HAD SOME MIXING PROBLEMS WITH SPACER BUT WAS ABLE TO LINE IT OUT. DENSITY WAS VERIFIED AND SCALED. PUMPED FULL DISPLACEMENT VOLUME AND BUMPED AT CACULATED 357BBLS. BUMPED PLUG AT 3BPM FINAL CIRCUALATING PRESSURE WAS 2140PSI BROUGHT TO 2870PSI AND HELD FOR 5 MIN OPENED UP WET SHOE SUB AT 3790PSI AND PUMPED 4 BBL WET SHOE. CHECKED FLOATS, FLOATS HELD AND GOT 2.5 BBLS BACK.</p> <p>TOP OF TAIL CEMENT 4929'</p> <p>TOP OF LEAD CEMENT 853'</p> <p>105 BBLS OF SPACER BACK</p>					

## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Drop Bottom Plug	Call Out	4/13/2019	14:00:00	USER					CREW CALLED OUT. ON LOCATION TIME 2000
Event	2	Depart Shop for Location	Depart Shop for Location	4/13/2019	18:30:00	USER					ON LOCATION TIME CHANGED TO 2100. CREW HAS VERIFIED EQUIPMENT AND MATERIALS, READY TO DEPART. CREW HAS JOURNEY MANAGEMENT SAFETY MEETING DISCUSSING ROUTE, CONVOY ORDER, FOLLOWING DISTANCE, STOPS, HAZARDS AND DEPARTS FOR LOCATION
Event	3	Arrive At Loc	Arrive At Loc	4/13/2019	20:45:00	USER					CREW ARRIVES AT LOCATION. RIG RIH CASING 15700'. CREW ASSESSES LOCATION FOR HAZARDS AND HAS PRE RIG UP SAFETY MEETING DISCUSSING RIG OPERATIONS, RED ZONES, BACKING, LINE OF FIRE, SLIPS TRIPS AND FALLS AND BEGIN TO SPOT IN AND RIG UP EQUIPMENT
Event	4	Casing on Bottom	Casing on Bottom	4/13/2019	21:30:00	USER					CASING ON BOTTOM. CASING CREW BEGINS RIGGING DOWN. RIG BEGINS TO FILL AND THEN CIRCULATE THE WELL

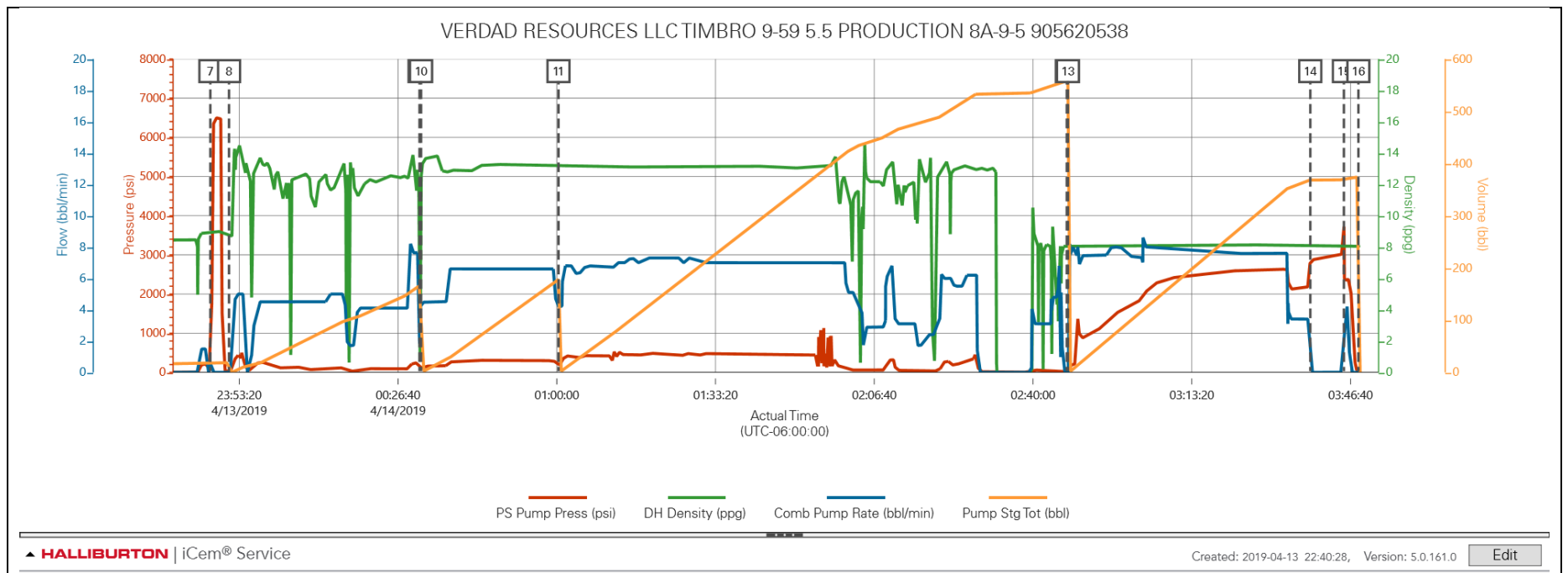
Event	5	Safety Meeting - Pre Job	Safety Meeting - Pre Job	4/13/2019	23:10:00	USER	-12.00	8.58	0.00	0.30	CREW, RIG CREW AND CUSTOMER REP HAVE PRE JOB SAFETY MEETING DISCUSSING HAZARDS, THREE POINTS OF CONTACT, RED ZONES, ROLES, CONTINGENCIES, TUGGER OPERATIONS, LINE OF FIRE, JOB PROCEEDURE. HES CREW ALREADY PREPARED MIX FLUID FOR LEAD CEMENT. CREW LOADS PLUGS WITH CUSTOMER REP
Event	6	Start Job	Start Job	4/13/2019	23:29:17	COM6	-1.00	8.40	0.00	16.20	START JOB
Event	7	Test Lines	Test Lines	4/13/2019	23:47:16	COM6	112.00	8.88	0.00	18.50	PRESSURE TESTED LINES TO 6500 PSI
Event	8	Pump Spacer 1	Pump Spacer 1	4/13/2019	23:51:11	COM6	23.00	8.75	0.00	18.50	PUMPED 120 BBLS OF FDP SPACER 12.5PPG 2.78 YIELD 16.7 GAL
Event	9	Drop Bottom Plug	Drop Bottom Plug	4/14/2019	00:31:11	USER	76.00	1.76	1.80	165.90	DROPPED BOTTOM PLUG WITH COMPANY MAN ON RIG FLOOR.
Event	10	Pump Cement	Pump Cement	4/14/2019	00:31:31	COM6	83.00	12.34	4.40	0.00	PUMPED LEAD CEMENT 625SKS 175BBLS 13.2PPG 1.57 YIELD 7.55 GAL
Event	11	Pump Tail Cement	Pump Tail Cement	4/14/2019	01:00:22	COM6	181.00	13.22	4.20	177.90	PUMPED TAIL CEMENT NEOCEM 1275 SKS 463BBLS 13.2PPG 2.04 YIELD 9.75 GAL
Event	12	Drop Top Plug	Drop Top Plug	4/14/2019	02:47:05	COM6	11.00	8.15	0.00	558.70	DROPPED TOP PLUG WITH COMPANY MAN ON RIG FLOOR.
Event	13	Pump Displacement	Pump Displacement	4/14/2019	02:47:20	COM6	9.00	8.14	0.00	0.00	PUMPED 357 BBLS OF DISPLACEMENT WITH MMCR IN THE FIRST 20 AND



											BIOCIDE THROUGHTOUT. CAUGHT CEMENT AT 10BBLs AWAY.
Event	14	Bump Plug	Bump Plug	4/14/2019	03:38:13	COM6	2827.00	8.13	0.00	368.50	BUMPED PLUG AT CALCULATED DISPLACEMENT SLOWED RATE TO 3BPM TO BUMP. FINAL CIRCULATING PRESSURE WAS 2140PSI AT 3BPM. BROUGHT TO 2890PSI AND HELD FOR 5 MIN
Event	15	Other	Other	4/14/2019	03:45:17	USER	3716.00	8.14	2.00	369.40	OPENED UP WET SHOE SUB AT 3790PSI AND PUMPED 4 BBL WET SHOE. CHECKED FLOATS AND GOT 2.5 BBLs BACK.
Event	16	End Job	End Job	4/14/2019	03:48:19	COM6	24.00	8.03	0.00	373.80	END JOB
Event	17	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig- Down	4/14/2019	04:00:00	USER					HAD PRE RIG DOWN SAFETY MEETING WITH HES CREW AND DISCUSSED TEAM CARRY, SLIP TRIPS AND FALLS, FOOTING PLACEMENT AND HAMMER SWINGS.
Event	18	Crew Leave Location	Crew Leave Location	4/14/2019	05:30:00	USER					HAD PRE CONVOY SAFETY MEETING WITH CREW AND DISCUSSED SAFE ROUTE HOME. CREW LEFT LOCATION.

## 2.0 Attachments

### 2.1 VERDAD RESOURCES LLC -Custom Results.png



## 3.0 Custom Graphs

### 3.1 Custom Graph

