

HALLIBURTON

iCem[®] Service

SRC ENERGY INC-EBUS

United States of America, COLORADO

For: Kent Pirddy

Troudt Production 8N-23B-M

Precision 562

Job Date: Tuesday, September 11, 2018

Sincerely,

Thomas Haas and Crew

Legal Notice

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.

Table of Contents

1.0 Cementing Job Summary 4

 1.1 Executive Summary4

2.0 Real-Time Job Summary 8

 2.1 Job Event Log8

3.0 Attachments..... 13

 3.1 SRC Energy Production Troudt 8N-23B-M-Custom Results.png13

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Troudt 8N-23B-M** cement **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 48 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 #: 359915		Ship To #: 3851311		Quote #:		Sales Order #: 0905125073				
Customer: SRC ENERGY INC-EBUS				Customer Rep: Kent Pirddy						
Well Name: TROUDT			Well #: 8N-23B-M		API/UWI #: 05-123-46239-00					
Field: WATTENBERG		City (SAP): LUCERNE		County/Parish: WELD		State: COLORADO				
Legal Description: NE NW-27-6N-66W-760FNL-1730FWL										
Contractor: PRECISION DRLG				Rig/Platform Name/Num: PRECISION 562						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB41307				Srv Supervisor: Thomas Haas						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST						
Job depth MD		14880ft		Job Depth TVD		6974				
Water Depth				Wk Ht Above Floor		6				
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		9.625	8.921	36	LTC	J-55	0	1810	0	1810
Casing		5.5	4.778	20	TXP-BTC	P110IC	0	14880	0	6974
Open Hole Section			8.5				1810	14900	1810	6974
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5					Top Plug	5.5	1	W.F.	
Float Shoe	5.5	1	W.F.	14880		Bottom Plug	5.5	1	W.F.	
Wet Shoe Sub	5.5	1	W.F.	14774		SSR plug set	5.5			
Insert Float	5.5					Plug Container	5.5	1	HES	
Stage Tool	5.5					Centralizers	5.5			
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	Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.86	24.1	6	1403	
0.50 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)								
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								
145.18 lbm/bbl		BARITE, BULK (100003681)								

36.09 gal/bbl		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
2	ElastiCem	ELASTICEM (TM) SYSTEM	1180	sack	13.2	1.57	7.54	8	8897
7.54 Gal		FRESH WATER							
0.15 %		FE-2 (100001615)							
0.27 %		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
3	NeoCem	NeoCem TM	308.8	bbl	13.2	2.04	9.77	8	8305
9.77 Gal		FRESH WATER							
0.08 %		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	MMCR Displacement	MMCR Displacement	20	bbl	8.34			8	
0.2220 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
5	Clay-web Displacement	Clay-web Displacement	238	bbl	8.33			8	
0.75 gal/bbl		CLA-WEB - TOTE (101985045)							
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	MMCR Displacement	MMCR Displacement	70	bbl	8.34			8	
0.20 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
Cement Left In Pipe		Amount	NONE		ReasonWet Shoe			Shoe Joint	

Mix Water:	pH 7	Mix Water Chloride:	<300 ppm	Mix Water Temperature:	74 °F
Cement Temperature:	N/A	Plug Displaced by:	8.33 lb/gal F.W.	Disp. Temperature:	74 °F
Plug Bumped?	Yes	Bump Pressure:	2300 psi	Floats Held?	Yes
Cement Returns:	48 BBL	Returns Density:	N/A	Returns Temperature:	N/A
Comment The plug bumped @ calculated displacement @ 2300 PSI. The sleeve opened @ 4970 PSI and pumped a 6 BBL wet shoe. The floats held and received 2 BBLS back to the truck. Total of 48 BBLS cement returned to surface					

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	9/11/2018	10:00:00	USER					CREW CALLED OUT AT 10:00 9/11/2018, REQUESTED ON LOCATION 16:00 9/11/2018. CREW PICKED UP CEMENT, CHEMICALS (20 GAL MUSOL A, 20 GAL DUAL SPACER B, 10 GAL D-AIR, 20 GAL CLAWEB, 20 GAL MICROMATRIX, 3LBS BE-3), 200 LBS OF SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 110897853/10867096, BULK 660: 10995045/11566182, PUMP ELITE 11877034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/11/2018	14:15:00	USER					DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	9/11/2018	14:30:00	USER					STARTED JOURNEY MANAGEMENT.

Event	4	Arrive At Loc	Arrive At Loc	9/11/2018	15:30:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 36# 9.625" @ 1810', CASING: 20# 5.5" HCP110 @ 14880', 106' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6974', 10 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/11/2018	15:40:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/11/2018	15:50:00	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	9/11/2018	16:45:00	USER					MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	9/11/2018	17:19:21	USER					BEGIN JOB DATA RECORDING.
Event	11	Test Lines	Test Lines	9/11/2018	17:22:19	RTD Import	50.87	8.28	0.00	3.04	PRESSURE TESTED IRON TO 6600 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 700 PSI, 5TH GEAR STALL OUT @ 1800 PSI.

Event	25	Pump Spacer 1	Pump Spacer 1*	9/11/2018	17:33:31	RTD Import	12.14	8.36	0.00	3.21	PUMP 40 BBLS OF TUNED SPACER @ 11.5 LB/GAL, 3.86 YIELD, 24.1 GAL/SKS, ADDED 20 GAL MUSOL A, 20 GAL DUAL SPACER B, 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	40	Drop Bottom Plug	Drop Bottom Plug	9/11/2018	17:40:28	RTD Import					PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	51	Pump Lead Cement	Pump Lead Cement*	9/11/2018	17:46:03	RTD Import	833.94	11.61	6.06	34.90	PUMP 1180 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.54 GAL/SK, 330 BBLS, CALCULATED TOL @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	103	Pump Tail Cement	Pump Tail Cement*	9/11/2018	18:31:38	RTD Import	408.87	13.11	8.05	0.07	PUMP 850 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 YIELD, 9.75 GAL/SK, 309 BBLS, CALCULATED TOT @ 7306', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	409	Shutdown	Shutdown	9/11/2018	19:22:27	RTD Import	4.58	13.68	0.00	330.24	SHUTDOWN TO CLEAN PUMPS/LINES AND TO DROP TOP PLUG.
Event	438	Drop Top Plug	Drop Top Plug	9/11/2018	19:33:11	RTD Import	-4.87	-0.13	0.00	354.55	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	439	Pump Displacement	Pump Displacement*	9/11/2018	19:33:15	RTD Import	-4.87	-0.13	0.00	354.55	BEGIN CALCULATED DISPLACEMENT OF 328 BBLS WITH FRESH WATER.

											FIRST 20 BBLs WITH 10 GAL MMCR, CLA-WEB, AND BE-3, REST OF DISPLACEMENT WITH 20 GAL CLA-WEB AND 3 LBS BE-3. LAST 70 BBLs WITH 10 GAL MMCR.
Event	449	Cement Returns to Surface	Cement Returns to Surface	9/11/2018	20:17:49	USER					CEMENT TO SURFACE 280 BBL INTO DISPLACEMENT, 48 BBL OF CEMENT TO SURFACE.
Event	456	Bump Plug	Bump Plug	9/11/2018	20:25:25	RTD Import					PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2300 PSI, HELD 5 MIN CASING TEST AT 2800 PSI.
Event	459	Other	Shift Wet Shoe Sleeve	9/11/2018	20:27:42	USER	2942.29	8.40	0.00	334.30	PRESSURE UP TO SHIFT WET SHOE SLEEVE, SLEEVE SHIFTED AT 4970 PSI.
Event	460	Other	Wet Shoe	9/11/2018	20:28:53	USER					PUMP A 6 BBL WET SHOE.
Event	461	Check Floats	Check Floats	9/11/2018	20:29:56	USER					RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, 2 BBL BACK.
Event	463	End Job	End Job	9/11/2018	20:32:11	USER	-2.98	8.33	0.00	342.84	END JOB DATA RECORDING.
Event	464	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/11/2018	20:45:00	USER					DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	465	Rig-Down Completed	Rig-Down Completed	9/11/2018	22:00:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	466	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/11/2018	22:15:00	USER					DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.

Event	467	Crew Leave Location	Crew Leave Location	9/11/2018	22:30:00	USER
-------	-----	---------------------	---------------------	-----------	----------	------

THANK YOU FOR USING
HALLIBURTON - THOMAS
HAAS AND CREW.

3.0 Attachments

3.1 SRC Energy Production Troudt 8N-23B-M-Custom Results.png

