

HALLIBURTON

iCem[®] Service

TRUE OIL LLC

For:

Date: Saturday, August 04, 2018

Case 1

Job Date: Wednesday, July 18, 2018

Sincerely,

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

Cementing Job SummaryError! Bookmark not defined.

 Executive SummaryError! Bookmark not defined.

Real-Time Job SummaryError! Bookmark not defined.

 Job Event Log.....Error! Bookmark not defined.

Attachments..... 7

 Case 1-Custom Results.pngError! Bookmark not defined.

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Citadel 5-64 15-16-1CHZ** 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 65 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

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	7/18/2018	06:00:00	USER					ON LOCATION CIRCULATING EQUIPMENT @ 10:00. CEMENT CREW @ 14:00
Event	2	Arrive at Location from Service Center	Arrive at Location from Service Center	7/18/2018	09:45:00	USER					47 MILES. Discussed numbers and job procedures with Customer. RIG IS RUNNING CASING. BROUGHT CEMENT HEAD AND MANIFOLD FOR RIG TO CIRCULATE THRU.
Event	3	Casing on Bottom	Casing on Bottom	7/18/2018	10:45:00	USER					CASING LANDED. RIG UP FLOOR FOR RIG TO CIRCULATE
Event	4	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	7/18/2018	13:45:00	USER					JSA to discuss the hazards of rig-up
Event	5	Rig-Up Equipment	Rig-Up Equipment	7/18/2018	13:55:00	USER					Rig-up all surface lines and equipmnet.
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/18/2018	15:18:00	USER	8.35	0.00	9.00	0.00	With all essential personnel, to discuss the hazards of pumping the job, and pump schedule.
Event	7	Start Job	Start Job	7/18/2018	15:37:57	COM4	8.25	0.00	9.00	9.20	
Event	8	Test Lines	Test Lines	7/18/2018	15:56:00	USER	8.19	0.00	5114.00	11.20	Load line with 2 bbls of water. Test lines @ 5130 psi
Event	9	Pump Spacer	Pump Spacer	7/18/2018	16:01:00	USER	12.04	4.00	255.00	4.90	BATCH/ WEIGH/PUMP 60 BBLS OF TUNED SPACER WITH SURFACTANS @ 12 PPG

Event	10	Check Weight	Check Weight	7/18/2018	16:12:51	COM4	13.26	5.00	140.00	3.30	
Event	11	Pump Cap Cement	Pump Cap Cement	7/18/2018	16:14:00	USER	13.46	5.00	160.00	9.00	BATCH/ WEIGHT PUMP 370 SKS (103.5 BBLS) OF ELASTICEM NO CBL @ 13.2 PPG
Event	12	Check Weight	Check Weight	7/18/2018	16:31:38	COM4	13.28	6.00	224.00	3.70	
Event	13	Pump Lead Cement	Pump Lead Cement	7/18/2018	16:32:00	USER	13.27	6.00	241.00	5.90	BATCH/ WEIGHT/ PUMP 695 SKS (194.3 BBLS) OF ELASTICEM WITH CBL @ 13.2 PPG.
Event	14	Pump Tail Cement	Pump Tail Cement	7/18/2018	17:04:00	USER	13.35	5.90	277.00	4.20	WEIGH/ PUMP 1450 SKS (526.8 BBLS) OF NEOCEM @ 13.2 PPG
Event	15	Check Weight	Check Weight	7/18/2018	17:04:16	COM4	13.33	5.90	282.00	5.80	
Event	16	Check Weight	Check Weight	7/18/2018	17:31:12	COM4	13.27	8.10	521.00	197.40	
Event	17	Shutdown	Shutdown	7/18/2018	18:19:00	USER	13.27	0.00	16.00	538.40	WASH/ PUMPS AND LINES
Event	18	Drop Top Plug	Drop Top Plug	7/18/2018	18:30:00	USER	8.12	0.00	15.00	562.90	LOAD AND DROP TOP PLUG
Event	19	Pump Displacement	Pump Displacement - Start	7/18/2018	18:32:00	USER	8.06	7.80	134.00	4.90	302.7 bbls fresh water. FIRST 40 BBLS WITH 10 GAL MMCR. REST OF DISPLACEMENT WITH CLA WEB AND BE 3. LAST 40 FRESH WATER
Event	20	Bump Plug	Bump Plug	7/18/2018	19:29:00	USER	8.23	0.00	2937.00	413.30	BUMP PLUG @ 3235 PSI. 500 psi over final circulating pressure.
Event	21	Check Floats	Check Floats	7/18/2018	19:34:00	USER	8.26	0.00	3273.00	413.60	Floats held. 4.5 bbls back
Event	22	End Job	End Job	7/18/2018	19:36:57	COM4	8.23	0.00	1.00	413.60	
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/18/2018	19:40:00	USER	8.21	0.00	1.00	413.60	JSA to discuss the hazards of rig-down

3.0 Attachments

3.1 Case 1-Custom Results.png



