

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: John Wade

Date: Tuesday, December 10, 2019

RWF 323-12

9 5/8" Surface Casing

Post Job Report

Job Date: Tuesday, December 10, 2019

Sincerely,

Steve Dickenson

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services for this cementing services 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.

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, Rock Springs

Job Times

	Date	Time	Time Zone
Called Out	12/9/19	2200	MST
On Location	12/10/19	0010	MST
Job Started	12/10/19	0515	MST
Job Complete	12/10/19	0610	MST
Depart Location	12/10/19	0730	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	33
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.6
4	Time circulated before job	HH:MM	01:00
5	Mud volume circulated	Bbls	600
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	150
9	Time from end mud circulation to start of job	HH:MM	00:08
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	77.5
12	Job displaced by	Rig/HES	HES
13	Annular flow before job	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	Ft	6
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time ?	Y/N	N

Lost Circulation Details

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1.3 Planned Pumping Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft ³ /sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
TEP Surface Mud	1	8.40	4.00			0.00		0.00
Fresh Water Spacer	2	8.33	8.00			20.00		2.50
VariCem GJ1 Lead Q3 2018 2500622/1	3	12.30	8.00	2.3787	13.772	52.96	125.00	6.62
VariCem GJ1 Tail Q3 2018 2500623/1	4	12.80	8.00	2.1124	11.779	56.44	150.00	7.05
Top Plug/Start Displacement								
Fresh Water Displacement	5-1	8.33	10.00			55.50		5.55
Fresh Water Displacement	5-2	8.33	2.00			20.00		10.00
Total:						204.90		31.72

*Pump schedule may include additional rows for displacement if "Automatic Rate Adjustment" was enabled and ECDs approached the fracture gradient.

1.4 Water Analysis Report

CEMENT MIX WATER REQUIREMENTS

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	6	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	101	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	63	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

2.0 Real-Time Job Summary

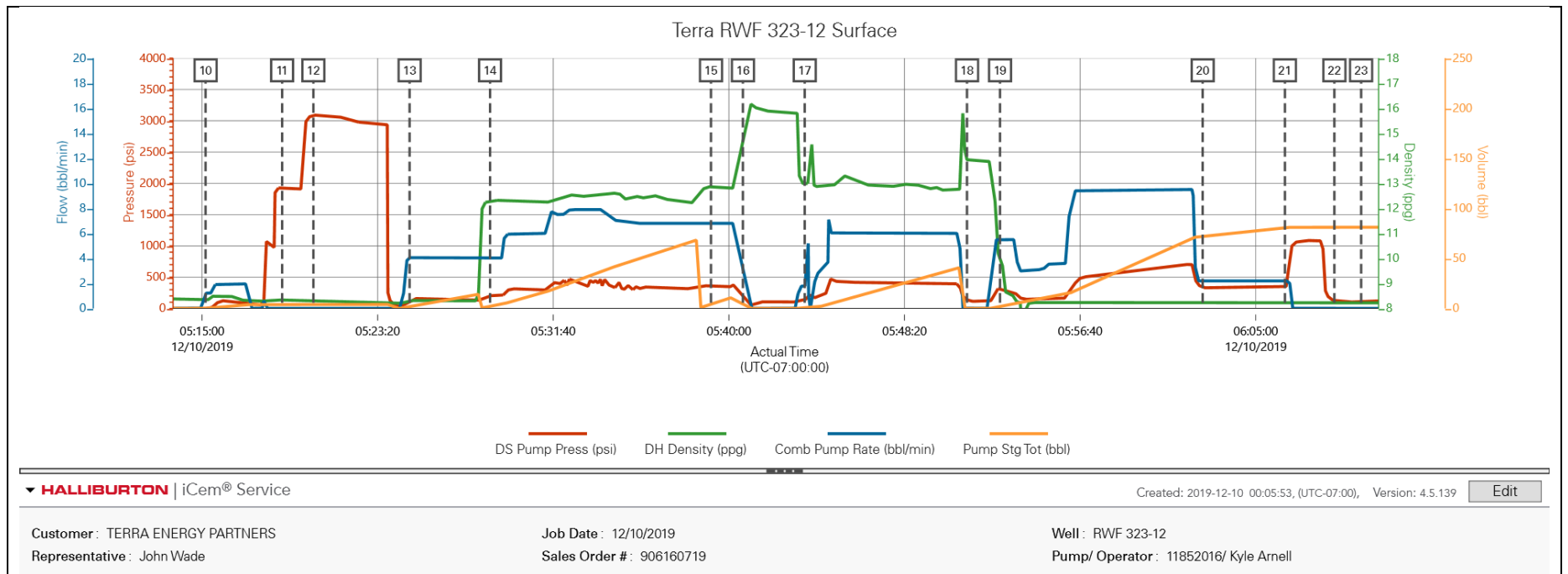
2.1 Job Event Log

Type	Seq. No.	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	12/9/2019	22:00:00	USER					Crew requested on location @ 02:30
Event	2	Pre-Convoy Safety Meeting	12/9/2019	23:50:00	USER					Have a JSA with crew on the hazards of driving to location
Event	3	Crew Leave Yard	12/10/2019	00:00:00	USER					
Event	4	Arrive At Loc	12/10/2019	00:10:00	USER					HD-1052, Casing-9.625 36#, J-55 @ 1045.36' , SJ-43.13' Hole 13.5", Mud 9.6#
Event	5	Pre-Rig Up Safety Meeting	12/10/2019	00:15:00	USER					Have a JSA with crew on spotting equipment and rigging up bulk, water, and iron on the ground.
Event	6	Rig-Up Equipment	12/10/2019	00:25:00	USER					
Event	7	Pre-Job Safety Meeting	12/10/2019	04:13:23	USER	118.00	-0.01	0.00	0.00	HES has a JSA with rig crew to go over the job and the hazards of rigging up the floor and pumping the job
Event	8	Check Weight	12/10/2019	04:57:23	USER	-4.00	8.38	0.00	0.00	Check scales on water 8,4 ppg
Event	9	Rig Info	12/10/2019	05:05:00	USER	-5.00	8.39	0.00	0.00	Tob-04:00, Rate- 10 Bpm, 150 Psi, 0 units of gas, and 0 loses
Event	10	Start Job	12/10/2019	05:15:10	USER	-2.00	8.34	1.20	0.20	Pump 5 Bbl of H2O ahead
Event	11	Pressure Test	12/10/2019	05:18:48	USER	1939.00	8.34	0.00	4.00	500 psi low pressure kick out test
Event	12	Pressure Test	12/10/2019	05:20:17	USER	3088.00	8.32	0.00	4.00	Pressure test HES iron to 3088 psi, No leaks
Event	13	Pump Spacer	12/10/2019	05:24:51	USER	129.00	8.32	4.00	1.00	Pump 15 Bbl of H2O behind @ 4 Bpm

Event	14	Pump Lead Cement	12/10/2019	05:28:40	USER	204.00	12.22	4.00	2.10	Pump 53 Bbl(125 sks) of Varicem RS1 Lead cement @ 12.3 ppg, 2.38 ft3/sk, 13.74 gal/sk @ 8 Bpm
Event	15	Pump Tail Cement	12/10/2019	05:39:09	USER	348.00	12.86	6.80	4.30	Pump 56.4 Bbl(150 sks) of VariCem RS1 Tail cement @ 12.8 ppg, 2.11 ft3/sk, 11.74 gal/sk @ 8 Bpm
Event	16	Shutdown	12/10/2019	05:40:40	USER					Shutdown due to the entire pump truck just shut off
Event	17	Resume Pumping	12/10/2019	05:43:36	USER	137.00	13.01	1.80	0.60	Got the pump truck fired back up and all lined out and resume pumping
Event	18	Shutdown	12/10/2019	05:51:18	USER	134.00	13.91	0.00	0.00	Shutdown/ Drop top plug witnessed by Co-Man
Event	19	Pump Displacement	12/10/2019	05:52:52	USER	312.00	9.83	5.50	2.20	Pump 67.5 Bbl of H2O displacement @ 10 Bpm
Event	20	Slow Rate	12/10/2019	06:02:29	USER	337.00	8.25	2.20	72.10	Slow rate to 2 Bpm for the last 10 Bbl
Event	21	Bump Plug	12/10/2019	06:06:23	USER	348.00	8.25	2.20	80.60	Bump plug/ Final circ psi was 348, brought it up to 1088 psi for 2 min
Event	22	Check Floats	12/10/2019	06:08:44	USER	121.00	8.23	0.00	81.10	Floats held/ 1 Bbl back to the truck
Event	23	End Job	12/10/2019	06:10:00	USER	104.00	8.23	0.00	81.10	Full returns throughout entire job with 20 Bbl of H2O spacer and 20 Bbl of lead cement to surface. Est top of tail is at 435'
Event	24	Pre-Rig Down Safety Meeting	12/10/2019	06:15:26	USER	172.00	8.26	2.90	98.90	JSA with crew on rigging down the equipment and lines
Event	25	Rig Down Equipment	12/10/2019	06:20:09	USER	102.00	-0.09	0.00	107.50	
Event	26	Depart Location Safety Meeting	12/10/2019	07:20:00	USER					JSA with the crew on driving back to the yard
Event	27	Crew Leave Location	12/10/2019	07:30:01	USER					Thank you for choosing Halliburton, Steve Dickenson

3.0 Attachments

3.1 Terra RWF 323-12 Surface-Custom Results.png



3.2 Terra RWF 323-12 Surface no-Custom Results (1).png

