

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, COLORADO

For: H&P 318

Date: Wednesday, January 29, 2020

RWF 312-12 Surface

GARFIELD, CO

API # 05-045-24275

Job Date: Wednesday, January 29, 2020

Sincerely,

Rock Springs Engineering

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	1/28/2020	14:30	MST
On Location	1/28/2020	20:30	MST
Job Started	1/29/2020	00:35	MST
Job Complete	1/29/2020	01:30	MST
Depart Location	1/29/2020	02:30	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	24
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.5
4	Time circulated before job	HH:MM	00:45
5	Mud volume circulated	Bbls	180
6	Rate at which well was circulated	Bpm	4
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	85
9	Time from end mud circulation to start of job	HH:MM	00:10
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	77.4
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	7
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	3	12.30	8.00	2.3787	13.772	52.96	125.00	6.62
VariCem GJ1 Tail	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

1.4 Water Analysis Report

CEMENT MIX WATER REQUIREMENTS

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	73	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

2.0 Real-Time Job Summary

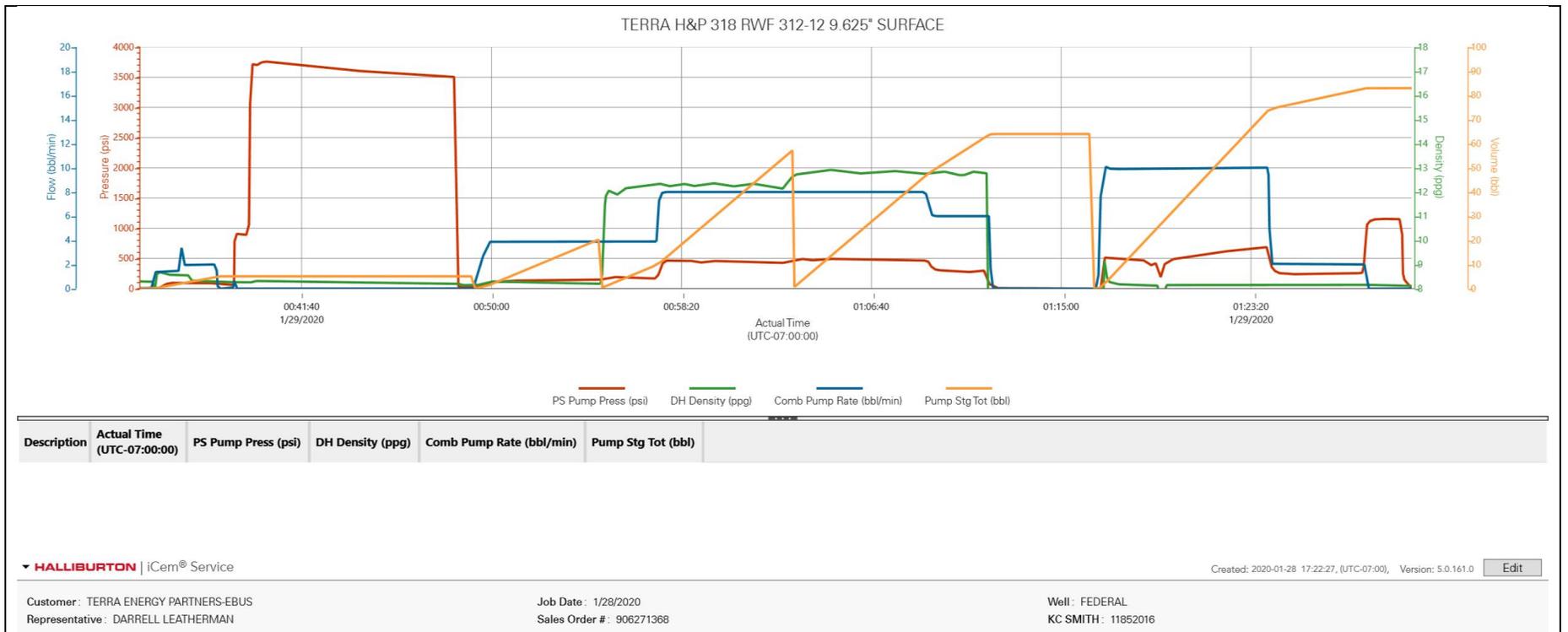
2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	1/28/2020	12:30:00	USER					CALLED OUT FOR TERRA SURFACE ON LOCATION AT 20:30
Event	2	Pre-Convoy Safety Meeting	1/28/2020	18:50:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING AND THE DIRECTIONS TO LOCATION
Event	3	Crew Leave Yard	1/28/2020	19:00:00	USER					
Event	4	Arrive At Loc	1/28/2020	20:30:00	USER					STILL RUNNING CASING. TD= 1052, TP 9.625", 1045' 36#. HOLE= 13.5", CENT= 9, MUD= 9.5#, SHOE= 44.5'
Event	5	Assessment Of Location Safety Meeting	1/28/2020	20:40:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF THE LOCATION.
Event	6	Pre-Rig Up Safety Meeting	1/28/2020	20:50:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING UP THE EQUIPMENT.
Event	7	Rig-Up Equipment	1/28/2020	21:00:00	USER					
Event	8	Pre-Job Safety Meeting	1/29/2020	00:01:00	USER					HALLIBURTON CEMENT CREW, RIG CREW AND COMPANY REP. DISCUSSED THE HAZARDS OF THE JOB AND THE JOB PROCEEDURE.
Event	9	Pump Water	1/29/2020	00:35:00	USER	-2.00	8.31	0.00	0.00	PUMP 5 BBLs OF WATER TO FILL PUMPS AND LINES.
Event	10	Shutdown	1/29/2020	00:38:00	USER	79.00	8.31	0.00	5.10	
Event	11	Pressure Test	1/29/2020	00:39:45	USER	3715.00	8.32	0.00	5.10	PRESSURE TESTED HES LINES: 500 PSI LOW KICK OUT, 3500 PSI FOR HIGH PRESSURE.
Event	12	Pump Spacer 1	1/29/2020	00:49:20	COM4	20.00	8.14	0.90	0.00	PUMPED 20 BBLs OF H2O AT 4 BPM.
Event	13	Pump Lead Cement	1/29/2020	00:55:06	COM4	177.00	12.05	3.90	1.40	PUMPED 125 SACKS OF VARICEM LEAD CEMENT AT 12.3 PPG 2.38 YLD., 13.74 GAL/ SACK AT 8 BPM
Event	14	Check Weight	1/29/2020	00:56:00	USER	180.00	12.18	3.90	4.90	
Event	15	Pump Tail Cement	1/29/2020	01:03:12	COM4	451.00	12.64	8.00	57.20	PUMPED 150 SACKS OF VARICEM TAIL CEMENT AT 12.8 PPG 2.11 YLD., 11.74 GAL/ SACK AT 8 BPM.

Event	16	Check Weight	1/29/2020	01:04:00	USER	472.00	12.80	8.00	6.40	
Event	17	Shutdown	1/29/2020	01:12:00	USER	32.00	-0.13	0.00	64.00	
Event	18	Drop Top Plug	1/29/2020	01:13:00	USER	-3.00	-0.22	0.00	64.00	COMPANY REP. WITNESSED THE PLUG DROP
Event	19	Pump Displacement	1/29/2020	01:16:21	COM4	-1.00	-0.22	0.00	0.00	PUMP 77.4 BBLS OF H2O DISPLACEMENT AT 10 BPM
Event	20	Slow Rate	1/29/2020	01:24:15	USER	348.00	8.13	2.00	74.50	PUMPED 20.4 BBLS OF H2O AT 2 BPM. FOR A TOTAL OF 77.4 BBLS OF DISPLACEMENT.
Event	21	BUMP PLUG	1/29/2020	01:28:08	USER	256.00	8.13	2.00	82.50	BUMP PLUG AT 256 PSI WENT 500 PSI OVER FINAL CIRCULATING PSI.
Event	22	Check Floats	1/29/2020	01:29:52	USER	1152.00	8.14	0.00	83.00	FLOATS HELD WITH 1 BBLS BACK TO HALLIBURTON PUMP.
Event	23	End Job	1/29/2020	01:44:16	COM4					FULL RETURNS THROUGHOUT JOB GOT 17 BBLS OF LEAD CEMENT AND 20 BBLS OF SPACER TO SURFACE.
Event	24	Pre-Rig Down Safety Meeting	1/29/2020	01:45:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING DOWN THE EQUIPMENT
Event	25	Rig-Down Equipment	1/29/2020	01:50:00	USER					
Event	26	Pre-Convoy Safety Meeting	1/29/2020	02:20:00	USER					HALLIBURTON CEMENT CREW DISCUSSES THE HAZARDS OF DRIVING.
Event	27	Crew Leave Location	1/29/2020	02:30:00	USER					
Event	28	Job Complete	1/29/2020	02:30:01	USER					NO ACCIDENTS, NO INCIDENTS. THANKS FROM THE ROCK SPRINGS HALLIBURTON CEMENT CREW.

3.0 Attachments

3.1 CHART WITHOUT EVENTS.png



3.2 CHART WITH EVENTS.png

