

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

Rock Springs District, COLORADO

### **For: H&P 318**

Date: Tuesday, February 04, 2020

### **FEDERAL RWF 32-12 Surface**

GARFIELD, CO

API# 05-045-24282

Job Date: Tuesday, February 04, 2020

Sincerely,

**Rock Springs Engineering**

## Legal Notice

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### Disclaimer:

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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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	2/3/2020	15:00	MST
On Location	2/3/2020	21:30	MST
Job Started	2/3/2020	23:48	MST
Job Complete	2/4/2020	00:45	MST
Depart Location	2/4/2020	01:30	MST

## 1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	20
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
3	Actual mud density	lb/gal	9.4
4	Time circulated before job	HH:MM	00:30
5	Mud volume circulated	Bbls	300
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	94
9	Time from end mud circulation to start of job	HH:MM	00:20
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	77.3
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

## 1.3 Planned Pumping Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft <sup>3</sup> /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

1.4 Water Analysis Report

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**CEMENT MIX WATER REQUIREMENTS**

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	8	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	70	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

## 2.0 Real-Time Job Summary

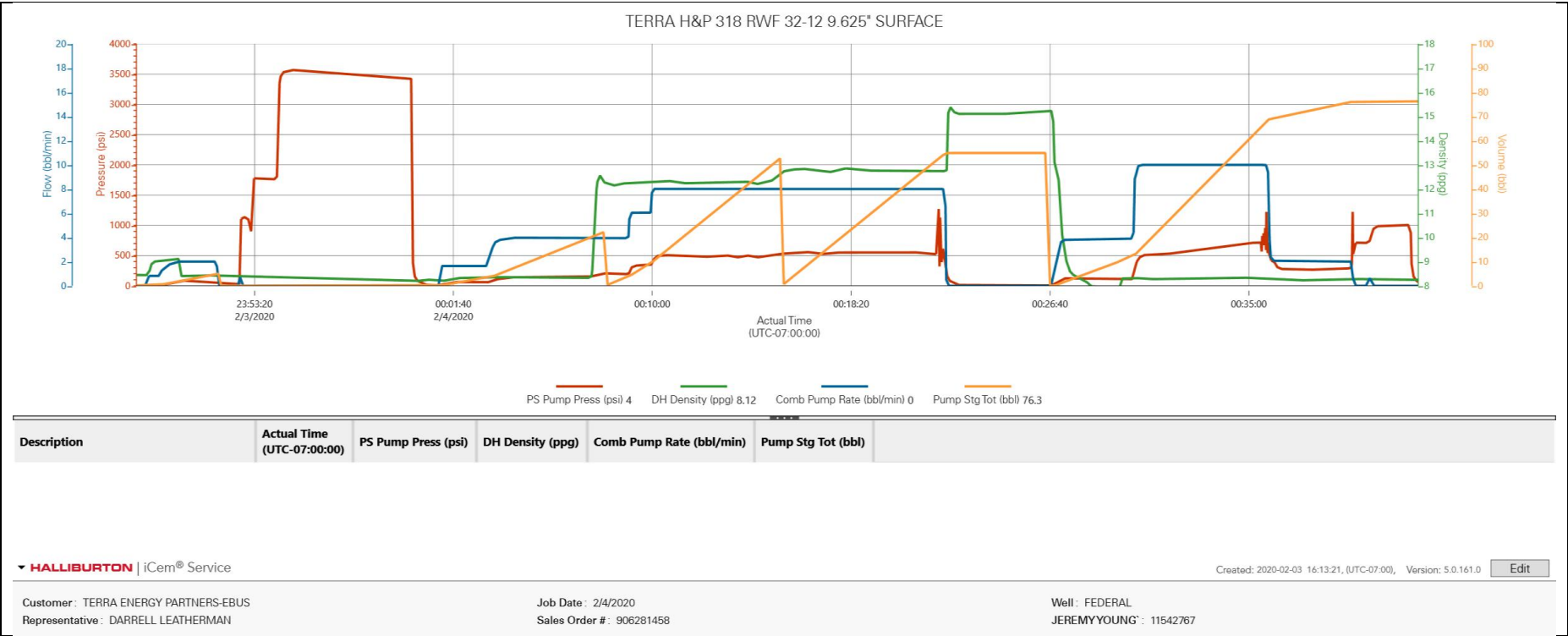
## 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	3/20/2000	15:00:00	USER					CALLED OUT FOR TERRA SURFACE ON LOCATION AT 21:30
Event	2	Pre-Convoy Safety Meeting	2/3/2020	20:00:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING AND THE DIRECTIONS TO LOCATION
Event	3	Crew Leave Yard	2/3/2020	21:00:00	USER					
Event	4	Arrive At Loc	2/3/2020	21:30:00	USER					STILL RUNNING CASING. TD= 1052, TP 9.625", 1045' 36#. HOLE= 13.5", CENT= 9, MUD= 9.4#, SHOE= 45'
Event	5	Assessment Of Location Safety Meeting	2/3/2020	21:40:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF THE LOCATION.
Event	6	Pre-Rig Up Safety Meeting	2/3/2020	21:50:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING UP THE EQUIPMENT.
Event	7	Rig-Up Equipment	2/3/2020	22:00:00	USER					
Event	8	Pre-Job Safety Meeting	2/3/2020	22:20:00	USER					HALLIBURTON CEMENT CREW, RIG CREW AND COMPANY REP. DISCUSSED THE HAZARDS OF THE JOB AND THE JOB PROCEEDURE.
Event	9	Pump Water	2/3/2020	23:48:00	USER	1.00	8.45	0.00	0.00	PUMP 5 BBLS OF WATER TO FILL PUMPS AND LINES.
Event	10	Start Job	2/3/2020	23:48:40	COM4	0.00	8.44	0.00	0.00	
Event	11	Shutdown	2/3/2020	23:51:00	USER	70.00	8.41	2.00	3.50	
Event	12	Pressure Test	2/3/2020	23:54:33	USER	3537.00	8.35	0.00	0.10	PRESSURE TESTED HES LINES: 500 PSI LOW KICK OUT, 3500 PSI FOR HIGH PRESSURE.
Event	13	Pump Spacer 1	2/4/2020	00:01:10	USER	15.00	8.21	1.70	0.20	PUMPED 20 BBLS OF H2O AT 4 BPM.
Event	14	Check Weight	2/4/2020	00:05:51	COM4	146.00	8.34	3.90	13.80	
Event	15	Pump Lead Cement	2/4/2020	00:08:00	USER	207.00	12.27	3.90	22.30	PUMPED 125 SACKS OF VARICEM LEAD CEMENT AT 12.3 PPG 2.38 YLD., 13.74 GAL/ SACK AT 8 BPM

Event	16	Check Weight	2/4/2020	00:09:00	USER	196.00	12.20	4.10	3.90	
Event	17	Pump Tail Cement	2/4/2020	00:15:29	USER	523.00	12.72	8.00	0.50	PUMPED 150 SACKS OF VARICEM TAIL CEMENT AT 12.8 PPG 2.11 YLD., 11.74 GAL/ SACK AT 8 BPM. ESTIMATED TOP OF TAIL AT 436.7'
Event	18	Check Weight	2/4/2020	00:16:00	USER	529.00	12.82	8.00	4.70	
Event	19	Check Weight	2/4/2020	00:19:35	COM4	534.00	12.79	8.00	33.30	
Event	20	Shutdown	2/4/2020	00:22:20	USER	198.00	12.78	0.00	54.90	
Event	21	Drop Top Plug	2/4/2020	00:24:00	USER	6.00	15.11	0.00	54.90	COMPANY REP. WITNESSED THE PLUG DROP
Event	22	Pump Displacement	2/4/2020	00:26:48	USER	17.00	14.79	1.70	0.10	PUMP 77.3 BBLS OF H2O DISPLACEMENT AT 10 BPM
Event	23	Slow Rate	2/4/2020	00:36:02	USER	429.00	8.24	2.10	69.50	PUMPED 10 BBLS OF H2O AT 2 BPM. FOR A TOTAL OF 77.3 BBLS OF DISPLACEMENT.
Event	24	BUMP PLUG	2/4/2020	00:39:09	USER	289.00	8.24	2.00	75.70	BUMP PLUG AT 289 PSI WENT 500 PSI OVER FINAL CIRCULATING PRESSURE
Event	25	Check Floats	2/4/2020	00:41:36	USER	1008.00	8.26	0.00	76.30	FLOATS HELD WITH .5 BBLS BACK TO HALLIBURTON PUMP.
Event	26	End Job	2/4/2020	00:44:00	USER	6.00	8.23	0.00	76.30	FULL RETURNS THROUGHOUT JOB GOT 17 BBLS OF CEMENT TO SURFACE.
Event	27	Pre-Rig Down Safety Meeting	2/4/2020	00:45:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING DOWN THE EQUIPMENT
Event	28	Rig-Down Equipment	2/4/2020	00:50:00	USER					
Event	29	Pre-Convoy Safety Meeting	2/4/2020	01:25:00	USER					HALLIBURTON CEMENT CREW DISCUSSES THE HAZARDS OF DRIVING.
Event	30	Crew Leave Location	2/4/2020	01:30:00	USER					
Event	31	Job Complete	2/4/2020	01:30:01	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

