

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

Rock Springs District, COLORADO

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

Date: Tuesday, January 07, 2020

### **FEDERAL RWF 332-11 Surface**

API # 05-045-24272

Job Date: Tuesday, January 07, 2020

Sincerely,

**Rock Springs Engineering**

## Legal Notice

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### Disclaimer:

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Table of Contents

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1.0    Cementing Job Summary ..... 4

    1.1    Executive Summary .....4

    1.2    Job Overview .....4

    1.3    Planned Pumping Schedule .....5

    1.4    Water Analysis Report .....6

2.0    Real-Time Job Summary ..... 7

    2.1    Job Event Log .....7

3.0    Attachments..... 9

    3.1    CHART WITHOUT EVENTS.png .....9

    3.2    CHART WITH EVENTS.png .....10

## 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	01/06/2020	13:00	MST
On Location	01/06/2020	19:00	MST
Job Started	01/06/2020	23:00	MST
Job Complete	01/07/2020	00:00	MST
Depart Location	01/07/2020	01:00	MST

### 1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	25
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	00:45
5	Mud volume circulated	Bbls	400
6	Rate at which well was circulated	Bpm	10.7
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	148
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	6
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	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	75	°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

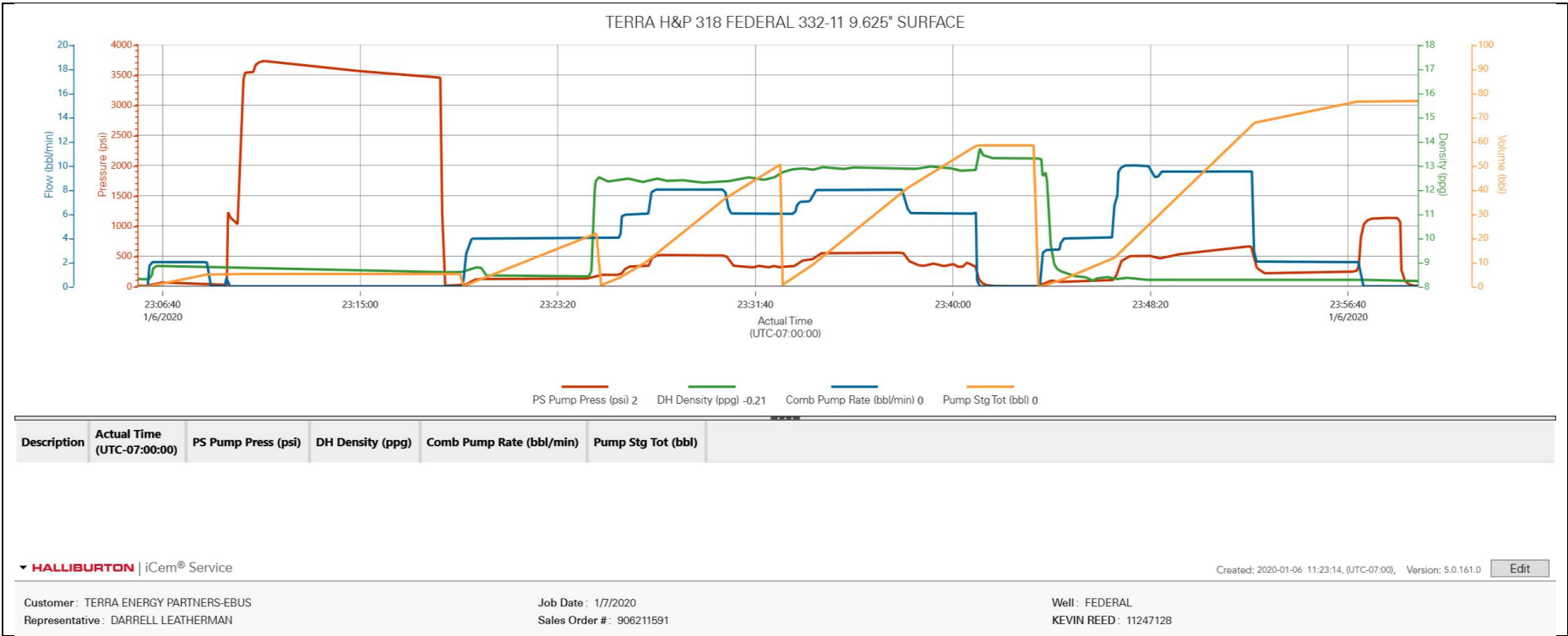
Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	1/6/2020	13:00:00	USER					CALLED OUT FOR TERRA SURFACE ON LOCATION AT 19:00
Event	2	Pre-Convoy Safety Meeting	1/6/2020	17:30:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF DRIVING AND THE DIRECTIONS TO LOCATION
Event	3	Crew Leave Yard	1/6/2020	18:00:00	USER					
Event	4	Arrive At Loc	1/6/2020	19:00:00	USER					STILL RUNNING CASING. TD= 1052, TP 9.625", 1046' 36#. HOLE= 13.5", CENT= 9, MUD= 9.6#, SHOE= 44.70'
Event	5	Assessment Of Location Safety Meeting	1/6/2020	19:10:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF THE LOCATION.
Event	6	Pre-Rig Up Safety Meeting	1/6/2020	19:20:00	USER					HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING UP THE EQUIPMENT.
Event	7	Rig-Up Equipment	1/6/2020	19:30:00	USER					
Event	8	Pre-Job Safety Meeting	1/6/2020	22:20:00	USER					HALLIBURTON CEMENT CREW, RIG CREW AND COMPANY REP. DISCUSSED THE HAZARDS OF THE JOB AND THE JOB PROCEEDURE.
Event	9	Start Job	1/6/2020	23:05:00	USER					
Event	10	Pump Water	1/6/2020	23:06:00	USER	11.00	8.30	0.00	0.00	PUMP 5 BBLS OF WATER TO FILL PUMPS AND LINES.
Event	11	Shutdown	1/6/2020	23:08:32	USER	52.00	8.84	2.00	4.90	
Event	12	Pressure Test	1/6/2020	23:10:19	USER	3529.00	8.79	0.00	5.10	PRESSURE TESTED HES LINES: 500 PSI LOW KICK OUT, 3500 PSI FOR HIGH PRESSURE.
Event	13	Pump H2O Spacer	1/6/2020	23:19:38	USER	69.00	8.73	3.70	0.80	PUMP 20 BBLS OF H2O SPACER AT 8.33 PPG., AT 4 BPM
Event	14	Pump Lead Cement	1/6/2020	23:24:59	USER	161.00	12.50	4.00	22.00	PUMP 125 SACKS OF VARICEM LEAD CEMENT AT 12.3 PPG., 2.38 YLD., 13.74 GAL/ SACK 8 BPM.
Event	15	Check Weight	1/6/2020	23:25:29	USER	194.00	12.34	4.00	1.70	

Event	16	Pump Tail Cement	1/6/2020	23:32:42	USER	313.00	12.66	6.00	50.30	PUMP 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 : 438.6'
Event	17	Check Weight	1/6/2020	23:33:00	USER	343.00	12.78	6.00	1.70	
Event	18	Shutdown	1/6/2020	23:40:52	USER	351.00	12.81	6.00	57.50	
Event	19	Drop Top Plug	1/6/2020	23:43:00	USER	2.00	13.27	0.00	58.30	COMPANY REP. WITNESSED THE PLUG DROP
Event	20	Pump Displacement	1/6/2020	23:43:53	USER	58.00	12.75	3.00	0.50	PUMPED 77.4 BBLS OF H2O DISPLACEMENT AT 10 BPM
Event	21	Slow Rate	1/6/2020	23:52:50	USER	290.00	8.25	2.00	67.90	PUMPED 10.4 BBLS OF H2O AT 4 BPM. FOR A TOTAL OF 77.4 BBLS OF DISPLACEMENT.
Event	22	BUMP PLUG	1/6/2020	23:57:00	USER	262.00	8.24	2.00	76.30	BUMP PLUG AT 262 PSI WENT 500 PSI OVER FINAL CIRCULATING PRESSURE
Event	23	Check Floats	1/6/2020	23:59:00	USER	129.00	8.22	0.00	76.70	FLOATS HELD WITH .5 BBLS BACK TO HALLIBURTON PUMP.
Event	24	Pre-Rig Down Safety Meeting	1/7/2020	00:00:01	USER	3.00	8.21	0.00	76.70	HALLIBURTON CEMENT CREW DISCUSSED THE HAZARDS OF RIGGING DOWN THE EQUIPMENT
Event	25	End Job	1/7/2020	00:01:00	USER	2.00	8.20	0.00	76.70	FULL RETURNS THROUGHOUT JOB GOT 17 BBLS OF CEMENT AND 20 BBLS OF SPACER TO SURFACE.
Event	26	Rig-Down Equipment	1/7/2020	00:10:00	USER					
Event	27	Pre-Convoy Safety Meeting	1/7/2020	00:55:00	USER					HALLIBURTON CEMENT CREW DISCUSSES THE HAZARDS OF DRIVING.
Event	28	Crew Leave Location	1/7/2020	01:00:00	USER					
Event	29	Job Complete	1/7/2020	01:00:01	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

