

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

Rock Springs District, CO

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

Date: Wednesday, January 22, 2020

### **RWF 324-1 Surface**

API# 05-045-24283

Job Date: Wednesday, January 22, 2020

Sincerely,

**BARTLEY OLSEN**

## 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	1/22/20	06:00	MST
On Location	1/22/20	12:00	MST
Job Started	1/22/20	14:01	MST
Job Completed	1/22/20	14:46	MST
Departed Location	1/22/20	16:00	MST

## 1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	38
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9
4	Time circulated before job	HH:MM	0:50
5	Mud volume circulated	Bbls	400
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	540
9	Time from end mud circulation to start of job	HH:MM	0:10
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	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
<b>Total:</b>						<b>204.90</b>		<b>31.72</b>

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		°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

## 2.0 Real-Time Job Summary

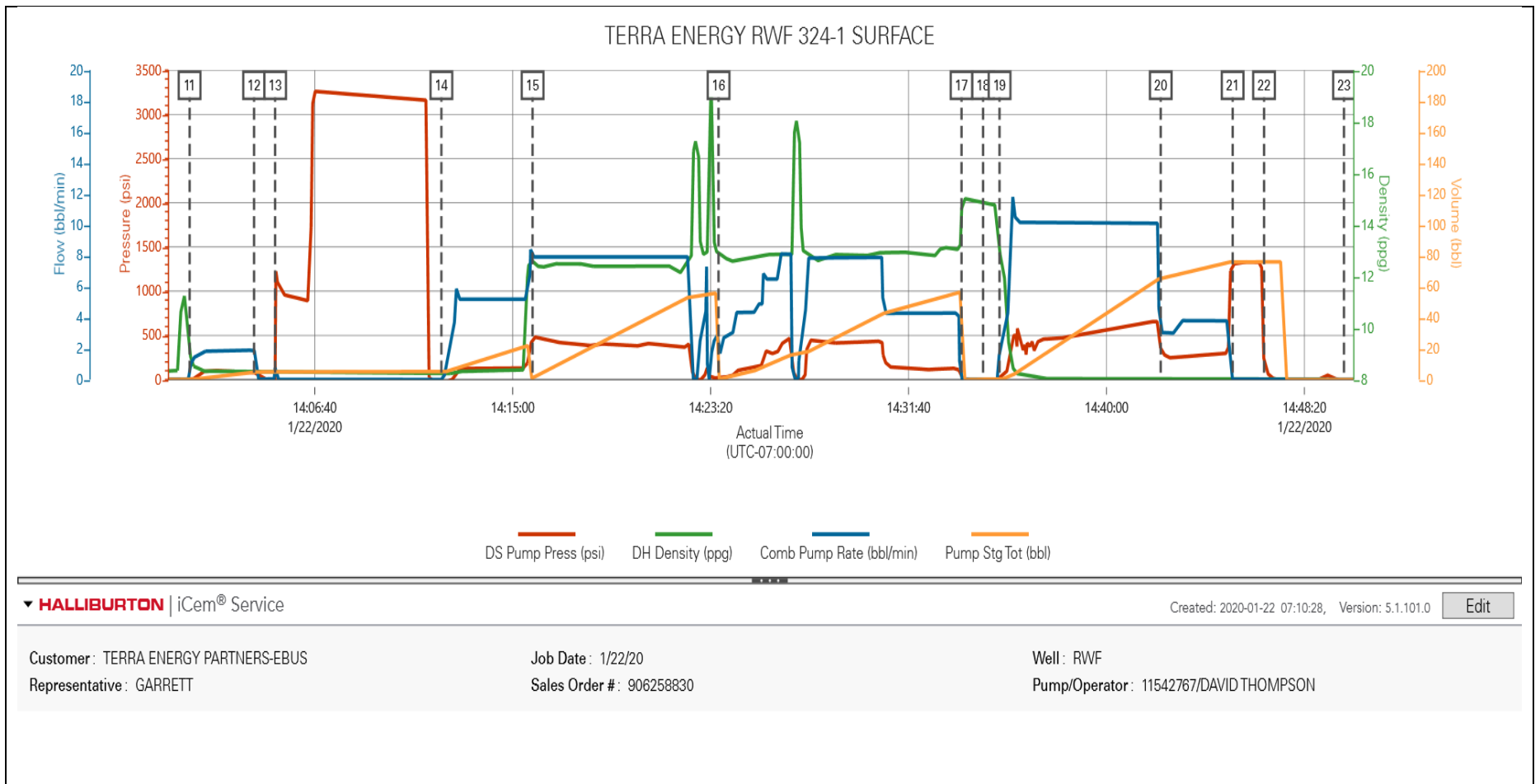
## 2.1 Job Event Log

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	1/22/2020	06:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	1/22/2020	06:10:00	USER					DISCUSS HAZARDS OF TRAVELING TO LOCATION
Event	3	Crew Leave Yard	1/22/2020	06:20:00	USER					
Event	4	Arrive At Loc	1/22/2020	09:00:00	USER					
Event	5	Assessment Of Location Safety Meeting	1/22/2020	09:10:00	USER					DISCUSS HAZARDS OF SPOTTING EQUIPMENT
Event	6	Other	1/22/2020	09:20:00	USER					SPOT HES EQUIPMENT
Event	7	Pre-Rig Up Safety Meeting	1/22/2020	09:30:00	USER					DISCUSS HAZARDS OF RIGGING-UP HES EQUIPMENT AND IRON
Event	8	Rig-Up Equipment	1/22/2020	09:45:00	USER					
Event	9	Rig-Up Completed	1/22/2020	11:00:00	USER					WAIT ON CUSTOMER TO RUN 1044.11' OF 9.625", 36LB/FT, J-55, SJ 43', OH 13.5" TO 1050', MW 9LB/GAL
Event	10	Pre-Job Safety Meeting	1/22/2020	13:30:00	USER					DISCUSS HAZARDS/JOB PROCEDURE WITH THE CUSTOMER AND RIGHANDS
Event	11	Pump Water	1/22/2020	14:01:24	USER	-1.00	9.43	0.30	0.00	FILL LINES WITH 5BBLs OF H2O
Event	12	Shutdown	1/22/2020	14:04:07	USER	82.00	8.34	1.90	4.90	LINE OUT VALVES TO PRESSURE TEST HES IRON
Event	13	Pressure Test	1/22/2020	14:05:00	USER	-3.00	8.31	0.80	5.10	500PSI KICKOUT TEST/3000PSI IRON TEST
Event	14	Pump Water	1/22/2020	14:12:00	USER	-30.00	8.24	0.00	5.10	PUMP 15BBLs OF H2O SPACER AT 5BBLs/MIN
Event	15	Pump Lead Cement	1/22/2020	14:15:50	USER	460.00	12.63	8.00	1.10	MIX AND PUMP 125SKS VARICEM RS1 AT 12.3LB/GAL, 2.38YLD, 13.74GAL/SK AT 8BBLs/MIN

Event	16	Pump Tail Cement	1/22/2020	14:23:40	USER	36.00	12.87	3.00	0.30	MIX AND PUMP 150SKS VARICEM RS1 AT 12.8LB/GAL, 2.11YLD, 11.74GAL/SK AT 8BBL/MIN
Event	17	Shutdown	1/22/2020	14:33:54	USER	38.00	14.51	0.00	56.50	
Event	18	Drop Top Plug	1/22/2020	14:34:48	USER	-14.00	14.87	0.00	0.00	DROPPED HES TOP PLUG WITNESSED BY THE CUSTOMER
Event	19	Pump Displacement	1/22/2020	14:35:30	USER	12.00	13.37	1.70	0.10	DISPLACE BBLs OF H2O AT 10BBL/MIN
Event	20	Slow Rate	1/22/2020	14:42:17	USER	351.00	8.05	3.40	65.50	SLOW RATE AT BBLs OF DISPLACEMENT TO 2BBL/MIN
Event	21	Bump Plug	1/22/2020	14:45:19	USER	1302.00	8.06	0.00	76.10	FINAL CIRCULATING PRESSURE 280PSI BROUGHT 500PSI OVER
Event	22	Check Floats	1/22/2020	14:46:38	USER	218.00	8.05	0.00	76.10	FLOATS HELD GOT .5BBL BACK TO THE PUMP
Event	23	Pre-Rig Down Safety Meeting	1/22/2020	14:50:00	USER					DISCUSS HAZARDS OF RIGGING DOWN HES EQUIPMENT
Event	24	Rig-Down Equipment	1/22/2020	15:00:00	USER					
Event	25	Rig-Down Completed	1/22/2020	15:40:00	USER					
Event	26	Pre-Convoy Safety Meeting	1/22/2020	15:50:00	USER					DISCUSS HAZARDS OF TRAVELING BACK TO THE YARD
Event	27	Crew Leave Location	1/22/2020	16:00:00	USER					NO INJURIES OR SPILLS WHILE ON LOCATION, GOT 20BBLs OF CEMENT TO SURFACE THANK YOU FOR USING HALLIBURTON CEMENT.

## 3.0 Attachments

### 3.1 TERRA ENERGY 324-1-CHART WITH EVENTS.png



## 3.2 TERRA ENERGY 324-1-CHART NO EVENTS.png

