

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS-EBUS

Rock Springs District, CO

For: H&P 318

Date: Friday, January 17, 2020

Federal RWF 432-11 Surface

Garfield, Rulison

API# 05-045-13868

Job Date: Friday, January 17, 2020

Sincerely,

Rock Springs Engineering

Legal Notice

Disclaimer:

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Table of Contents

1.0 Cementing Job Summary 4

 1.1 Executive Summary4

 1.2 Job Overview5

 1.3 Planned Pumping Schedule5

 1.4 Water Analysis Report6

2.0 Real-Time Job Summary 7

 2.1 Job Event Log7

3.0 Attachments..... 10

 3.1 TEP Federal RWF 432-11- With Events.png.....10

 3.2 TEP Federal RWF 432-11- Without Events.png11

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	1/17/2020	0800	MST
On Location	1/17/2020	1100	MST
Job Started	1/17/2020	1400	MST
Job Completed	1/17/2020	1440	MST
Departed Location	1/17/2020	1600	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	35
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.6
4	Time circulated before job	HH:MM	00:36
5	Mud volume circulated	Bbls	460
6	Rate at which well was circulated	Bpm	13
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	160
9	Time from end mud circulation to start of job	HH:MM	00:15
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	10
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 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

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	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

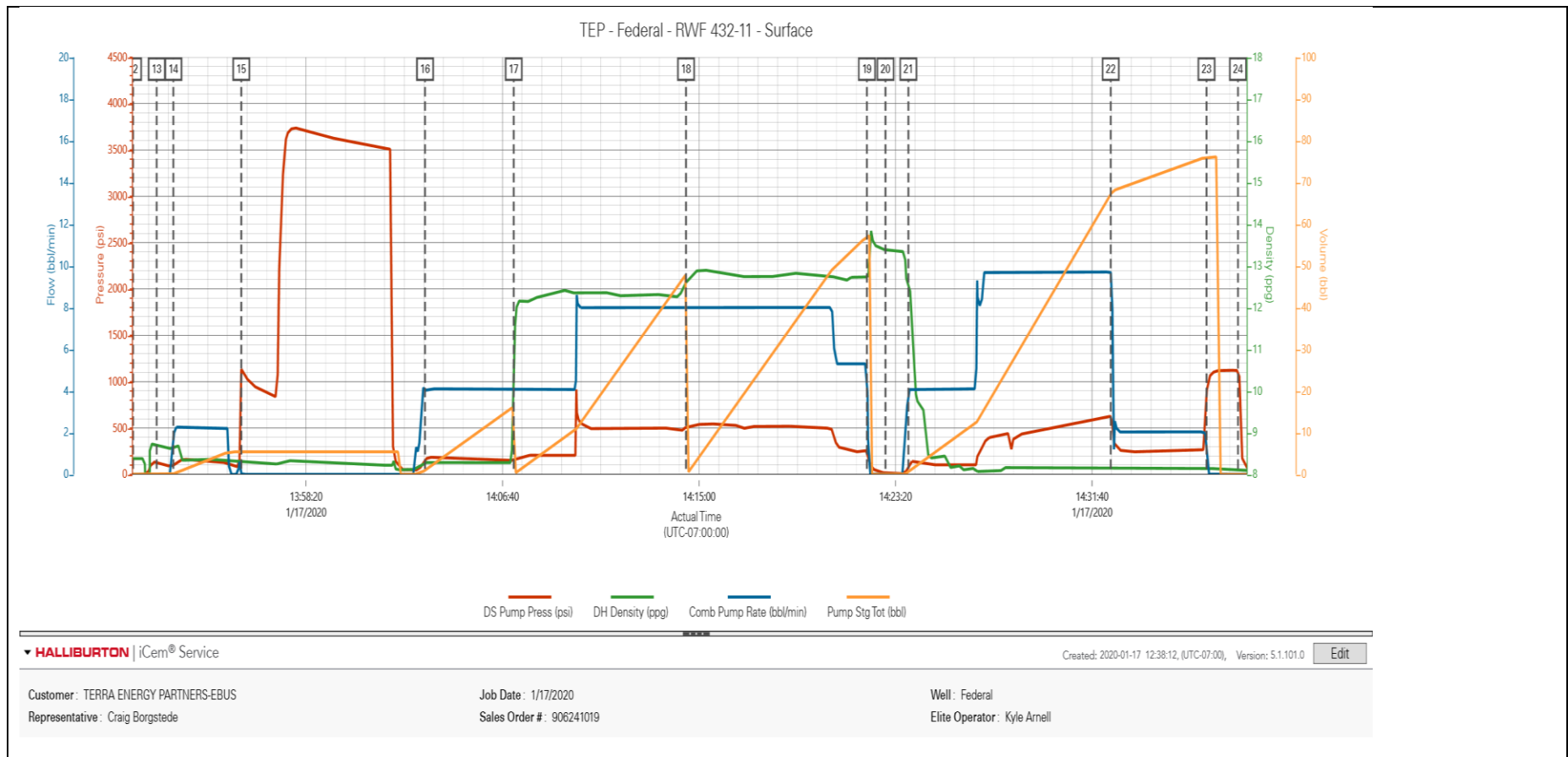
Type	Seq. No.	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	1/17/2020	08:00:00	USER					CREW CALLED OUT TO H&P 318 FOR TEP SURFACE JOB. REQUESTED ON LOCATION AT 1200
Event	2	Pre-Convoy Safety Meeting	1/17/2020	10:50:00	USER					ALL HAZARDS ASSOCIATED WITH DRIVING TO LOACTION DISCUSSED AMONG THE CREW
Event	3	Crew Leave Yard	1/17/2020	11:00:00	USER					CREW LEFT STAGING AREA IN RIFLE CO
Event	4	Arrive At Location	1/17/2020	11:10:00	USER					RIG WAS RUNNING CASING UPON HES ARRIVAL
Event	5	Assessment Of Location Safety Meeting	1/17/2020	11:11:00	USER					WITH ALL HES PERSONNEL
Event	6	Spot Equipment	1/17/2020	11:15:00	USER					SPOT EQUIPMENT
Event	7	Pre-Rig Up Safety Meeting	1/17/2020	11:20:00	USER					WITH ALL HES PERSONNEL
Event	8	Rig-Up Equipment	1/17/2020	11:30:00	USER					1-ELITE RCM PUMP TRUCK, 1-660 FT3 BULK TRUCK, 1-PICKUP
Event	9	Rig-Up Completed	1/17/2020	12:00:00	USER					RIG UP COMPLETED. WAIT FOR RIG TO FINISH RUNNING CASING.
Event	10	Check Weight	1/17/2020	12:01:00	USER					PRESSURIZED MUD SCALES CALIBRATED USING FRESH WATER PRIOR TO JOB. ALL FLUID DENSITIES VERIFIED USING PRSSURIZED MUD SCALES THROUGHOUT JOB
Event	11	Pre-Job Safety Meeting	1/17/2020	13:30:00	USER	273.00	-0.01	0.00	0.00	WITH ALL PERSONNEL ON LOCATION.
Event	12	Start Job	1/17/2020	13:51:00	USER	0.00	8.38	0.00	0.00	
Event	13	Pump Water	1/17/2020	13:52:00	USER	133.00	8.69	0.00	0.00	PUMP 5 BBL H2O TO PRIME LINES. PUMPED AT 2BPM WITH 130 PSI
Event	14	Shutdown	1/17/2020	13:52:42	USER	95.00	8.61	1.30	0.10	SHUTDOWN TO LINE OUT VALVES FOR PRESSURE TEST.
Event	15	Pressure Test	1/17/2020	13:55:35	USER	1140.00	8.29	0.00	5.40	SET KICKOUTS TO 500 PSI FOR LOW TEST TO ENSURE KICKOUTS FUNCTIONING PROPERLY. BROUGHT PRESSURE UP TO 3,500 PSI FOR HIGH TEST.

Event	16	Pump H2O Spacer	1/17/2020	14:03:23	USER	160.00	8.28	4.10	1.00	PUMP 20 BBL H2O SPACER. PUMPED AT 4 BPM WITH 200 PSI.
Event	17	Pump Lead Cement	1/17/2020	14:07:08	USER	146.00	10.23	4.10	16.20	PUMP 53 BBL VARICEM LEAD CEMENT. 125 SKS AT 12.3 PPG, 2.38 FT3/SK, 13.74 GAL/SK. PUMPED AT 8 BPM WITH 560 PSI.
Event	18	Pump Tail Cement	1/17/2020	14:14:27	USER	482.00	12.60	8.00	47.90	PUMP 56.4 BBL VARICEM TAIL CEMENT. 150 SKS AT 12.8 PPG, 2.11 FT3/SK, 11.74 GAL/SK. PUMPED AT 8 BPM WITH 650 PSI.
Event	19	Shutdown	1/17/2020	14:22:07	USER	261.00	12.73	5.30	57.00	SHUTDOWN TO DROP TOP PLUG.
Event	20	Drop Top Plug	1/17/2020	14:22:55	USER	16.00	13.38	0.00	0.00	DROP HES TOP PLUG. PLUG LAUNCHED. WITNESSED BY CUSTOMER REP.
Event	21	Pump Displacement	1/17/2020	14:23:53	USER	88.00	12.66	4.00	0.50	PUMP 67.3 BBL H2O DISPLACEMENT. PUMPED AT 10 BPM WITH 700 PSI.
Event	22	Slow Rate	1/17/2020	14:32:28	USER	626.00	8.16	9.70	67.20	SLOW RATE TO 2 BPM 10 BBL PRIOR TO CALCULATED DISPLACEMENT TO BUMP PLUG.
Event	23	Bump Plug	1/17/2020	14:36:31	USER	799.00	8.13	2.00	76.10	PLUG BUMPED AT 2 BPM. FCP-260 PSI. BROUGHT PRESSURE UP TO 1000 PSI. TOTAL DISPLACEMENT-77.3 BBL
Event	24	Check Floats	1/17/2020	14:37:51	USER	1122.00	8.11	0.00	0.00	FLOATS HOLDING. RETURNED .5 BBL FLUID TO TRUCK.
Event	25	End Job	1/17/2020	14:40:00	USER	9.00	8.05	0.00	0.00	PIPE WAS STATIC DURING JOB. GOOD CIRCULATION THROUGHOUT JOB.
Event	26	Pre-Rig Down Safety Meeting	1/17/2020	14:50:00	USER	320.00	8.12	8.10	34.60	WITH ALL HES PERSONNEL
Event	27	Rig-Down Equipment	1/17/2020	15:00:00	USER	-2.00	-0.37	0.00	47.70	
Event	28	Rig-Down Completed	1/17/2020	15:30:00	USER					
Event	29	Pre-Convoy Safety Meeting	1/17/2020	15:40:00	USER					WITH ALL HES PERSONNEL
Event	30	Crew Leave Location	1/17/2020	15:50:00	USER					
Event	31	Well Info	1/17/2020	15:51:00	USER					TD-1,052', TP-1,045.45' SET AT 1,042', SHOE-44.6', HOLE-13 1/2", MUD-9.6 PPG WBM, CSG-9 5/8" 36 LB/FT
Event	32	Rig Info	1/17/2020	15:52:00	USER					RIG ON BOTTOM AT 1255. CIRCULATED AT 13 BPM WITH 160 PSI. 460 BBL CIRCULATED

Event	33	Job Info	1/17/2020	15:53:00	USER	CALCULATED TOP OF TAIL CEMENT 432.8'. RETURNED 17 BBL LEAD CEMENT TO SURFACE. USED. TOP PLUG WAS USED FOR JOB. 100 LBS OF SUGAR RETURNED TO THE BULK PLANT
Event	34	Comment	1/17/2020	15:54:00	USER	THANK YOU FOR USING HALLIBURTON CEMENT DEPARTMENT. ZACHARY CRUTCHMAN AND CREW.

3.0 Attachments

3.1 TEP Federal RWF 432-11- With Events.png



3.2 TEP Federal RWF 432-11- Without Events.png

