

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

Rock Springs District, Colorado

For: H&P 318

Date: Monday, December 16, 2019

RWF 43-11 Surface

Garfield, RWF 43-11

API# 05-045-24277

Job Date: Monday, December 16, 2019

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	12/16/19	00:00	MST
On Location	12/16/19	05:00	MST
Job Started	12/16/19	08:39	MST
Job Completed	12/16/19	09:32	MST
Departed Location	12/16/19	10:30	MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	32
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	01:00
5	Mud volume circulated	Bbls	300
6	Rate at which well was circulated	Bpm	10
7	Pipe movement during hole circulation	Y/N	NO
8	Rig pressure while circulating	Psi	150
9	Time from end mud circulation to start of job	HH:MM	00:10
10	Pipe movement during cementing	Y/N	No
11	Calculated displacement	Bbls	77
12	Job displaced by	Rig/HES	HES
13	Annular flow before job	Y/N	NO
14	Annular flow after job	Y/N	NO
15	Length of rat hole	Ft	8
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time ?	Y/N	No

1.3 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	<200	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	68	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

2.0 Real-Time Job Summary

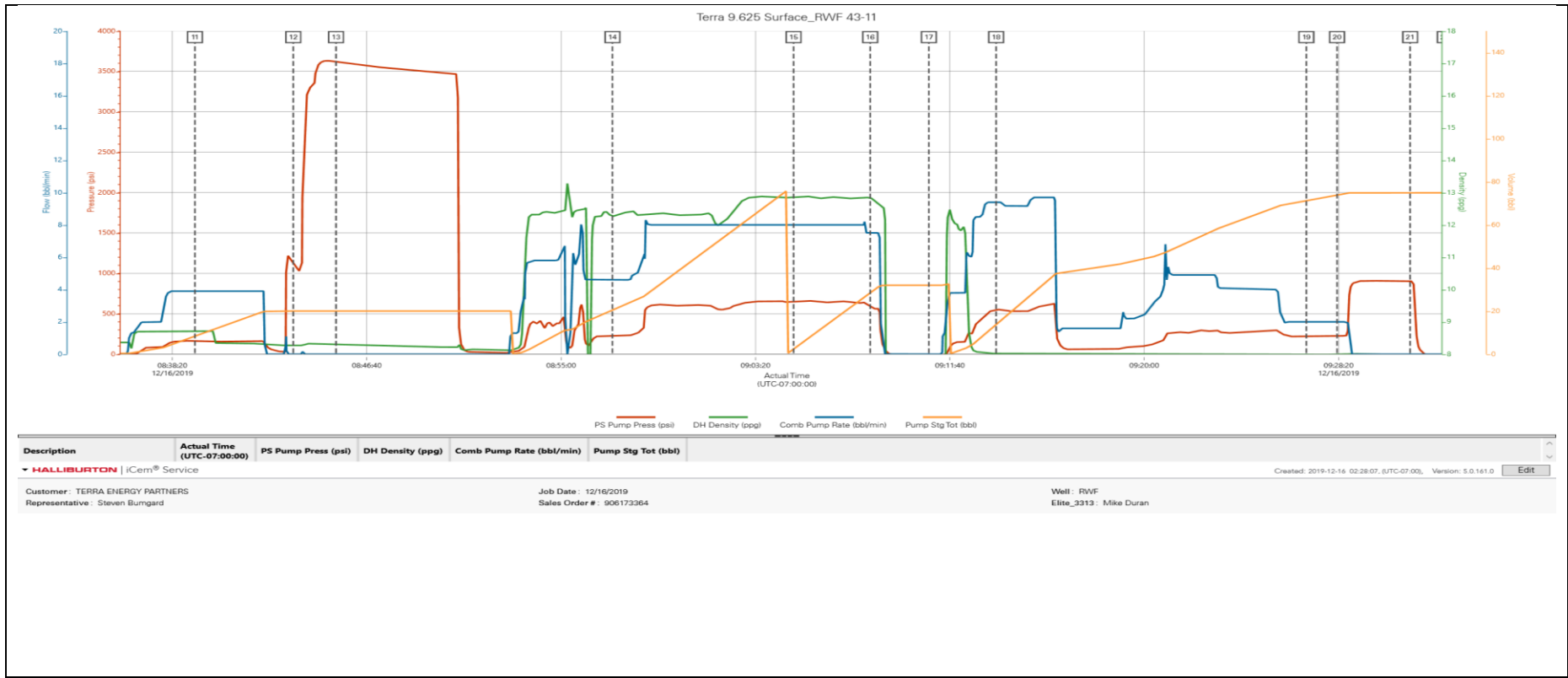
2.1 Job Event Log

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	12/16/2019	00:00:01	USER					Crew requested on location at 05:00
Event	2	Pre-Convoy Safety Meeting	12/16/2019	04:00:00	USER					
Event	3	Crew Leave Yard	12/16/2019	04:05:00	USER					
Event	4	Arrive At Loc	12/16/2019	05:00:00	USER	64.00	-0.01	0.00	0.10	Well Info: TD_1052 Total Pipe_1045 ft 9.625 in 36 lb/ft Shoe Track_46 ft. Previous Casing_18" Conductor Open Hole_13.5 in. Well fluid_9.4 WBM
Event	5	Pre-Rig Up Safety Meeting	12/16/2019	05:05:00	USER	64.00	-0.01	0.00	0.10	
Event	6	Rig-Up Equipment	12/16/2019	05:10:00	USER	64.00	-0.01	0.00	0.10	
Event	7	Rig-Up Completed	12/16/2019	06:52:58	USER	68.00	-0.01	0.00	0.10	
Event	8	Casing on Bottom	12/16/2019	07:00:33	USER	68.00	-0.01	0.00	0.10	
Event	9	Pre-Job Safety Meeting	12/16/2019	08:15:20	USER	67.00	-0.01	0.00	0.10	
Event	10	Start Job	12/16/2019	08:31:55	COM4	6.00	8.39	1.30	12.60	
Event	11	Pump Water	12/16/2019	08:39:18	USER	163.00	8.71	3.90	8.30	Pumped 20 bbls water to fill lines.
Event	12	Test Lines	12/16/2019	08:43:31	USER	1143.00	8.29	0.00	20.00	Test kick-outs and they worked.
Event	13	Test Lines	12/16/2019	08:45:21	USER	3620.00	8.30	0.00	20.00	Test kick lines to 3500 psi. No leaks.
Event	14	Pump Lead Cement	12/16/2019	08:57:12	USER	227.00	12.27	4.60	20.40	Pumped 125 sks VariCem Lead Cement at 12.3 lb/gal, 2.38 yd, 13.74 gal/sk.

Event	15	Pump Tail Cement	12/16/2019	09:04:58	USER	644.00	12.86	8.00	2.50	Pumped 150 sks VariCem Tail Cement at 12.8 lb/gal, 2.11 yd, 11.74 gal/sk.
Event	16	Shutdown.	12/16/2019	09:08:15	USER	588.00	12.84	7.50	28.70	Shutdown. Washed up on top of the plug.
Event	17	Drop Top Plug	12/16/2019	09:10:46	USER	-22.00	0.09	0.00	32.00	Dropped 9.625 in HWE top plug. Washed up on top.
Event	18	Pump Displacement	12/16/2019	09:13:39	USER	548.00	8.02	9.40	13.60	Pumped 77 bbls fresh water displacement. Cement to surface at 67 bbls away. 10 bbls cement to surface.
Event	19	Slow Rate	12/16/2019	09:26:57	USER	220.00	8.00	2.00	71.30	Slowed rate to bump plug.
Event	20	Bump Plug	12/16/2019	09:28:16	USER	226.00	7.99	2.00	73.90	Final circulating pressure was 260 psi. Bumped to 900 psi.
Event	21	Check Floats	12/16/2019	09:31:24	USER	905.00	7.98	0.00	74.90	Check floats and they held. We got 1 bbl back.
Event	22	Pre-Rig Down Safety Meeting	12/16/2019	09:32:53	USER	-34.00	7.95	0.00	74.90	Cement top at surface.
Event	23	Rig-Down Equipment	12/16/2019	09:34:43	USER	-35.00	7.93	0.00	74.90	
Event	24	End Job	12/16/2019	09:44:58	COM4	11.00	9.72	2.50	78.60	
Event	25	Rig-Down Completed	12/16/2019	10:15:00	USER					
Event	26	Pre-Convoy Safety Meeting	12/16/2019	10:20:00	USER					
Event	27	Crew Leave Location	12/16/2019	10:30:00	USER					This job was completed safely by Denny Elder and Crew. Thanks for choosing Halliburton Cementing.

3.0 Attachments

3.1 Terra 9.625 Surface -Events.png



3.2 Terra 9.625 Surface -No Events.png

