

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: Terra

Date: Sunday, February 10, 2019

CHEVRON TR 443-22-597 Surface

API# 05-045-23700-00

Sincerely,

Grand Junction Cement Engineering

Legal Notice

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1.0 Job Design

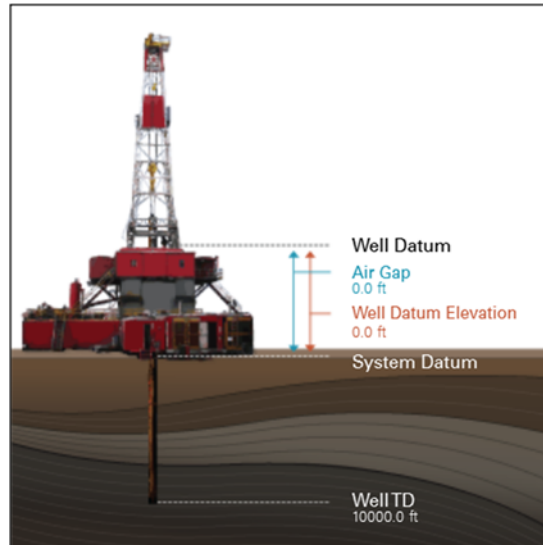
1.1 Overview

Job Type	Primary Cement Job
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Injection Path	Casing/Conventional
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Foam Job	No
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Well Snapshot



Simulations Performed

1.2 Pressure Schedule Inputs

Pressure Mode	Conventional
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1.3 Pressure Schedule Table

Start (Pump Volume in bbl)	End (Pump Volume in bbl)	Pressure (psi)
0.00	End	0.00

1.4 Time of Stages

Graph Label	Time (min)	Stage Starts Pumping	Stage Enters Annulus
①	0.0	Pump SUPERFLUSH	
②	0.0	Call Out	
③	0.0	Bump Plug	
④	0.0	Crew Leave Location	

⑤	0.0	Pre-Rig Down Safety Meeting
⑥	0.0	Drop Top Plug
⑦	0.0	Pump H2O
⑧	0.0	Pump CaCl WATER
⑨	0.0	Assessment Of Location Safety Meeting
⑩	0.0	Pump Tail Cement
⑪	0.0	Pre-Convoy Safety Meeting
⑫	0.0	Pump H2O
⑬	0.0	CLEAR PARASITE LINE
⑭	0.0	Pump H2O
⑮	0.0	Pump CaCl WATER
⑯	0.0	Pre-Job Safety Meeting
⑰	0.0	Rig-Down Equipment
⑱	0.0	Pump Displacement
⑲	0.0	Pump H2O
20	0.0	CHECK FLOATS
21	0.0	Pump SUPERFLUSH
22	0.0	End Job
23	0.0	Test Lines
24	0.0	Crew Leave Shop
25	0.0	Start Job
26	0.0	Pump Cement
27	0.0	Rig-Up Equipment
28	0.0	Pump Lead Cement
29	0.0	Pump H2O
30	0.0	Depart Yard Safety Meeting
31	0.0	Arrive At Loc
32	0.0	Pre-Rig Up Safety Meeting

2.0 Real-Time Job Summary

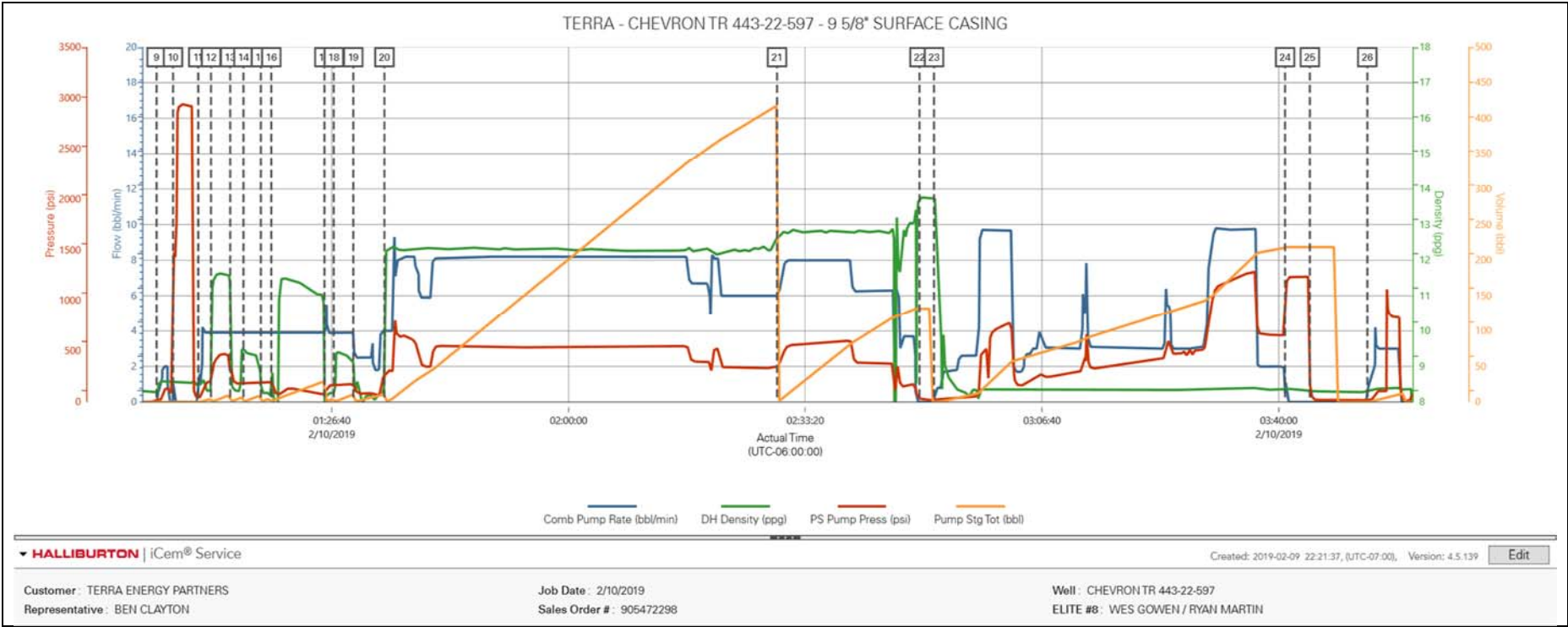
2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	2/9/2019	14:30:00	USER					REQUESTED ON LOCATION 2/9/19 @ 21:30
Event	2	Depart Yard Safety Meeting	2/9/2019	17:25:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	2/9/2019	17:30:00	USER					
Event	4	Arrive At Loc	2/9/2019	21:30:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	2/9/2019	21:45:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	2/9/2019	21:55:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	2/9/2019	22:00:00	USER					
Event	8	Pre-Job Safety Meeting	2/10/2019	00:30:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER
Event	9	Start Job	2/10/2019	01:02:00	COM4					9 5/8"-36# CASING IN 14 3/4" OH, TD 2854', TP 2859.7', ST 31.7', MUD 9.1 PPG, PARASITE LINE 1.9"-2.76# TIED IN @ 2702', WATER TEMP 65, PH 7 CHLORIDES 0
Event	10	Test Lines	2/10/2019	01:04:19	COM4			3000.00		TEST LINES TO 3000 PSI
Event	11	Pump H2O	2/10/2019	01:07:52	COM4	4.00	8.33	200.00	5.00	5 BBLS FRESH WATER
Event	12	Pump SUPERFLUSH	2/10/2019	01:09:40	COM4	4.00	10.00	460.00	10.00	10 BBLS SUPERFLUSH
Event	13	Pump H2O	2/10/2019	01:12:22	COM4	4.00	8.33	180.00	5.00	5 BBLS FRESH WATER
Event	14	Pump CaCl WATER	2/10/2019	01:14:14	COM4	4.00	9.40	190.00	10.00	10 BBLS CaCl WATER
Event	15	Pump H2O	2/10/2019	01:16:41	COM4	4.00	8.33	200.00	5.00	5 BBLS FRESH WATER
Event	16	Pump SUPERFLUSH	2/10/2019	01:18:09	COM4	4.00	10.00	100.00	10.00	10 BBLS SUPERFLUSH

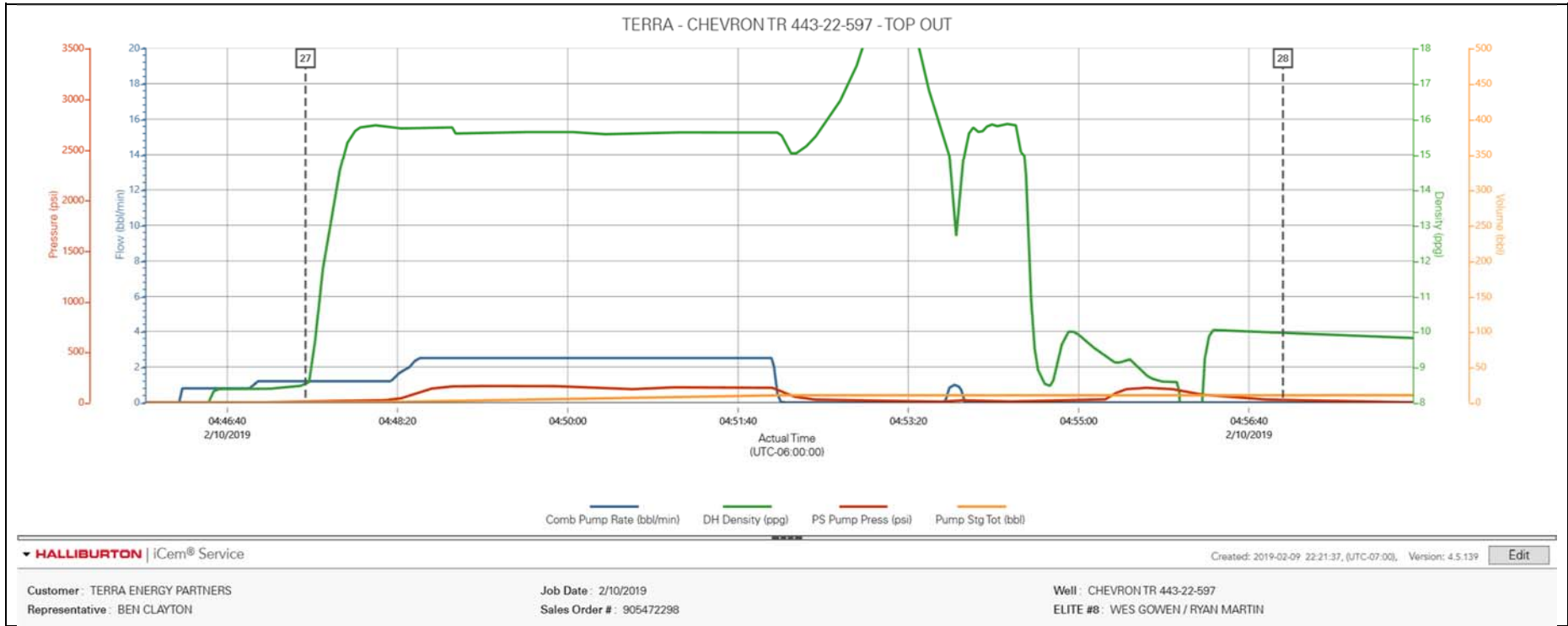
Event	17	Pump H2O	2/10/2019	01:25:38	COM4	4.00	8.33	150.00	5.00	5 BBLs FRESH WATER
Event	18	Pump CaCl WATER	2/10/2019	01:26:57	COM4	4.00	9.40	150.00	10.00	10 BBLs CaCl WATER
Event	19	Pump H2O	2/10/2019	01:29:42	COM4	4.00	8.33	150.00	10.00	10 BBLs FRESH WATER
Event	20	Pump Lead Cement	2/10/2019	01:34:05	COM4	8.00	12.30	500.00	405.20	405.2 BBLs LEAD CEMENT, 960 SKS @ 12.3 PPG / 2.37 YLD / 13.74 GAL/SK
Event	21	Pump Tail Cement	2/10/2019	02:29:22	COM4	8.00	12.80	500.00	129.60	129.6 BBLs TAIL CEMENT, 345 SKS @ 12.8 PPG / 2.11 YLD / 11.75 GAL/SK
Event	22	Drop Top Plug	2/10/2019	02:49:25	COM4					PLUG AWAY, PLUG PROVIDED BY CUSTOMER
Event	23	Pump Displacement	2/10/2019	02:51:28	COM4	10.00	8.33	940.00	218.60	218.6 BBLs FRESH WATER DISPLACEMENT, CELLAR PUMP BROKE AT 50 BBLs AWAY, SLOWED RATE TO 3 BBL/MIN UNTIL IT WAS FIXED
Event	24	Bump Plug	2/10/2019	03:40:54	COM4	2.00	8.33	650.00	218.60	PLUG BUMPED AT CALCULATED, FINAL CIRCULATING PRESSURE 650 @ 2 BBL/MIN, BROUGHT TO 1240 PSI, APPROX. 60 BBLs CEMENT TO SURFACE
Event	25	CHECK FLOATS	2/10/2019	03:44:23	COM4					FLOATS HELD, 1 BBL BACK TO PUMP
Event	26	CLEAR PARASITE LINE	2/10/2019	03:52:29	COM4	3.00	8.33	700.00	10.00	PUMP 10 BBLs SUGAR WATER TO CLEAR PARASITE LINE, 850 PSI @ 3 BBL/MIN, SUGAR PROVIDED BY CUSTOMER
Event	27	Pump Cement	2/10/2019	04:47:26	COM4	2.50	15.60	150.00	14.60	14.6 BBLs TOP OUT CEMENT, 69 SKS @ 15.6 PPG / 1.19 YLD / 5.24 GAL/SK, CEMENT TO SURFACE, 8 BBLs SUPERFLUSH AND 1 SKS CaCl USED
Event	28	End Job	2/10/2019	04:57:00	COM4					GOOD RETURNS THROUGHTOUT ENTIRE JOB, PIPE LEFT STATIC, APPROX. 60 BBLs CEMENT TO SURFACE, NO ADD HOURS CHARGED
Event	29	Pre-Rig Down Safety Meeting	2/10/2019	05:45:00	USER					JSA COMPLETED
Event	30	Rig-Down Equipment	2/10/2019	05:50:00	USER					
Event	31	Pre-Convoy Safety Meeting	2/10/2019	06:25:00	USER					JSA COMPLETED
Event	32	Crew Leave Location	2/10/2019	06:30:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO - RYAN MARTIN AND CREW

3.0 Attachments

3.1 905472298-Custom Results.png

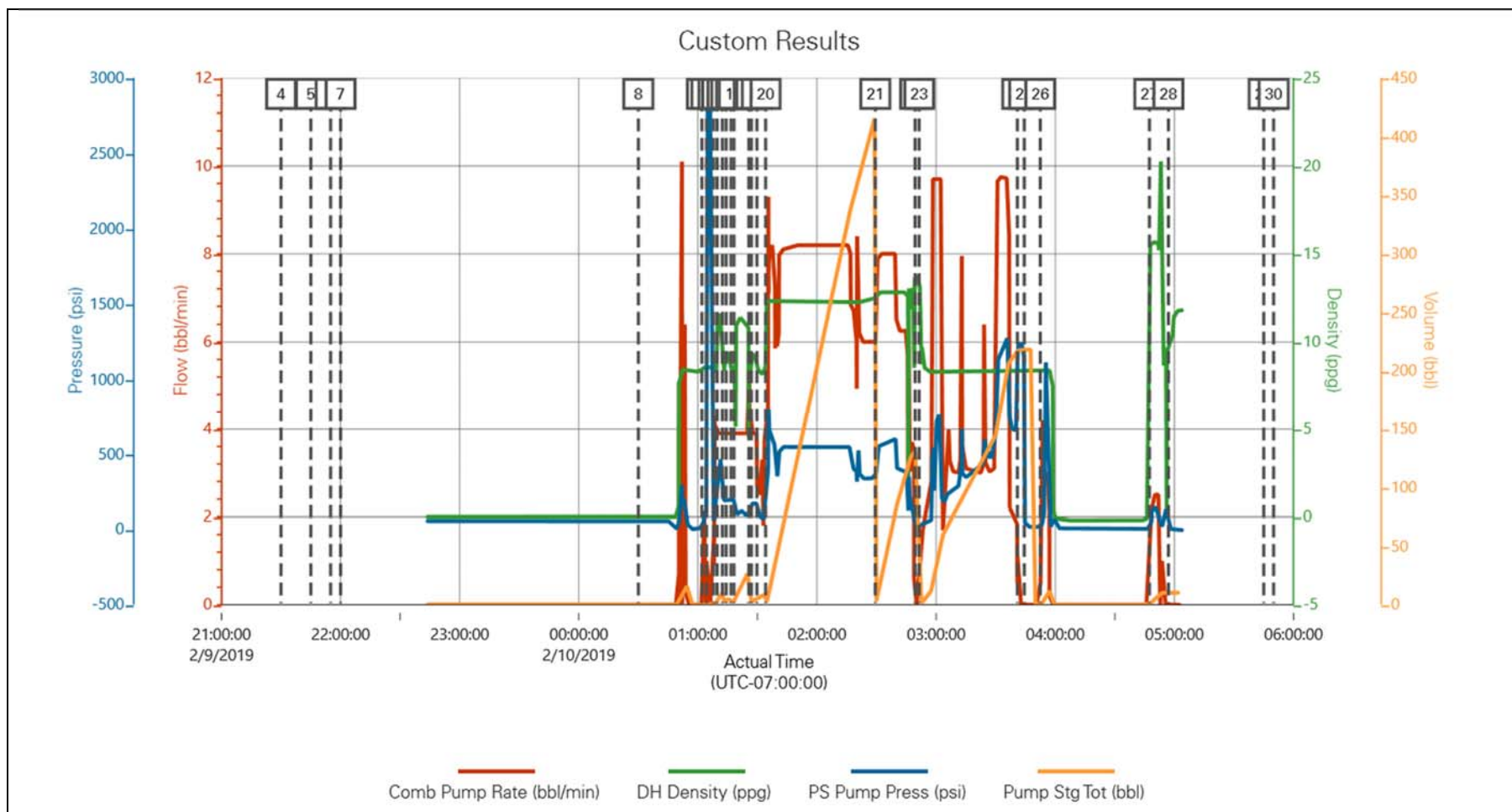


3.2 905472298-Custom Results (1).png



4.0 Custom Graphs

4.1 Custom Graph



5.0 Appendix

5.1 3D Wellbore Schematic

