

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

Rock Springs District, CO

For: Darrell

Date: Monday, December 02, 2019

Federal

Garfield, Federal RWF 23-12

Terra, Federal RWF 23-12

Job Date: Monday, December 02, 2019

Sincerely,

KC Smith

Legal Notice

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 3D Wellbore SchematicError! Bookmark not defined.

1.0 Job Design

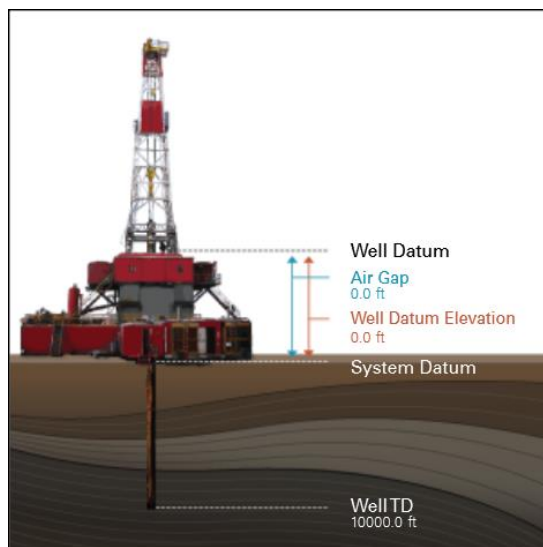
1.1 Overview

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	Call Out	
②	0.0	Depart Yard Safety Meeting	
③	0.0	Depart from Service Center or Other Site	
④	0.0	Arrive at Location from Service Center	

⑤	0.0	Assessment Of Location Safety Meeting
⑥	0.0	WELL INFORMATION
⑦	0.0	Spot Equipment
⑧	0.0	Rig-Up Equipment
⑨	0.0	Rig-Up Completed
⑩	0.0	Pre-Job Safety Meeting
⑪	0.0	Start Job
⑫	0.0	Pressure Test
⑬	0.0	Pressure Test
⑭	0.0	Pump Fresh Water
⑮	0.0	Pump Mud Flush Spacer
⑯	0.0	Pump Primary Cement
⑰	0.0	Shutdown
⑱	0.0	Clean Lines
⑲	0.0	Drop Top Plug
20	0.0	Pump Displacement
21	0.0	Slow Rate
22	0.0	Bump Plug
23	0.0	Check Floats
24	0.0	End Job
25	0.0	Pre-Rig Down Safety Meeting
26	0.0	Rig-Down Equipment
27	0.0	Rig-Down Completed
28	0.0	ITEMS RETURNED
29	0.0	Pre-Convoy Safety Meeting
30	0.0	Depart Location for Service Center or Other Site
31	0.0	Cement info
32	0.0	Job Complete

2.0 Real-Time Job Summary

2.1 Job Event Log

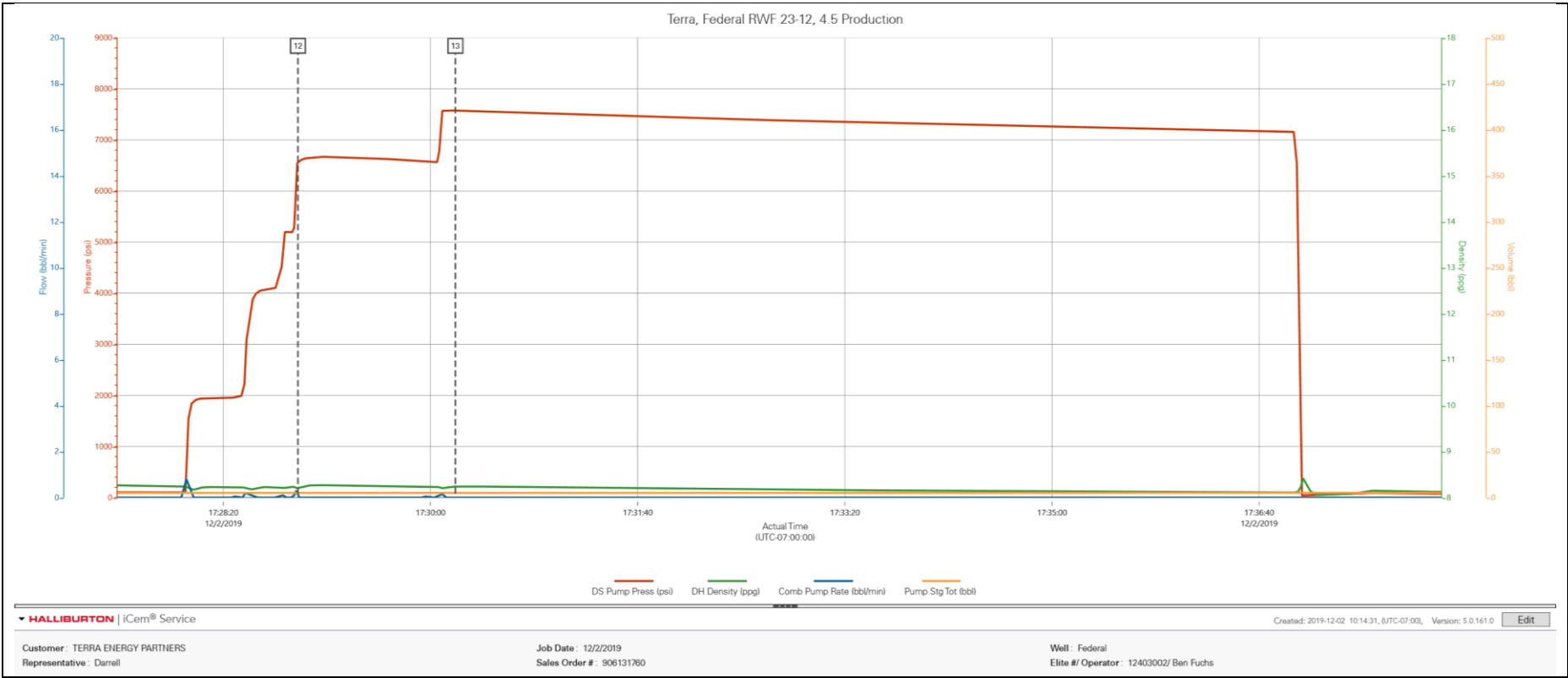
Type	Seq. No.	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	12/1/2019	23:30:00	USER					HES CREW CALLED OUT, REQUESTED ON LOCATION AT 11:30 ON 12/2/19. (OLT WAS MOVED FROM 10:00 TO 11:30)
Event	2	Depart Yard Safety Meeting	12/2/2019	00:55:00	USER					HES CREW DISCUSSES THE HAZARDS OF DRIVING TO LOCATION. FOCUS WAS ON ANIMALS IN THE ROADWAY.
Event	3	Depart from Service Center or Other Site	12/2/2019	01:00:00	USER					HES CREW DEPARTS YARD FOR LOCATION
Event	4	Arrive at Location from Service Center	12/2/2019	11:30:00	USER					HES CREW ARRIVES AT LOCATION. RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	12/2/2019	11:35:00	USER					HES CREW CONDUCTS A WALK AROUND PRIOR TO SPOTTING THE EQUIPMENT. HAZARDS ARE IDENTIFIED AND THE JSA IS DISCUSSED ALONG WITH THE HAZARDS OF RIGGING UP
Event	6	WELL INFORMATION	12/2/2019	11:40:00	USER					HOLE DEPTH__9277__, TOTAL PIPE__9270__, CASING_4.5",__11.6#,_P-110__PREVIOUS CASING__1041__9 5/8",__36#__SHOE JOINT__31.6'__HOLE SIZE__8 3/4"__MW__13.1__WATER TEST__6 PH__<200 SULFATES__196 AND 158 CHLORIDES__TANKS WERE OVER 100 DEGREES EACH__BEFORE JOB WATER WAS COOLED TO 80 DEGREES
Event	7	Spot Equipment	12/2/2019	11:55:00	USER					CREW SAFELY SPOTS THE EQUIPMENT INTO PLACE
Event	8	Rig-Up Equipment	12/2/2019	12:00:00	USER					RIGGED UP IRON AND HOSES
Event	9	Rig-Up Completed	12/2/2019	13:00:00	USER					RIG UP COMPLETED, WAITING ON RIG TO FINISH RUNNING CASING
Event	10	Pre-Job Safety Meeting	12/2/2019	16:30:00	USER	1.00	0.00	0.00	1.00	HES CREW AND RIG CREW DISCUSSES THE HAZARDS OF PUMPING THE JOB. FOCUSED ON HAND PLACEMENT, LINE OF FIRE, POSITION OF FOOTING, AND KEEPING YOUR EYES ON THE PATH.
Event	11	Start Job	12/2/2019	17:20:00	USER	-2.00	8.40	0.00	49.80	START JOB, RIG HAS GOOD CIRCULATION. FILLED LINES WITH 5 BBLS OF FRESH WATER

Event	12	Pressure Test	12/2/2019	17:28:56	USER	6567.00	8.18	0.00	5.20	500 PSI KICKOUT TEST
Event	13	Pressure Test	12/2/2019	17:30:12	USER	7575.00	8.24	0.00	5.20	6500 PSI PRESSURE TEST
Event	14	Pump Fresh Water	12/2/2019	17:38:26	USER	64.00	8.11	0.80	0.00	PUMP 10 BBLS FRESH WATER
Event	15	Pump Mud Flush Spacer	12/2/2019	17:41:56	USER	631.00	8.38	3.90	0.20	PUMP 20 BBLS OF MUD FLUSH
Event	16	Pump Primary Cement	12/2/2019	17:45:50	USER	640.00	8.38	6.10	0.70	PUMP 397 BBLS (1245 SKS) NEOCEM AT 13.3 PPG, 1.79 FT3/SK, 8.5 GAL/SK AT 6 BPM
Event	17	Shutdown	12/2/2019	18:44:23	USER	222.00	13.83	4.00	436.80	SHUTDOWN
Event	18	Clean Lines	12/2/2019	18:48:24	USER	50.00	12.73	0.10	436.90	WASH PUMPS AND LINES TO PIT
Event	19	Drop Top Plug	12/2/2019	18:57:10	USER	79.00	7.94	0.00	0.00	DROP HALLIBURTON TOP PLUG. CUSTOMER THERE TO WITNESS
Event	20	Pump Displacement	12/2/2019	18:57:56	USER	71.00	7.93	0.00	0.00	PUMP FRESH WATER DISPLACEMENT 143.2 BBLS. 1 GALLON OF MMCR IN THE FIRST 10 BBLS, 3 POUNDS OF BE-6 IN THE FIRST 30 BBLS, 12 SKS KCL IN FIRST 120 BBLS
Event	21	Slow Rate	12/2/2019	19:12:37	USER	2288.00	8.39	8.00	135.70	SLOW RATE LAST 10 BBLS TO 4 BPM
Event	22	Bump Plug	12/2/2019	19:14:30	USER	2513.00	8.38	4.00	143.20	BUMP PLUG, FINAL CIRCULATING PRESSURE 1300 PSI AND PRESSURED UP TO 2400 PSI
Event	23	Check Floats	12/2/2019	19:15:20	USER	3326.00	8.36	0.00	143.60	CHECK FLOATS, 1 BBL BACK TO HES PUMP
Event	24	End Job	12/2/2019	19:20:00	USER	47.00	8.28	0.00	143.60	END JOB FINAL
Event	25	Pre-Rig Down Safety Meeting	12/2/2019	19:25:00	USER	82.00	8.28	3.70	3.60	HES CREW DISCUSS THE HAZARDS OF RIGGING DOWN
Event	26	Rig-Down Equipment	12/2/2019	19:30:00	USER	42.00	-0.07	0.80	21.80	HES CREW RIG DOWN EQUIPMENT AND LINES
Event	27	Rig-Down Completed	12/2/2019	20:25:00	USER					RIG DOWN COMPLETE
Event	28	ITEMS RETURNED	12/2/2019	20:26:00	USER					ITEMS RETURNED: 100 # SUGAR
Event	29	Cement info	12/2/2019	20:27:00	USER					WATER SPACER: 10 BBLS _TOD_ 1470' MUD FLUSH SPACER: _20_ BBLS_, TOS_ 1836' CEMENT: _397_ BBLS_ 1245_SKS_, TOC_2018'_ DISPLACEMENT: _143.2_ BBLS_ CEMENT LEFT IN PIPE _0.5_' REASON: _SHOE JOINT_
Event	30	Pre-Convoy Safety Meeting	12/2/2019	20:28:00	USER					HES CREW DISCUSS THE HAZARDS OF DRIVING

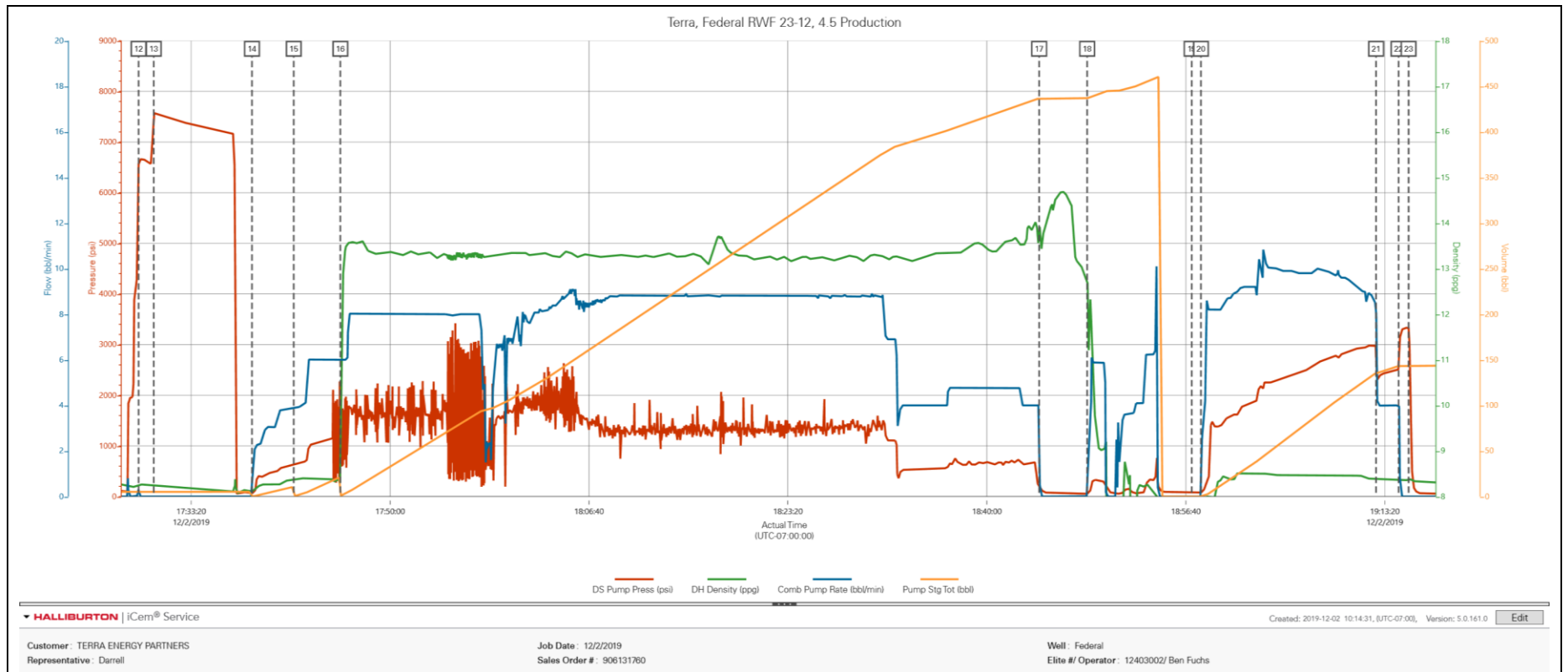
Event	31	Depart Location for Service Center or Other Site	12/2/2019	20:30:00	USER	HES CREW DEPARTS LOCATION
Event	32	Job Complete	12/2/2019	20:35:00	USER	JOB COMPLETE ESTIMATED TOP OF LEAD CEMENT AT 1470'. THANK YOU FOR CHOOSING HALLIBURTON CEMENT DEPARTMENT - KC SMITH AND CREW

3.0 Attachments

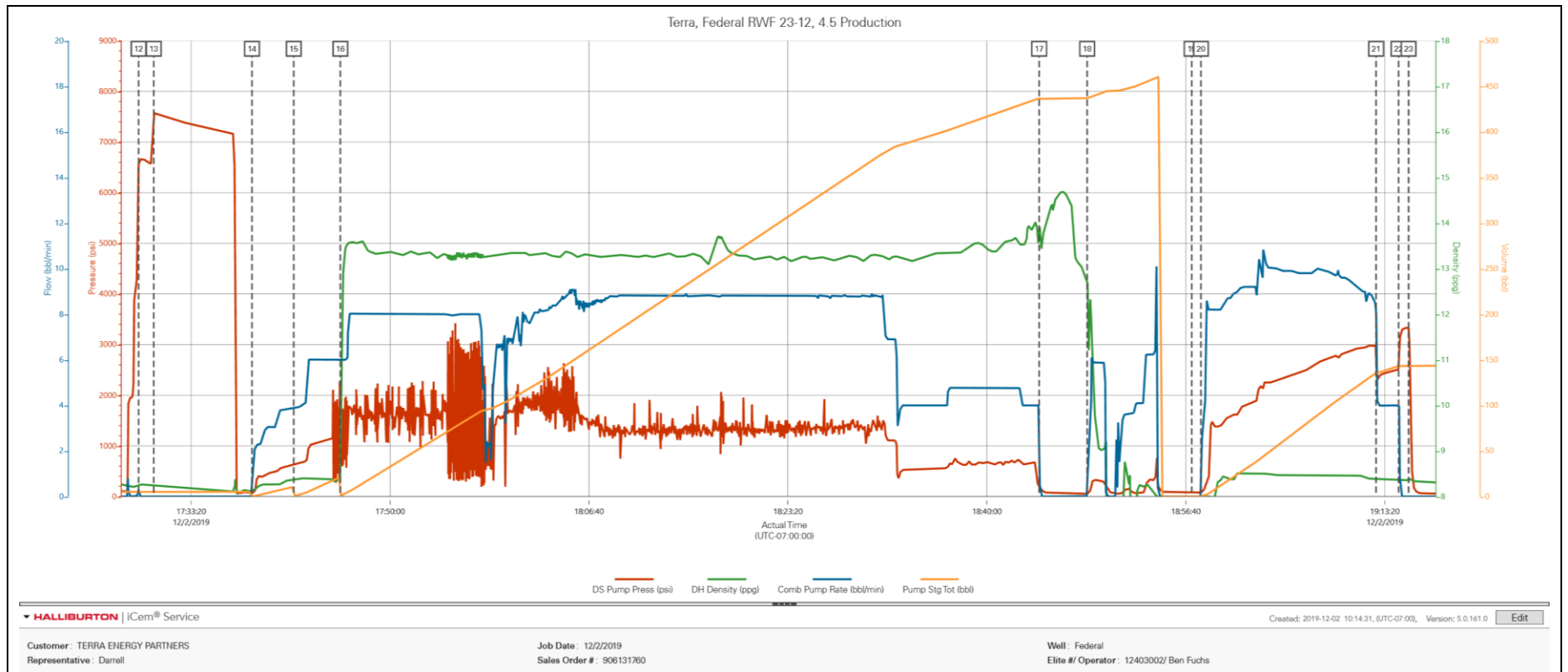
3.1 Pressure Test.png



3.2 Job Chart with Events.png

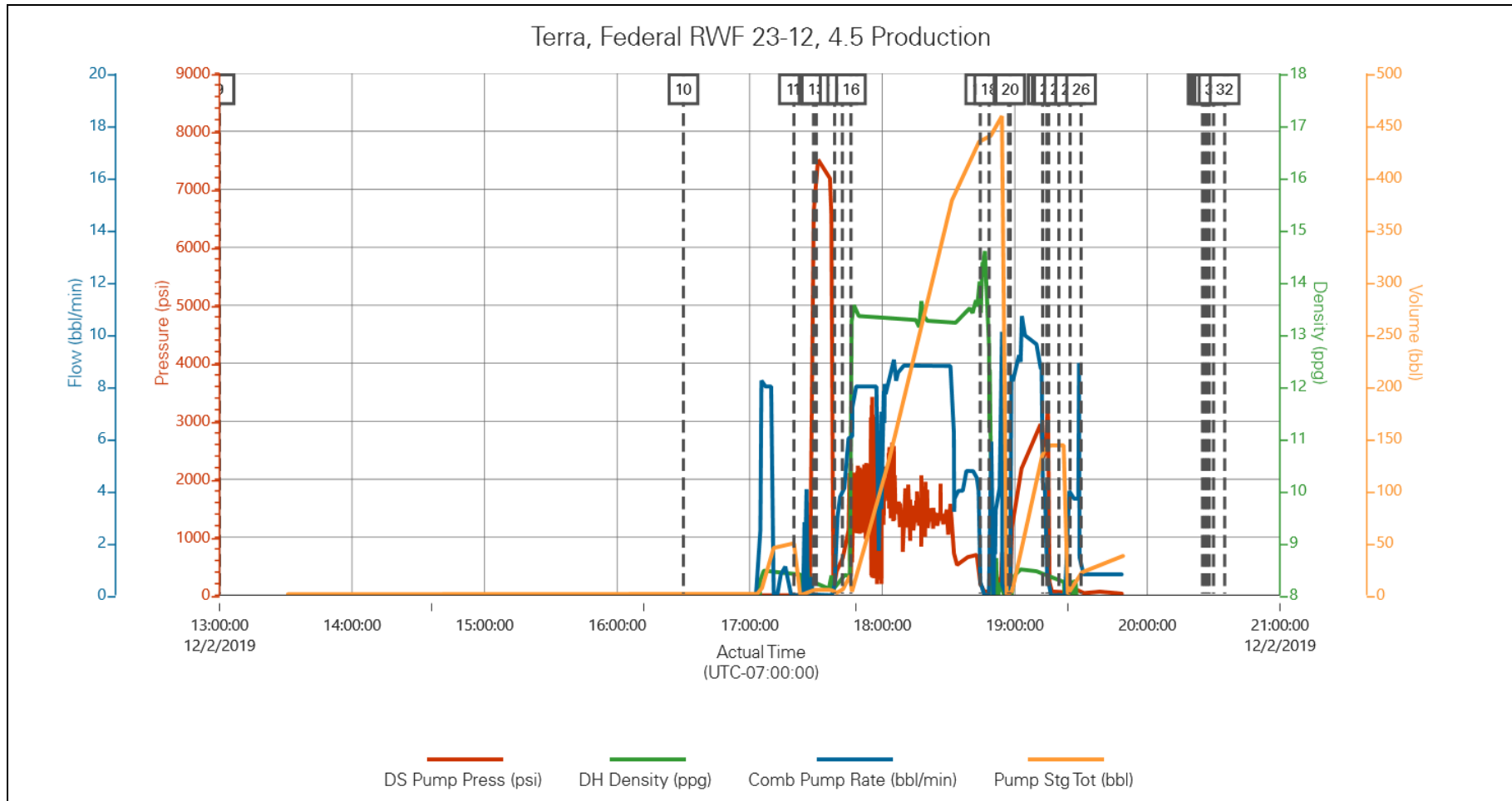


3.3 Job Chart without Events.png



4.0 Custom Graphs

4.1 Custom Graph



5.0 Appendix

5.1 3D Wellbore Schematic

