

HALLIBURTON

iCem[®] Service

TEP ROCKY MOUNTAIN LLC

For: Terra

Date: Saturday, October 21, 2017

SR 522-12 Production

API#05-045-23447

Sincerely,

Grand Junction Cement Engineering

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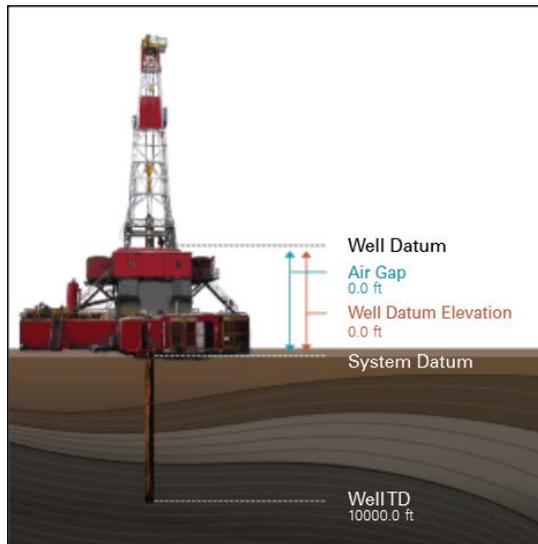
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1.0 Job Design

1.1 Overview

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

Well Snapshot



Simulations Performed

1.2 Pressure Schedule Inputs

Pressure Mode	Conventional
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1.3 Pressure Schedule Table

Start <i>(Pump Volume in bbl)</i>	End <i>(Pump Volume in bbl)</i>	Pressure <i>(psi)</i>
0.00	End	0.00

2.0 Real-Time Job Summary

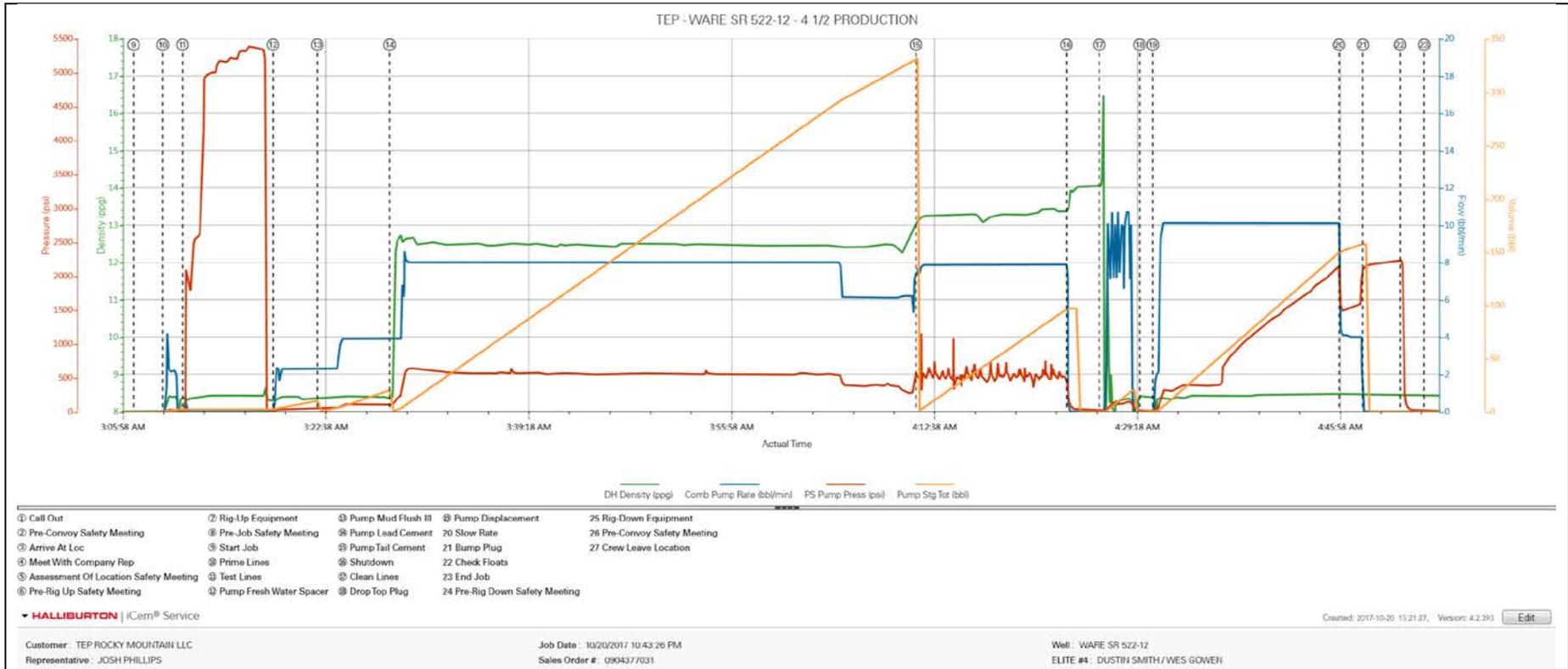
2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	PS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	10/20/2017	14:30:00	USER					ELITE # 4, REQUESTED ON LOCATION TIME 1930
Event	2	Pre-Convoy Safety Meeting	10/20/2017	17:00:00	USER					ALL HES EMPLOYEES
Event	3	Arrive At Loc	10/20/2017	18:30:00	USER					ARRIVED ON LOCATION 1 HOUR EARLY, RIGS DRAW WORKS NOT WORKING UPON HES ARRIVAL
Event	4	Meet With Company Rep	10/20/2017	18:35:00	USER					COMPANY REP OFFERED SDS / WATER TEST: TEMP: 50 PH:8 CLORIDES: 0
Event	5	Assessment Of Location Safety Meeting	10/20/2017	18:40:00	USER					ALL HES EMPLOYEES
Event	6	Pre-Rig Up Safety Meeting	10/20/2017	18:50:00	USER					ALL HES EMPLOYEES
Event	7	Rig-Up Equipment	10/20/2017	22:00:00	USER					1 HT-400 PUMP TRUCK 1 660 BULK TRUCK 2 SLIOS 1 F-550 PICKUP
Event	8	Pre-Job Safety Meeting	10/20/2017	23:00:00	USER					ALL HES EMPLOYEES AND RIG CREW RIG CIRCULATED @ 497 GPM @ 265 PSI GAS @ 34 PRIOR TO STARTING THE JOB
Event	9	Start Job	10/21/2017	03:07:00	COM5					TD: 9634 TP: 9624 SJ: 31.57 CSG: 4 1/2 11.6# P-110 OH: 8 3/4 MUD WT: 9.6 PPG
Event	10	Prime Lines	10/21/2017	03:09:23	COM5	8.33	2.0	30	2.0	PRIME LINES WITH 2 BBL FRESH WATER
Event	11	Test Lines	10/21/2017	03:11:00	COM5	8.33	0.0	5320	2.0	PRESSURE TEST OK
Event	12	Pump Fresh Water Spacer	10/21/2017	03:18:26	USER	8.33	2.0	50	10	PUMP 10 BBL FRESH WATER SPACER
Event	13	Pump Mud Flush III	10/21/2017	03:22:04	COM5	8.4	4.0	120	20	PUMP 20 BBL MUD FLUSH III SPACER
Event	14	Pump Lead Cement	10/21/2017	03:28:01	COM5	12.5	8.0	620	301	870 SKS 12.5 PPG 1.94 YIELD 9.6 GAL/SK LEAD CEMENT WEIGHT VERIFIED VIA PRESSURIZED MUD

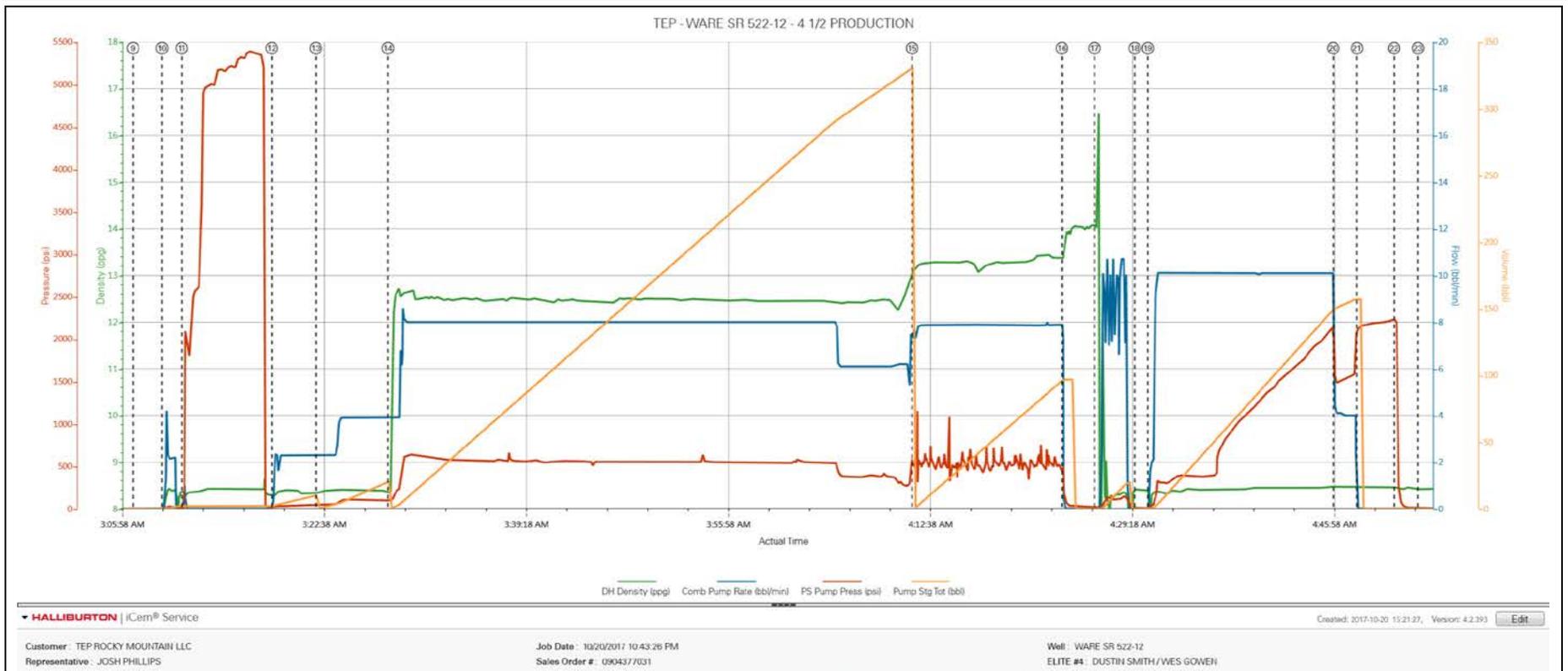
										SCALES
Event	15	Pump Tail Cement	10/21/2017	04:11:16	COM5	13.3	8.0	700	82	265 SKS 13.3 PPG 1.73 YIELD 7.81 GAL/SK TAIL CEMENT WEIGHT VERIFIED VIA PRESSURIZED MUD SCALES
Event	16	Shutdown	10/21/2017	04:23:37	COM5					SHUTDOWN TO CLEAN PUMPS AND LINES
Event	17	Clean Lines	10/21/2017	04:26:19	COM5	8.33			10	CLEAN PUMPS AND LINES TO PIT AND BLOW IRON DOWN FROM RIG FLOOR TO PIT WITH AIR
Event	18	Drop Top Plug	10/21/2017	04:29:38	COM5					RE-PRIMED LINES WITH FRESH WATER, PLUG AWAY NO PROBLEMS, USED POSITIVE DISPLACEMENT
Event	19	Pump Displacement	10/21/2017	04:30:42	COM5	8.4	10.0	2160	149.2	1 GAL MMCR 3#S BE-6 15 BAGS KCL, FRESH WATER DISPLACEMENT
Event	20	Slow Rate	10/21/2017	04:46:01	COM5	8.4	4.0	1602	139	SLOW RATE TO BUMP PLUG
Event	21	Bump Plug	10/21/2017	04:47:58	COM5	8.4	4.0	2234	149.2	PSI BEFORE BUMPING PLUG @ 1602 BUMPED PLUG UP TO 2234
Event	22	Check Floats	10/21/2017	04:51:02	COM5					FLOATS HELD, 1 BBL BACK TO DISPLACEMENT TANKS
Event	23	End Job	10/21/2017	04:53:00	COM5					MAINTAINED RETURNS THROUGHOUT JOB, PIPE RECIPROCATED THROUGHOUT JOB
Event	24	Pre-Rig Down Safety Meeting	10/21/2017	05:00:00	USER					ALL HES EMPLOYEES
Event	25	Rig-Down Equipment	10/21/2017	05:10:00	USER					
Event	26	Pre-Convoy Safety Meeting	10/21/2017	06:25:00	USER					ALL HES EMPLOYEES
Event	27	Crew Leave Location	10/21/2017	06:30:00	USER					THANK YOU FOR USING HALLIBURTON CEMENT, DUSTIN SMITH AND CREW

3.0 Attachments

3.1 CHART.png

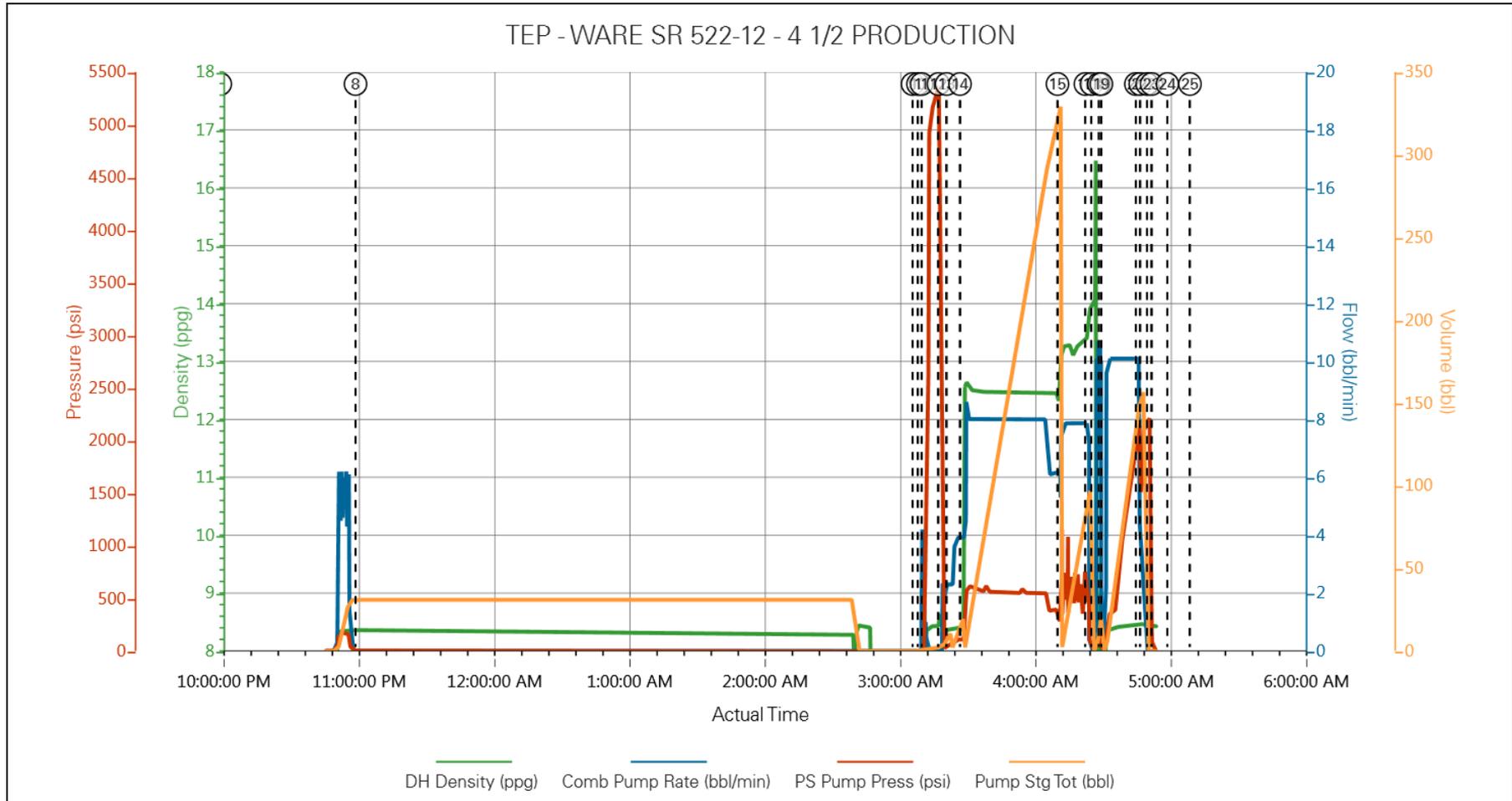


3.2 CHART NO EVENT LOG.png



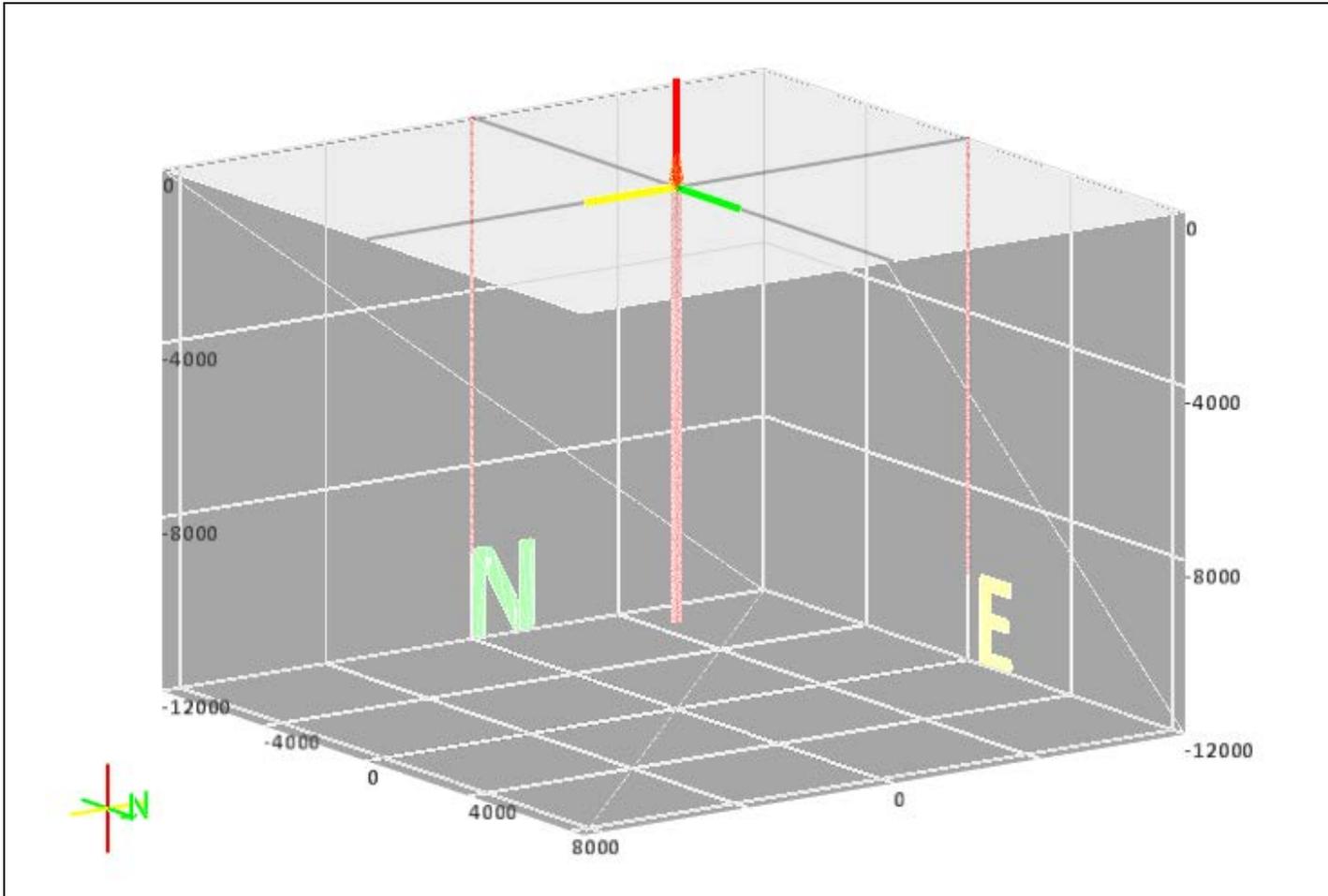
4.0 Custom Graphs

4.1 Custom Graph

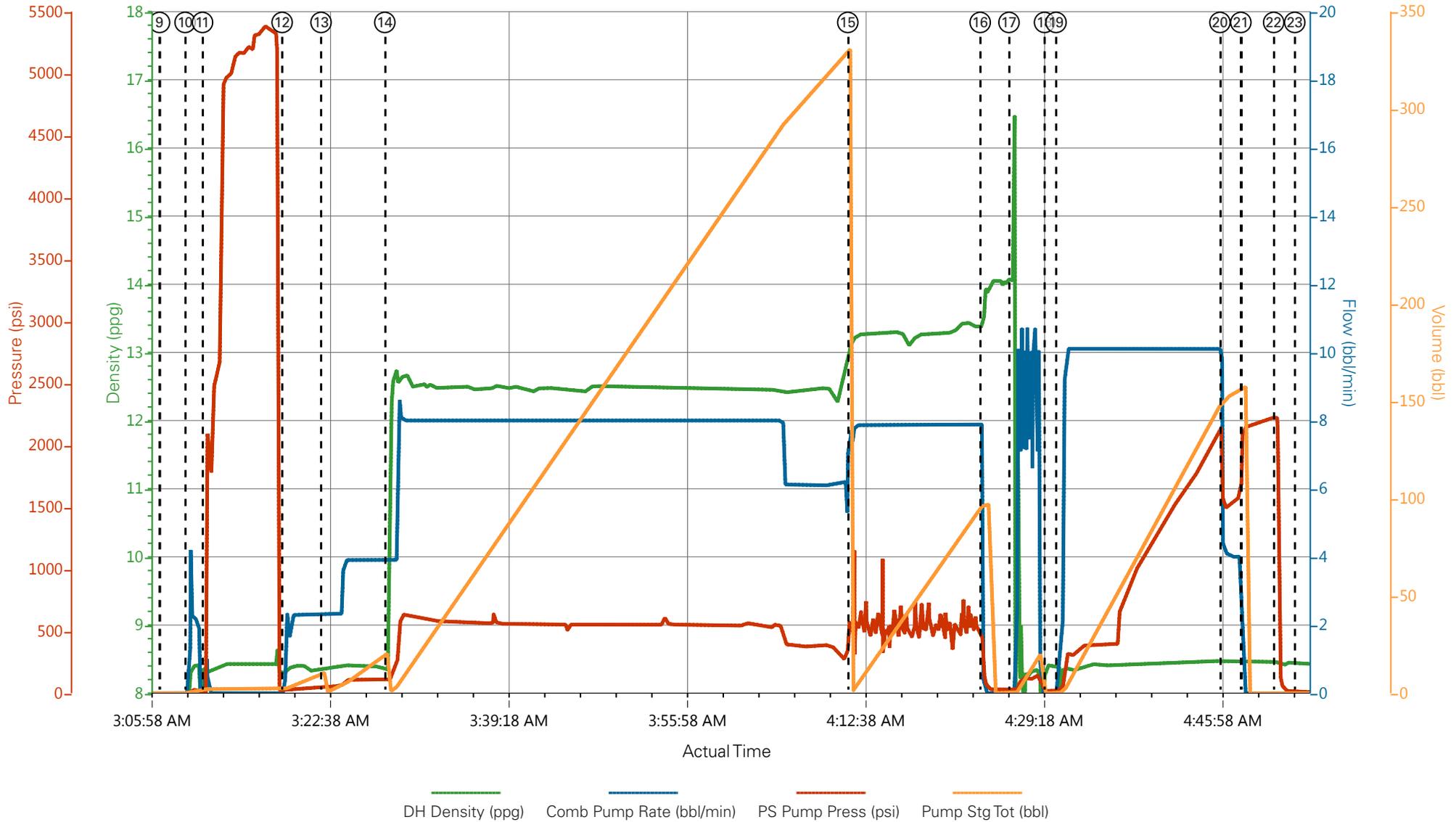


5.0 Appendix

5.1 3D Wellbore Schematic



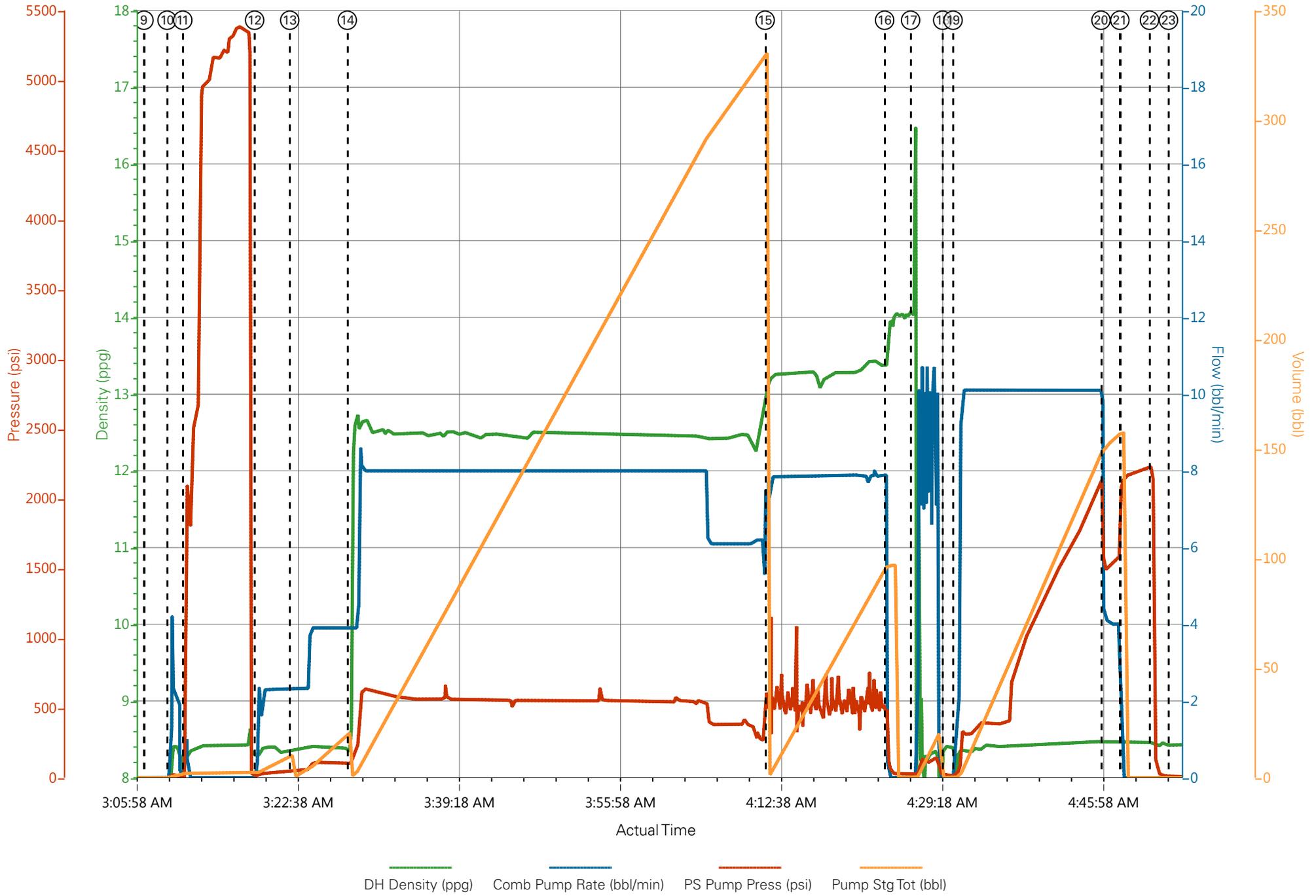
TEP - WARE SR 522-12 - 4 1/2 PRODUCTION



— DH Density (ppg)
 — Comb Pump Rate (bbl/min)
 — PS Pump Press (psi)
 — Pump Stg Tot (bbl)

- | | | | | |
|---|---------------------------|----------------------|--------------------------------|------------------------------|
| ① Call Out | ⑦ Rig-Up Equipment | ⑬ Pump Mud Flush III | ⑰ Pump Displacement | 25 Rig-Down Equipment |
| ② Pre-Convoy Safety Meeting | ⑧ Pre-Job Safety Meeting | ⑭ Pump Lead Cement | 20 Slow Rate | 26 Pre-Convoy Safety Meeting |
| ③ Arrive At Loc | ⑨ Start Job | ⑮ Pump Tail Cement | 21 Bump Plug | 27 Crew Leave Location |
| ④ Meet With Company Rep | ⑩ Prime Lines | ⑯ Shutdown | 22 Check Floats | |
| ⑤ Assessment Of Location Safety Meeting | ⑪ Test Lines | ⑰ Clean Lines | 23 End Job | |
| ⑥ Pre-Rig Up Safety Meeting | ⑫ Pump Fresh Water Spacer | ⑱ Drop Top Plug | 24 Pre-Rig Down Safety Meeting | |

TEP - WARE SR 522-12 - 4 1/2 PRODUCTION



Job Information

Request/Slurry	2423818/1	Rig Name	H&P 318	Date	17/OCT/2017
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	SR 522-12

Well Information

Casing/Liner Size	4.5 in	Depth MD	9807 ft	BHST	118°C / 245°F
Hole Size	8.75 in	Depth TVD	9701 ft	BHCT	79°C / 175°F
Pressure	6090 psi				

Drilling Fluid Information

Mud Supplier Name		Mud Trade Name		Density	
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Cement Information - Lead Design

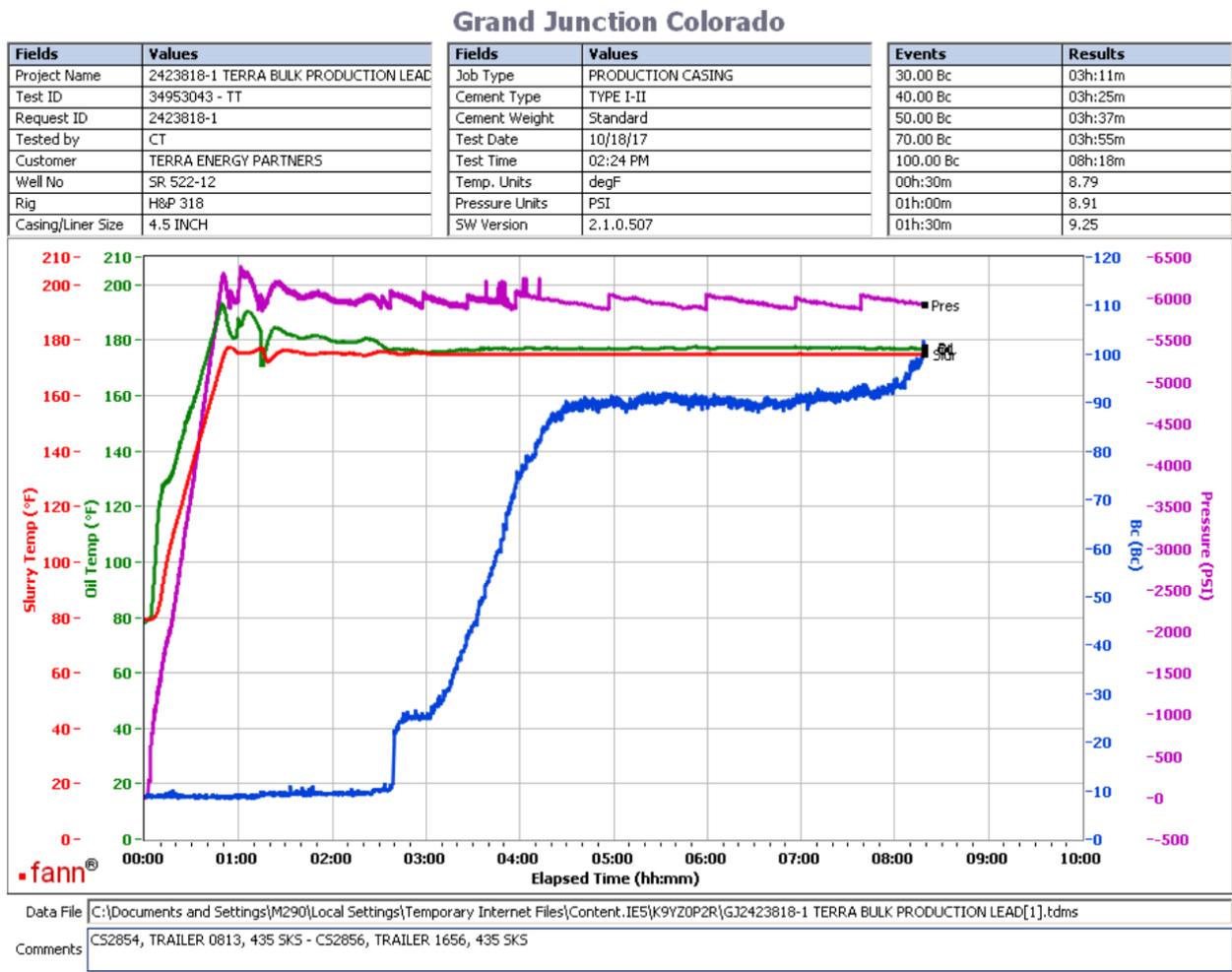
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		NeoCem Lead				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.941	ft3/sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

19/OCT/2017

Test Temp (°F)	Pressure (psi)	Reached in (min)	30 Bc (hh:min)	50 Bc (hh:min)	70 Bc (hh:min)	100 Bc (hh:min)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
175	6090	49	3:11	3:37	3:55	8:18	9	59	15	10



Total sks= 870
 Composite:
 CS2854, Trailer 0813, 435 sks
 CS2856, Trailer 1656, 435 sks
 deflected from 9Bc-- > 10Bc

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Job Information

Request/Slurry	2423819/1	Rig Name	H&P 318	Date	17/OCT/2017
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	SR 522-12

Well Information

Casing/Liner Size	4.5 in	Depth MD	9807 ft	BHST	118°C / 245°F
Hole Size	8.75 in	Depth TVD	9701 ft	BHCT	79°C / 175°F
Pressure	6090 psi				

Drilling Fluid Information

Mud Supplier Name		Mud Trade Name		Density	
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Cement Information - Tail Design 

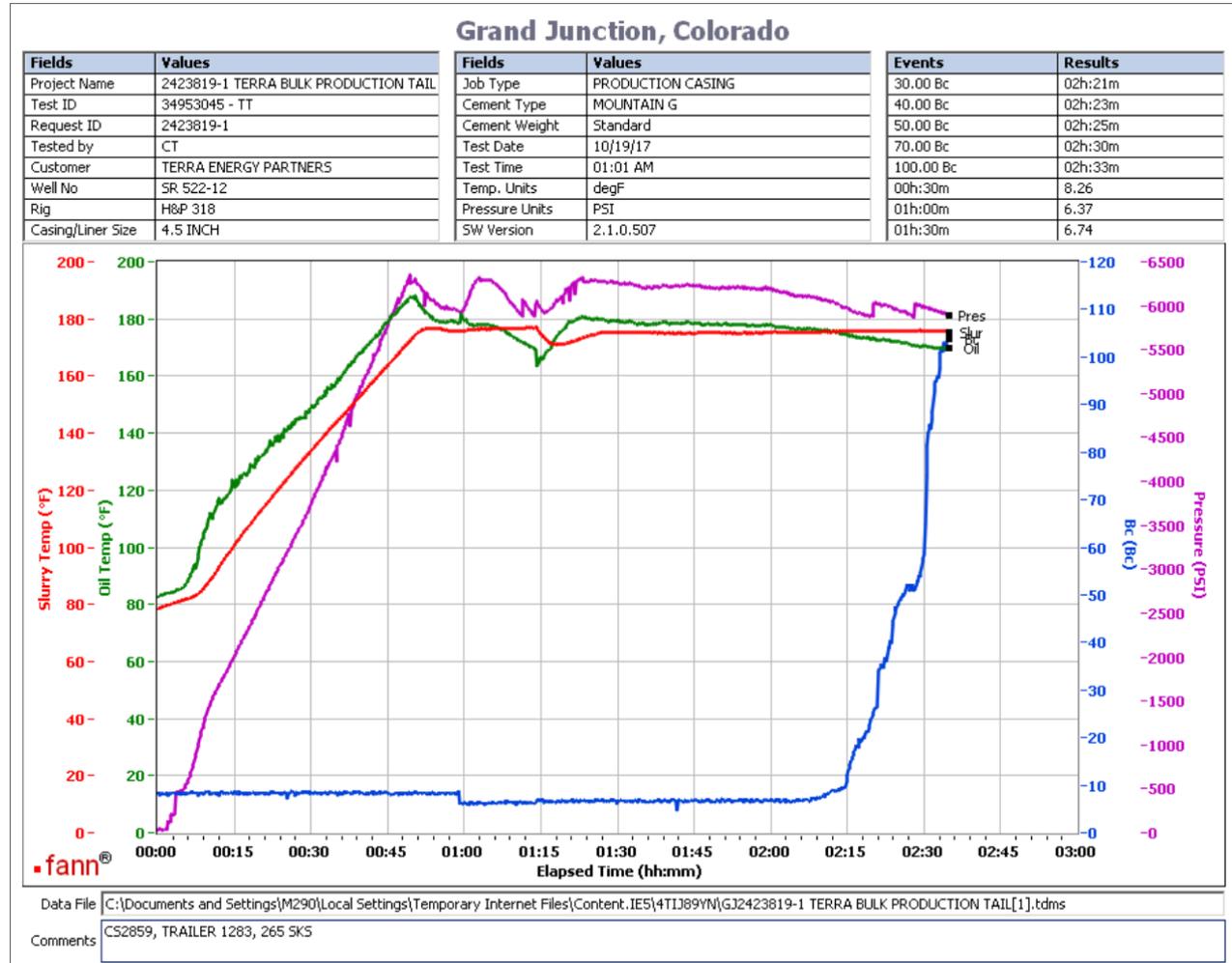
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		ThermaCem Tail				Slurry Density	13.3	lbm/gal
						Slurry Yield	1.733	ft3/sack
						Water Requirement	7.799	gal/sack
						Total Mix Fluid	7.799	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

19/OCT/2017

Test Temp (°F)	Pressure (psi)	Reached in (min)	30 Bc (hh:min)	50 Bc (hh:min)	70 Bc (hh:min)	100 Bc (hh:min)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
175	6090	49	2:21	2:25	2:30	2:33	8	59	15	6



265 sks tail
 CS2859, Trailer 1283, 265 sks
 no deflection was observed. 6Bc--- > 6Bc

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