

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Tuesday, February 06, 2018

**PA 411-25 Production PJR**

API# 05-045-23659-00

Sincerely,

**Grand Junction Cement Engineering**

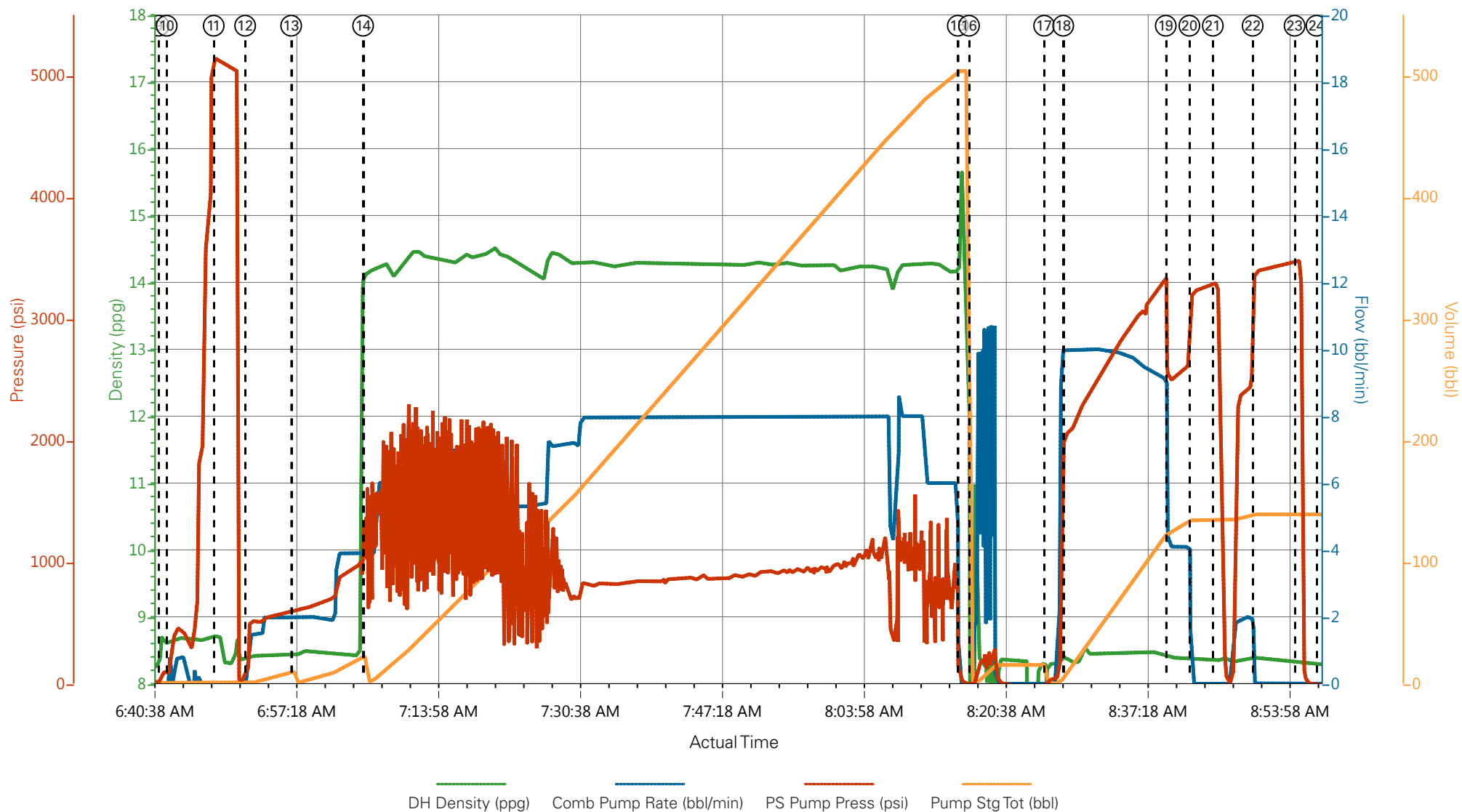
## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Pump Stage Total (bbl)	Comments
Event	1	Call Out	1/2/2018	19:45:00	USER					REQUESTED ON LOCATION @ 0230
Event	2	Pre-Convoy Safety Meeting	1/2/2018	21:55:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	1/2/2018	22:00:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive At Loc	1/2/2018	23:45:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	1/3/2018	00:50:00	USER					MET WITH COMP REP AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 70F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	1/3/2018	01:00:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	1/3/2018	01:30:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	1/3/2018	06:00:00	USER	8.00	0.09	0.00	30.9	ALL HES AND RIG CREW PRESENT
Event	9	Start Job	1/3/2018	06:41:30	COM3	100.00	8.68	0.00	0.0	T
Event	10	Prime Pumps	1/3/2018	06:42:26	COM3	144.00	8.64	0.80	0.2	8.33 PPG FRESH WATER
Event	11	Test Lines	1/3/2018	06:47:57	COM3	5147.00	8.70	0.00	1.4	ALL LINES HELD PRESSURE AT 5137 PSI
Event	12	Pump Spacer 1	1/3/2018	06:51:39	COM3	253.00	8.36	1.50	0.1	8.33 PPG FRESH WATER (10 BBL)

Event	13	Pump Spacer 2	1/3/2018	06:57:03	COM3					8.4 PPG MUDFLUSH III (20 BBL)
Event	14	Pump Cement	1/3/2018	07:05:30	COM3					HALCEM CEMENT 1765 SKS (437 BBLS), 14.2 PPG, 1.39 FT3/SK, 6.39 GAL/SK
Event	15	Shutdown	1/3/2018	08:15:21	USER	28.00	15.61	0.00	503.9	END OF JOB
Event	16	Clean Lines	1/3/2018	08:16:41	USER	-14.00	0.07	0.00	0.0	WASH UP PUMPS AND LINES TO THE PIT
Event	17	Drop Plug	1/3/2018	08:25:30	USER	18.00	8.30	0.00	0.0	PLUG WENT, VERIFIED BY DRILLER
Event	18	Pump Displacement	1/3/2018	08:27:45	COM3	2040.00	8.39	10.00	8.6	8.34 PPG FRESH WATER (127.2 BBLS) 3 BAGS BE6, 1 GAL MMCR & 11 SKS KCL
Event	19	Slow Rate	1/3/2018	08:39:47	USER	2499.00	8.39	4.10	124.6	SLOW RATE TO 4 BPM PER CO REP TO LAND PLUG
Event	20	Bump Plug	1/3/2018	08:42:34	USER	3213.00	8.40	0.00	134.6	BROUGHT BACK UP TO 3200 PSI
Event	21	Check Floats	1/3/2018	08:45:19	USER	3299.00	8.36	0.00	134.6	FLOATS HELD, 1.5 BBL BACK TO TRUCK
Event	22	Bump Plug	1/3/2018	08:50:00	USER	3393.00	8.39	0.00	139.2	LAND PLUG AT 2700 PSI, BROUGHT UP TO 3200 PSI
Event	23	Check Floats	1/3/2018	08:54:55	USER	3478.00	8.34	0.00	139.2	FLOATS HELD, 5 BBL BACK TO TRUCK, CO REP AND HES AGREED TO BUMP AGAIN BECAUSE OF THE VOLUME RETURNED TO THE TRUCK.
Event	24	End Job	1/3/2018	08:57:30	COM3	-15.00	8.28	0.00	139.2	GOOD RETURNS THROUGHOUT, PIPE WAS NOT RECIPROCATED, MUD FLUSH TO SURFACE
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	1/3/2018	09:02:03	USER	-14.00	8.25	0.00	139.2	ALL HES PRESENT
Event	26	Rig Down Lines	1/3/2018	09:20:57	USER	1.00	8.25	0.00	18.6	ALL HES PRESENT
Event	27	Pre-Convoy Safety Meeting	1/3/2018	10:10:00	USER					ALL HES PRESENT
Event	28	Crew Leave Location	1/3/2018	10:15:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW

# TEP - PA 411-25 - 4.5" PRODUCTION



- |                                         |                          |                     |                                          |
|-----------------------------------------|--------------------------|---------------------|------------------------------------------|
| ① Call Out                              | ⑧ Pre-Job Safety Meeting | ⑮ Shutdown          | ⑳ Bump Plug                              |
| ② Pre-Convoy Safety Meeting             | ⑨ Start Job              | ⑯ Clean Lines       | ㉑ Check Floats                           |
| ③ Crew Leave Yard                       | ⑩ Prime Pumps            | ⑰ Drop Plug         | ㉒ End Job                                |
| ④ Arrive At Loc                         | ⑪ Test Lines             | ⑱ Pump Displacement | ㉓ Post-Job Safety Meeting (Pre Rig-Down) |
| ⑤ Assessment Of Location Safety Meeting | ⑫ Pump Spacer 1          | ㉒ Slow Rate         | ㉔ Rig Down Lines                         |
| ⑥ Pre-Rig Up Safety Meeting             | ⑬ Pump Spacer 2          | ㉓ Bump Plug         | ㉕ Pre-Convoy Safety Meeting              |
| ⑦ Rig-Up Equipment                      | ⑭ Pump Cement            | ㉔ Check Floats      | ㉖ Crew Leave Location                    |

▼ **HALLIBURTON** | iCem® Service

Created: 2018-01-03 04:06:56, Version: 4.2.393

Edit

Customer: TERRA ENERGY LTD.

Job Date: 1/3/2018

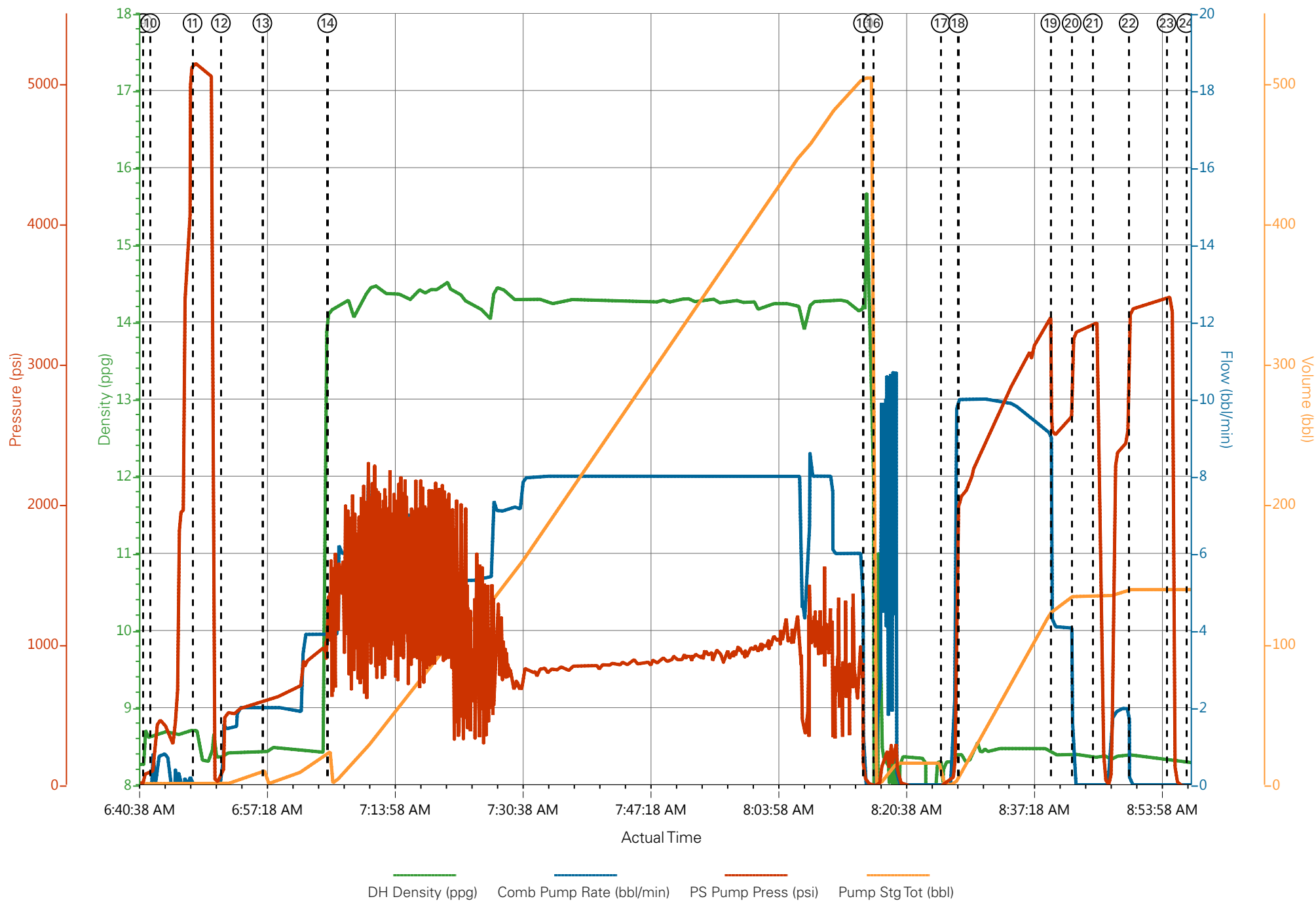
Well: PA 411-25

Representative: G.GOIN

Sales Order #: 904535029

ELITE 8: C.SMITH/D.PORTER

# TEP - PA 411-25 - 4.5" PRODUCTION



### Job Information

<b>Request/Slurry</b>	2441058/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	27/DEC/2017
<b>Submitted By</b>	Lukas Van Zyl	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Terra Energy Partners	<b>Location</b>	Garfield	<b>Well</b>	PA 411-25

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8220 ft	<b>BHST</b>	102°C / 215°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	7928 ft	<b>BHCT</b>	63°C / 145°F
<b>Pressure</b>	4885 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	AMC	<b>Mud Trade Name</b>		<b>Density</b>	
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### Cement Information - Primary Design



<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		HalCem Primary				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.387	ft3/sack
						Water Requirement	6.36	gal/sack
						Total Mix Fluid	6.36	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

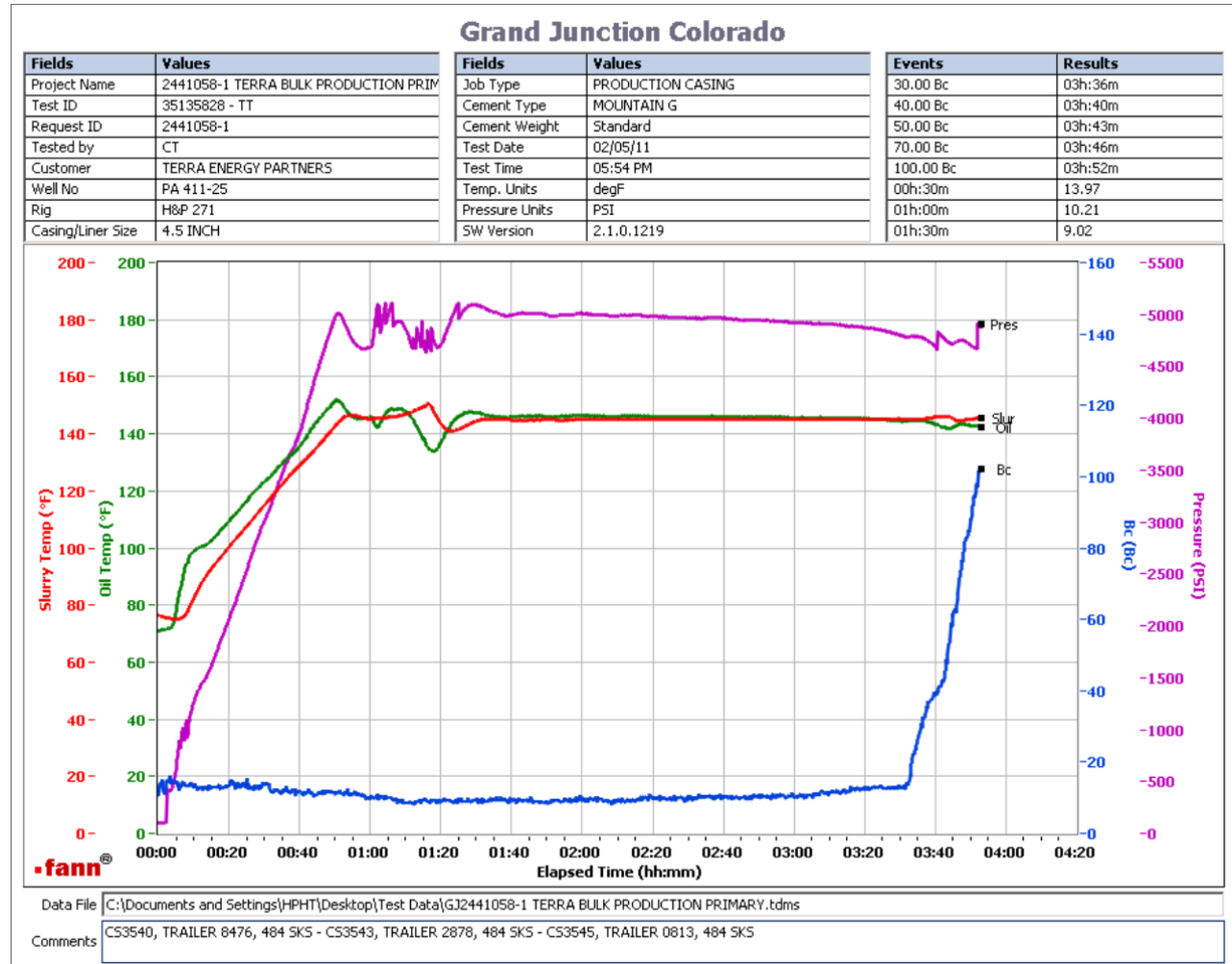
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# **Operation Test Results Request ID 2441058/1**

## **Thickening Time - ON-OFF-ON**

**30/DEC/2017**

Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
145	4885	50	3:36	3:43	3:46	3:52	12	60	15	9



1765 sks Total  
 CS3540, Trailer 8476, 484 sks  
 CS3543, Trailer 2878, 484 sks  
 CS3545, Trailer 0813, 484 sks  
 Deflection: 9 - 9

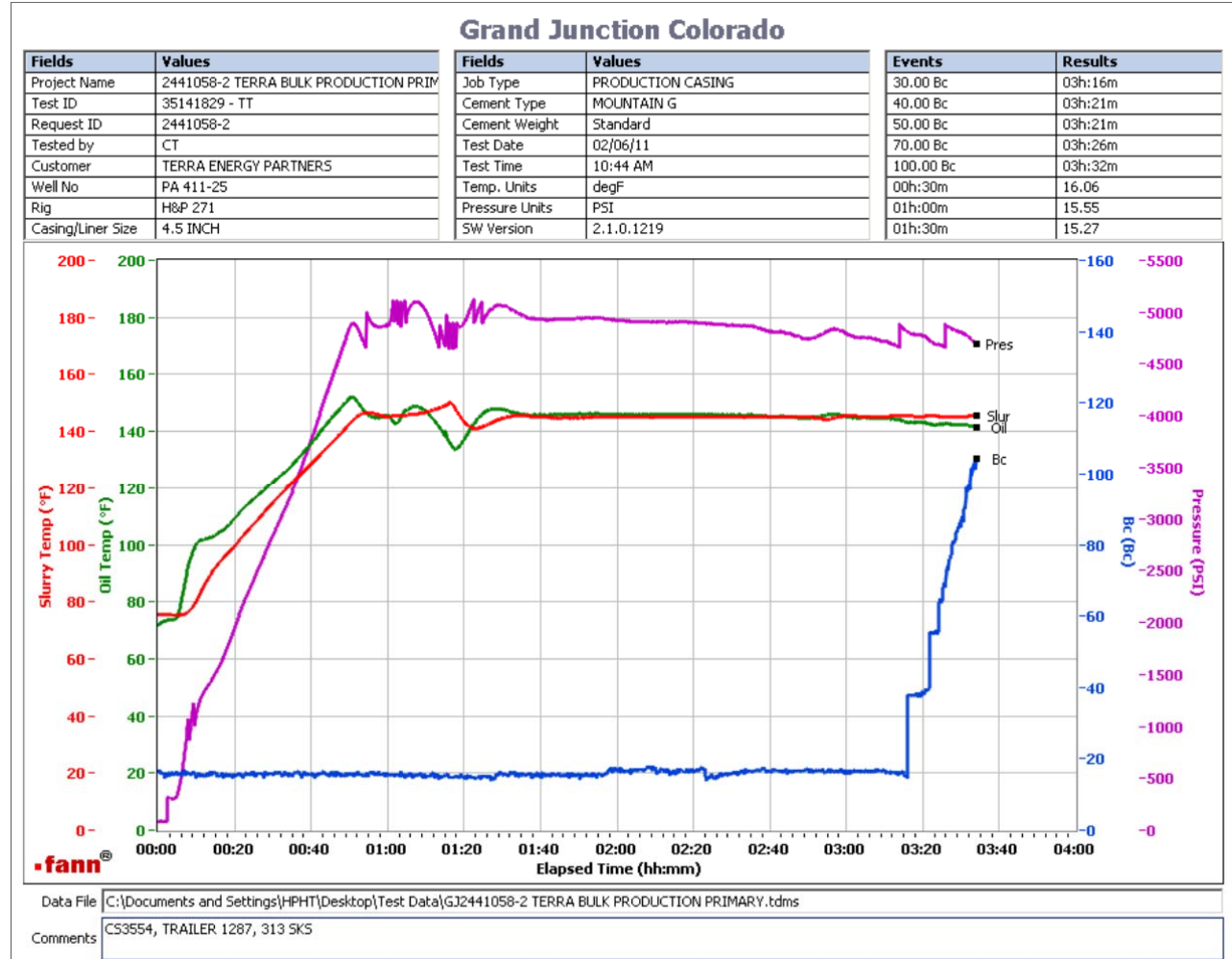
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## Operation Test Results Request ID 2441058/2

### Thickening Time - ON-OFF-ON

30/DEC/2017

Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
145	4885	50	3:16	3:21	3:26	3:32	16	60	15	16



1765 sks Total  
CS3554, Trailer 1287, 313 sks  
Deflection: 16 - 16

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