

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

Date: Wednesday, April 18, 2018

### **Terra RU 523-17**

API # 05-045-23735-00  
Terra RU 523-17 Production  
Job Date: Sunday, April 15, 2018

Sincerely,

**Grand Junction Cement Engineering**

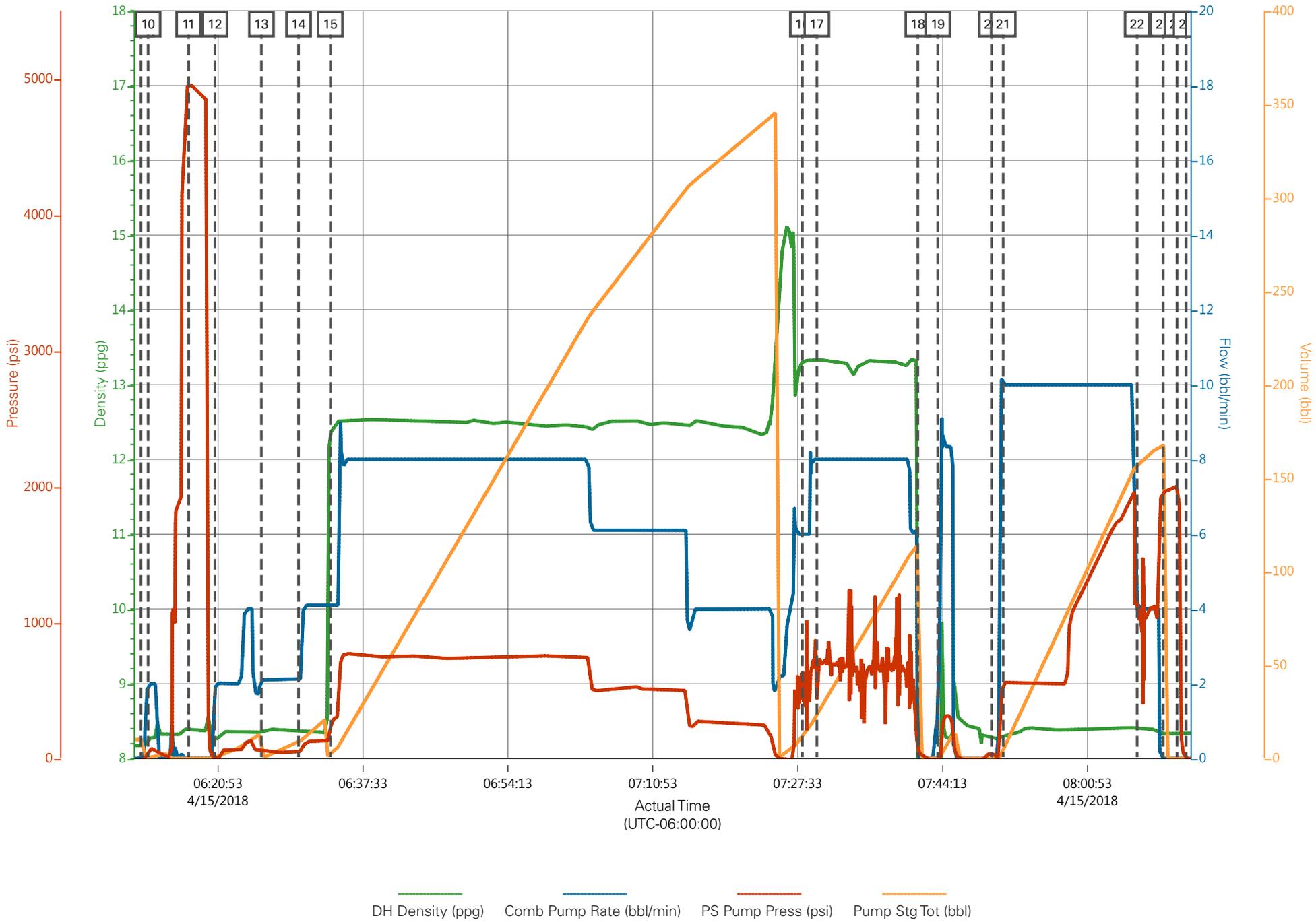
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	4/14/2018	18:30:00	USER					REQUESTED ON LOCATION @ 0000
Event	2	Pre-Convoy Safety Meeting	4/14/2018	20:30:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	4/14/2018	20:35:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive at Location from Service Center	4/14/2018	21:45:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	4/14/2018	22:00:00	USER					MET WITH COMP REP AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 71F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	4/14/2018	22:10:00	USER					ALL HES PRESENT
Event	7	Rig-Up Completed	4/14/2018	23:00:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	4/15/2018	05:33:50	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	4/15/2018	06:12:00	COM3					TD 10390', TP 10384.9', SJ 30.06', OH 8.75", CSG 4.5" 11.6#, MUD 9.0 PPG. RIG CIRCULATED WELL @ 10 BPM WITH 1100 PSI.
Event	10	Prime Pumps	4/15/2018	06:12:50	USER	53.00	8.33	1.00	2.00	8.33 PPG FRESH WATER
Event	11	Test Lines	4/15/2018	06:17:30	COM3	4960.00	8.33	0.50	0.50	ALL LINES HELD PRESSURE AT 4960 PSI

Event	12	Pump Spacer 1	4/15/2018	06:20:31	COM3	140.00	8.33	2.00	10.00	8.33 PPG FRESH WATER (10 BBL)
Event	13	Pump Spacer 2	4/15/2018	06:25:52	COM3	155.00	8.33	4.00	20.00	8.4 PPG MUDFLUSH III (20 BBL)
Event	14	Check Weight	4/15/2018	06:30:08	COM3					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	15	Pump Lead Cement	4/15/2018	06:33:48	COM3	720.00	12.30	8.00	2.50	NEOCEM CEMENT 930 SKS (321 BBLs), 12.5 PPG, 1.94 FT3/SK, 9.6 GAL/SK
Event	16	Pump Tail Cement	4/15/2018	07:28:05	COM3	660.00	13.30	8.00	11.90	THERMACEM CEMENT 265 SKS (82 BBLs), 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK
Event	17	Check Weight	4/15/2018	07:29:45	COM3					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Shutdown	4/15/2018	07:41:22	USER					END OF CMT
Event	19	Clean Lines	4/15/2018	07:43:39	USER					WASH UP PUMPS AND LINES
Event	20	Drop Top Plug	4/15/2018	07:49:50	USER					PLUG WENT, VERIFIED BY CO REP
Event	21	Pump Displacement	4/15/2018	07:51:11	COM3	1944.00	8.33	10.00	150.40	8.34 PPG FRESH WATER (160.4 BBLs) 3 BAGS BE6, 1 GAL MMCR & 16 SKS KCL
Event	22	Slow Rate	4/15/2018	08:06:35	USER	1205.00	8.33	4.00	10.00	SLOW RATE TO 4 BPM PER CO REP TO LAND PLUG
Event	23	Bump Plug	4/15/2018	08:09:35	COM3	2004.00	8.33	0.00	160.50	LAND PLUG AT 1204 PSI, BROUGHT UP TO 2003PSI
Event	24	Check Floats	4/15/2018	08:11:10	USER	2003.00	8.32	0.00	0.00	FLOATS HELD, 1 BBL BACK TO TRUCK
Event	25	End Job	4/15/2018	08:12:13	COM3					RETURNS TO START JOB AND THROUGHOUT CEMENT AND NO RETURNS DURING DISPLACEMENT, LAND PRESSURE WAS ABOUT HALF OF CALCULATED, PIPE WAS RECIPROCATED
Event	26	Post-Job Safety Meeting (Pre Rig-Down)	4/15/2018	08:13:38	USER					ALL HES PRESENT
Event	27	Rig-Down Completed	4/15/2018	08:49:59	USER					ALL HES PRESENT
Event	28	Pre-Convoy Safety Meeting	4/15/2018	09:00:33	USER					ALL HES PRESENT
Event	29	Crew Leave Location	4/15/2018	09:05:53	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW

# TERRA - RU 523-17 - 4.5" PRODUCTION



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

### Job Information

<b>Request/Slurry</b>	2466123/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	09/APR/2018
<b>Submitted By</b>	Connor Matthews	<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>	RU 523-17

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10599 ft	<b>BHST</b>	127°C / 260°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10578 ft	<b>BHCT</b>	92°C / 198°F
<b>Pressure</b>	6705 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	<b>Mud Trade Name</b>	<b>Density</b>
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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>	<b>Cement Properties</b>		
						Slurry Density	12.5	lbm/gal
						Slurry Yield	1.941	ft <sup>3</sup> /sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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# Operation Test Results Request ID 2466123/1

## Thickening Time - ON-OFF-ON

12/APR/2018

Test Temp (degF)	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)
198	6705	52	4:38	4:56	5:00	5:00	6	62	15	7

Total sks =930

CS0862, Trailer 2878, 400 sks

CS0861, Trailer 4064, 130 sks

CS0864, Trailer 1513, 400 sks

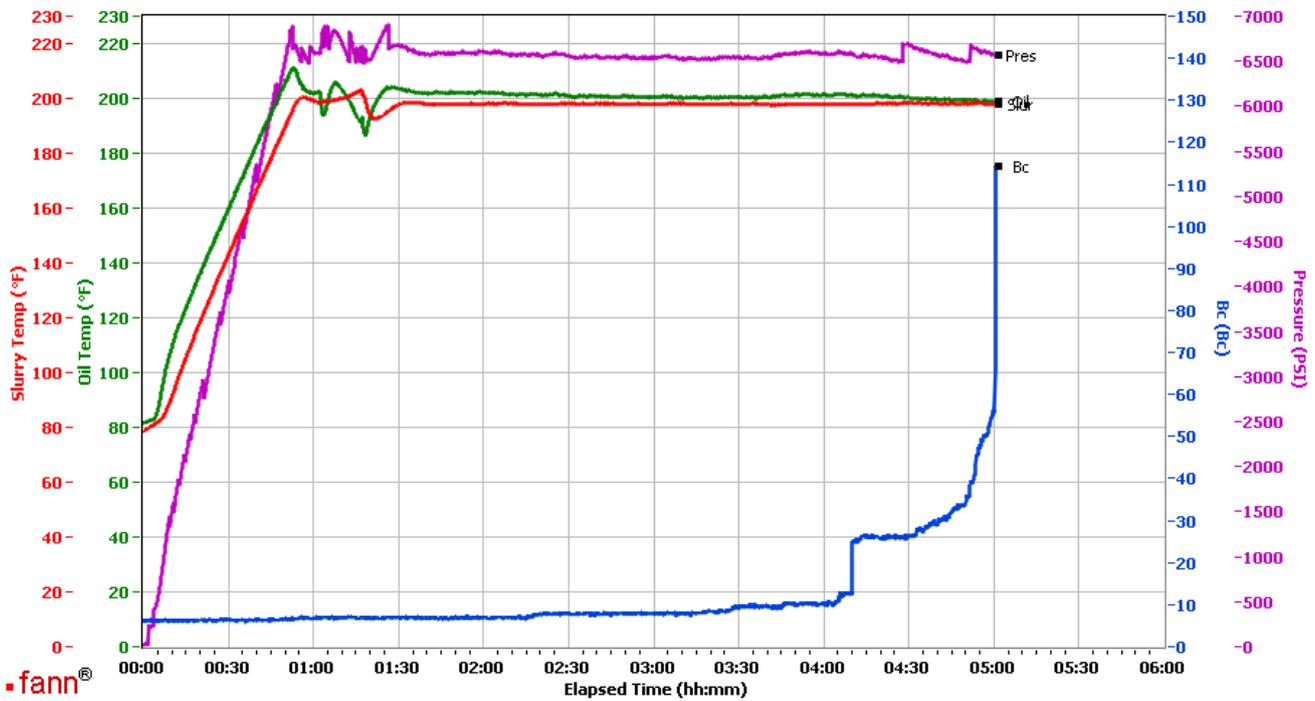
No deflection.

### Grand Junction, Colorado

Fields	Values
Project Name	2466123-1 TERRA BULK PRODUCTION LEAD
Test ID	35404530 - TT
Request ID	2466123-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	RU 523-17
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	GCC TYPE I-II
Cement Weight	Standard
Test Date	04/12/18
Test Time	04:49 AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:38m
40.00 Bc	04h:52m
50.00 Bc	04h:56m
70.00 Bc	05h:00m
100.00 Bc	05h:00m
00h:30m	6.24
01h:00m	6.91
01h:30m	6.96



Data File C:\Documents and Settings\M290\Desktop\Test Data\GJ2466123-1 TERRA BULK PRODUCTION LEAD.tdms

Comments CS0862, TRAILER 2878, 400 SKS - CS0861, TRAILER 4064, 130 SKS - CS0864, TRAILER 1513, 400 SKS

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### Job Information

Request/Slurry	2466124/1	Rig Name	H&P 318	Date	09/APR/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	RU 523-17

### Well Information

Casing/Liner Size	4.5 in	Depth MD	10599 ft	BHST	127°C / 260°F
Hole Size	8.75 in	Depth TVD	10578 ft	BHCT	92°C / 198°F
Pressure	6705 psi				

### Drilling Fluid Information

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

Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties
						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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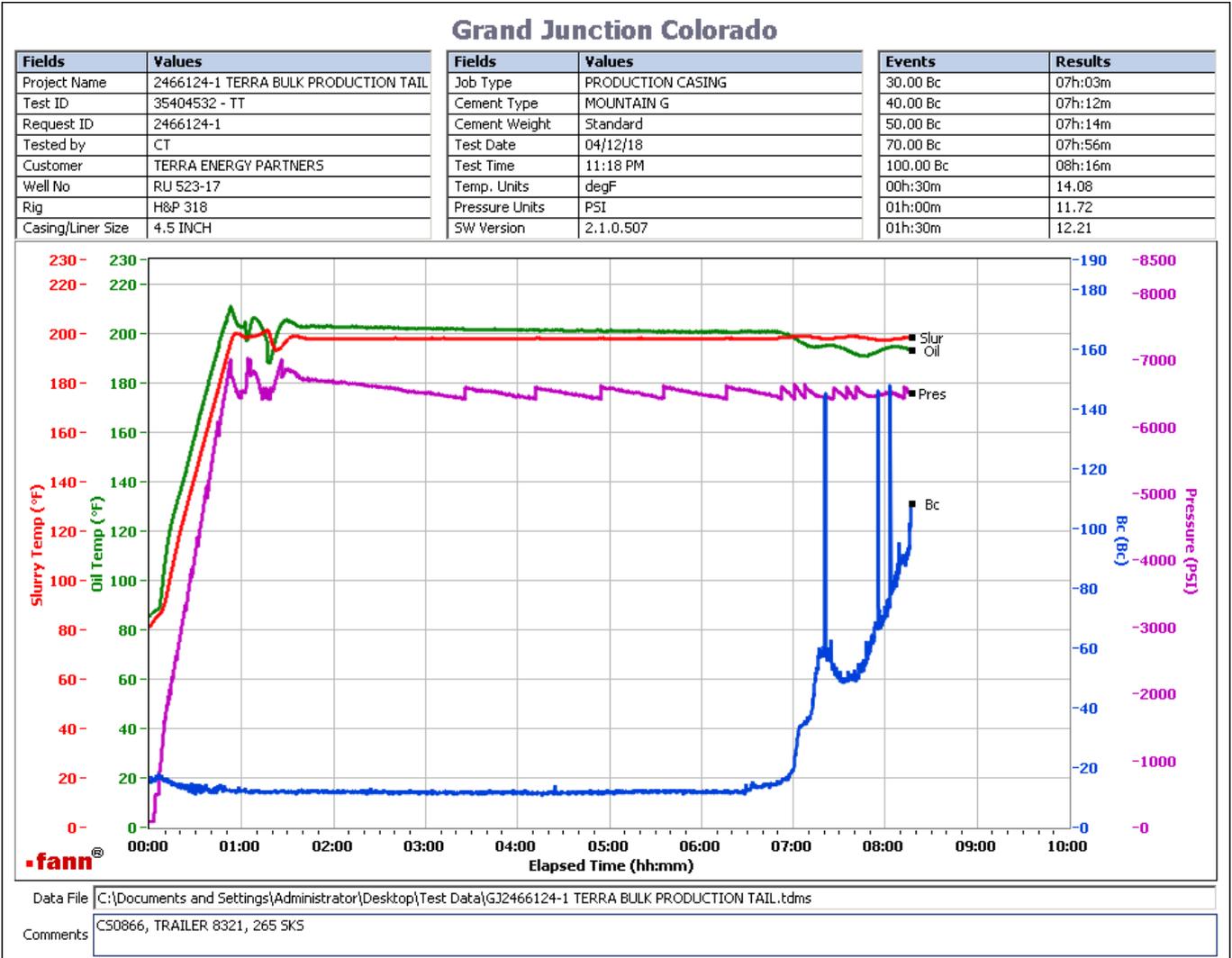
**Operation Test Results Request ID 2466124/1**

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

**13/APR/2018**

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)
198	6705	52	7:03	7:14	7:56	8:16	15	62	15	11

Total sks = 265  
 CS0866, Trailer 8321, 265 sks  
 No deflection



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