

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

**For: Terra**

Date: Wednesday, February 28, 2018

**RU 522-17 Production**

API# 05-045-23738-00

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

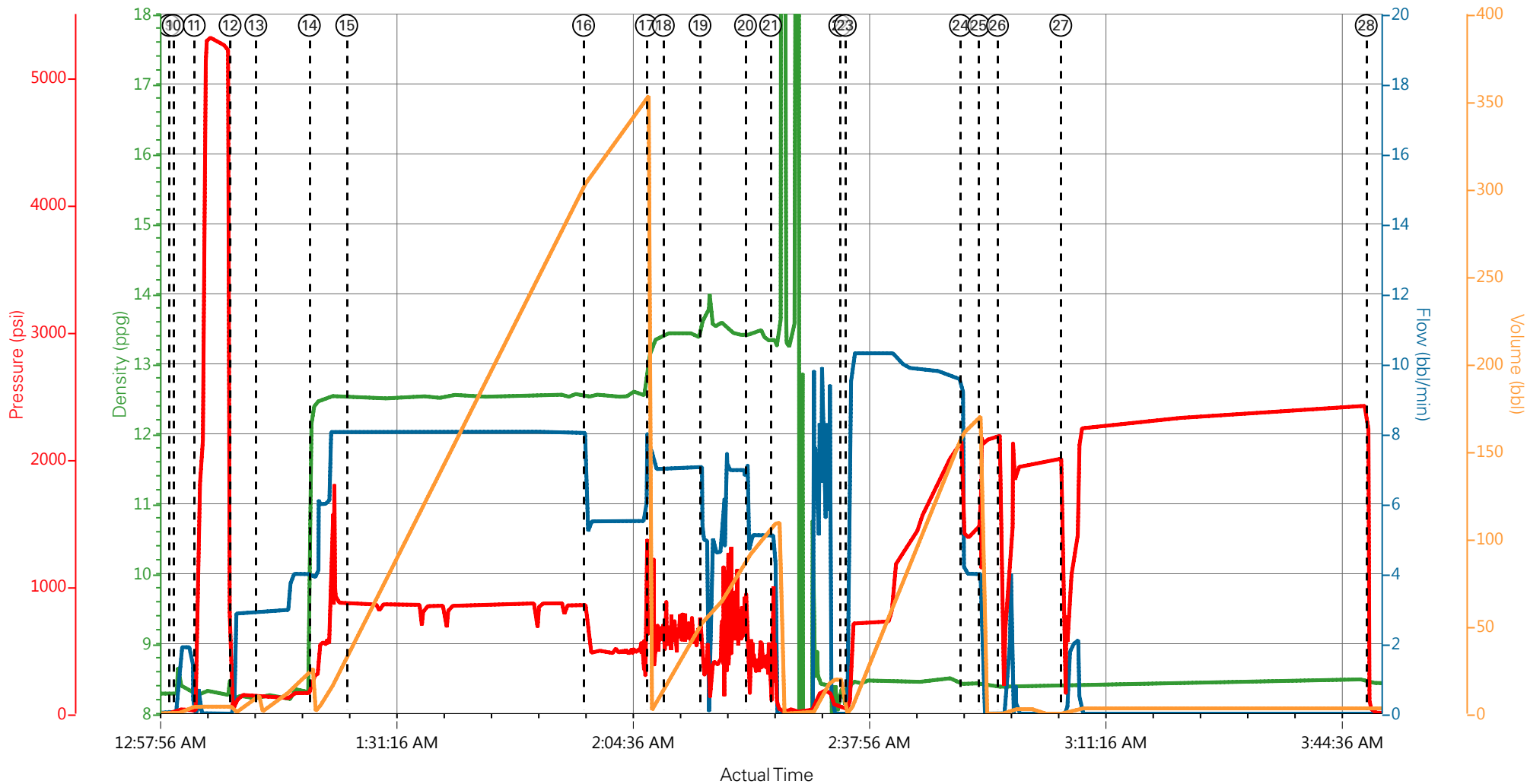
### 2.1 Job Event Log

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	2/27/2018	06:00:00	USER					REQUESTED ON LOCATION @ 12:00
Event	2	Pre-Convoy Safety Meeting	2/27/2018	08:45:00	USER					ALL HES EMPLOYEES PRESENT
Event	3	Crew Leave Yard	2/27/2018	09:00:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 F550 SERVICE TRUCK
Event	4	Arrive At Loc	2/27/2018	11:00:00	USER					RIG RUNNING CASING UPON HES ARRIVAL
Event	5	Assessment Of Location Safety Meeting	2/27/2018	11:15:00	USER					MET WITH COMP REP, AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7.0, CHLORIDES- 500, TEMP- 57F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	2/27/2018	11:30:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	2/27/2018	11:45:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	2/28/2018	00:10:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 11 BPM PRIOR TO JOB PRESSURE @ 1030PSI.
Event	9	Start Job	2/28/2018	00:59:40	COM6					TD 10493', TP 10486', SJ 28.15', SURFACE CSG 9 5/8" 32.3# H-40 SET @ 1137' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 9.0
Event	10	Prime Lines	2/28/2018	01:00:14	USER	8.33	2	40	4	8.33 PPG FRESH WATER
Event	11	Test Lines	2/28/2018	01:03:13	COM6	8.33	0	5285	.5	ALL LINES HELD PRESSURE AT PSI 5285
Event	12	Pump H2O Spacer	2/28/2018	01:08:16	COM6	8.33	3	110	10	8.33 PPG FRESH WATER

Event	13	Mud Flush	2/28/2018	01:11:54	COM6	8.5	4	160	20	20 BBL MUDFLUSH III
Event	14	Pump Lead Cement	2/28/2018	01:19:27	COM6	12.5	8	900	321.3	930 SKS NEOCEM CMT 12.5 PPG, 1.96 FT3/SK, 9.6 GAL/SK
Event	15	Check weight	2/28/2018	01:24:43	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Slow Rate	2/28/2018	01:58:08	USER					SLOWED RATE TO END LEAD SILO
Event	17	Pump Tail Cement	2/28/2018	02:06:59	COM6	13.3	7	650	81.7	265 SKS THERMACEM CMT 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK.
Event	18	Check weight	2/28/2018	02:09:23	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	19	Slow Rate	2/28/2018	02:14:32	USER					SLOWED RATE TO FIX DENSITY
Event	20	Slow Rate	2/28/2018	02:20:58	USER					SLOWED TO END TAIL CEMENT
Event	21	Shutdown	2/28/2018	02:24:30	USER					END OF CEMENT, WASH UP PUMPS AND LINES TO PIT.
Event	22	Pump Displacement	2/28/2018	02:34:16	COM6	8.4	10	2150	162	1 GAL MMCR IN FIRST 10 BBLs, 3 LBS BE-6 IN FIRST 30 BBLs, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT
Event	23	Drop Top Plug	2/28/2018	02:35:03	COM6					VERIFIED BY FLAG INDICATOR
Event	24	Slow Rate	2/28/2018	02:51:17	USER	8.4	4	1460	152	SLOW RATE TO 4 BPM TO BUMP PLUG
Event	25	Bump Plug	2/28/2018	02:53:51	COM6	8.4	4	1480	162	LANDED PLUG AT 1480 PSI, BROUGHT UP TO 2150 PSI
Event	26	Check Floats	2/28/2018	02:56:31	USER					FLOATS DID NOT HOLD. 2.5BBLs BACK TO TRUCK. CLOSED VALVE AND PRESSURED BACK UP.
Event	27	Check Floats	2/28/2018	03:05:26	USER					FLOATS DID NOT HOLD. 3BBLs BACK TO TRUCK. CLOSED VALVE AND PRESSURED BACK UP.
Event	28	Shut In Well	2/28/2018	03:48:31	USER					SHUT IN WELL WITH 2420PSI LEFT ON IT. RIG MONITORED PRESSURE ON THE FLOOR.
Event	29	End Job	2/28/2018	06:00:00	USER					RIG HAD RETURNS PRIOR TO JOB, DID NOT GET RETURNS BACK DURING CEMENT JOB. PRE CO-REP SHUT IN WELL WITH 2420PSI ON IT AND LEFT PLUG CONTAINER RIGGED UP. CO-REP RELEASED CREW AT 06:00
Event	30	Post-Job Safety Meeting (Pre Rig-Down)	2/28/2018	08:00:00	USER					ALL HES PRESENT

Event	31	Rig-Down Equipment	2/28/2018	08:10:00	USER	ALL HES PRESENT
Event	32	Pre-Convoy Safety Meeting	2/28/2018	08:50:00	USER	ALL HES PRESENT
Event	33	Crew Leave Location	2/28/2018	09:00:00	USER	THANK YOU FOR CHOOSING HALLIBURTON CEMENT, SHAWN BLOSSOM AND CREW

# TERRA FEDERAL RU 522-17, 4.5" PRODUCTION



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

- |   |                          |                    |                     |  |
|---|--------------------------|--------------------|---------------------|--|
| ① Call Out                              | ⑧ Pre-Job Safety Meeting | ⑮ Check weight     | ⑳ Pump Displacement | ⑳ End Job                                |
| ② Pre-Convoy Safety Meeting             | ⑨ Start Job              | ⑯ Slow Rate        | ㉑ Drop Top Plug     | ㉒ Post-Job Safety Meeting (Pre Rig-Down) |
| ③ Crew Leave Yard                       | ⑩ Prime Lines            | ⑰ Pump Tail Cement | ㉒ Slow Rate         | ㉓ Rig-Down Equipment                     |
| ④ Arrive At Loc                         | ⑪ Test Lines             | ⑱ Check weight     | ㉓ Bump Plug         | ㉔ Pre-Convoy Safety Meeting              |
| ⑤ Assessment Of Location Safety Meeting | ⑫ Pump H2O Spacer        | ⑲ Slow Rate        | ㉔ Check Floats      | ㉕ Crew Leave Location                    |
| ⑥ Pre-Rig Up Safety Meeting             | ⑬ Mud Flush              | ㉑ Slow Rate        | ㉕ Check Floats      |  |
| ⑦ Rig-Up Equipment                      | ⑭ Pump Lead Cement       | ㉒ Shutdown         | ㉖ Shut In Well      |  |

▼ **HALLIBURTON** | iCem® Service

Created: 2018-02-27 07:52:48, Version: 4.2.393

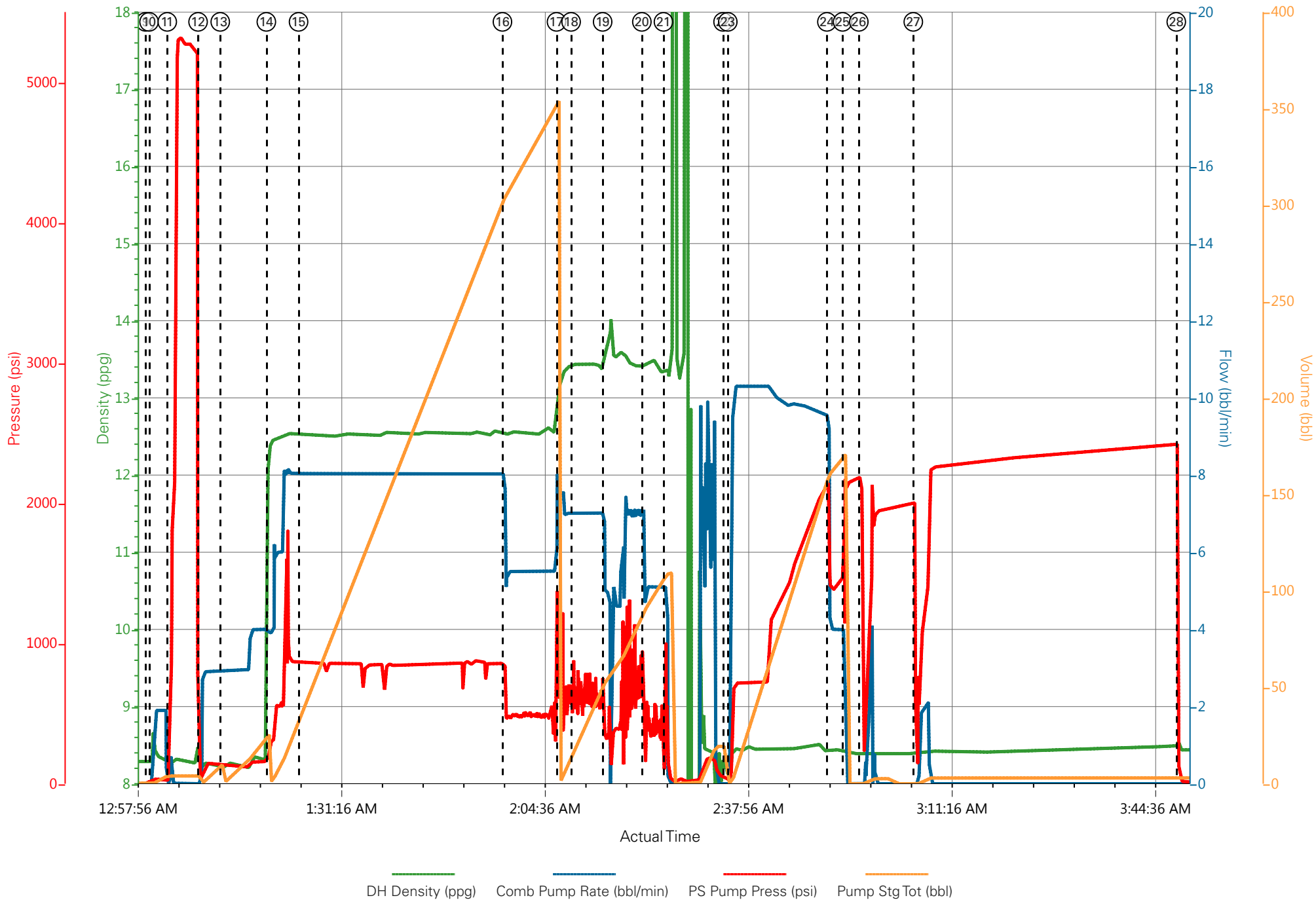
[Edit](#)

Customer : TERRA ENERGY PARTNERS-EBUS  
 Representative : BOBBY BROWN

Job Date : 2/27/2018  
 Sales Order # : 904657478

Well : RU 522-17  
 ELITE 4 : ADAM ANGELO

# TERRA FEDERAL RU 522-17, 4.5" PRODUCTION



### Job Information

<b>Request/Slurry</b>	2454381/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	19/FEB/2018
<b>Submitted By</b>	Patrick Ealey	<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 522-17

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10658 ft	<b>BHST</b>	127°C / 260°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10580 ft	<b>BHCT</b>	92°C / 198°F
<b>Pressure</b>	6706 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>	<u>Cement Properties</u>		
		NeoCem				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 2454381/1

## Thickening Time - ON-OFF-ON

20/FEB/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	6706	52	4:44	5:17	5:22	5:22	13	62	15	12

Total sks = 930

composite:

CS0462 TR#8678 465 SKS

CS0463 TR#1656 465 SKS

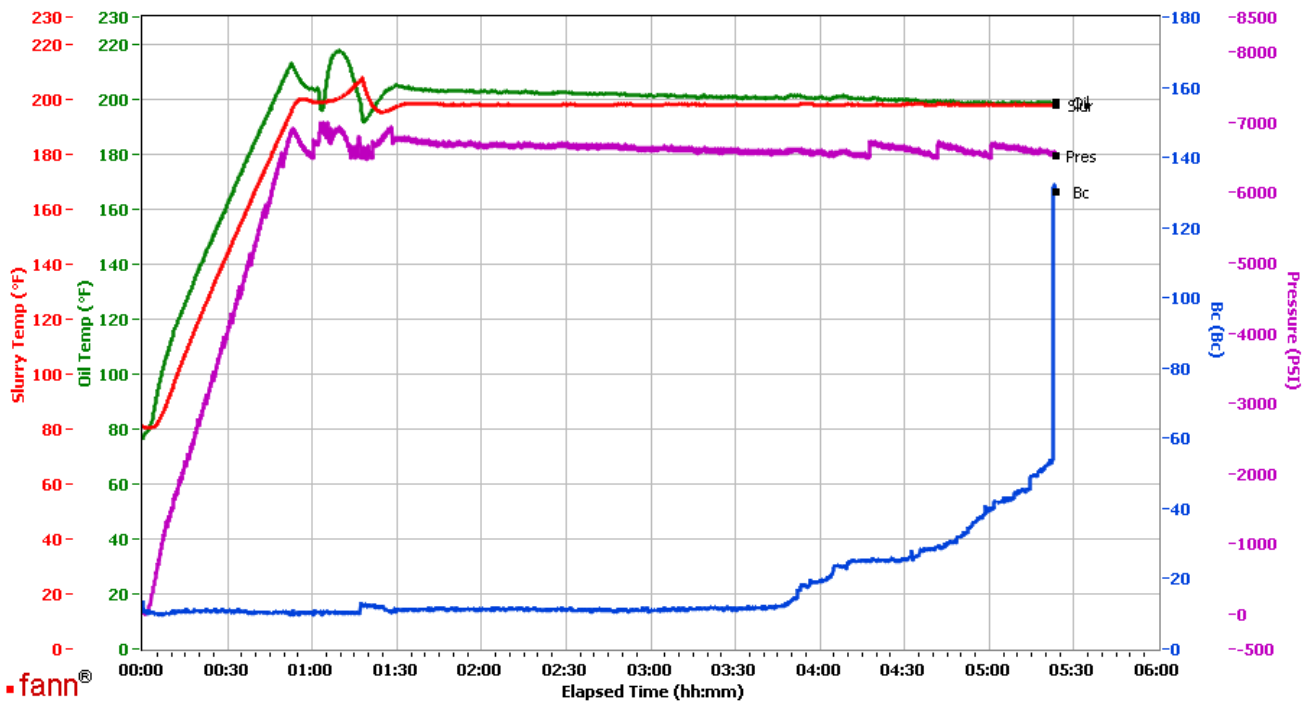
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### Grand Junction, Colorado

Fields	Values
Project Name	GJ2454381-1 TERRA PRODUCTION BULK PR
Test ID	35268552
Request ID	GJ2454381-1
Tested by	DEBA
Customer	TERRA ENERGY PARTNERS
Well No	RU 522-17
Rig	H&P 318
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	HOLCIM TYPE I-II
Cement Weight	Standard
Test Date	02/20/18
Test Time	06:28 AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:44m
40.00 Bc	04h:58m
50.00 Bc	05h:17m
70.00 Bc	05h:22m
100.00 Bc	05h:22m
00h:30m	11.25
01h:00m	10.81
01h:30m	10.71



Data File C:\Documents and Settings\M290\Desktop\Test Data\GJ2454381-1 TERRA PRODUCTION BULK PRIMARY.tdms

Comments COMPOSITE: CS0462 TR#8678 465 SKS AND CS0463 TR#1656 465 SKS

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### Job Information

<b>Request/Slurry</b>	2454382/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	19/FEB/2018
<b>Submitted By</b>	Patrick Ealey	<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 522-17

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10658 ft	<b>BHST</b>	127°C / 260°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10580 ft	<b>BHCT</b>	92°C / 198°F
<b>Pressure</b>	6706 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>		<b>Mud Trade Name</b>		<b>Density</b>	
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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>	<b>Cement Properties</b>		
		ThermaCem				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 2454382/1**

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

**20/FEB/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	6706	52	6:12	6:48	6:52	6:52	11	62	15	12

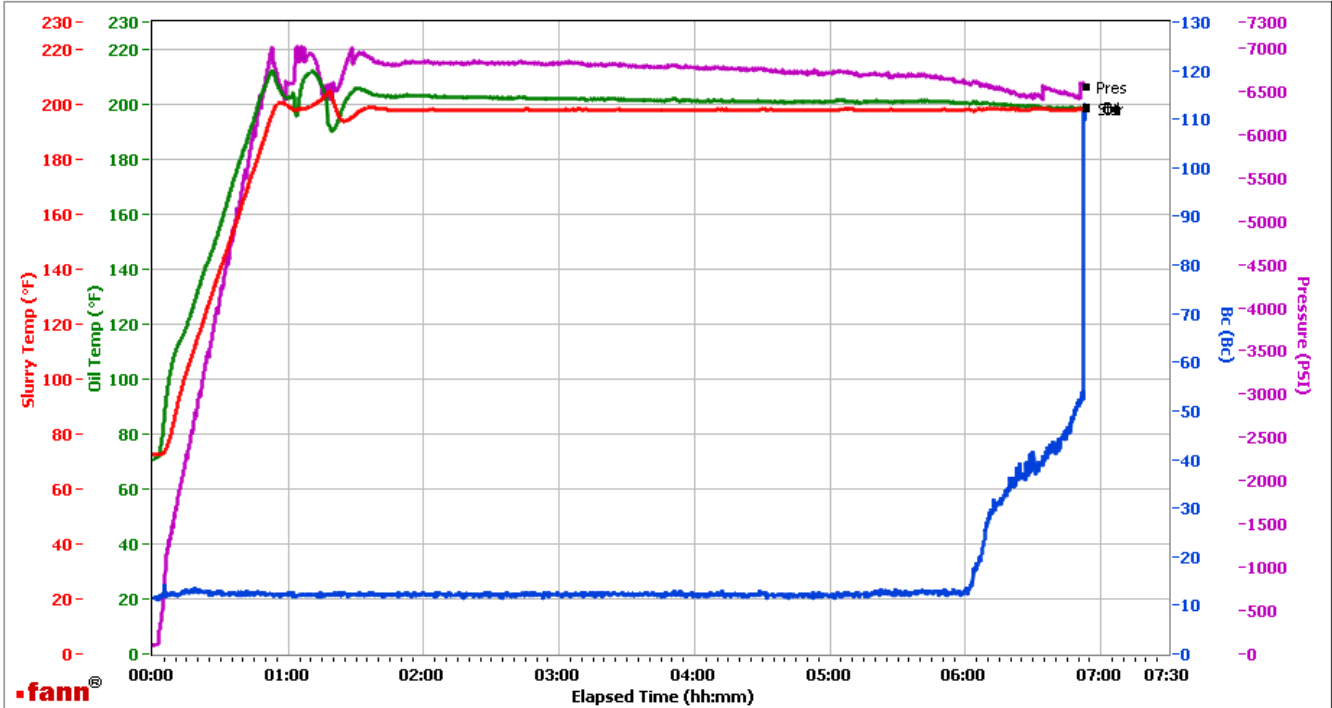
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**Grand Junction Colorado**

Fields	Values
Project Name	GJ2454382-1 TERRA PRODUCTION TAIL BU
Test ID	35268554
Request ID	2454382-1
Tested by	JASON
Customer	TERRA ENERGY PARTNERS
Well No	RU 522-17
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION
Cement Type	MOUNTAIN G
Cement Weight	Light Weight
Test Date	02/20/18
Test Time	11:49 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	06h:12m
40.00 Bc	06h:28m
50.00 Bc	06h:48m
70.00 Bc	06h:52m
100.00 Bc	06h:52m
00h:30m	12.77
01h:00m	12.86
01h:30m	12.03



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