

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Monday, August 21, 2017

**TR 324-23-597 Production PJR**

API #05-045-23471-00

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

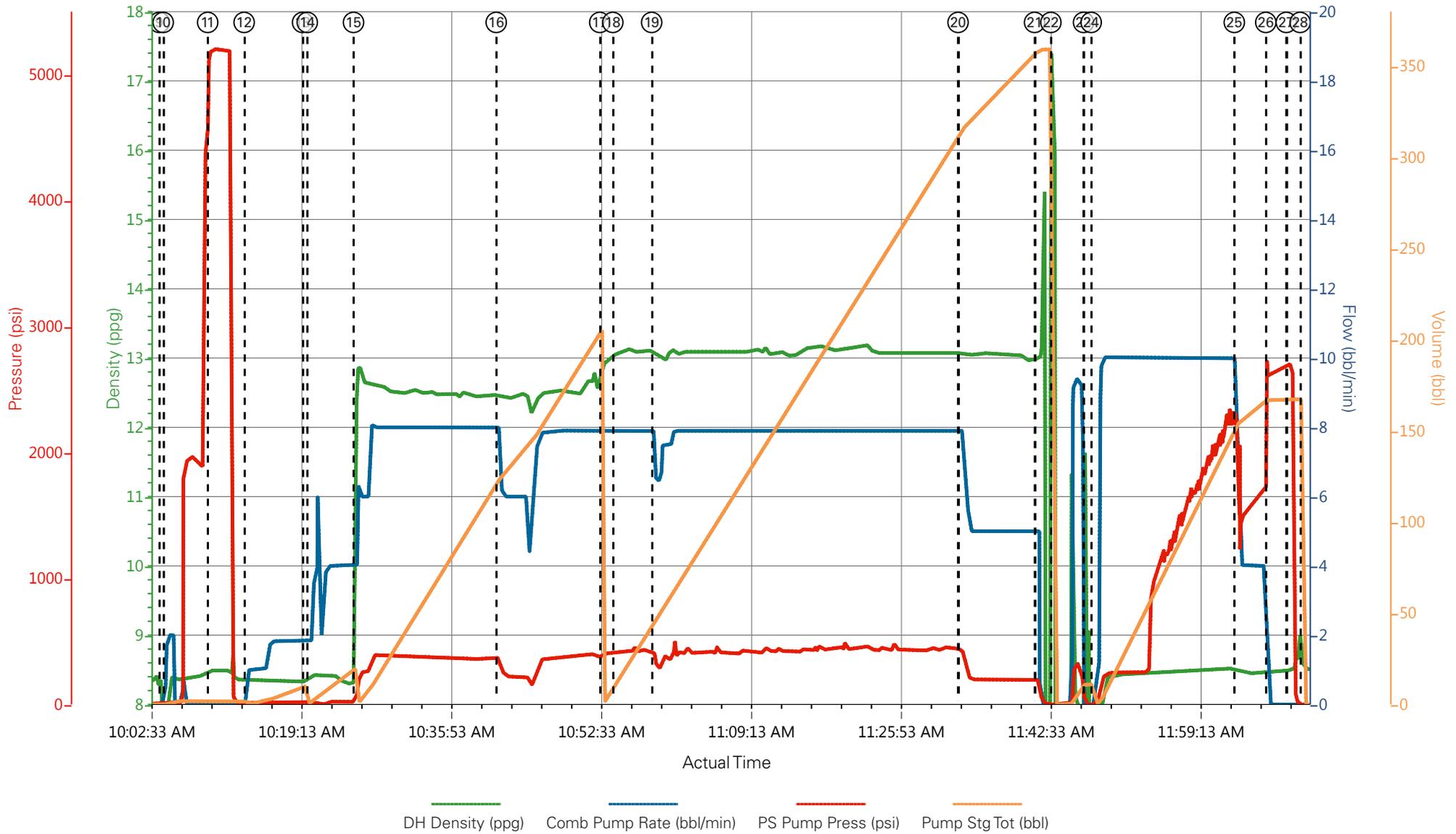
Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/21/2017	00:00:00	USER					REQUESTED ON LOCATION @ 6:00
Event	2	Pre-Convoy Safety Meeting	8/21/2017	02:45:00	USER					ALL HES EMPLOYEES PRESENT
Event	3	Crew Leave Yard	8/21/2017	03:00:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive at Loc	8/21/2017	05:45:00	USER					RIG RUNNING CASING UPON HES ARRIVAL
Event	5	Assessment Of Location Safety Meeting	8/21/2017	06:00:00	USER					ASSESSED LOCATION AND COLLECTED WATER SAMPLE (PH- 7.0, CHLORIDES- 0, TEMP- 60 F). MET WITH COMPANY REP, AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION COMPANY REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Spot Equipment	8/21/2017	06:15:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP  ALL HES EMPLOYEES PRESENT
Event	7	Pre-Rig Up Safety Meeting	8/21/2017	06:45:00	USER					
Event	8	Pre-Job Safety Meeting	8/21/2017	08:45:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 11.7 BPM PRIOR TO JOB PRESSURE @ 1550 PSI.
Event	9	Start Job	8/21/2017	10:03:45	COM5					TP 10380.12', SJ 31.42', SURFACE CSG 9 5/8" 32.3#

J-55 SET @ 3087' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 8.8, 1500 CFM DOWN THE PARASITE STRING.

Event	10	Prime Lines	8/21/2017	10:04:11	USER	8.33	2.0	20	2	FRESH WATER
Event	11	Test Lines	8/21/2017	10:09:08	COM5				5200	PRESSURE HELD
Event	12	Pump H2O Spacer	8/21/2017	10:13:11	COM5	8.33	1.8	20	10	FRESH WATER
Event	13	Pump Mud Flush III	8/21/2017	10:19:41	COM5	8.4	4.0	20	20	80 LBS MUD FLUSH III USED FOR 20 BBLS
Event	14	Check weight	8/21/2017	10:20:13	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	15	Pump Lead Cement	8/21/2017	10:25:21	COM5	12.5	8.0	390	197	570 SKS NEOCEM CMT 12.5 PPG, 1.94 FT3/SK, 9.58 GAL/SK, WITH 45 LBS TUF-FIBER THROUGHOUT
Event	16	Slow Rate	8/21/2017	10:41:13	USER					SLOWED FOR SWAP
Event	17	Pump Tail Cement	8/21/2017	10:52:44	COM5	13.0	8.0	420	329	890 SKS NEOCEM CMT 13.0 PPG, 2.07 FT3/SK, 9.43 GAL/SK.
Event	18	Check weight	8/21/2017	10:54:11	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	19	Slow Rate	8/21/2017	10:58:30	USER					SLOWED RATE FOR SWAP
Event	20	Slow Rate	8/21/2017	11:32:35	USER					SLOWED TO END CEMENT
Event	21	Shutdown	8/21/2017	11:41:05	USER					END OF CEMENT
Event	22	Clean Pump And Lines	8/21/2017	11:42:54	USER					CLEANED LINES AND PUMP TO PIT
Event	23	Drop Top Plug	8/21/2017	11:46:32	USER					LATCH DOWN PLUG AWAY, VERIFIED BY COMPANY REP
Event	24	Pump Displacement	8/21/2017	11:47:23	COM5	8.4	10.0	2300	150.4	1 GAL MMCR IN FIRST 10 BBLS, 3 LBS BE-6 IN FIRST 30 BBLS, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT
Event	25	Slow Rate	8/21/2017	12:03:18	USER	8.4	4.0	1300	10	SLOWED TO BUMP PLUG

Event	26	Bump Plug	8/21/2017	12:06:48	COM5	8.4	4.0	1700	160.4	PLUG BUMPED
Event	27	Check Floats	8/21/2017	12:09:05	USER			2700		FLOATS HELD 1.5 BBL FLOW BACK TO TANK
Event	28	End Job	8/21/2017	12:10:37	COM5					RETURNS DURING JOB UNTIL AIR WAS SHUT OFF. USED 3RD PARTY LATCH DOWN PLUG
Event	29	Post-Job Safety Meeting (Pre Rig-Down)	8/21/2017	12:20:00	USER					ALL HES EMPLOYEES PRESENT
Event	30	Pre-Convoy Safety Meeting	8/21/2017	13:45:00	USER					SILOS BLOWN DOWN AND READY TO BE MOVED. BROUGHT BACK ALL IRON AND BULK HOSES FROM LOCATION
Event	31	Crew Leave Location	8/21/2017	14:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW

# TERRA - CHEVRON TR 324-23-597 - 4 1/2" PRODUCTION



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

- |   |                             |                      |                         |   |                        |
|---|-----------------------------|----------------------|-------------------------|---|------------------------|
| ① Call Out                              | ⑦ Pre-Rig Up Safety Meeting | ⑬ Pump Mud Flush III | ⑲ Slow Rate             | 25 Slow Rate                              | 31 Crew Leave Location |
| ② Pre-Convoy Safety Meeting             | ⑧ Pre-Job Safety Meeting    | ⑭ Check weight       | 20 Slow Rate            | 26 Bump Plug                              |                        |
| ③ Crew Leave Yard                       | ⑨ Start Job                 | ⑮ Pump Lead Cement   | 21 Shutdown             | 27 Check Floats                           |                        |
| ④ Arrive at Loc                         | ⑩ Prime Lines               | ⑯ Slow Rate          | 22 Clean Pump And Lines | 28 End Job                                |                        |
| ⑤ Assessment Of Location Safety Meeting | ⑪ Test Lines                | ⑰ Pump Tail Cement   | 23 Drop Top Plug        | 29 Post-Job Safety Meeting (Pre Rig-Down) |                        |
| ⑥ Spot Equipment                        | ⑫ Pump H2O Spacer           | ⑱ Check weight       | 24 Pump Displacement    | 30 Pre-Convoy Safety Meeting              |                        |

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Created: 2017-08-21 07:06:14, Version: 4.2.393

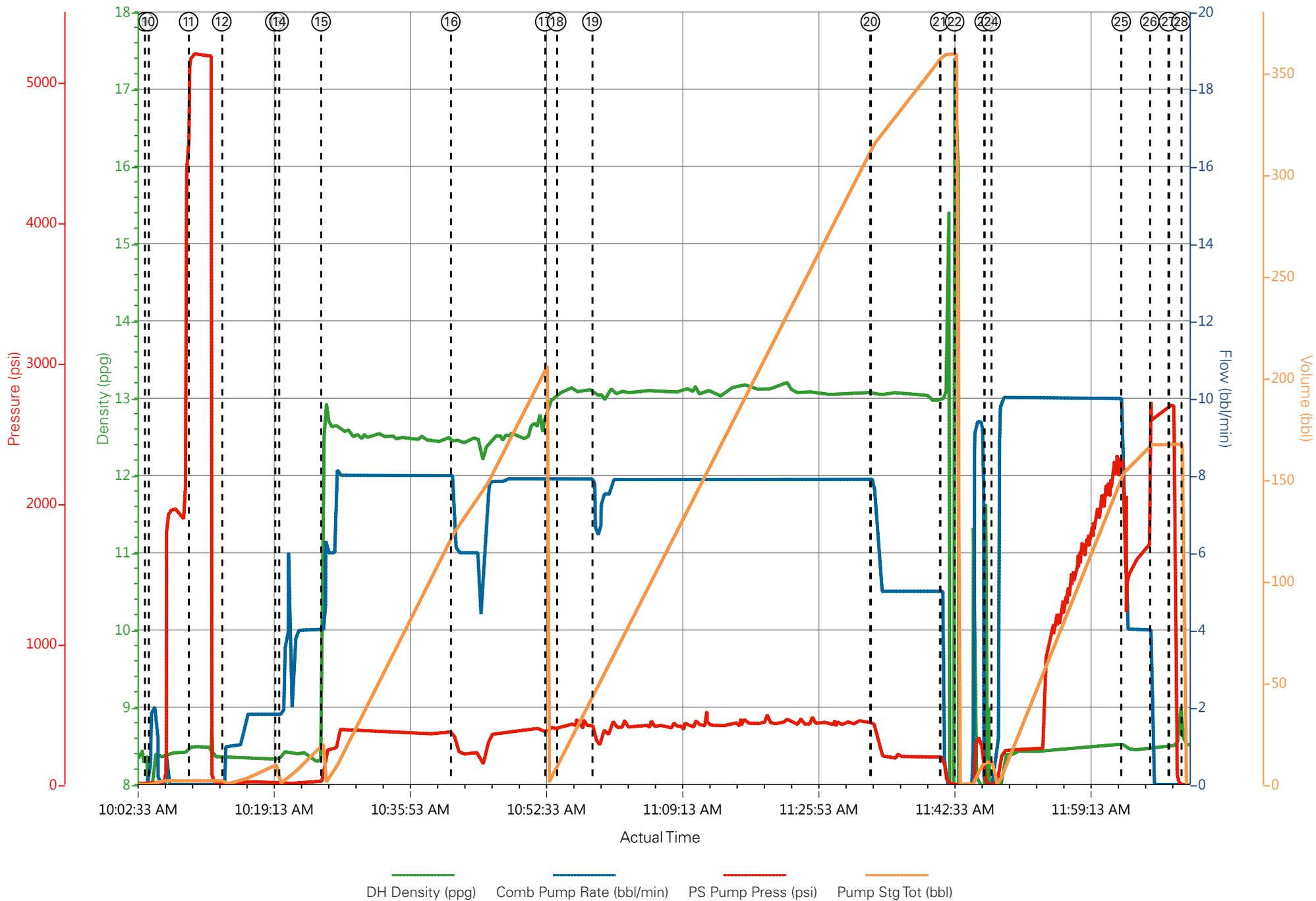
Edit

Customer : TEP ROCKY MOUNTAIN LLC  
 Representative : GARRETT WADE

Job Date : 8/21/2017  
 Sales Order # : 904245814

Well : CHEVRON TR 324-23-597  
 ELITE 4 : HYDE / D. BRENNECKE

# TERRA - CHEVRON TR 324-23-597 - 4 1/2" PRODUCTION



### Job Information

<b>Request/Slurry</b>	2410277/2	<b>Rig Name</b>	H&P 271	<b>Date</b>	17/AUG/2017
<b>Submitted By</b>	Aaron Katz	<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>	TR 324-23-567

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10580 ft	<b>BHST</b>	123°C / 253°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10168 ft	<b>BHCT</b>	89°C / 192°F
<b>Pressure</b>	6410 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
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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>		
						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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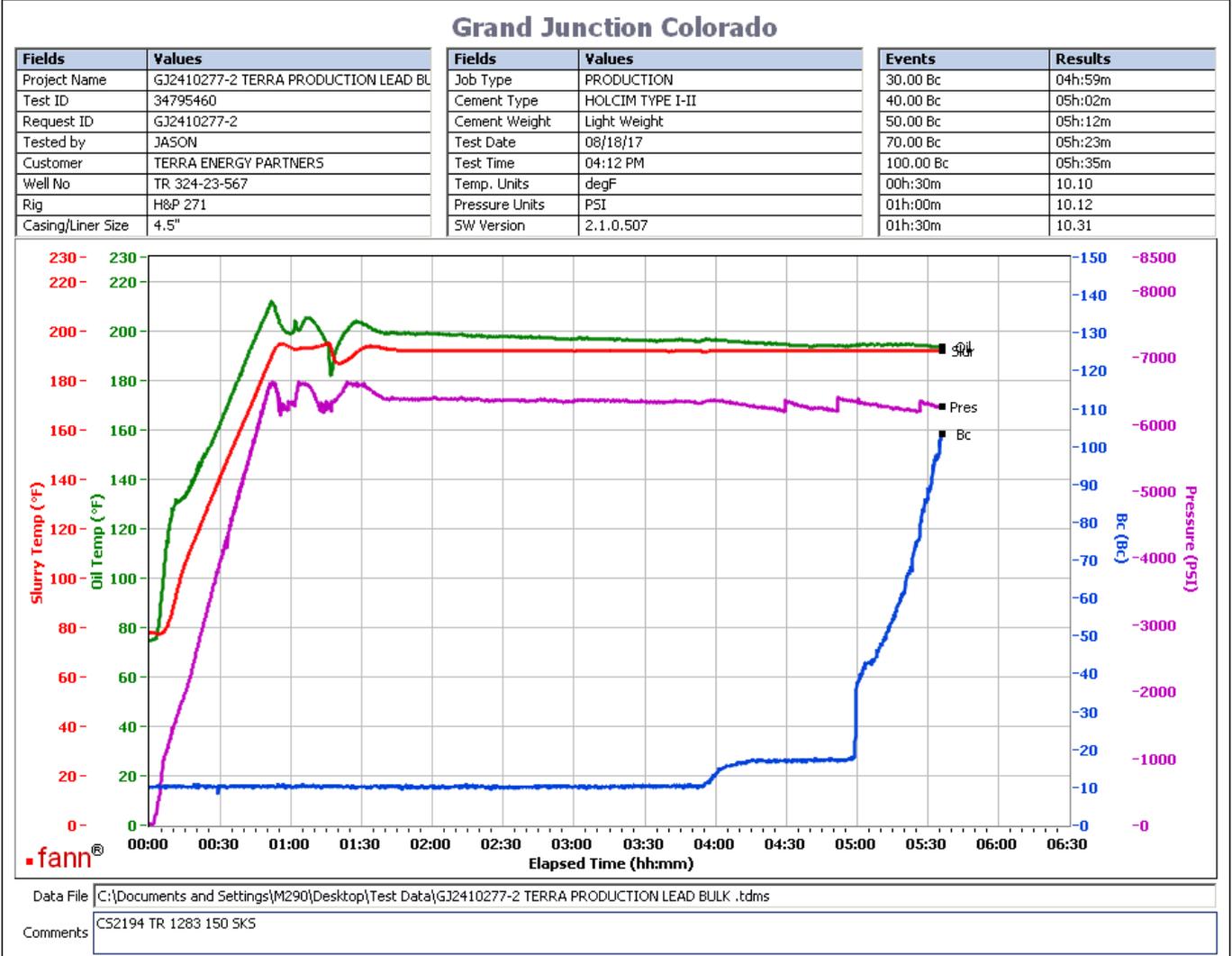
**Operation Test Results Request ID 2410277/2**

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

**18/AUG/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)
192	6410	51	4:59	5:12	5:23	5:35	10	61	15	10

Total sks = 570  
 CS2194 TR 1283 150 SKS  
 No deflection



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# Operation Test Results Request ID 2410277/1

## Thickening Time - ON-OFF-ON

18/AUG/2017

Test Temp (°F)	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)
192	6410	51	4:22	4:34	4:44	4:54	7	61	15	8

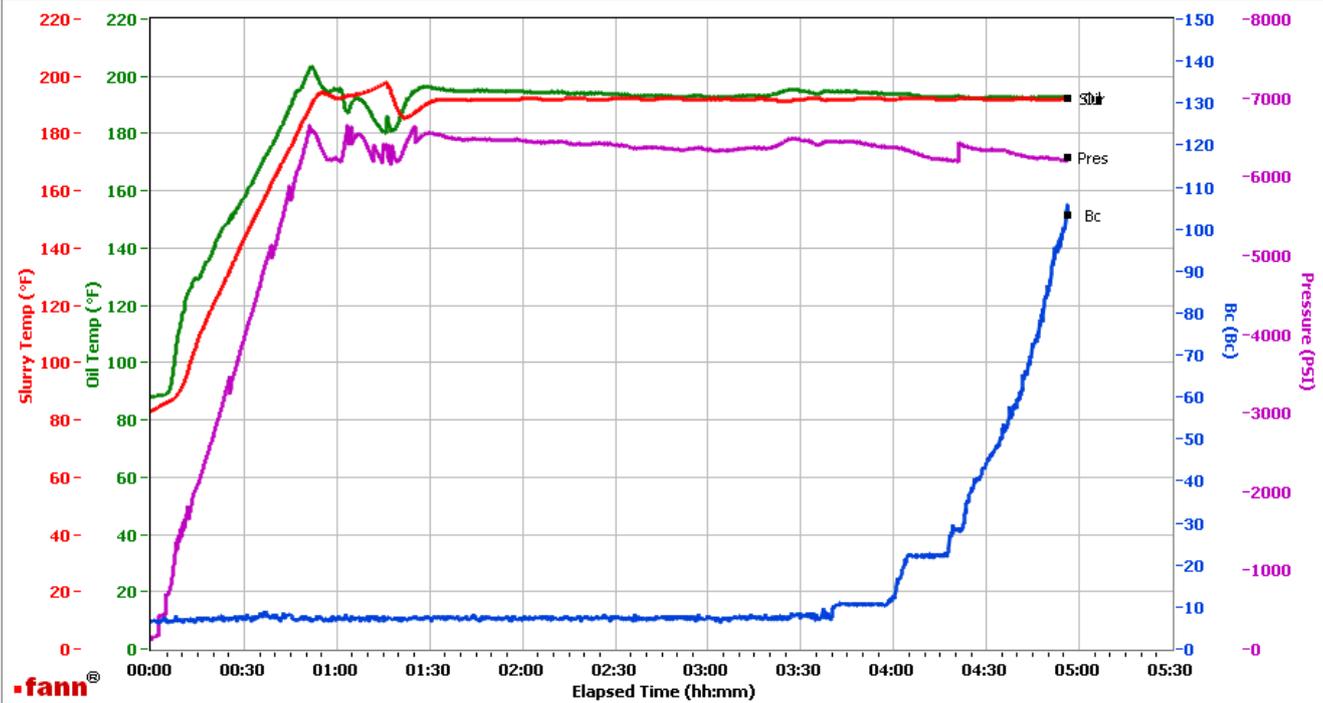
Total sks = 570  
 CS2183 TR 1513 420 SKS  
 No deflection

### Grand Junction Colorado

Fields	Values
Project Name	GJ2410277-1 TERRA PRODUCTION LEAD BL
Test ID	34792181
Request ID	2410277-1
Tested by	JASON
Customer	TERRA ENERGY PARTNERS
Well No	TR 324-23-567
Rig	H&P 271
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION
Cement Type	HOLCIM TYPE I-II
Cement Weight	Light Weight
Test Date	09/24/10
Test Time	07:20 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.1219

Events	Results
30.00 Bc	04h:22m
40.00 Bc	04h:26m
50.00 Bc	04h:34m
70.00 Bc	04h:44m
100.00 Bc	04h:54m
00h:30m	7.64
01h:00m	7.51
01h:30m	7.15



Data File C:\Documents and Settings\HPHT\Desktop\Test Data\GJ2410277-1 TERRA PRODUCTION LEAD BULK.tdms  
 Comments CS2183 TR 1513 420 SKS

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### Job Information

<b>Request/Slurry</b>	2410278/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	17/AUG/2017
<b>Submitted By</b>	Aaron Katz	<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>	TR 324-23-567

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10580 ft	<b>BHST</b>	123°C / 253°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10168 ft	<b>BHCT</b>	89°C / 192°F
<b>Pressure</b>	6410 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
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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>	
						Slurry Density	13 lbm/gal
						Slurry Yield	2.065 ft <sup>3</sup> /sack
						Water Requirement	9.424 gal/sack
						Total Mix Fluid	9.424 gal/sack
						Water Source	Fresh Water
						Water Chloride	

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# Operation Test Results Request ID 2410278/1

## Thickening Time - ON-OFF-ON

18/AUG/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)
192	6410	51	4:51	5:43	5:45	5:46	11	61	15	13

Total sks 890

Composite:

CS2191 TR 0812 370 SKS

CS2192 TR 8678 370 SKS

CS2193 TR 1283 150 SKS

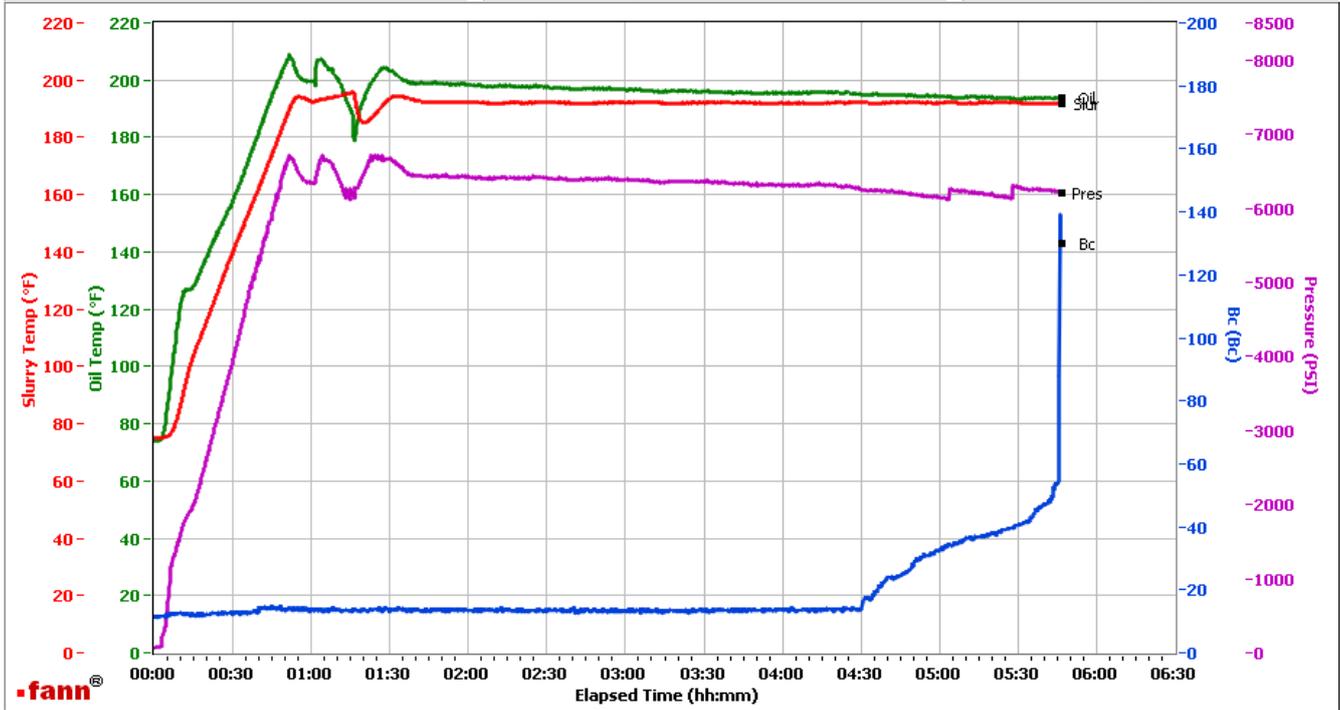
No deflection

### Grand Junction Colorado

Fields	Values
Project Name	GJ2410278-1 TERRA PRODUCTION TAIL BU
Test ID	34792183
Request ID	2410278-1
Tested by	JASON
Customer	TERRA ENERGY PARTNERS
Well No	TR 324-23-567
Rig	H&P 271
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION
Cement Type	HOLCIM TYPE I-II
Cement Weight	Light Weight
Test Date	08/19/17
Test Time	12:20 AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:51m
40.00 Bc	05h:28m
50.00 Bc	05h:43m
70.00 Bc	05h:45m
100.00 Bc	05h:46m
00h:30m	11.95
01h:00m	13.74
01h:30m	13.76



Data File C:\Documents and Settings\Administrator\Local Settings\Temporary Internet Files\Content.IE5\AFGSUB25\GJ2410278-1 TERRA PRODUCTION TAIL BULK COMPOSITE[1].tdms

Comments CS2191 TR 0812 370 SKS CS2192 TR 8678 370 SKS CS2193 TR 1283 150 SKS

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