

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Wednesday, May 30, 2018

### **Federal RU 324-17 Production PJR**

API #: 05-045-23746

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	5/29/2018	20:00:00	USER					REQUESTED ON LOCATION 5/30/2018 @ 02:30
Event	2	Depart Yard Safety Meeting	5/29/2018	21:55:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	5/29/2018	22:00:00	USER					
Event	4	Arrive At Loc	5/30/2018	00:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	5/30/2018	00:05:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	5/30/2018	00:55:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	5/30/2018	01:00:00	USER					
Event	8	Pre-Job Safety Meeting	5/30/2018	03:15:00	USER					JSA COMPLETED
Event	9	Start Job	5/30/2018	03:57:30	COM4					4 1/2" - 11.6# CASING IN 8 3/4" OH, TD 10474', TP 10467.7', ST 38.7', MUD 9.0 PPG, WATER TEMP 60, PH 7, CHLORIDES 0.
Event	10	Test Lines	5/30/2018	04:00:53	COM4			5000.00		TEST LINES TO 5000 PSI
Event	11	Pump Spacer 1	5/30/2018	04:06:34	COM4	2.50	8.33	50.00	10.00	10 BBL FRESH WATER
Event	12	Pump Spacer 2	5/30/2018	04:10:55	COM4	2.50	8.40	50.00	20.00	20 BBL MUDFLUSH
Event	13	Pump Lead Cement	5/30/2018	04:18:37	COM4	8.00	12.50	770.00	321.30	321.3 BBL LEAD, 930 SKS @ 12.5 PPG / 1.94 YLD / 9.6 GAL/SK

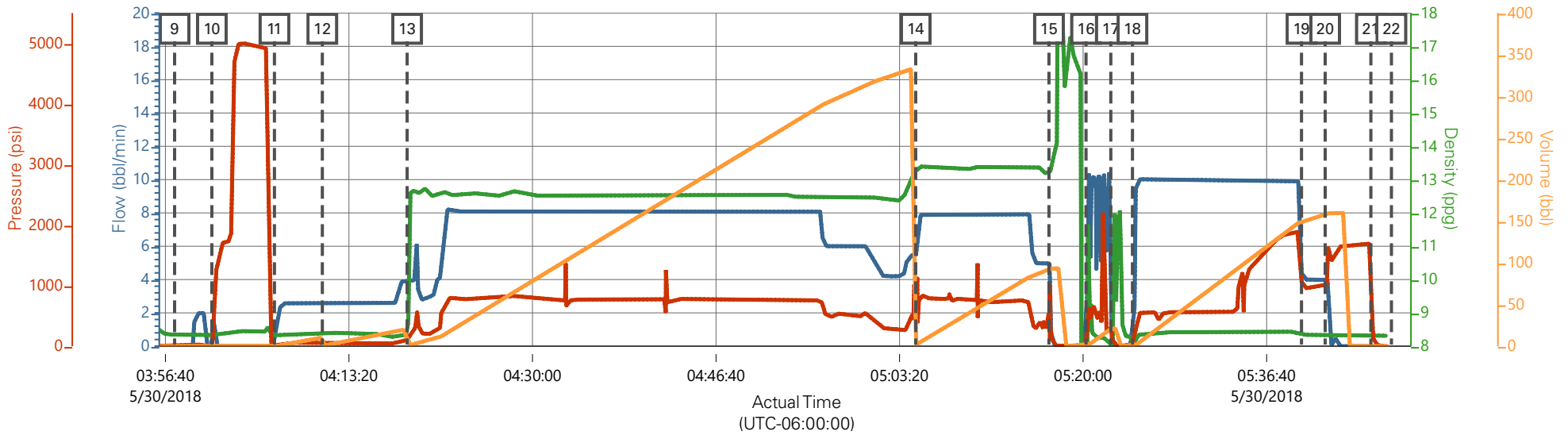
Event	14	Pump Tail Cement	5/30/2018	05:04:48	COM4	8.00	13.30	760.00	81.6	81.6 BBL TAIL, 265 SKS @ 13.3 PPG / 1.73 YLD / 7.81 GAL/SK
Event	15	Shutdown	5/30/2018	05:16:54	COM4					
Event	16	Clean Lines	5/30/2018	05:20:16	COM4					
Event	17	Drop Top Plug	5/30/2018	05:22:31	COM4					PLUG AWAY
Event	18	Pump Displacement	5/30/2018	05:24:29	COM4	10.00	8.40	1910.00	161.60	161.6 BBL KCL WATER DISPLACEMENT, 1 GALLON MMCR AND 3# BE-6 USED, RETURNS AT 117 BBLS AWAY
Event	19	Slow Rate	5/30/2018	05:39:50	COM4	4.00	8.40	1910.00	150.00	SLOW RATE AT 151 BBLS AWAY TO 4 BBL/MIN, 1910 PSI TO 950 PSI
Event	20	Bump Plug	5/30/2018	05:41:59	COM4	4.00	8.40	1050.00	161.60	PLUG BUMPED AT CALCULATED, FINAL CIRCULATING PRESSURE 1050 PSI, BROUGHT UP TO 1650 PSI
Event	21	Other	5/30/2018	05:46:08	COM4					FLOATS HELD, 1 BBL BACK TO PUMP
Event	22	End Job	5/30/2018	05:48:00	COM4					GOOD RETURNS UNTIL DISPLACEMENT, RETURNS ON DISPLACEMENT AT 117 BBL AWAY, PIPE WAS RECIPRICATED, NO SUGAR USED, NO ADD HOURS CHARGED
Event	23	Pre-Rig Down Safety Meeting	5/30/2018	06:15:00	USER					JSA COMPLETED
Event	24	Rig-Down Equipment	5/30/2018	06:20:00	USER					
Event	25	Pre-Convoy Safety Meeting	5/30/2018	06:55:00	USER					JSA COMPLETED

Event 26 Crew Leave Location 5/30/2018 07:00:00 USER

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THANK YOU FOR CHOOSING  
HALLIBURTON CEMENTING  
OF GRAND JUNCTION, CO –  
RYAN MARTIN AND CREW

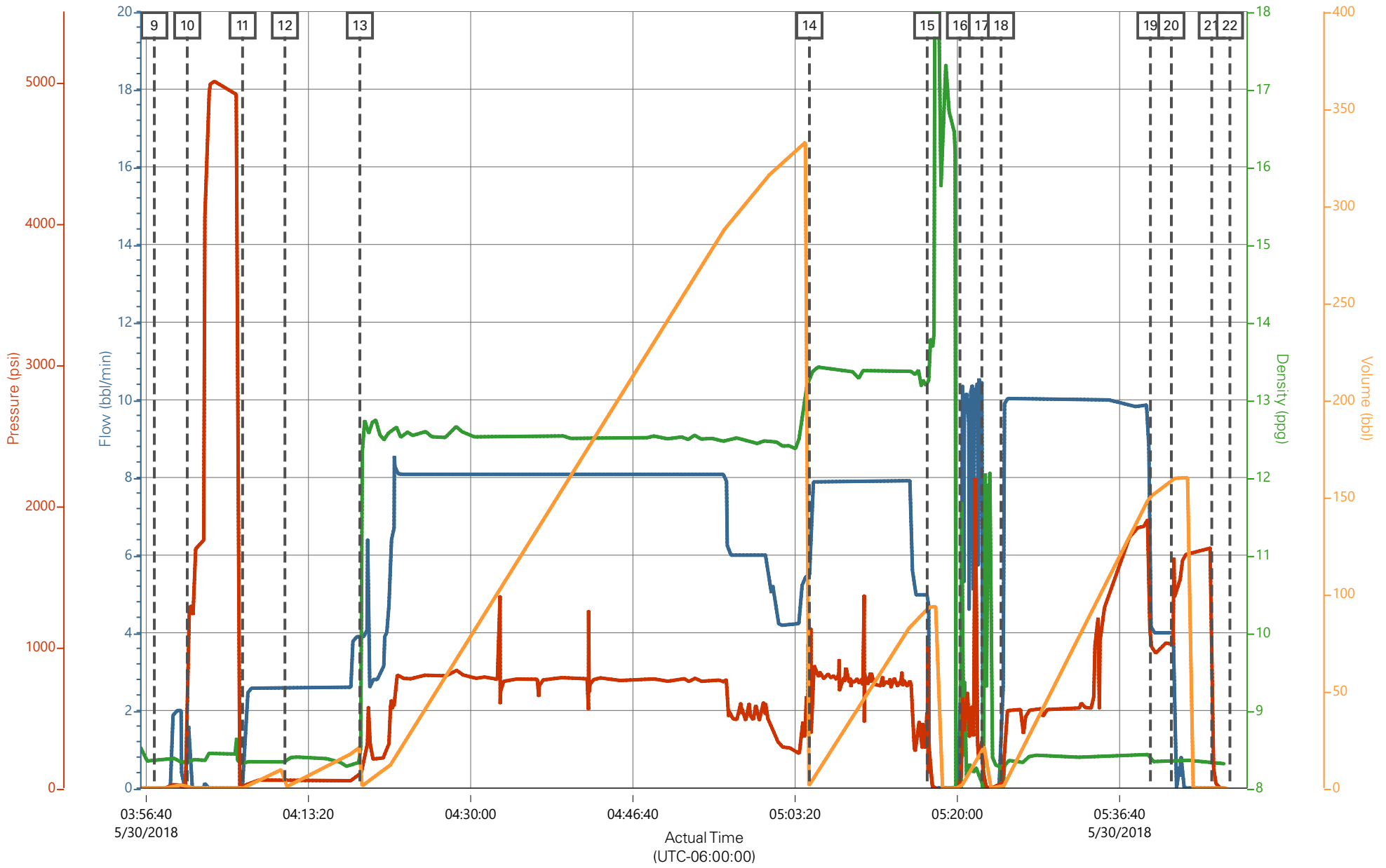
# TEP - FEDERAL RU 324-17 - 4 1/2" PRODUCTION CASING



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

Description	Actual Time (UTC-06:00:00)	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)
9 Start Job	03:57:30	0.00	8.35	-2.00	0.00
10 Test Lines	04:00:53	0.00	8.33	-5.00	0.00
11 Pump Spacer 1	04:06:34	0.00	8.32	5.00	0.00
12 Pump Spacer 2	04:10:55	2.60	8.33	56.00	0.30
13 Pump Lead Cement	04:18:37	3.90	8.33	100.00	0.30
14 Pump Tail Cement	05:04:48	5.50	13.28	487.00	1.60
15 Shutdown	05:16:54	5.00	13.24	372.00	92.60
16 Clean Lines	05:20:16	2.40	1.87	-6.00	0.30
17 Drop Top Plug	05:22:31	10.40	8.12	317.00	21.00
18 Pump Displacement	05:24:29	1.70	8.29	20.00	0.10
19 Slow Rate	05:39:50	4.50	8.36	1067.00	150.00
20 Bump Plug	05:41:59	4.00	8.34	1013.00	158.60
21 Other	05:46:08	0.00	8.34	1330.00	0.00
22 End Job	05:48:00	n/a	n/a	n/a	n/a

# TEP - FEDERAL RU 324-17 - 4 1/2" PRODUCTION CASING



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

## Job Information

<b>Request/Slurry</b>	2476432/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	22/MAY/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 324-17

## Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10640 ft	<b>BHST</b>	127°C / 260°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10570 ft	<b>BHCT</b>	92°C / 198°F
<b>Pressure</b>	6697 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>		
		NeoCem				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 2476432/1

## Thickening Time - ON-OFF-ON

27/MAY/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	6697	52	3:28	3:58	4:07	4:17	6	62	15	9

Total sks = 930

CS1118 TR#8678 400 SKS

CS1121 TR#1513 400 SKS

CS1123 TR#5692 130 SKS

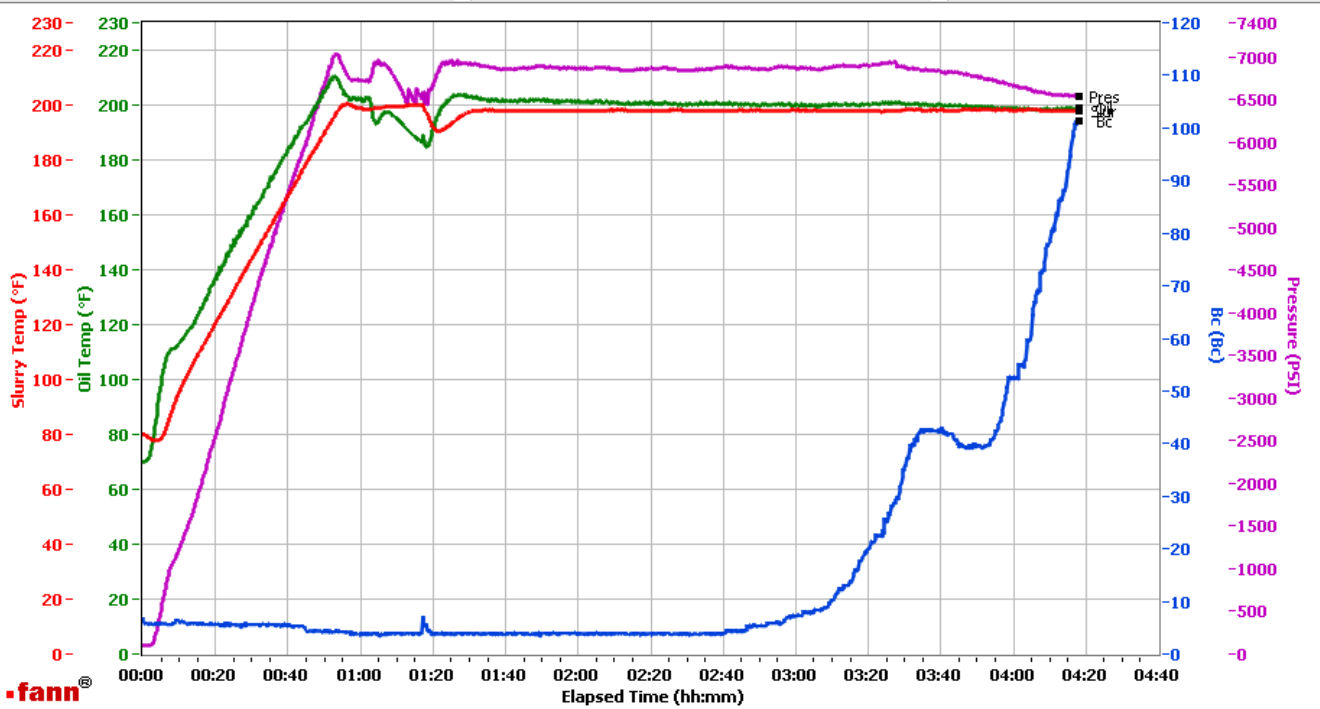
no deflection, 9Bc--- > 9Bc

### Grand Junction, Colorado

Fields	Values
Project Name	GJ2476432-1 TERRA PRODUCTION BULK LE
Test ID	35519987
Request ID	GJ2477144-1
Tested by	DEBA
Customer	TERRA ENERGY PARTNERS
Well No	RU 324-17
Rig	H&P 318
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	GCC TYPE I-II
Cement Weight	Standard
Test Date	05/27/18
Test Time	01:45 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	03h:28m
40.00 Bc	03h:32m
50.00 Bc	03h:58m
70.00 Bc	04h:07m
100.00 Bc	04h:17m
00h:30m	5.38
01h:00m	3.65
01h:30m	4.04



Data File C:\Documents and Settings\M290\Desktop\Test Data\GJ2476432-1 TERRA PPRODUCTION BULK LEAD.tdms

Comments CS1118 TR#8678 400 SKS, CS1121 TR#1513 400 SKS AAND CS1123 TR#5692 130 SKS

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### Job Information

<b>Request/Slurry</b>	2476433/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	22/MAY/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 324-17

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10640 ft	<b>BHST</b>	127°C / 260°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10570 ft	<b>BHCT</b>	92°C / 198°F
<b>Pressure</b>	6699 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	1.734	ft <sup>3</sup> /sack
						Water Requirement	7.809	gal/sack
						Total Mix Fluid	7.809	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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**Operation Test Results Request ID 2476433/1**

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

**26/MAY/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	6698	52	2:47	3:13	3:35	3:36	19	62	15	22

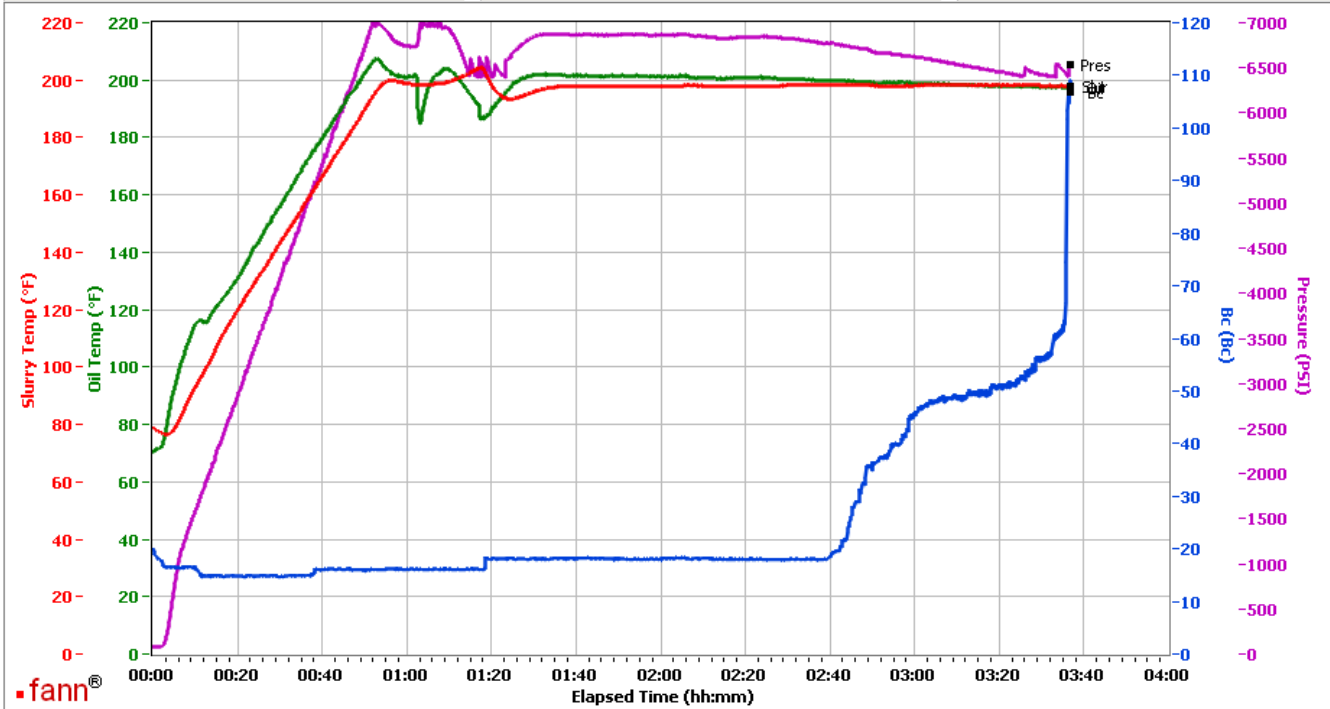
Total sks = 265  
 CS1104 TR#6813 265 SKS  
 deflected from 16Bc--- > 22Bc

**Grand Junction Colorado**

Fields	Values
Project Name	GJ2476433-1 TERRA PRODUCTION BULK TA
Test ID	35519989
Request ID	GJ2476433-1
Tested by	DEBA
Customer	TERRA ENERGY
Well No	RU 324-17
Rig	H&P 318
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	05/26/18
Test Time	12:02 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	02h:47m
40.00 Bc	02h:54m
50.00 Bc	03h:13m
70.00 Bc	03h:35m
100.00 Bc	03h:36m
00h:30m	14.56
01h:00m	16.09
01h:30m	18.11



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\4TIJ89YN\GJ2476433-1 TERRA PRODUCTION BULK TAIL[1].tdms

Comments CS1104 TR#6813 265 SKS

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