

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Sunday, August 05, 2018

### **PA 412-26 Production PJR**

API #: 05-045-23718

Sincerely,

**Grand Junction Cement Engineering**

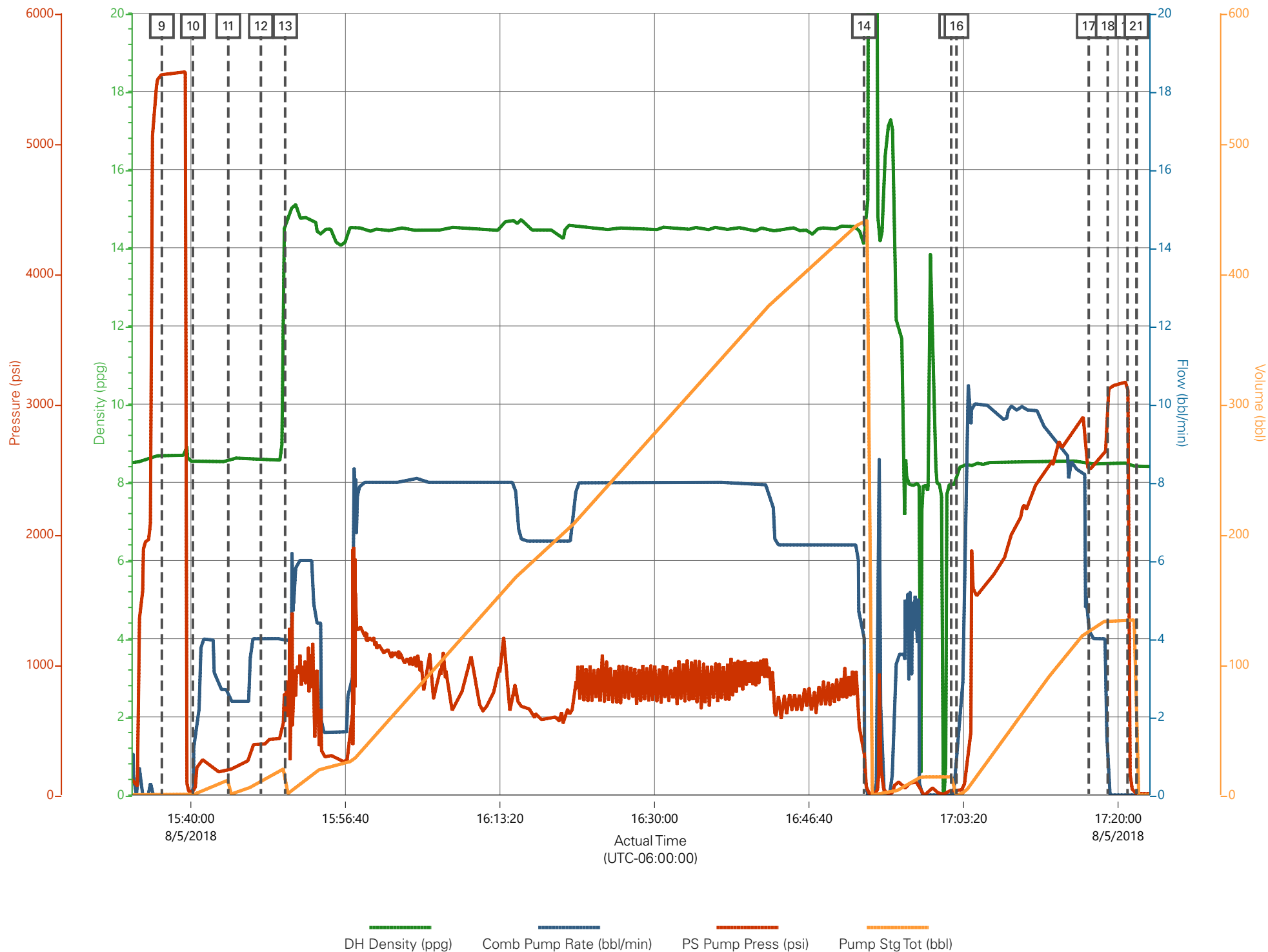
## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

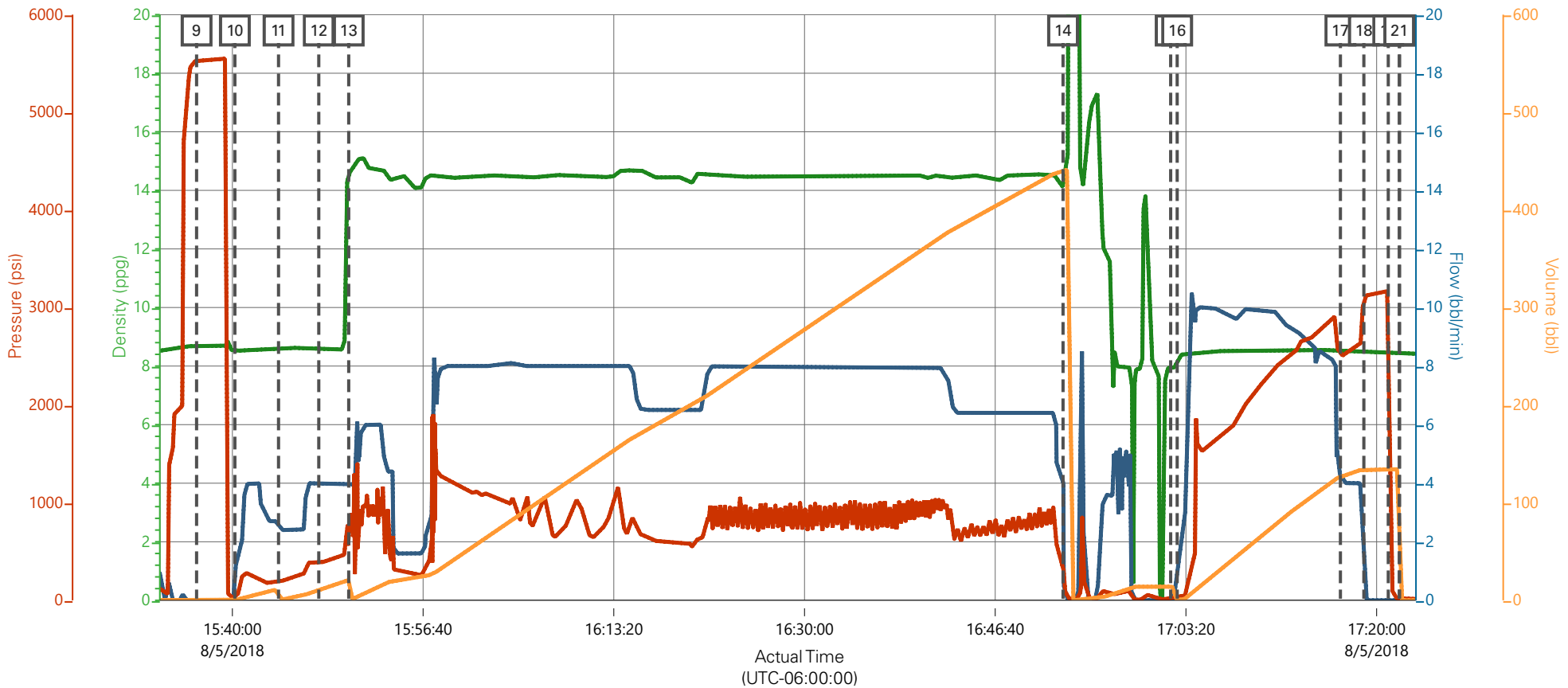
Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/5/2018	06:30:00	USER					CREW WAS ON ANOTHER JOB WHEN CALLED OUT
Event	2	Pre-Convoy Safety Meeting	8/5/2018	11:20:00	USER					JOURNEY MANAGEMENT COMPLETE, AS WELL AS JSA
Event	3	Crew Leave Yard	8/5/2018	11:30:00	USER					
Event	4	Assessment Of Location Safety Meeting	8/5/2018	12:30:00	USER					
Event	5	Arrive At Loc	8/5/2018	12:40:00	USER					JOURNEY MANAGEMENT CLOSED OUT.
Event	6	Pre-Rig Up Safety Meeting	8/5/2018	12:45:00	USER					JSA COMPLETE
Event	7	Rig-Up Equipment	8/5/2018	12:50:00	USER					ELITE IRON "T" AT BACK OF ELITE AND WASH UP LINE RAN FROM A MANIFOLD
Event	8	Pre-Job Safety Meeting	8/5/2018	14:30:00	USER					JSA COMPLETE
Event	9	Other	8/5/2018	14:35:00	USER					WATER TEST: TEMP-69, PH-7, CL-0 TP- 8717.62 4.5 11.5#, TD- 8725, F.C.- 8685.69, HOLE- 8 3/4, MUD#-11.2, SURFACE SET AT 1124 9 5/8 36#
Event	10	Other	8/5/2018	14:40:00	USER					PRESSURIZED MUD SCALES WERE CALIBRATED TO DRINKING WATER PRIOR TO JOB.
Event	11	Start Job	8/5/2018	15:31:24	COM5					

Event	12	Test Lines	8/5/2018	15:36:52	COM5			5530.00		5530 PSI
Event	13	Pump Spacer 1	8/5/2018	15:40:13	COM5	8.33	4.00	124.00	10.0	FRESH WATER
Event	14	Pump Spacer 1	8/5/2018	15:44:02	COM5	8.40	4.00	196.00	20.00	MUD FLUSH
Event	15	Check Weight	8/5/2018	15:47:33	COM5	14.5	4.00	367.00	10.40	GOOD 14.5 PPG
Event	16	Pump Lead Cement	8/5/2018	15:50:10	COM5	14.50	8.00	860.0	432.6	1840 SKS EXPANDACEM, 14.5 PPG, 1.32 FT3/SK, 5.85 GAL/SK
Event	17	Shutdown	8/5/2018	16:52:36	USER					CLEAN UP PUMPS AND LINES TO PIT, BLEW AIR FROM FLOOR TO PIT.
Event	18	Drop Top Plug	8/5/2018	17:02:00	USER					AWAY
Event	19	Pump Displacement	8/5/2018	17:02:34	COM5	8.33	10.00	2945.0	134.6	KCL WATER WITH 3 BAG BE- 6, 1 GAL MMCR
Event	20	Slow Rate	8/5/2018	17:16:50	USER	8.33	4.00	2580.0	124.00	TO BUMP PLUG
Event	21	Bump Plug	8/5/2018	17:18:53	COM5	8.33	4.00	2680.0	134.6	PLUG BUMPED ON CALULATED
Event	22	Check Floats	8/5/2018	17:21:01	USER			3174.00		FLOATS HELD, 1.5 BBLS BACK TO TRUCK
Event	23	End Job	8/5/2018	17:21:59	COM5					GOOD RETURNS THROUGHOUT JOB, PIPE WORKED 5-10 FT. THROUGHOUT JOB
Event	24	Post-Job Safety Meeting (Pre Rig-Down)	8/5/2018	17:22:00	USER					JSA COMPLETE
Event	25	Crew Leave Location	8/5/2018	18:45:00	USER					THANK YOU FOR USING HALLIBURTON CEMENT, JAMES LEIST AND CREW

# Custom Results



# Custom Results



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

Description	Actual Time (UTC-06:00:00)	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)
9 Test Lines	15:36:52	8.68	0.00	5530.00	1.20
10 Pump Spacer 1	15:40:13	8.54	0.00	24.00	1.20
11 Pump Spacer 1	15:44:02	8.54	2.70	196.00	0.00
12 Check Weight	15:47:33	8.58	4.00	367.00	10.40
13 Pump Lead Cement	15:50:10	14.62	4.00	666.00	0.00
14 Shutdown	16:52:36	14.11	4.20	411.00	440.80
15 Drop Top Plug	17:02:00	7.95	0.00	29.00	13.90
16 Pump Displacement	17:02:34	7.94	0.90	36.00	0.10
17 Slow Rate	17:16:50	8.49	4.20	2507.00	126.60

# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Primary

### Job Information

Request/Slurry	2490574/2	Rig Name	H&P 271	Date	26/JUL/2018
Submitted By	Lukas Van Zyl	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	PA 412-26

### Well Information

Casing/Liner Size	4.5 in	Depth MD	8739 ft	BHST	106°C / 222°F
Hole Size	8.75 in	Depth TVD	8346 ft	BHCT	67°C / 152°F
Pressure	5142 psi				

### Drilling Fluid Information

Mud Supplier Name	AMC	Mud Trade Name	Density
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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>	<u>Cement Properties</u>		
		ExpandaCem				Slurry Density	14.5	lbm/gal
						Slurry Yield	1.32	ft3/sack
						Water Requirement	5.849	gal/sack
						Total Mix Fluid	5.849	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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# Operation Test Results Request ID 2490574/2

## Thickening Time - ON-OFF-ON

01/AUG/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)
152	5142	43	4:15	4:19	4:19	4:21	16	53	15	15

total sks=1840

CS1656 TR#8476 425 SKS

CS1658 TR#7304 140 sks

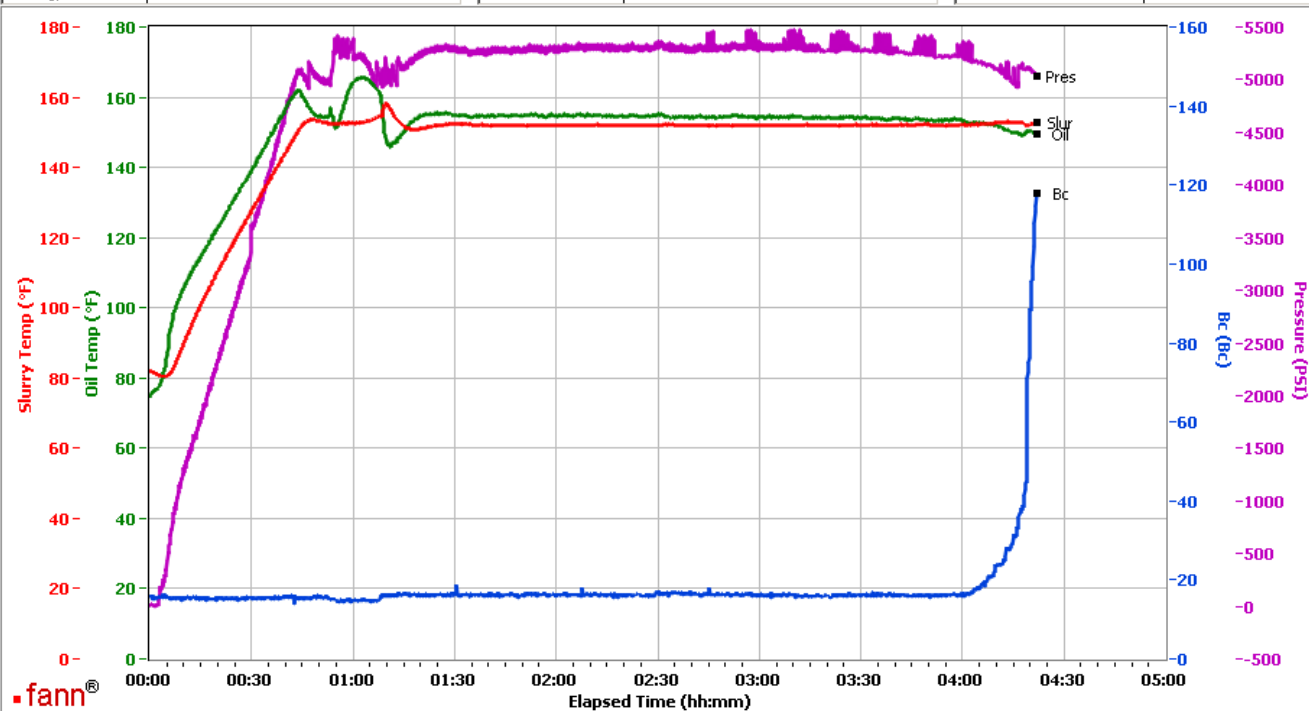
Deflection: 15 - 15

## Grand Junction, Colorado

Fields	Values
Project Name	GJ2490574-2 TERRA BULK PRODUCTION PR
Test ID	35707340
Request ID	GJ2490574-2 TT
Tested by	DEBA
Customer	TERRA ENERGY PARTNERS
Well No	PA 412-26
Rig	H8P271
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	08/01/18
Test Time	06:44 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:15m
40.00 Bc	04h:18m
50.00 Bc	04h:19m
70.00 Bc	04h:19m
100.00 Bc	04h:21m
00h:30m	15.06
01h:00m	14.47
01h:30m	16.43



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\SPUJOLQV\GJ2490574-2 TERRA BULK PRODUCTION PRIMARY[1].tdms

Comments CS1656 TR#8476 425 SKS & CS1658 TR#7304 140 SKS

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## Operation Test Results Request ID 2490574/1

### Thickening Time - ON-OFF-ON

01/AUG/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)
152	5142	43	4:06	4:15	4:16	4:18	14	53	15	20

total sks=1840

CS1647, Trailer 8678, 425 sks

CS1651, Trailer 2878, 425 sks

CS1652, Trailer 8658, 425 sks

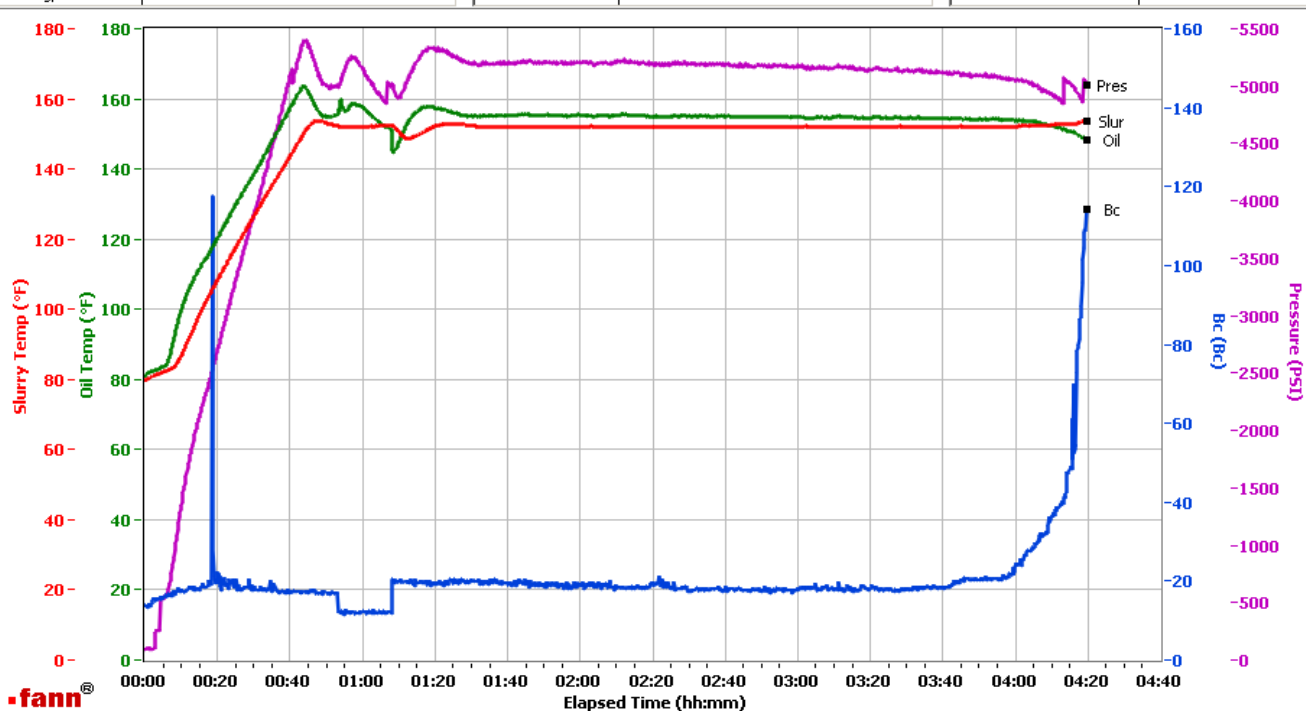
Deflected 12--> 20. Results taken from graph due to spike early in test.

### Grand Junction Colorado

Fields	Values
Project Name	GJ2490574-1 TERRA BULK PRODUCTION PR
Test ID	35692086 - TT
Request ID	2490574-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	PA 412-26
Rig	H&P 271
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	H&P 271
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	08/01/18
Test Time	06:08 AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:06m
40.00 Bc	04h:12m
50.00 Bc	04h:15m
70.00 Bc	04h:16m
100.00 Bc	04h:18m
00h:30m	17.62
01h:00m	12.36
01h:30m	19.60



Data File C:\Documents and Settings\Administrator\Desktop\Test Data\GJ2490574-1 TERRA BULK PRODUCTION PRIMARY.tdms

Comments CS1647, TRAILER 8678, 425 SKS - CS1651, TRAILER 2878, 425 SKS - CS1652, TRAILER 8658, 425 SKS

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