

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Sunday, October 07, 2018

### **Federal PA 433-24 Production**

API# 05-045-23760

Sincerely,

**Grand Junction Cement Engineering**

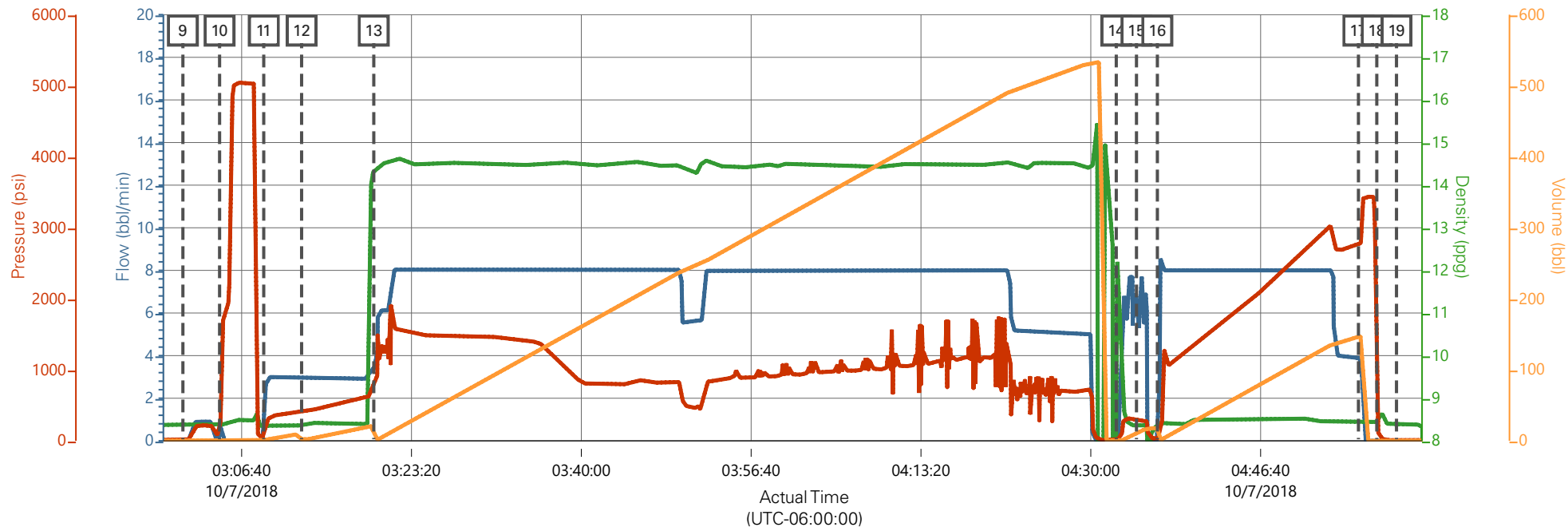
## 2.0 Real-Time Job Summary

## 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	10/6/2018	16:30:00	USER					REQUESTED ON LOCATION 10/6/18 @ 22:00
Event	2	Depart Yard Safety Meeting	10/6/2018	19:55:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	10/6/2018	20:00:00	USER					
Event	4	Arrive At Loc	10/6/2018	22:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	10/6/2018	22:05:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	10/6/2018	22:10:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	10/6/2018	22:15:00	USER					
Event	8	Pre-Job Safety Meeting	10/7/2018	02:00:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER
Event	9	Start Job	10/7/2018	03:00:54	COM4					4 1/2"-11.6# CASING IN 8 3/4" OH, TD 9055', TP 9049.1', ST 28.6', MUD 13.1 PPG, WATER TEMP 60, PH 7, CHLORIDES 0
Event	10	Test Lines	10/7/2018	03:04:30	COM4			5000.00		TEST LINES TO 5000 PSI
Event	11	Pump Spacer 1	10/7/2018	03:08:50	COM4	3.00	8.33	400.00	10.00	10 BBLS FRESH WATER
Event	12	Pump Spacer 2	10/7/2018	03:12:33	COM4	3.00	8.40	580.00	20.00	20 BBLS MUDFLUSH
Event	13	Pump Cement	10/7/2018	03:19:38	COM4	8.00	14.50	1000.00	446.70	446.7 BBLS PRIMARY CEMENT, 1900 SKS @ 14.5 PPG / 1.32 YLD / 5.85 GAL/SK
Event	14	Clean Lines	10/7/2018	04:32:30	COM4					
Event	15	Drop Top Plug	10/7/2018	04:34:29	USER					PLUG AWAY
Event	16	Pump Displacement	10/7/2018	04:36:32	COM4	8.00	8.40	3050.00	139.80	139.8 BBLS KCL WATER DISPLACEMENT

Event	17	Bump Plug	10/7/2018	04:56:16	COM4	4.00	8.40	2800.00	139.80	PLUG BUMPED AT CALCULATED, FINAL CIRCULATING PRESSURE 2800 PSI @ 4 BBL/MIN, BROUGHT TO 3430 PSI
Event	18	CHECK FLOATS	10/7/2018	04:58:04	COM4					FLOATS HELD, 2 BBL BACK TO PUMP
Event	19	End Job	10/7/2018	05:00:00	COM4					PIPE LEFT STATIC, GOOD RETURNS THROUGHOUT, 80# MUDFLUSH AND TOP PLUG USED, NO SUGAR AND NO ADD HOURS
Event	20	Pre-Rig Down Safety Meeting	10/7/2018	05:25:00	USER					JSA COMPLETED
Event	21	Rig-Down Equipment	10/7/2018	05:30:00	USER					
Event	22	Pre-Convoy Safety Meeting	10/7/2018	05:55:00	USER					JSA COMPLETED
Event	23	Crew Leave Location	10/7/2018	06:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO - RYAN MARTIN AND CREW

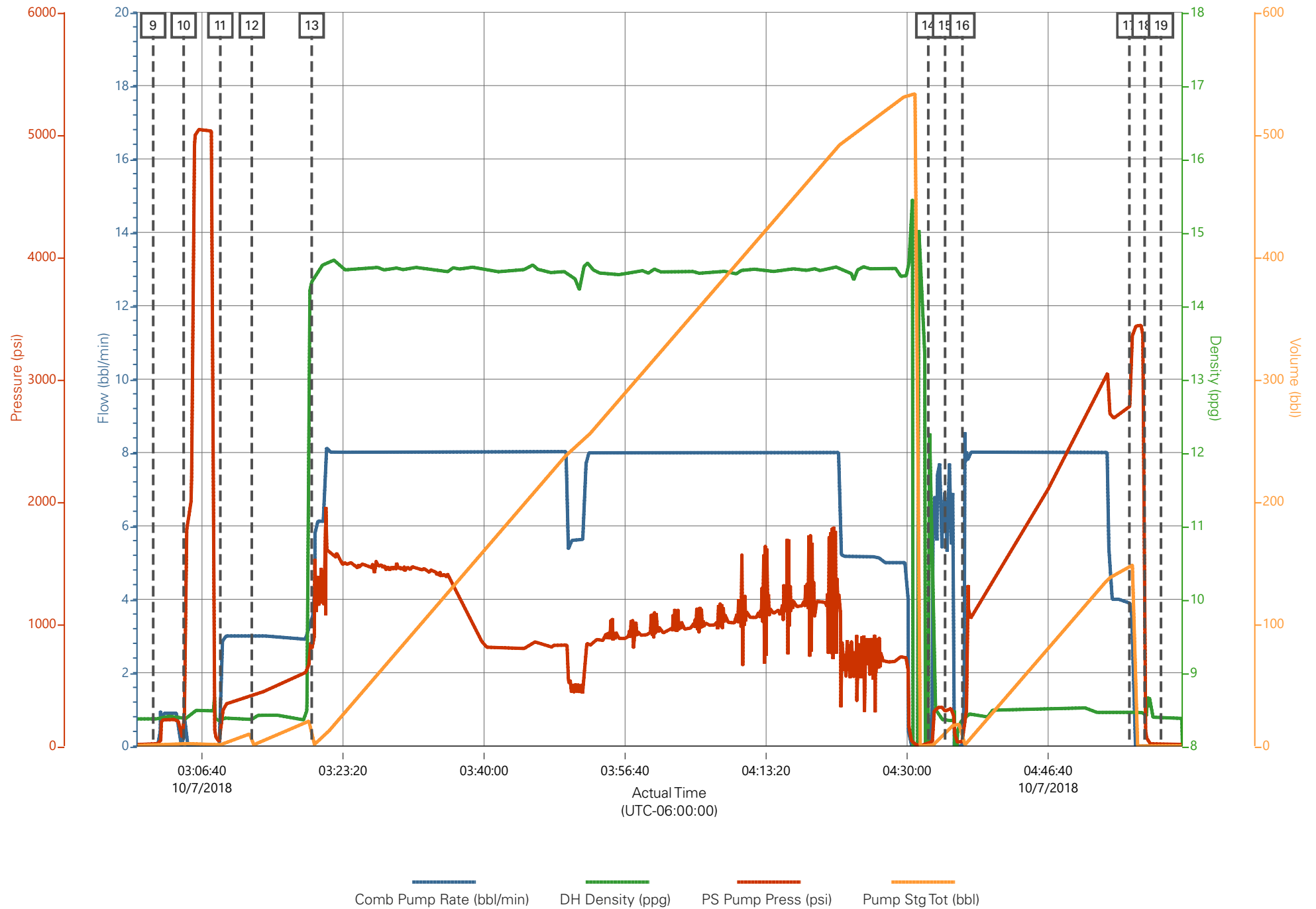
# TERRA - FEDERAL PA 433-24 - 4 1/2" PRODUCTION CASING



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	03:00:54	0.00	8.37	8.00	0.00
10 Test Lines	03:04:30	0.00	8.36	63.00	1.90
11 Pump Spacer 1	03:08:50	0.00	8.35	36.00	0.00
12 Pump Spacer 2	03:12:33	3.00	8.36	405.00	0.40
13 Pump Cement	03:19:38	3.40	14.33	824.00	0.00
14 Clean Lines	04:32:30	0.00	11.78	18.00	0.00
15 Drop Top Plug	04:34:29	6.90	8.35	303.00	10.50
16 Pump Displacement	04:36:32	0.00	8.34	27.00	0.00
17 Bump Plug	04:56:16	3.90	8.45	2774.00	146.90
18 CHECK FLOATS	04:58:04	0.00	8.45	406.00	0.00
19 End Job	05:00:00	0.00	8.39	8.00	0.00

# TERRA - FEDERAL PA 433-24 - 4 1/2" PRODUCTION CASING



### Job Information

<b>Request/Slurry</b>	2504888/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	27/SEP/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>	PA 433-24

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9064 ft	<b>BHST</b>	109°C / 229°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	8746 ft	<b>BHCT</b>	71°C / 159°F
<b>Pressure</b>	5422 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	AMC	<b>Mud Trade Name</b>		<b>Density</b>	
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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>	<b>Cement Properties</b>		
		ExpandaCem Primary				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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Thickening Time - ON-OFF-ON

03/OCT/2018

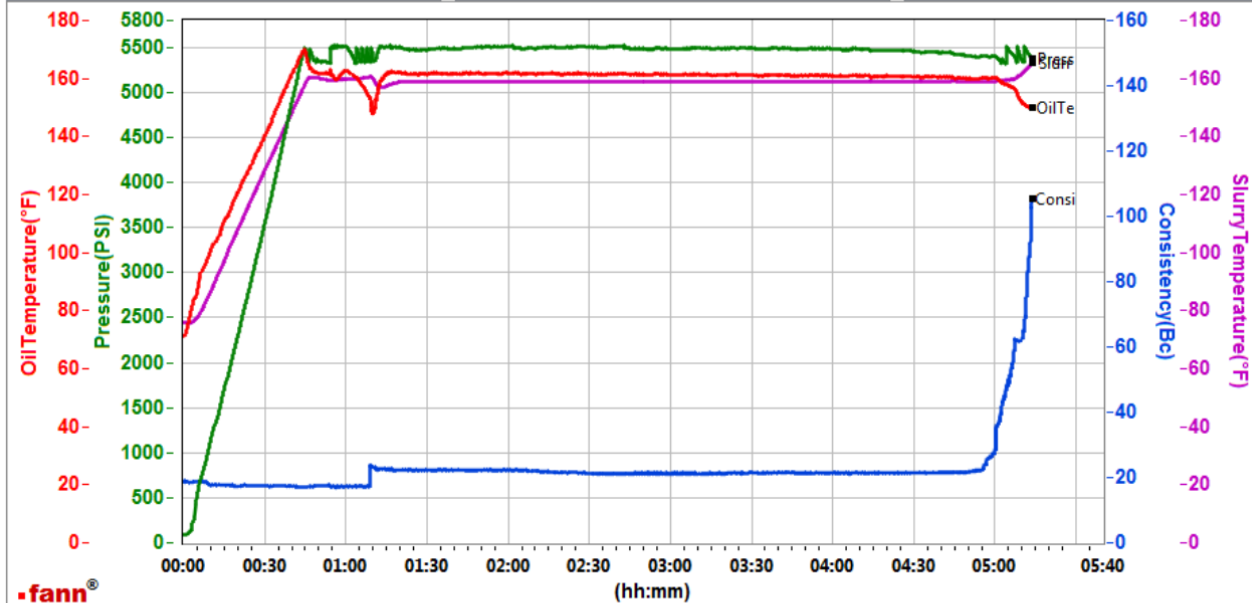
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
159	5422	44	5:01	5:04	5:11	5:13	18	54	15	23

Grand Junction

Fields	Values
Project Name	2504888-1 Terra Energy t
SW Version	1.0
Test ID	35855901 - TT
Request ID	2504888-1
Tested by	DEBA
Customer	TERRA ENERGY PARTN
Well No	PA433-24

Fields	Values
Rig	H&P 271
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	10/2/2018 12:34:03.520
Temp. Units	degF

Events	Results
30 BC	5:01
50 BC	5:04
70 BC	5:11
100 BC	5:13



Data File C:\Users\H185329\Desktop\000 Graphs\GJ2504888-1 TERRA BULK PRODUCTION PRIMARY.tdms

Comments Standard

total sks=1900  
 CS2200 TR#2878 450 SKS  
 CS2201 TR#1513 450 SKS  
 CS2202 TR#8476 450 SKS  
 Deflection: 17 – 23

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## Operation Test Results Request ID 2504888/2

Thickening Time - ON-OFF-ON

03/OCT/2018

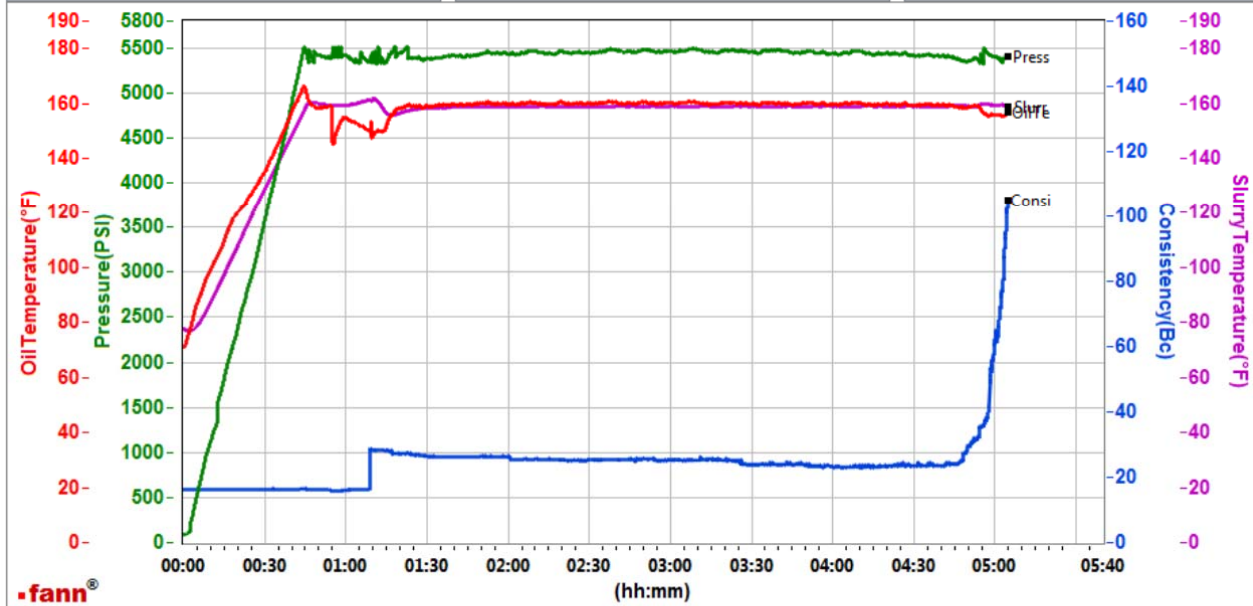
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
159	5422	44	4:50	4:58	5:01	5:04	16	54	15	29

### GRAND JUNCTION

Fields	Values
Project Name	2504888-2 Terra Energy f
SW Version	1.0
Test ID	35869181
Request ID	2504888-2
Tested by	DEBA
Customer	TERRA ENERGY PARET
Well No	PA 433-24

Fields	Values
Rig	H&P 271
Casing/Liner Size	4.5"
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	10/2/2018 13:53:12.232
Temp. Units	degF

Events	Results
30 BC	4:50
50 BC	4:58
70 BC	5:01
100 BC	5:04



Data File C:\Users\H185329\Desktop\000 Graphs\GJ2504888-2 TERRA PRODUCTION BULK PRIMARY.tdms

Comments Standard

total sks=1900  
 CS2203 TR#8677 450 SKS  
 CS2205 TR#7428 100 SKS  
 Deflection: 16 - 29

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