

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Wednesday, March 06, 2019

### **TR 444-22-597 Production PJR**

API# 05-045-23689-00

Sincerely,

**Grand Junction Cement Engineering**

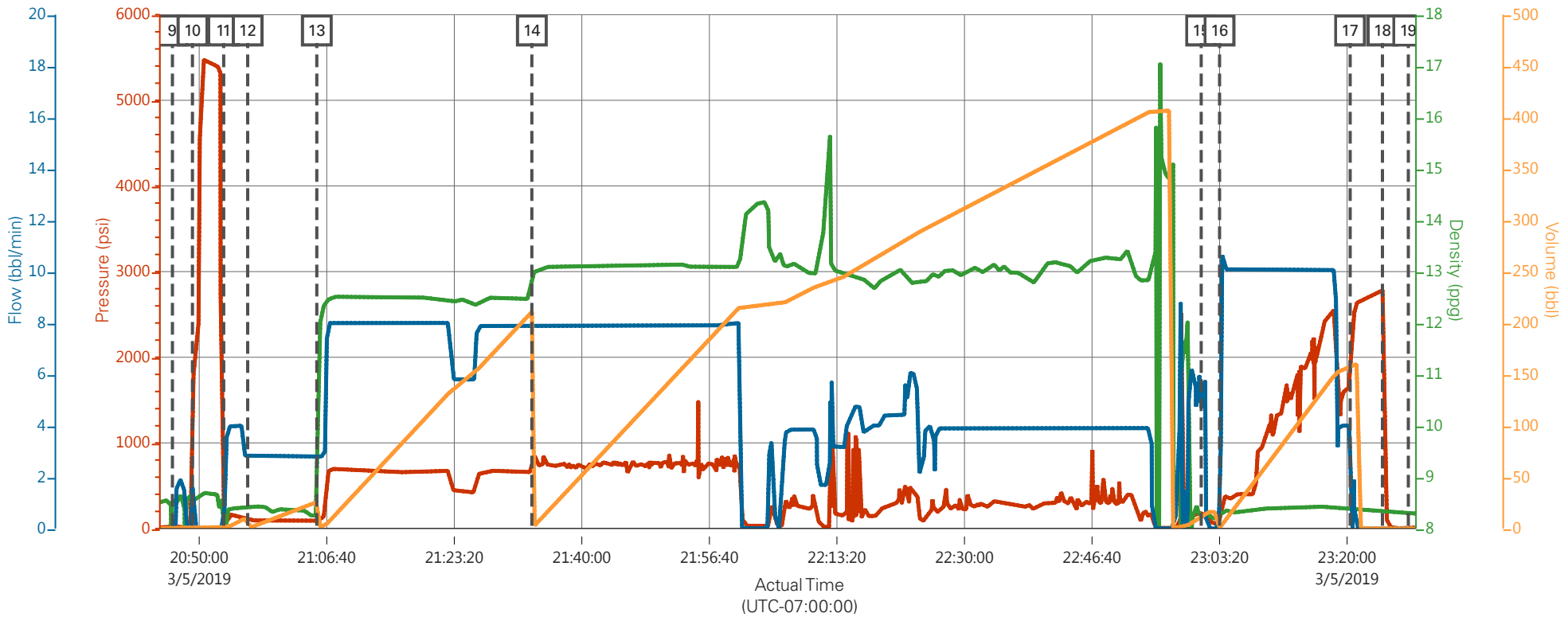
## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	3/5/2019	06:30:00	USER					REQUESTED ON LOCATION 3/5/19 @ 14:00
Event	2	Depart Yard Safety Meeting	3/5/2019	08:55:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	3/5/2019	09:00:00	USER					
Event	4	Arrive At Loc	3/5/2019	13:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	3/5/2019	13:15:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	3/5/2019	13:55:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	3/5/2019	14:00:00	USER					
Event	8	Pre-Job Safety Meeting	3/5/2019	20:15:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER
Event	9	Start Job	3/5/2019	20:46:30	COM4					4 1/2"-11.6# CASING IN 8 3/4" OH, TD 9436', TP 9431.3', ST 32.5', MUD 9.2, WATER TEMP 55, PH 7, CHLORIDES 0
Event	10	Test Lines	3/5/2019	20:49:07	COM4			5000.00		TEST LINES TO 5000 PSI
Event	11	Pump H2O	3/5/2019	20:53:12	COM4	4.00	8.33	150.00	10.00	10 BBLS FRESH WATER SPACER
Event	12	Pump MUDFLUSH	3/5/2019	20:56:20	COM4	4.00	8.40	150.00	20.00	20 BBLS MUDFLUSH
Event	13	Pump Lead Cement	3/5/2019	21:05:22	COM4	8.00	12.50	670.00	195.20	195.2 BBLS LEAD CEMENT, 565 SKS @ 12.5 PPG / 1.94 YLD / 9.6 GAL/SK

Event	14	Pump Tail Cement	3/5/2019	21:33:28	COM4	8.00	13.00	700.00	293.10	293.1 BBLs TAIL CEMENT, 795 SKS @ 13.0 PPG / 2.07 YLD / 9.43 GAL/SK
Event	15	Drop Top Plug	3/5/2019	23:00:56	COM4					PLUG AWAY, 4 1/2" LATCH DOWN PLUG PROVIDED BY CUSTOMER
Event	16	Pump Displacement	3/5/2019	23:03:20	COM4	10.00	8.40	2500.00	145.70	145.7 BBLs KCL DISPLACEMENT WITH 3# BE-6 AND 1 GALLON MMCR
Event	17	Bump Plug	3/5/2019	23:20:24	COM4	4.00	8.40	1670.00	145.60	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE 1670 PSI @ 2 BBL/MIN, BROUGHT TO 2650 PSI
Event	18	CHECK FLOATS	3/5/2019	23:24:37	COM4					FLOATS HELD, 1.5 BBLs BACK TO PUMP
Event	19	End Job	3/5/2019	23:28:00	COM4					PIPE RECIPRICATED, PARTIAL RETURNS THROUGHOUT CEMENT, NO RETURNS ON DISPLACEMENT, 60# SUGAR USED, 2 ADD HOURS CHARGED
Event	20	Pre-Rig Down Safety Meeting	3/6/2019	00:25:00	USER					JSA COMPLETED
Event	21	Rig-Down Equipment	3/6/2019	00:30:00	USER					
Event	22	Pre-Convoy Safety Meeting	3/6/2019	00:55:00	USER					JSA COMPLETED
Event	23	Crew Leave Location	3/6/2019	01:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO - RYAN MARTIN AND CREW

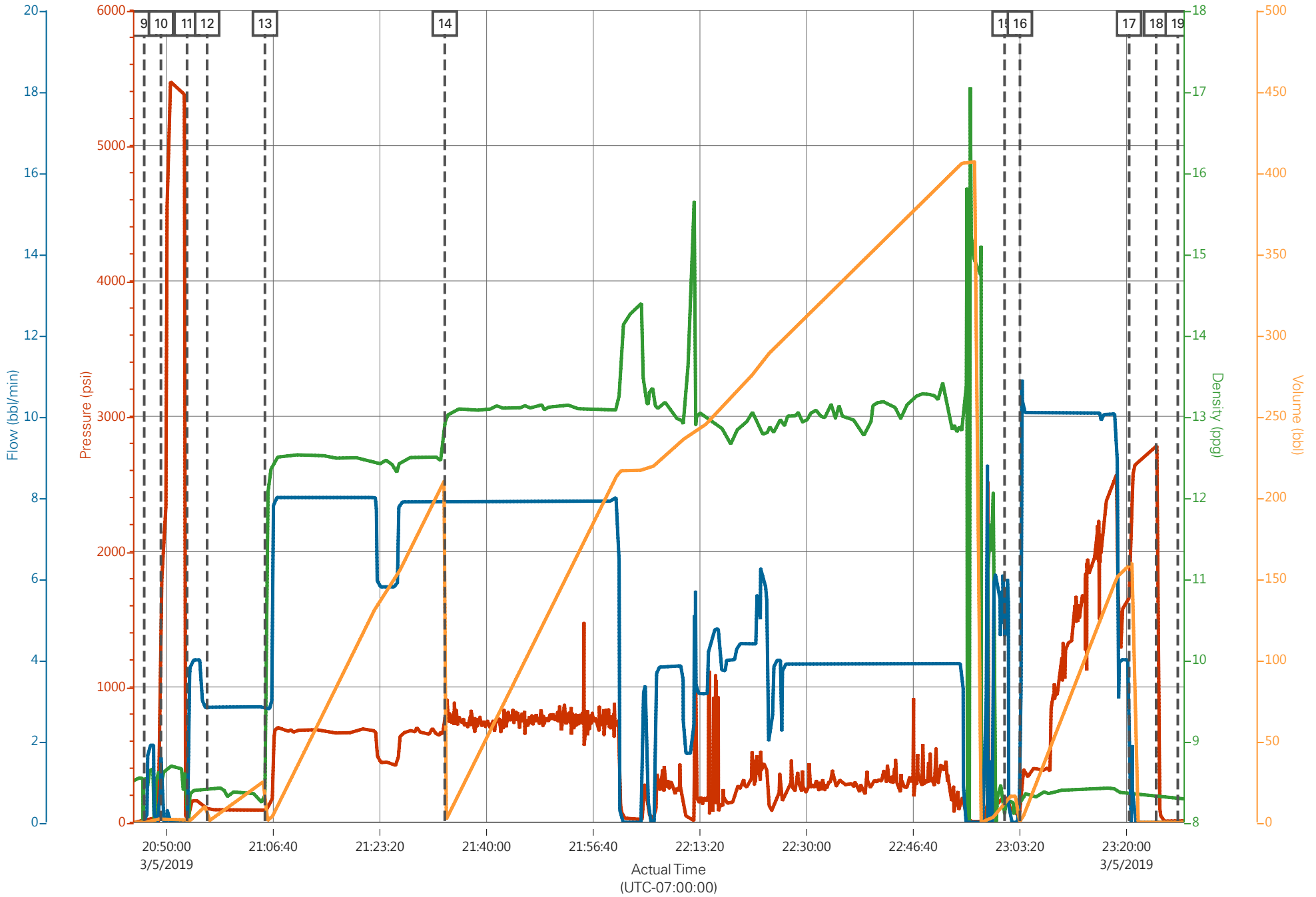
# TR 444-22-597 Production



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

Description	Actual Time (UTC-07:00:00)	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)
9 Start Job	20:46:30	25.00	8.57	0.00	0.00
10 Test Lines	20:49:07	1.00	8.62	1.60	2.00
11 Pump H2O	20:53:12	25.00	8.28	0.00	2.10
12 Pump MUDFLUSH	20:56:20	102.00	8.38	2.90	10.70
13 Pump Lead Cement	21:05:22	86.00	8.40	2.80	0.00
14 Pump Tail Cement	21:33:28	741.00	12.89	7.90	210.80
15 Drop Top Plug	23:00:56	167.00	8.09	5.70	12.60
16 Pump Displacement	23:03:20	43.00	8.24	1.20	0.10
17 Bump Plug	23:20:24	1656.00	8.36	4.00	158.90
18 CHECK FLOATS	23:24:37	2787.00	8.34	0.00	0.00
19 End Job	23:28:00	3.00	8.29	0.00	0.00

# TR 444-22-597 Production



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

### Job Information

<b>Request/Slurry</b>	2538839/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	01/MAR/2019
<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>	Trail Ridge 444-22-597

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9473 ft	<b>BHST</b>	112°C / 234°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9032 ft	<b>BHCT</b>	73°C / 164°F
<b>Pressure</b>	5622 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	
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### Cement Information - Lead Design

<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>MP</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem Lead					Slurry Density	12.5	lbm/gal
							Slurry Yield	1.94	ft3/sack
							Water Requirement	9.62	gal/sack
							Total Mix Fluid	9.62	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

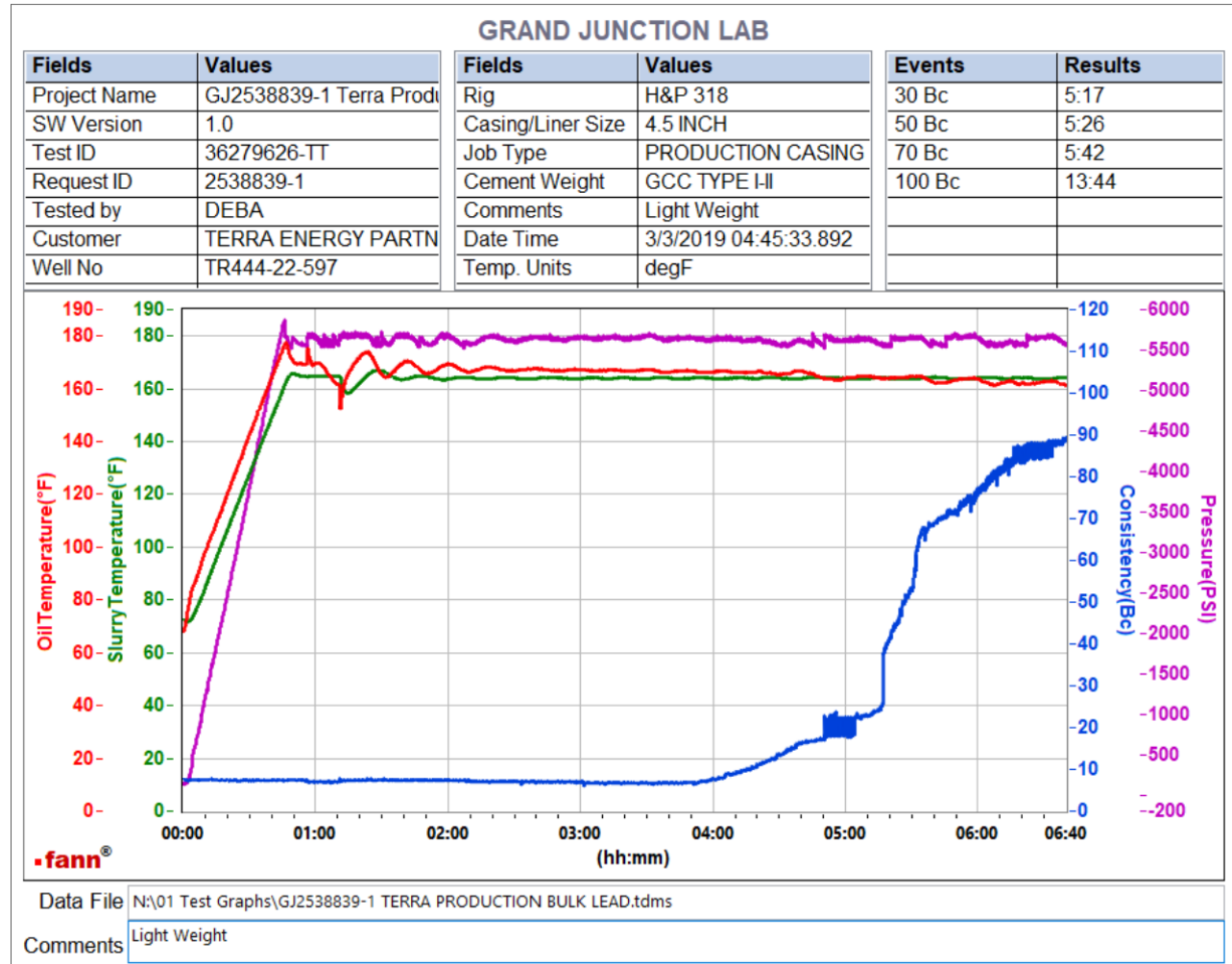
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**Operation Test Results Request ID 2538839/1**

**Thickening Time - ON-OFF-ON, Request Test ID:36279626**

**04/MAR/2019**

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)
164	5622	46	5:17	5:26	5:42	13:44	8	56	15	8



Total sks = 565

CS0284 TR#8658 420 SKS

CS0285 TR#4053 145 SKS

No deflection. Please note that heat of hydration started around 6:00. Slurry got to 90 Bc at 6:47 and started spinning in cup.

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### Job Information

<b>Request/Slurry</b>	2538840/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	01/MAR/2019
<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>	Trail Ridge 444-22-597

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9473 ft	<b>BHST</b>	112°C / 234°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9032 ft	<b>BHCT</b>	73°C / 164°F
<b>Pressure</b>	5622 psi				

### Drilling Fluid Information

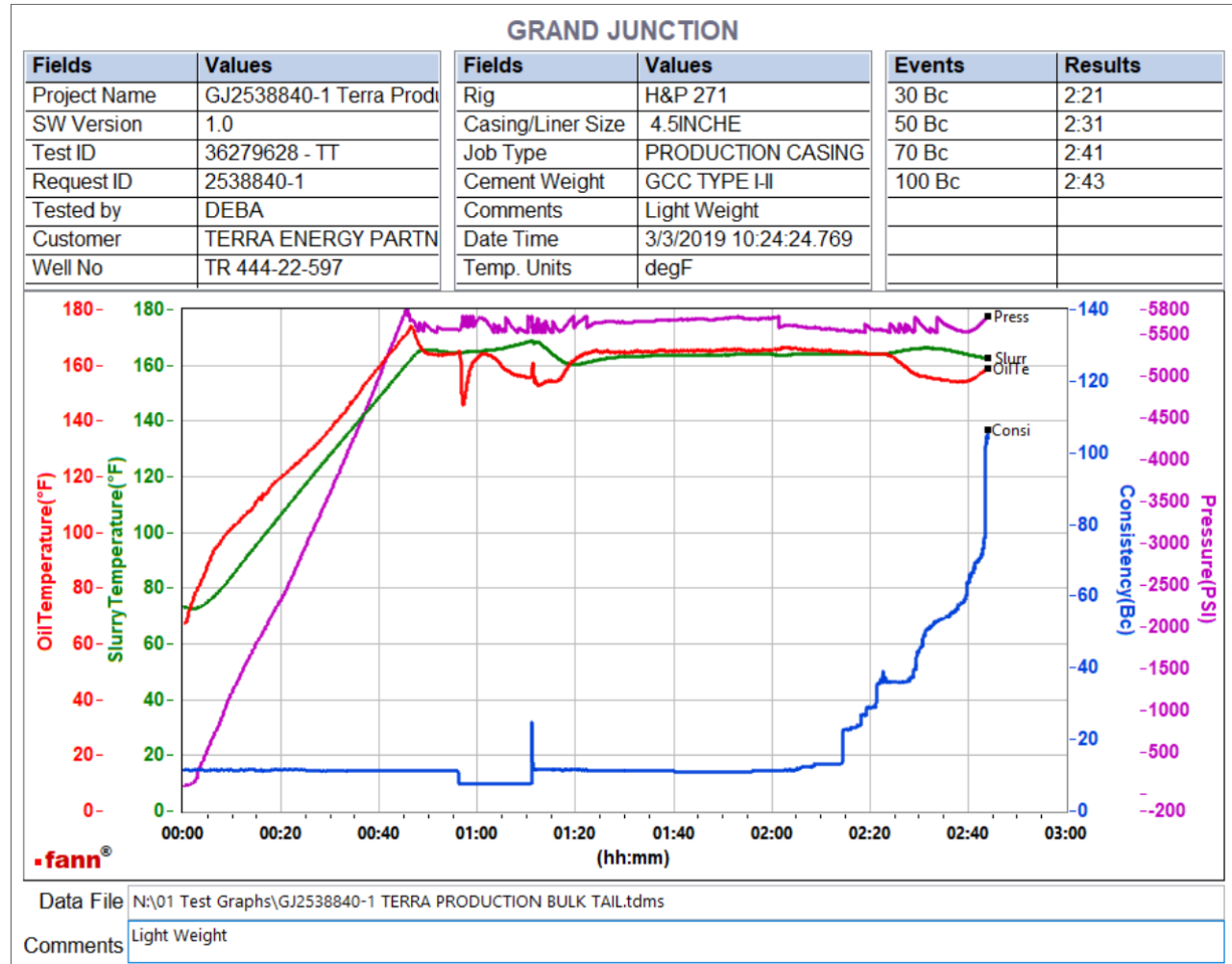
<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	
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### Cement Information - Tail Design

<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>MP</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem HT Tail					Slurry Density	13	lbm/gal
							Slurry Yield	2.07	ft <sup>3</sup> /sack
							Water Requirement	9.42	gal/sack
							Total Mix Fluid	9.42	gal/sack
							Water Source	Fresh Water	
							Water Chloride	N/A	

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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)
164	5622	46	2:21	2:31	2:41	2:43	12	56	15	28



Total sks 795  
 CS0286 TR#8677 350 SKS  
 CS0287 TR#8678 350 SKS  
 CS0288 TR#4053 95SKS Front  
 Deflected 9-- > 28-- > 16 after 1 minute. Please note heat of hydration started around 2:23.

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