

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Saturday, April 20, 2019

**GM 413-14 Production PJR**

API# 05-045-24252-00

Sincerely,

**Grand Junction Cement Engineering**

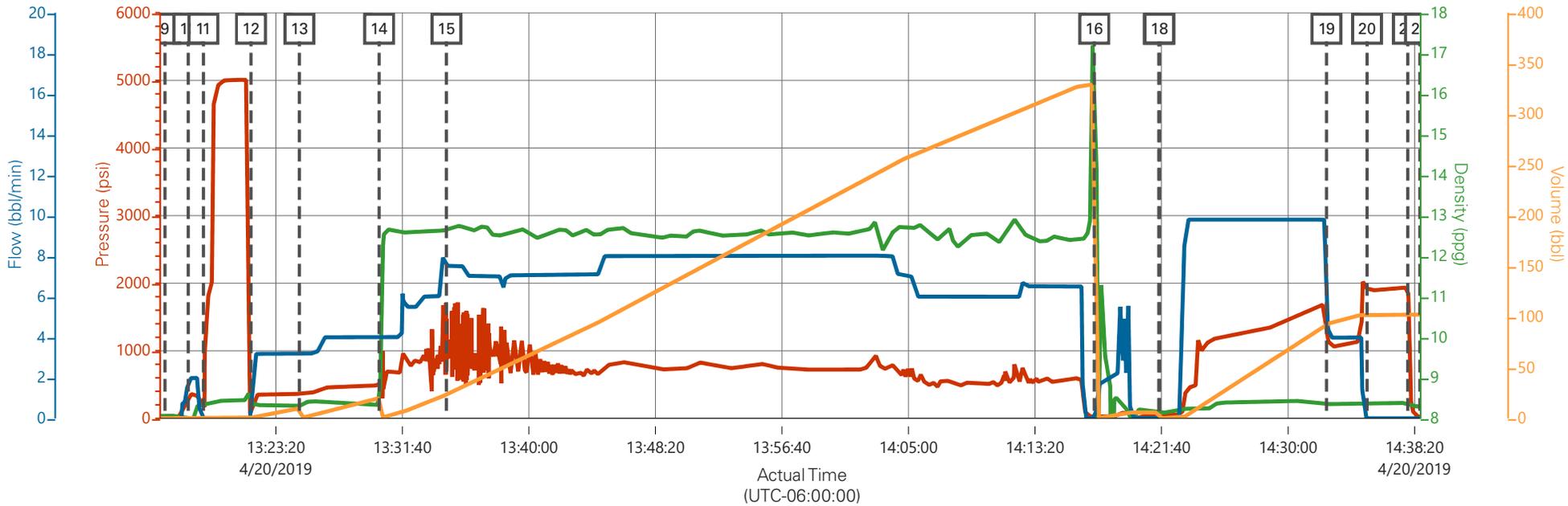
## 2.0 Real-Time Job Summary

### 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	4/19/2019	22:00:00	USER					REQUESTED ON LOCATION AT 4:00
Event	2	Depart Yard Safety Meeting	4/19/2019	23:45:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	4/20/2019	00:01:00	USER					1 HT 400 PUMP TRUCK E8, 1 660 BULK TRUCK, 1 F550 SERVICE TRUCK.
Event	4	Arrive At Loc	4/20/2019	02:00:00	USER					RIG RUNNING CASING WHEN HES ARRIVED
Event	5	Assessment Of Location Safety Meeting	4/20/2019	02:10:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	4/20/2019	02:15:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	4/20/2019	02:20:00	USER					1 HT400 PUMP TRUCK, 1 660 BULK TRUCK, 1 CEMENT SILO, 2" IRON, AND 4" WATER HOSE.
Event	8	Pre-Job Safety Meeting	4/20/2019	12:45:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER. RIG CIRCULATED AT 10BPM, PRESSURE 550PSI, 50 UNITS OF GAS.
Event	9	Start Job	4/20/2019	13:16:02	COM4					TD 6690', TP 6683.39', SJ 30.66', OH 8.75", CSG 4.5" 11.6# P110, SC 9 5/8" 32.3# SET @ 1026', MUD 9.8#
Event	10	Prime Lines	4/20/2019	13:17:34	USER	2	8.33	315	2	FRESH WATER
Event	11	Test Lines	4/20/2019	13:18:34	COM4			5000		HELD PRESSURE AT 5000PSI
Event	12	Pump H2O Spacer	4/20/2019	13:21:42	COM4	3	8.33	350	10	10BBLS FRESH WATER

Event	13	Mud Flush	4/20/2019	13:24:53	COM4	4	8.4	480	20	20BBLs MUD FLUSH
Event	14	Pump Cement	4/20/2019	13:30:08	COM4	8	12.5	870	317	NEOCEM 850 SKS 12.5 PPG, 2.09 FT3/SK, 10.64 GAL/SK.
Event	15	Check Weight	4/20/2019	13:34:34	USER					VERIFIED WITH PRESSURIZED MUD SCALES
Event	16	Clean Lines	4/20/2019	14:17:14	COM4					END OF CEMENT, CLEAN LINES TO CELLAR.
Event	17	Drop Top Plug	4/20/2019	14:21:29	COM4					VERIFIED BY FLAG INDICATOR
Event	18	Pump Displacement	4/20/2019	14:21:32	COM4	10	8.4	1700	103.2	FRESH WATER WITH 1 GAL MMCR IN FIRST 10BBLs AND ONE BAG KCL IN EVERY 10BBLs.
Event	19	Slow Rate	4/20/2019	14:32:32	USER	4	8.4	1115	93	SLOWED TO 4BPM TO BUMP PLUG
Event	20	Bump Plug	4/20/2019	14:35:12	COM4	4	8.4	1140	103.2	BUMPED PLUG AT 1140PSI TOOK UP TO 1930 PSI
Event	21	Check Floats	4/20/2019	14:37:53	USER					FLOATS HELD, 1BBL BACK TO TRUCK.
Event	22	End Job	4/20/2019	14:38:41	USER					RETURNS THROUGH JOB. PIPE WAS RECIPRICATED, NO SUGAR USED.
Event	23	Pre-Rig Down Safety Meeting	4/20/2019	14:45:00	USER					JSA COMPLETED
Event	24	Rig-Down Equipment	4/20/2019	14:50:00	USER					ALL HSE PRESENT
Event	25	Pre-Convoy Safety Meeting	4/20/2019	16:00:00	USER					JSA COMPLETED
Event	26	Crew Leave Location	4/20/2019	16:15:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO – SHAWN BLOSSOM AND CREW

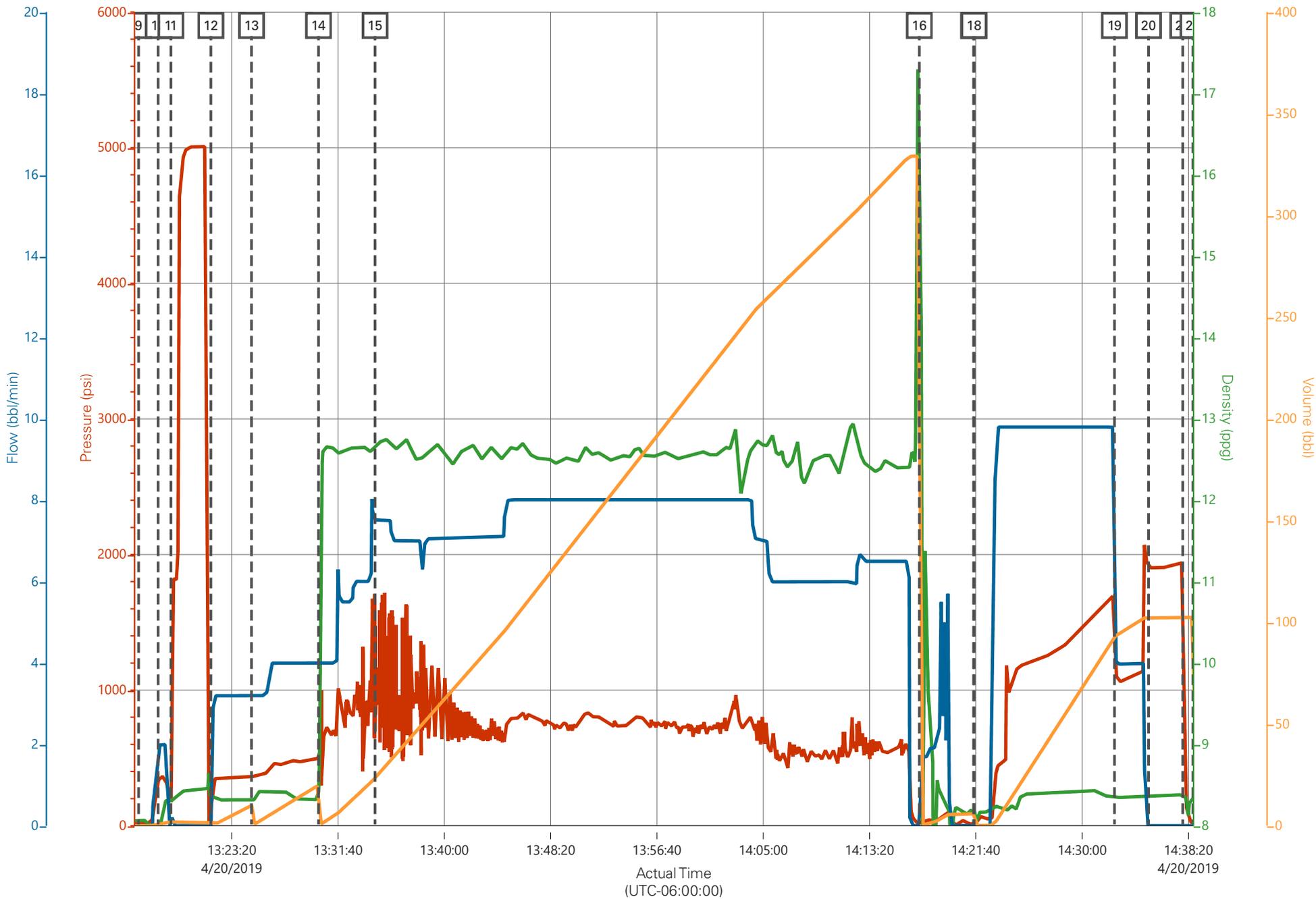
# TEP GM 413-14 Production



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

Description	Actual Time (UTC-06:00:00)	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)
9 Start Job	13:16:02	13.00	8.06	0.00	0.00
10 Prime Lines	13:17:34	322.00	8.01	2.00	0.40
11 Test Lines	13:18:34	175.00	8.31	0.00	1.90
12 Pump H2O Spacer	13:21:42	96.00	8.35	0.00	0.00
13 Mud Flush	13:24:53	360.00	8.31	3.20	10.00
14 Pump Cement	13:30:08	515.00	8.39	4.00	0.00
15 Check Weight	13:34:34	686.00	12.68	7.50	23.60
16 Clean Lines	14:17:14	13.00	15.31	0.00	329.20
17 Drop Top Plug	14:21:29	10.00	8.14	0.00	5.90
18 Pump Displacement	14:21:32	10.00	8.14	0.00	5.90
19 Slow Rate	14:32:32	1327.00	8.37	5.80	93.00
20 Bump Plug	14:35:12	1911.00	8.37	0.00	102.40
21 Check Floats	14:37:53	1925.00	8.38	0.00	102.40
22 End Job	14:38:41	14.00	8.34	0.00	102.40

# TEP GM 413-14 Production



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

# HALLIBURTON

Rockies, Grand Junction

Lab Results- Tail

## Job Information

<b>Request/Slurry</b>	2549553/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	16/APR/2019
<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>	GM 413-14

## Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	6706 ft	<b>BHST</b>	80°C / 176°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	5649 ft	<b>BHCT</b>	47°C / 117°F
<b>Pressure</b>	3290 psi				

## Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	9.9 lbm/gal
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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>	<u>Cement Properties</u>		
							Slurry Density	12.5	lbm/gal
							Slurry Yield	2.1	ft3/sack
							Water Requirement	10.67	gal/sack
							Total Mix Fluid	10.67	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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**Operation Test Results Request ID 2549553/1**

**Thickening Time - ON-OFF-ON, Request Test ID:36409820**

**18/APR/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)
117	3290	40	4:01	4:11	4:21	4:31	5	50	15	12

Total sks=800

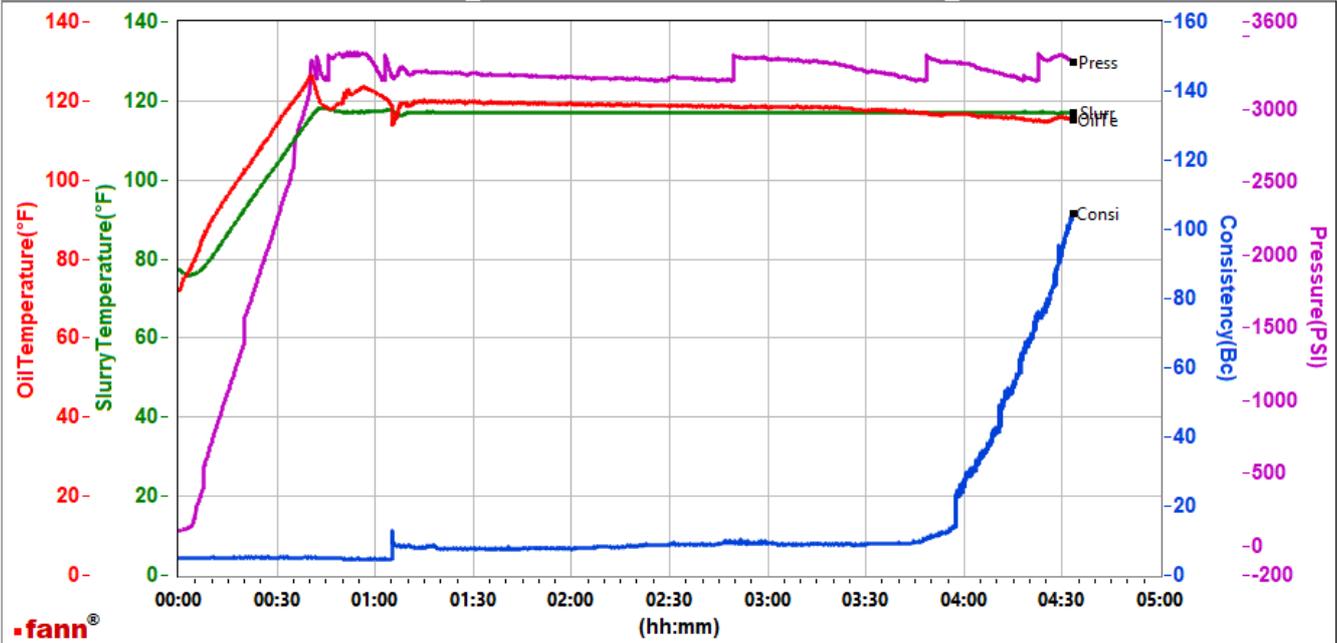
CS0491 TR#8677 400 sks

CS0492 TR#1656 400 SKS

Deflected 4- > 12. Please not that heat of hydration started around 4:00.

**GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	GJ2549553-1 Terra Bulk I	Rig	H&P 318	30 Bc	4:01
SW Version	1.0	Casing/Liner Size	4.5 INCH	50 Bc	4:11
Test ID	36409820 - TT	Job Type	PRODUCTION CASING	70 Bc	4:21
Request ID	2549553-1	Cement Weight	MOUNTAIN G	100 Bc	4:31
Tested by	DS	Comments	Light Weight		
Customer	TERRA ENERGY PARTN	Date Time	4/17/2019 11:22:34.560		
Well No	GM413-14	Temp. Units	degF		



Data File	N:\01 Test Graphs\GJ2549553-1 TERRA BULK PRODUCTION PRIMARY.tdms
Comments	Light Weight

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