

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Monday, July 16, 2018

### **PA 12-26 Production PJR**

API #: 05-045-23703

Sincerely,

**Grand Junction Cement Engineering**

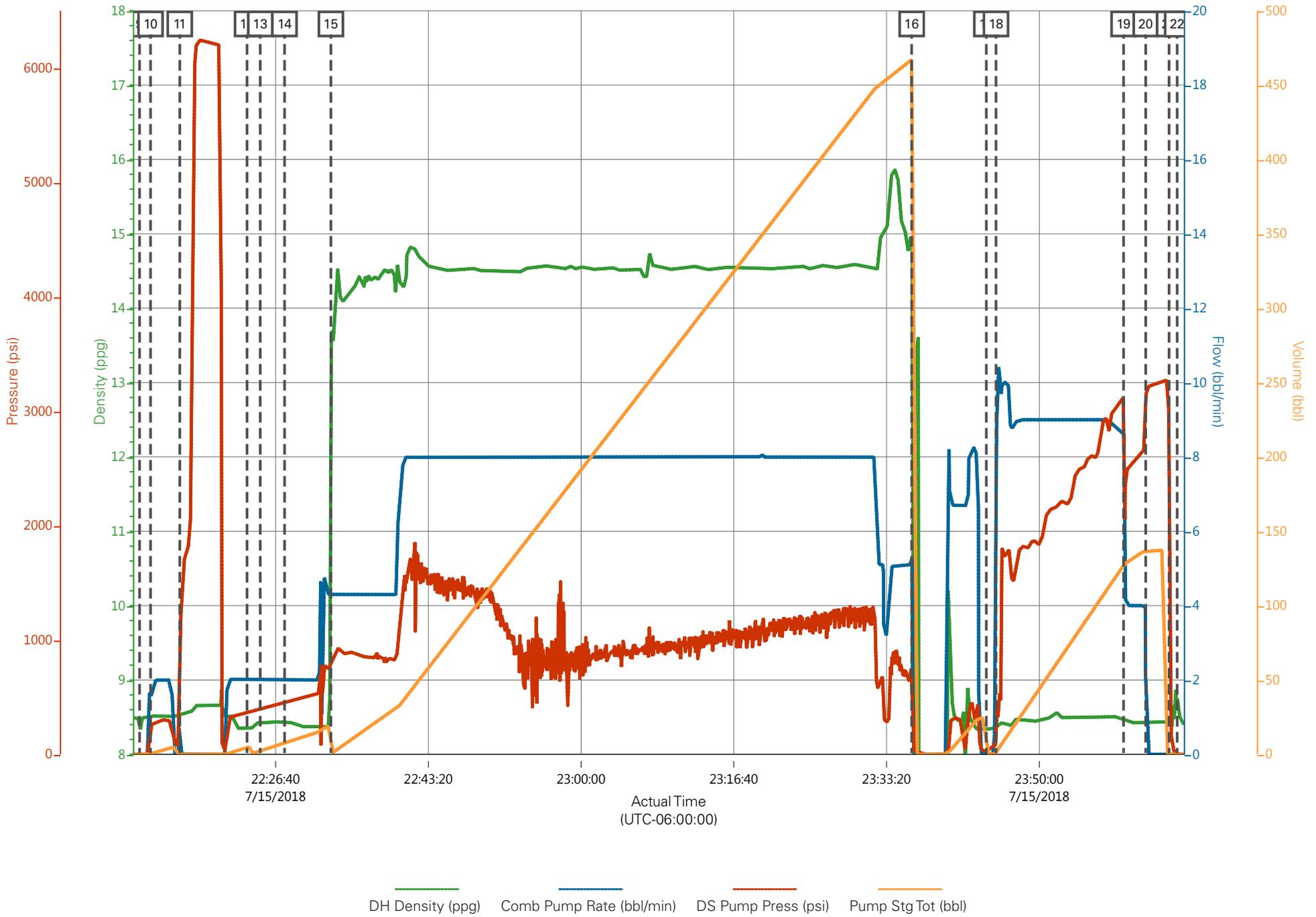
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	7/15/2018	10:00:00						Requested on Location @ 17:00
Event	2	Pre-Convoy Safety Meeting	7/15/2018	13:00:00						
Event	3	Crew Leave Yard	7/15/2018	13:20:00						1 Elite, 1 660, 1 pickup
Event	4	Arrive at Location from Service Center	7/15/2018	17:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	7/15/2018	17:10:00						JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <200, temp 85 degrees
Event	6	Pre-Rig Up Safety Meeting	7/15/2018	17:15:00						1 hardline to standpipe, water hoses to upright, bulk hose to 660 and silos.
Event	7	Other	7/15/2018	17:45:00						Rig Circulated 60 mins prior to cement job at 420 gpm 1850 psi
Event	8	Pre-Job Safety Meeting	7/15/2018	21:23:34						All HES personnel, rig crew, and company rep
Event	9	Start Job	7/15/2018	22:11:49						TD 8875', TP 8865.05, SJ 29.1', FC 8835.95 OH 8 3/4", Csg 4.5", 11.6 lb/ft, Mud 12.6 ppg.
Event	10	Fill Lines	7/15/2018	22:13:01		8.33	2	260	5	Fresh Water
Event	11	Test Lines	7/15/2018	22:16:13				6245		Held pressure 2 minutes no leaks

Event	12	Pump Spacer	7/15/2018	22:23:33	8.33	2	360	5	Fresh Water
Event	13	Pump Spacer 1	7/15/2018	22:24:59	8.4	4	740	20	Mud Flush
Event	14	Check Weight	7/15/2018	22:27:39					Density Verified via Mud Scales
Event	15	Pump Tail Cement	7/15/2018	22:32:42	14.5	8	1590	434.9	1850 Sks 14.5 ppg 1.32 yield, 5.85 gal/sk
Event	16	Shutdown	7/15/2018	23:36:04					Clean lines to pit
Event	17	Drop Top Plug	7/15/2018	23:44:13					Co-Rep Verify Plug Launched
Event	18	Pump Displacement	7/15/2018	23:45:17	8.4	10	3100	136.9	3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	19	Slow Rate	7/15/2018	23:59:12	8.4	4	2580	126	Slow Rate 10 bbls to calculated displacement
Event	20	Bump Plug	7/16/2018	00:01:36			3270	136.9	Plug Bumped at 2580 psi, Brought up to 3270 psi
Event	21	Check Floats	7/16/2018	00:04:09					Floats held – 1 3/4 bbl back to the truck
Event	22	End Job	7/16/2018	00:05:03					Good returns throughout job. Pipe was reciprocated during job.
Event	23	Post-Job Safety Meeting (Pre Rig-Down)	7/16/2018	00:25:26					No sugar, HES top plug used, 0 add hours
Event	24	Pre-Convoy Safety Meeting	7/16/2018	00:32:52					
Event	25	Crew Leave Location	7/16/2018	00:38:11					Thanks For Using Halliburton Cement. Chris Martinez And Crew.

# Terra, PA 12-26 4 1/2" Production



### Job Information

<b>Request/Slurry</b>	2486192/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	06/JUL/2018
<b>Submitted By</b>	Lukas Van Zyl	<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 12-26

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8901 ft	<b>BHST</b>	106°C / 223°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	8396 ft	<b>BHCT</b>	67°C / 153°F
<b>Pressure</b>	5177 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

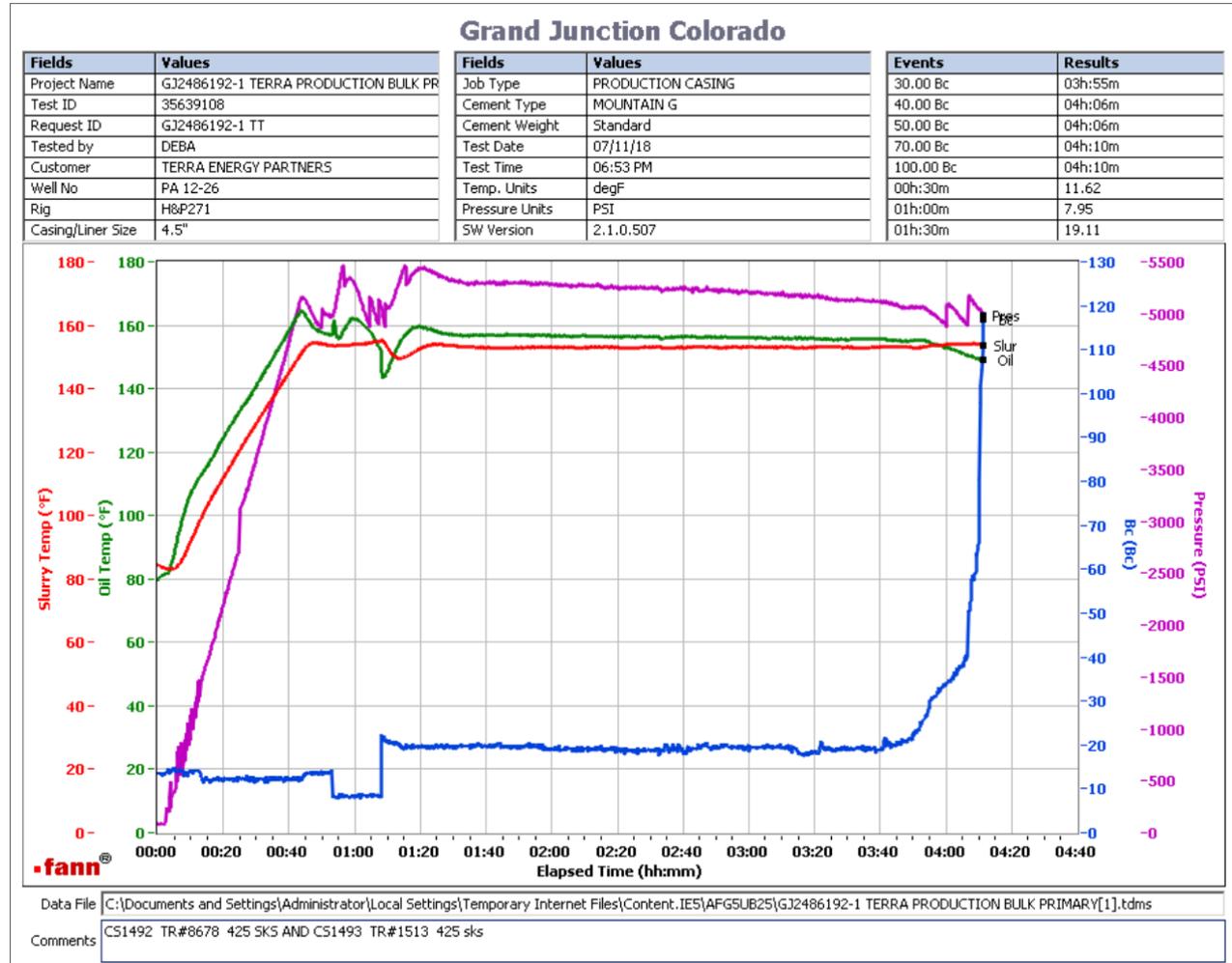
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		Expandacem Primary				Slurry Density	14.5	lbm/gal
						Slurry Yield	1.32	ft3/sack
						Water Requirement	5.849	gal/sack
						Total Mix Fluid	5.849	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

12/JUL/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)
153	5177	43	3:55	4:06	4:10	4:10	13	53	15	26



total sks=1850  
 CS1492 TR# 8678 425 SKS  
 CS1493 TR#1513 425 SKS  
 deflected from 15Bc--- > 26Bc

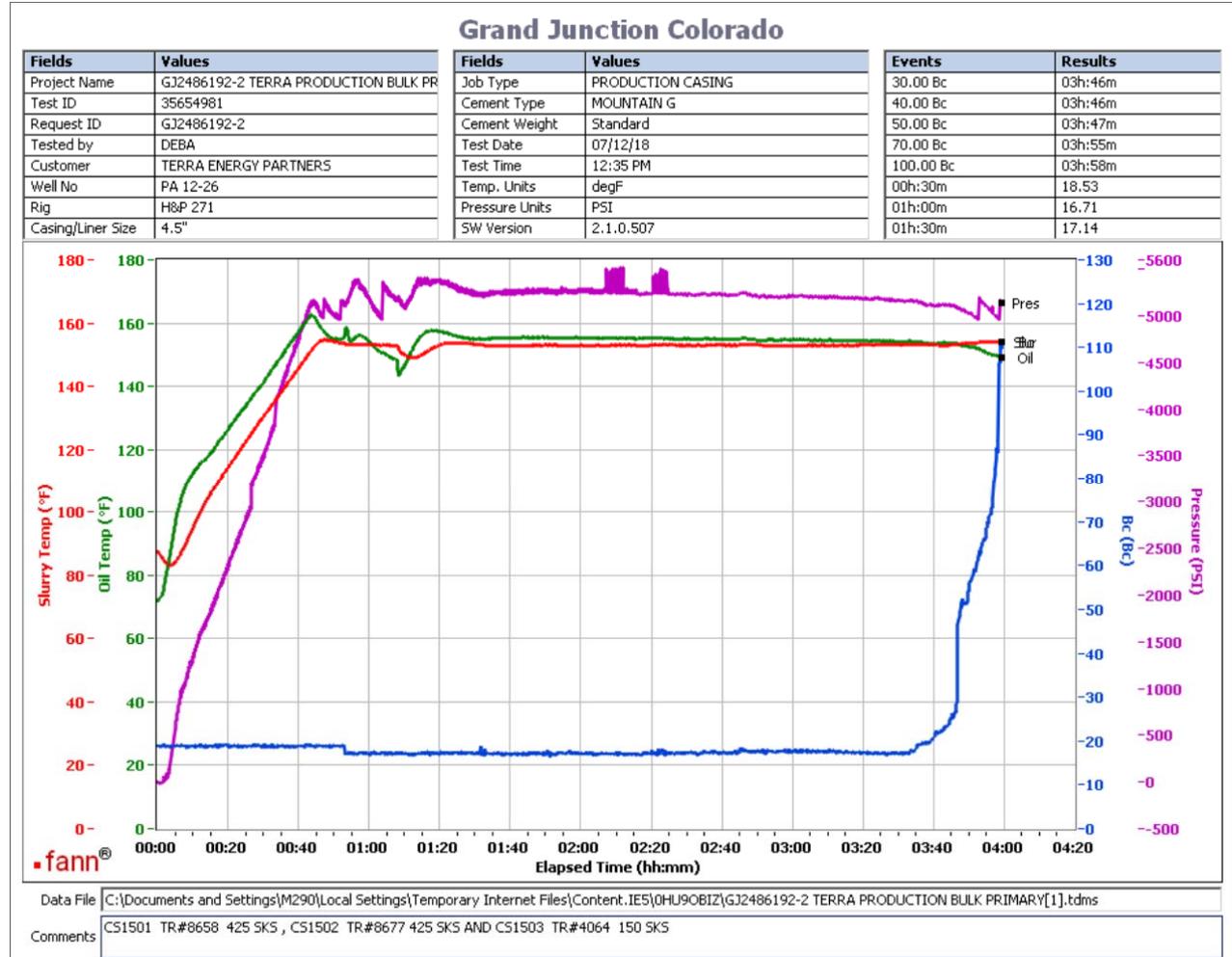
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## Operation Test Results Request ID 2486192/2

### Thickening Time - ON-OFF-ON

12/JUL/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)
153	5177	43	3:46	3:47	3:55	3:58	19	53	15	17



total sks=1850  
 CS1501 TR#8658 425 SKS  
 CS1502 TR#8677 425 SKS  
 CS1503 TR#4064 150 SKS  
 no deflection , 17Bc--- > 17Bc

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