

HALLIBURTON

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TERRA ENERGY PARTNERS

United States of America, COLORADO

Date: Thursday, February 21, 2019

RWF 421-10 Production

Terra RWF 421-10 Production

API# 05-045-23926-00

Sincerely,

Grand Junction Cement Engineering

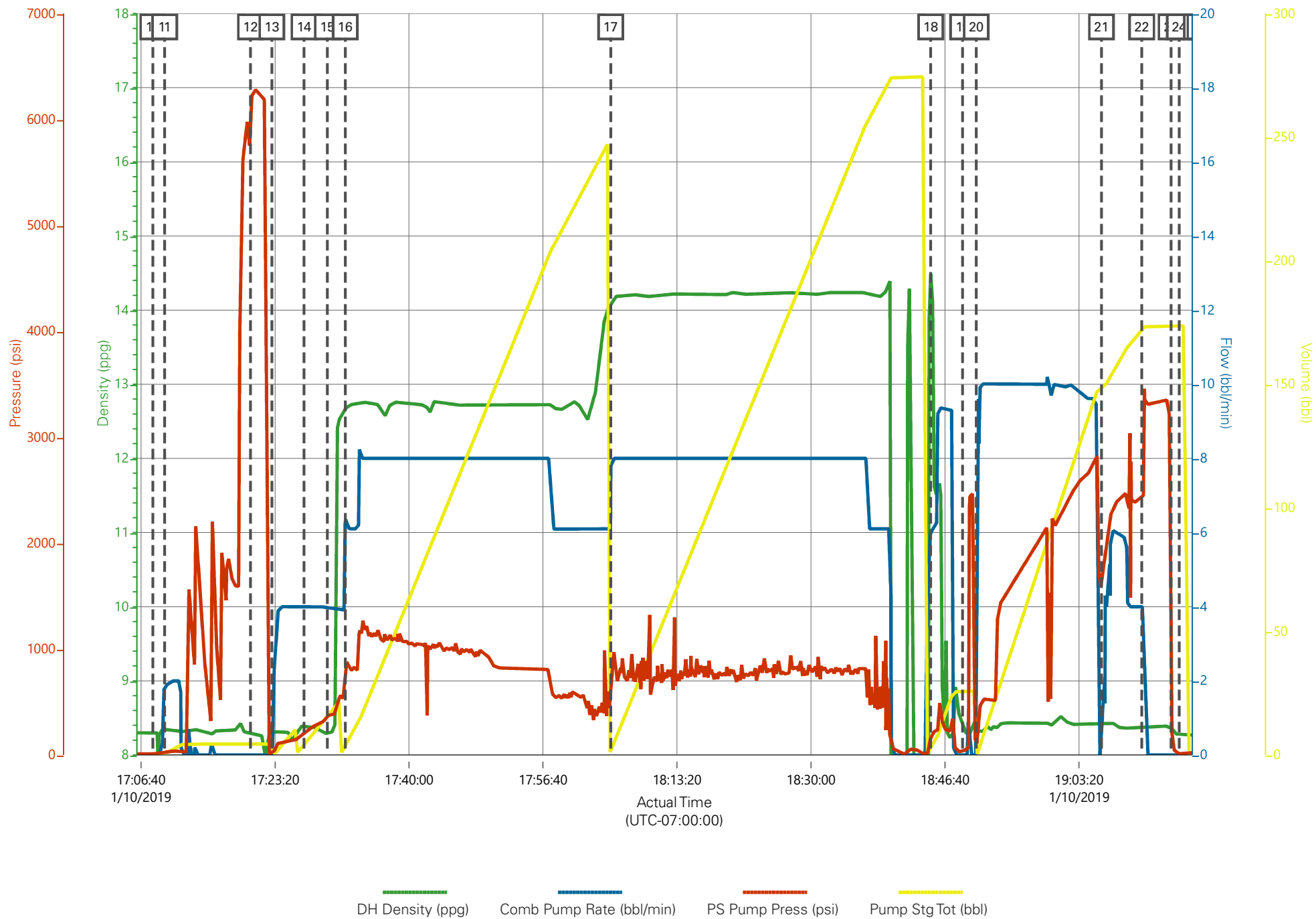
1.0 Real-Time Job Summary

1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	PS Pump Press (psi)	Comments
Event	1	Call Out	1/10/2019	07:00:00						Requested on Location @ 14:00
Event	2	Pre-Convoy Safety Meeting	1/10/2019	10:00:00						
Event	3	Crew Leave Yard	1/10/2019	10:05:00						1 Elite, 1 660, 1 pickup
Event	4	Arrive At Loc	1/10/2019	14:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	1/10/2019	14:05:00						JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <200, temp 68 degrees
Event	6	Pre-Rig Up Safety Meeting	1/10/2019	14:10:00						
Event	7	Rig-Up Equipment	1/10/2019	14:15:00						DME iron to ground manifold, standpipe, hardline to pit. Water hoses to both uprights, bulk hoses to Silo's and 660.
Event	8	Other	1/10/2019	14:20:00						Rig Circulated 1.5 hrs prior to cement job at 10 bpm 850 psi. Mud scales calibrated to drinking water prior to job.
Event	9	Pre-Job Safety Meeting	1/10/2019	17:00:00						All HES personnel, rig crew, and company rep.
Event	10	Start Job	1/10/2019	17:08:08						TD 10318', TP 10311.6', SJ 31.91', OH 8.75", Csg 4.5" 11.6 lb/ft P-110 Prev. Csg. 9.625" 36# @ 1110', Mud 11.3 ppg.
Event	11	Fill Lines	1/10/2019	17:09:37		8.33	2	77	5	Fresh Water
Event	12	Test Lines	1/10/2019	17:20:17				6299		Held pressure 2 minutes
Event	13	Pump Spacer	1/10/2019	17:22:57		8.33	4	140	10	Fresh Water

Event	14	Pump Spacer	1/10/2019	17:26:57	8.4	4	295	20	80 lbs. Mud Flush III
Event	15	Check Weight	1/10/2019	17:29:51					Density verified via mud cup
Event	16	Pump Lead Cement	1/10/2019	17:32:04	12.7	8	875	212.5	645 sks, 12.7 ppg, 1.85 yield, 8.94 gal/sk
Event	17	Pump Tail Cement	1/10/2019	18:05:05	14.2	8	780	224	740 sks, 14.2 ppg, 1.7 Yield, 7.53 gal/sk
Event	18	Shutdown	1/10/2019	18:44:53					Wash lines to pit
Event	19	Drop Top Plug	1/10/2019	18:48:51					Co-Rep Verify Plug Launched
Event	20	Pump Displacement	1/10/2019	18:50:33	8.4	10	1950	159.4	3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	21	Slow Rate	1/10/2019	19:06:07	8.4	4	2400	149	Slow Rate 10 bbls to Calculated Displacement
Event	22	Bump Plug	1/10/2019	19:11:07	8.4	4	3360	159.4	Plug Bumped at 2400 psi, Brought up to 3360 psi
Event	23	Check Floats	1/10/2019	19:14:47					Floats held – 2.5 bbl back to the truck
Event	24	End Job	1/10/2019	19:15:47					Good returns throughout job. Pipe was reciprocated during job.
Event	25	Pre-Rig Down Safety Meeting	1/10/2019	19:17:55					No sugar, HES top plug used, 0 add hours
Event	26	Rig-Down Equipment	1/10/2019	19:18:22					
Event	27	Pre-Convoy Safety Meeting	1/10/2019	19:19:00					
Event	28	Crew Leave Location	1/10/2019	19:19:43					Thanks for using Halliburton Cement, Chris Martinez and crew.

TERRA RWF 421-10 4 1/2" PRODUCTION



Job Information

Request/Slurry	2524544/1	Rig Name	H&P 318	Date	28/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	RWF 421-10

Well Information

Casing/Liner Size	4.5 in	Depth MD	10341 ft	BHST	119°C / 246°F
Hole Size	8.75 in	Depth TVD	9793 ft	BHCT	80°C / 176°F
Pressure	6155 psi				

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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Cement Information - Lead Design



Conc	UOM	Cement/Additive	MP	Sample Type	Sample Date	Lot No.	Cement Properties		
							Slurry Density	12.7	lbm/gal
							Slurry Yield	1.85	ft3/sack
							Water Requirement	8.95	gal/sack
							Total Mix Fluid	8.95	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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Operation Test Results Request ID 2524544/1

Thickening Time - ON-OFF-ON, Request Test ID:36098831

06/JAN/2019

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)
176	6155	57	3:21	3:28	3:33	3:43	5	67	15	6

Total Sks = 645

CS0021 TR#8658 400 SKS

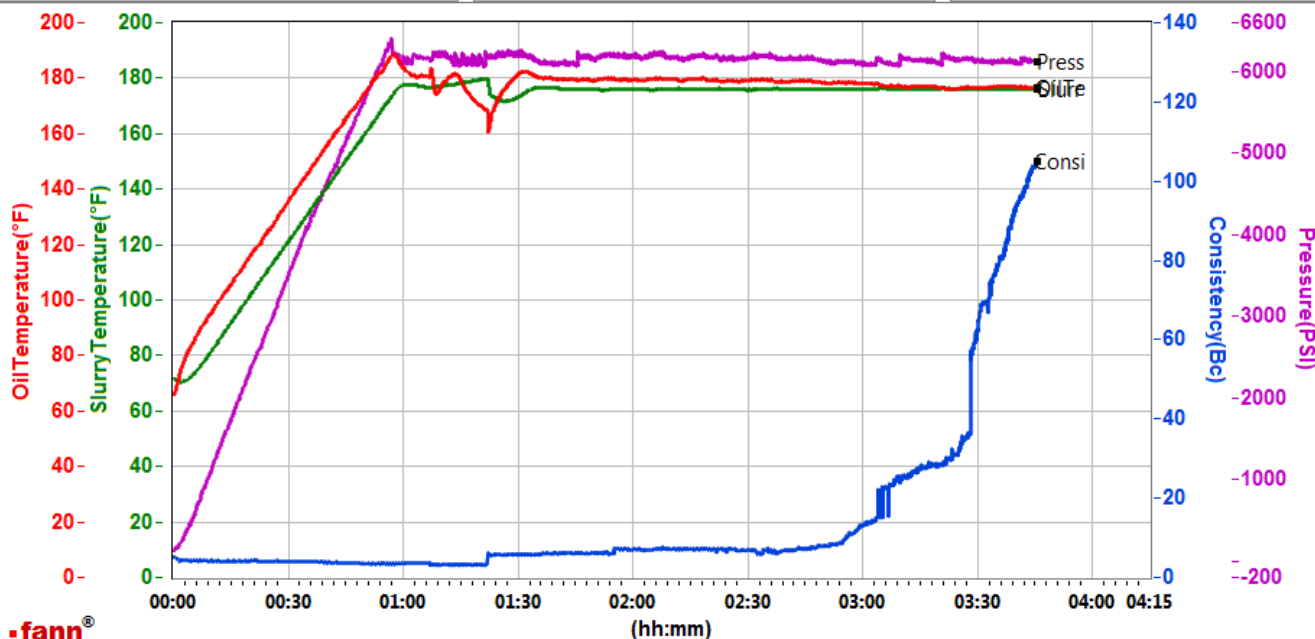
CS0023 TR#4053 245 SKS

deflected from 3Bc--- > 6Bc

slight heat of hydration at 3:33

GRAND JUNCTION

Fields	Values	Fields	Values	Events	Results
Project Name	GJ2524544-1 Terra Prodi	Rig	H&P 318	30 Bc	3:21
SW Version	1.0	Casing/Liner Size	4.5 INCH	50 Bc	3:28
Test ID	36098831 - TT	Job Type	PRODUCTION CASING	70 Bc	3:33
Request ID	2524544-1	Cement Weight	GCC TYPE I-II	100 Bc	3:43
Tested by	DS	Comments	Standard		
Customer	TERRA ENERGY PARTN	Date Time	1/6/2019 05:38:30.272		
Well No	RWF 421-10	Temp. Units	degF		



Data File N:\01 Test Graphs\GJ2524544-1TERRA BULK PRODUCTION LEAD.tdms

Comments Standard

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HALLIBURTON

Rockies, Grand Junction

Lab Results- Tail

Job Information

Request/Slurry	2524545/1	Rig Name	H&P 318	Date	28/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	RWF 421-10

Well Information

Casing/Liner Size	4.5 in	Depth MD	10341 ft	BHST	119°C / 246°F
Hole Size	8.75 in	Depth TVD	9793 ft	BHCT	80°C / 176°F
Pressure	6155 psi				

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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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>	Cement Properties		
							Slurry Density	14.2	lbm/gal
							Slurry Yield	1.7	ft3/sack
							Water Requirement	7.53	gal/sack
							Total Mix Fluid	7.53	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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Operation Test Results Request ID 2524545/1

Thickening Time - ON-OFF-ON, Request Test ID:36098833

06/JAN/2019

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)
176	6155	57	2:08	2:09	2:11	2:13	22	67	15	41

Total sks = 740

CS0022 TR#5678 370 SKS

CS0024 TR#2878 370 SKS

deflected from 22Bc-- > 41Bc --- > 33 within one min

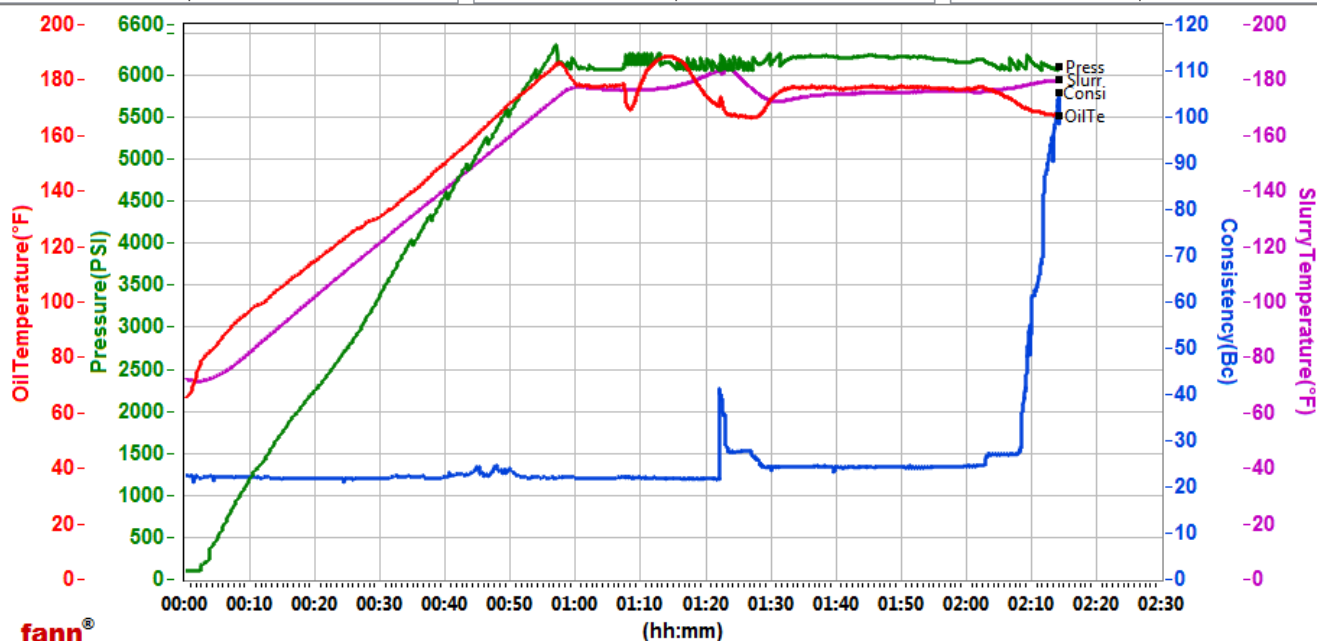
heat of hydration at 2:04

GRAND JUNCTION

Fields	Values
Project Name	TempTest
SW Version	1.0
Test ID	36098833 - TT
Request ID	2524545-1
Tested by	DS
Customer	TERRA ENERGY PARTN
Well No	RWF 421-10

Fields	Values
Rig	H&P 318
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	1/6/2019 06:25:19.663
Temp. Units	degF

Events	Results



Data File C:\Users\hx25273\Desktop\HPHT Graphs\GJ2524545-1 TERRA BULK PRODUCTION TAIL.tdms

Comments Standard

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