

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: Terra

Date: Thursday, October 18, 2018

PA 432-24 Production

API#05-045-23774-00

Sincerely,

Grand Junction Cement Engineering

1.0 Real-Time Job Summary

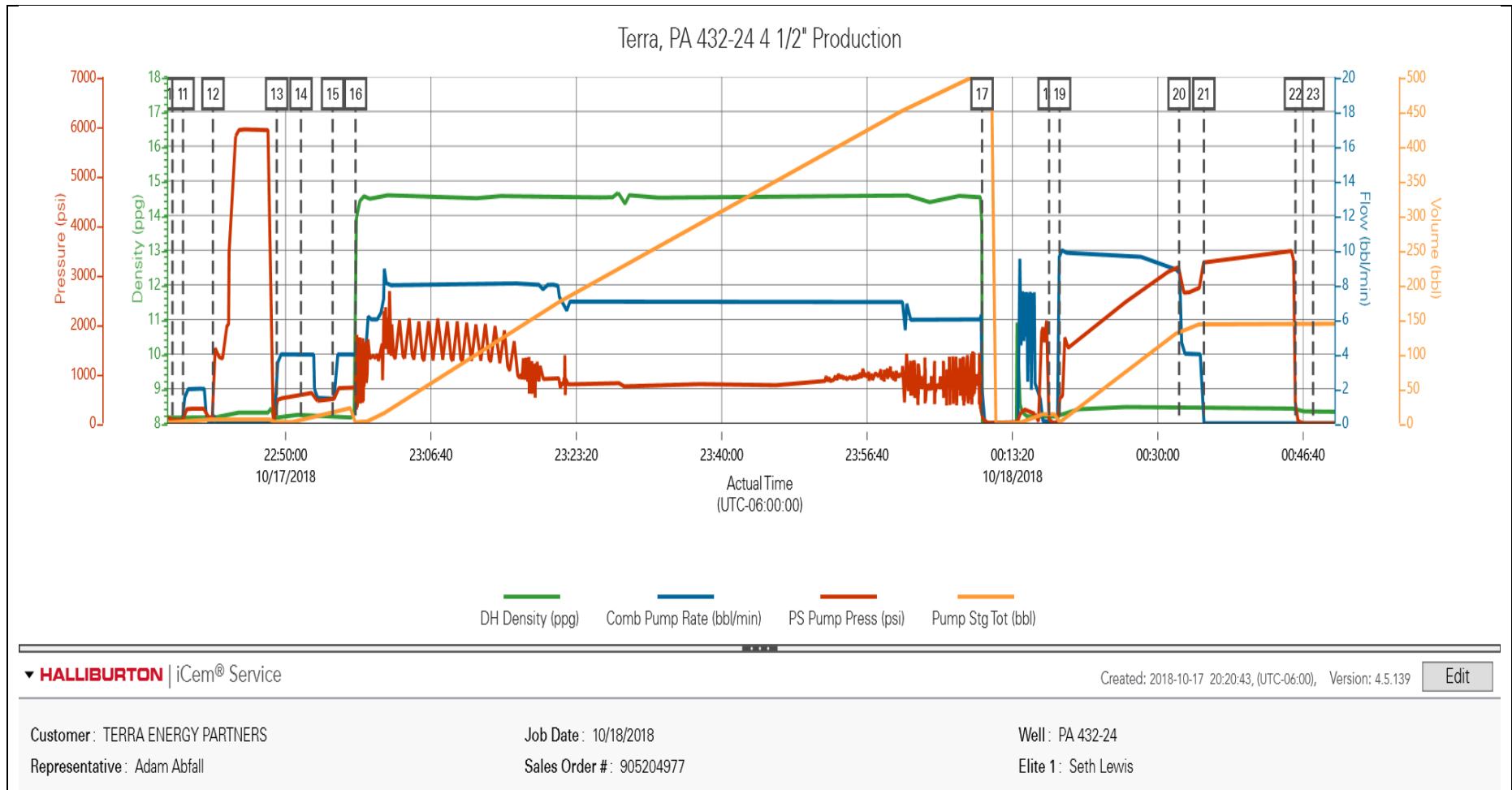
1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	PS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	10/17/2018	13:00:00						Requested on Location @ 19:00
Event	2	Pre-Convoy Safety Meeting	10/17/2018	15:55:00						
Event	3	Crew Leave Yard	10/17/2018	16:00:00						1 Elite, 1 660's, 1 pickup
Event	4	Arrive At Loc	10/17/2018	19:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	10/17/2018	19:05:00						JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <500, temp 45 degrees
Event	6	Pre-Rig Up Safety Meeting	10/17/2018	19:20:00						
Event	7	Rig-Up Equipment	10/17/2018	19:30:00						DME iron to ground manifold, standpipe, hardline to pit. Water hoses to both uprights, bulk hoses to Silo and 660.
Event	8	Other	10/17/2018	22:00:00						Rig Circulated 2 hrs prior to cement job at 320 gpm 1093 psi. Mud scales calibrated to drinking water prior to job.
Event	9	Pre-Job Safety Meeting	10/17/2018	22:05:00						All HES personnel, rig crew, and company rep.
Event	10	Start Job	10/17/2018	22:37:02						TD 9205', TP 9198.33', SJ 34.64', OH 8.75'', Csg 4.5'' 11.6 lb/ft P-110 Prev. Csg. 9.625'' 36# @ 1128', Mud 12.5 ppg.
Event	11	Fill Lines	10/17/2018	22:38:14		8.33	2	310	5	Fresh Water
Event	12	Test Lines	10/17/2018	22:41:40				5984		Held pressure 2 minutes
Event	13	Pump Spacer	10/17/2018	22:48:59		8.33	4	505	5	Fresh Water
Event	14	Pump Spacer	10/17/2018	22:51:45		8.4	4	780	20	80 lbs. Mud Flush III
Event	15	Check Weight	10/17/2018	22:55:23						Density verified via mud cup
Event	16	Pump Tail Cement	10/17/2018	22:58:01		14.5	8	2100	452.6	1925 sks, 14.5 ppg, 1.32 Yield, 5.85 gal/sk

Event	17	Shutdown	10/18/2018	00:09:51						Wash lines to pit
Event	18	Drop Top Plug	10/18/2018	00:17:32						Co-Rep Verify Plug Launched
Event	19	Pump Displacement	10/18/2018	00:18:44	8.4	10	3150	142		3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	20	Slow Rate	10/18/2018	00:32:27	8.4	4	2750	132		Slow Rate 10 bbls to Calculated Displacement
Event	21	Bump Plug	10/18/2018	00:35:17			3530			Plug Bumped at 2750 psi, Brought up to 3530 psi
Event	22	Check Floats	10/18/2018	00:45:47						Floats held – 2 bbl back to the truck
Event	23	End Job	10/18/2018	00:47:48						Good returns throughout job. Pipe was reciprocated during job. 5 bbl of cement to surface
Event	24	Pre-Rig Down Safety Meeting	10/18/2018	01:05:58						no sugar, HES top plug used, 0 add hours
Event	25	Rig-Down Equipment	10/18/2018	01:08:23						
Event	26	Pre-Convoy Safety Meeting	10/18/2018	01:16:03						
Event	27	Crew Leave Location	10/18/2018	01:18:16						Thanks for using Halliburton Cement, Chris Martinez and crew.

2.0 Attachments

2.1 PA 432-24-Custom Results.png



Job Information

Request/Slurry	2507477/1	Rig Name	H&P 271	Date	09/OCT/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	PA 432-24

Well Information

Casing/Liner Size	4.5 in	Depth MD	9239 ft	BHST	107°C / 225°F
Hole Size	8.75 in	Depth TVD	8512 ft	BHCT	68°C / 155°F
Pressure	5258 psi				

Drilling Fluid Information

Mud Supplier Name	AMC	Mud Trade Name		Density	
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Cement Information - Primary Design

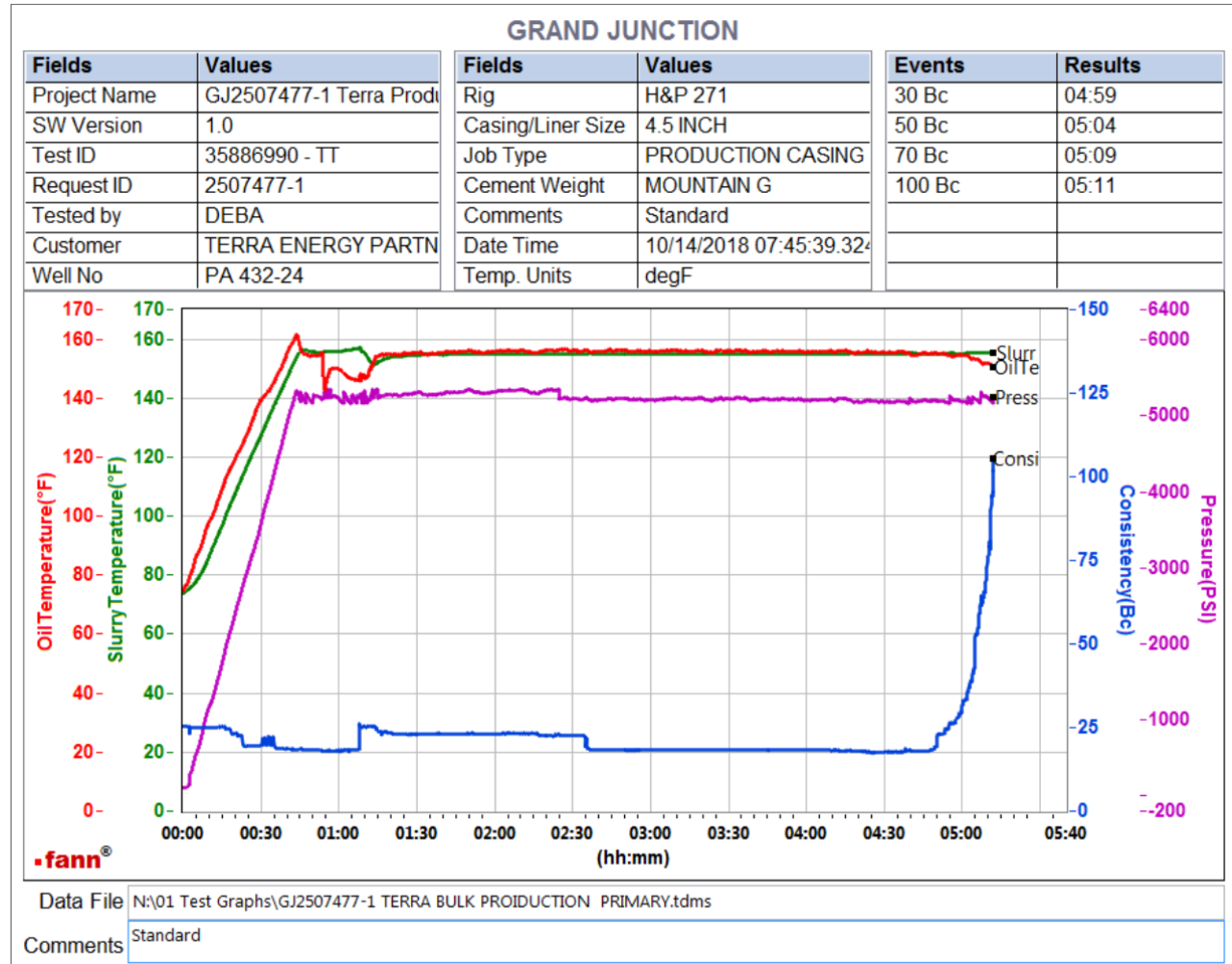
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		Expandacem Primary				Slurry Density	14.5	lbm/gal
						Slurry Yield	1.32	ft3/sack
						Water Requirement	5.849	gal/sack
						Total Mix Fluid	5.849	gal/sack
						Water Source	Fresh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

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Thickening Time - ON-OFF-ON

15/OCT/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)
155	5258	43	4:59	5:04	5:09	5:11	23	53	15	25



total sks=1925
 CS2287 TR#8677 450 SKS
 CS2290 TR#8678 450 SKS
 Deflected 18-- > 25

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Operation Test Results Request ID 2507477/2

Thickening Time - ON-OFF-ON

15/OCT/2018

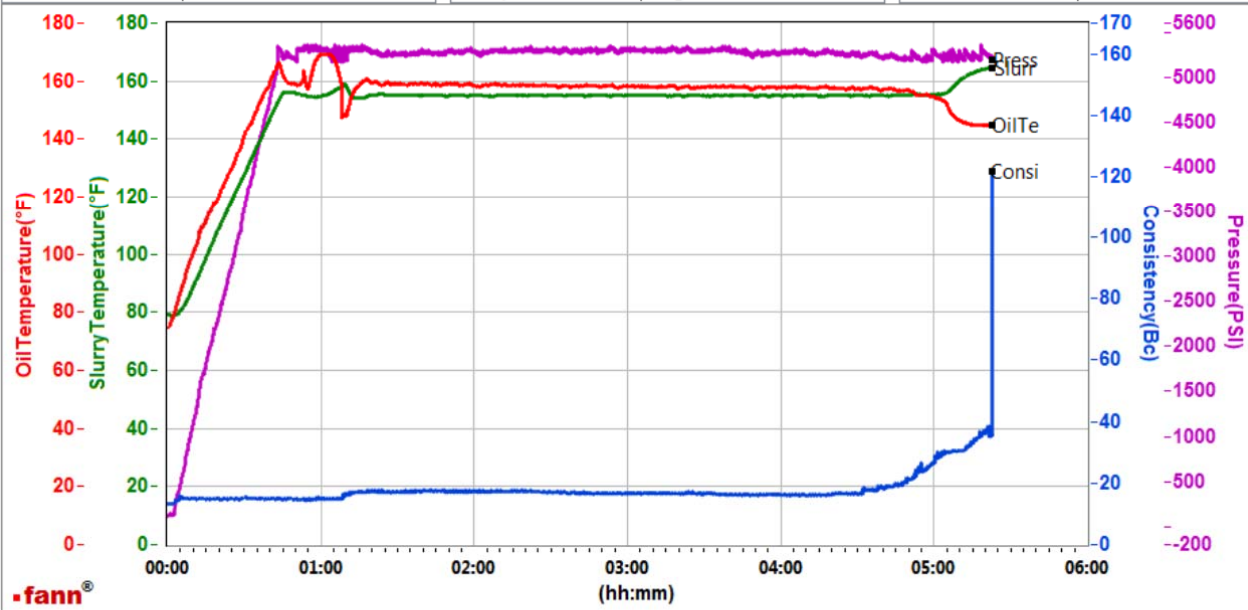
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
155	5258	43	5:05	5:22	5:22	5:22	13	53	15	18

GRAND JUNCTION

Fields	Values
Project Name	GJ2507477-2 Terra Prodi
SW Version	1.0
Test ID	35900282 - TT
Request ID	2507477-2
Tested by	DEBA
Customer	TERRA ENERGY PARTN
Well No	PA 432-24

Fields	Values
Rig	H&P 271
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	10/14/2018 09:27:49.112
Temp. Units	degF

Events	Results
30 Bc	05:05
50 Bc	05:22
70 Bc	05:22
100 Bc	05:22



Data File N:\01 Test Graphs\GJ2507477-2 TERRA BULK PRODUCTION PRIMARY.tdms

Comments Standard

total sks=1925
 CS2291 TR#1513 450 SKS
 CS2292 TR#8476 450 SKS
 Deflected 15-- > 18

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Operation Test Results Request ID 2507477/3

Thickening Time - ON-OFF-ON

15/OCT/2018

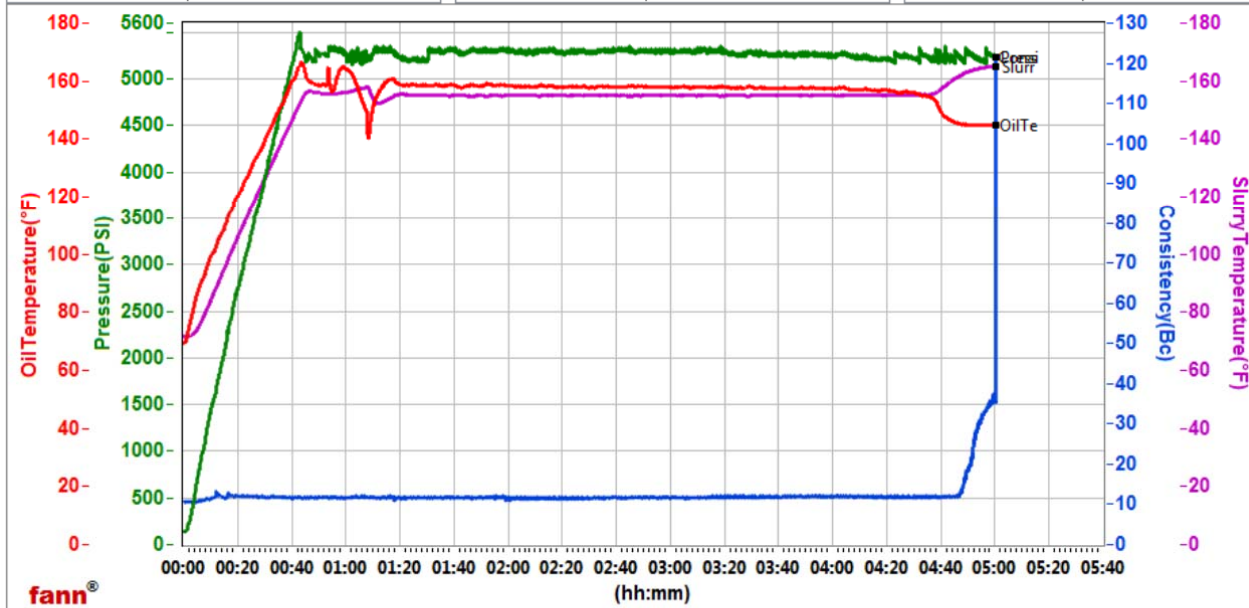
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
155	5258	43	4:35	5:00	5:00	5:00	11	53	15	12

GRAND JUNCTION

Fields	Values
Project Name	TempTest
SW Version	1.0
Test ID	35902540
Request ID	2507477-3
Tested by	JASON
Customer	TERRA ENERGY PARTN
Well No	PA 432-24

Fields	Values
Rig	H&P 271
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	10/15/2018 05:55:10.416
Temp. Units	degF

Events	Results



Data File C:\Users\hx25273\Desktop\new Graph M290\GJ2507477-3 TERRA BULK PRODUCTION PRIMARY.tdms

Comments Standard

total sks=1925
 CS2293 TR 1972 125 SKS
 no deflection, 12Bc--- > 12Bc
 please note heat of hydration at 4:35

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