

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: TEP

Date: Sunday, August 12, 2018

Clough NR 311-3 Production PJR

API #: 05-045-23903

Sincerely,

Grand Junction Cement Engineering

1.0 Real-Time Job Summary

1.1 Job Event Log

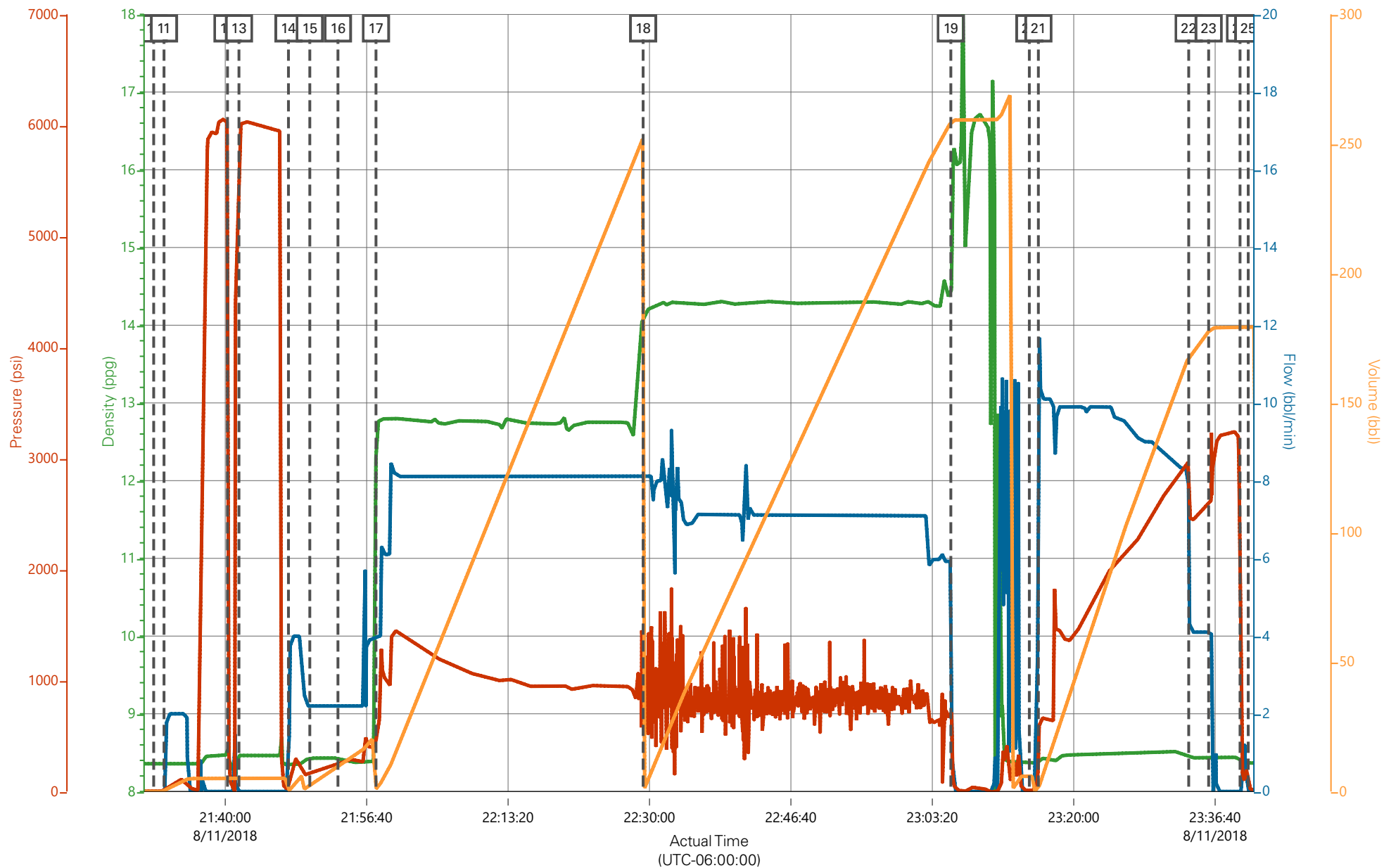
Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/11/2018	11:00:00						Requested on Location @ 17:00
Event	2	Pre-Convoy Safety Meeting	8/11/2018	13:00:00						
Event	3	Crew Leave Yard	8/11/2018	13:10:00						1 Elite, 2 660's, 1 pickup
Event	4	Arrive At Loc	8/11/2018	17:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	8/11/2018	17:10:00						JSA completed - Customer offered/received SDS - water test pH 7.0, CI <200, temp 83 degrees
Event	6	Pre-Rig Up Safety Meeting	8/11/2018	17:15:00						
Event	7	Rig-Up Equipment	8/11/2018	17:30:00						DME iron to ground manifold, standpipe, hardline to pit. Water hoses to both uprights, bulk hoses to Silo and 660's.
Event	8	Other	8/11/2018	18:00:00						Rig Circulated 1:30 hrs prior to cement job at 450 gpm 1600 psi. Mud scales calibrated to drinking water prior to job.
Event	9	Pre-Job Safety Meeting	8/11/2018	19:00:00						All HES personnel, rig crew, and company rep.
Event	10	Start Job	8/11/2018	21:31:34						TD 11028', TP 11018', SJ 31.91', OH 8.75", Csg 4.5" 11.6 lb/ft P-110 Prev. Csg.

9.625" 36# @ 1127', Mud
11.0 ppg.

Event	11	Fill Lines	8/11/2018	21:32:47	8.33	2	60	5	Fresh Water
Event	12	Release PSI	8/11/2018	21:40:16					Fix Leak
Event	13	Test Lines	8/11/2018	21:41:37			6177		Held pressure 2 minutes
Event	14	Pump Spacer	8/11/2018	21:47:27	8.33	4	460	5	Fresh Water
Event	15	Pump Spacer	8/11/2018	21:49:58	8.4	4	425	20	80 lbs. Mud Flush III
Event	16	Check Weight	8/11/2018	21:53:17					Density verified via mud cup
Event	17	Pump Lead Cement	8/11/2018	21:57:46	12.7	8	1250	227.3	690 sks, 12.7 ppg, 1.85 yield, 8.94 gal/sk
Event	18	Pump Tail Cement	8/11/2018	22:29:15	14.2	7	950	224.1	740 sks, 14.2 ppg, 1.7 Yield, 7.53 gal/sk
Event	19	Shutdown	8/11/2018	23:05:31					Wash lines to pit
Event	20	Drop Top Plug	8/11/2018	23:14:46					Co-Rep Verify Plug Launched
Event	21	Pump Displacement	8/11/2018	23:15:50	8.4	10	2950	170.3	3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	22	Slow Rate	8/11/2018	23:33:33	8.4	4	2600	160	Slow Rate 10 bbls to Calculated Displacement
Event	23	Bump Plug	8/11/2018	23:35:54			3300		Plug Bumped at 2600 psi, Brought up to 3300 psi
Event	24	Check Floats	8/11/2018	23:39:36					Floats held – 2 bbl back to the truck
Event	25	End Job	8/11/2018	23:40:34					Good returns throughout job. Pipe was not reciprocated during job.
Event	26	Pre-Rig Down Safety Meeting	8/12/2018	00:20:18					No sugar, HES top plug used, 0 add hours
Event	27	Rig-Down Equipment	8/12/2018	00:28:23					

Event	28	Pre-Convoy Safety Meeting	8/12/2018	01:02:21	
Event	29	Crew Leave Location	8/12/2018	01:13:07	Thanks for using Halliburton Cement, Chris Martinez and crew.

TEP, Clough NR 311-3, 4 1/2" Production



DH Density (ppg) 8.07 Comb Pump Rate (bbl/min) 3.6 DS Pump Press (psi) 24 Pump Stg Tot (bbl) 61.4

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Rockies, Grand Junction

Lab Results- Lead

Job Information

Request/Slurry	2491711/1	Rig Name	H&P 318	Date	31/JUL/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 311-3

Well Information

Casing/Liner Size	4.5 in	Depth MD	11044 ft	BHST	122°C / 251°F
Hole Size	8.75 in	Depth TVD	10074 ft	BHCT	88°C / 190°F
Pressure	6352 psi				

Drilling Fluid Information

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

Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties		
		NeoCem				Slurry Density	12.7	lbm/gal
						Slurry Yield	1.853	ft3/sack
						Water Requirement	8.959	gal/sack
						Total Mix Fluid	8.959	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Operation Test Results Request ID 2491711/1

Thickening Time - ON-OFF-ON

07/AUG/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)
190	6352	50	3:09	3:16	3:39	3:48	8	60	15	19

Total sks = 690

CS1716, Trailer 7094, 345 sks

CS1717, Trailer 8321, 345 sks

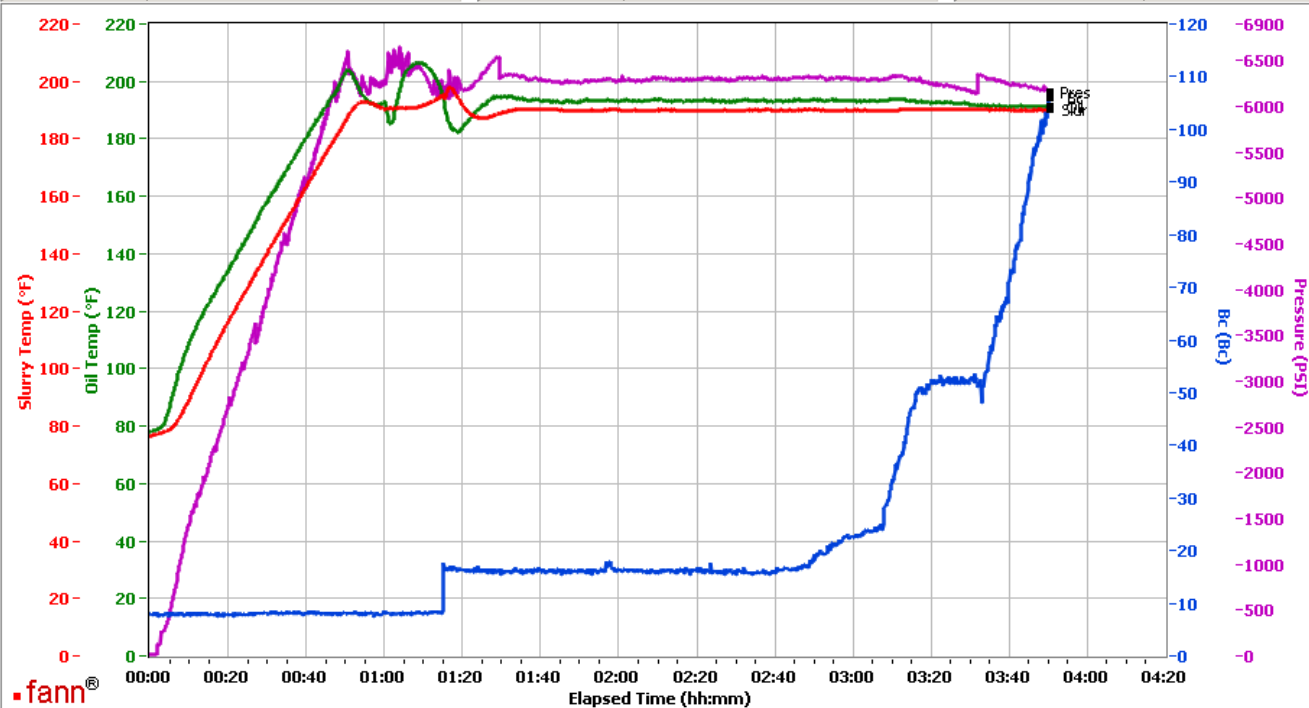
Deflected from 8Bc--- > 19Bc-- > 17 with in one minute

Grand Junction, Colorado

Fields	Values
Project Name	GJ2491711-1 TERRA BULK PRODUCTION LE
Test ID	35705001 - TT
Request ID	2491711-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	NR 311-3
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	GCC TYPE I-II
Cement Weight	Standard
Test Date	08/07/18
Test Time	1:12 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	03h:09m
40.00 Bc	03h:13m
50.00 Bc	03h:16m
70.00 Bc	03h:39m
100.00 Bc	03h:48m
00h:30m	8.09
01h:00m	8.20
01h:30m	16.46



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\SPUJOLQV\GJ2491711-1 TERRA BULK PRODUCTION LEAD[1].tdms

Comments CS1716, TRAILER 7094, 345 SKS - CS1717, TRAILER 8321, 345 SKS

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Rockies, Grand Junction

Lab Results- Tail

Job Information

Request/Slurry	2491712/2	Rig Name	H&P 318	Date	31/JUL/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 311-3

Well Information

Casing/Liner Size	4.5 in	Depth MD	11044 ft	BHST	122°C / 251°F
Hole Size	8.75 in	Depth TVD	10074 ft	BHCT	88°C / 190°F
Pressure	6352 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>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		ThermaCem				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.704	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 2491712/2

Thickening Time - ON-OFF-ON

07/AUG/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)
190	6352	50	2:30	2:31	2:37	2:40	14	60	15	13

Total sks = 740

CS1715, Trailer 8476, 370 sks

Deflected from 12Bc--- > 13Bc

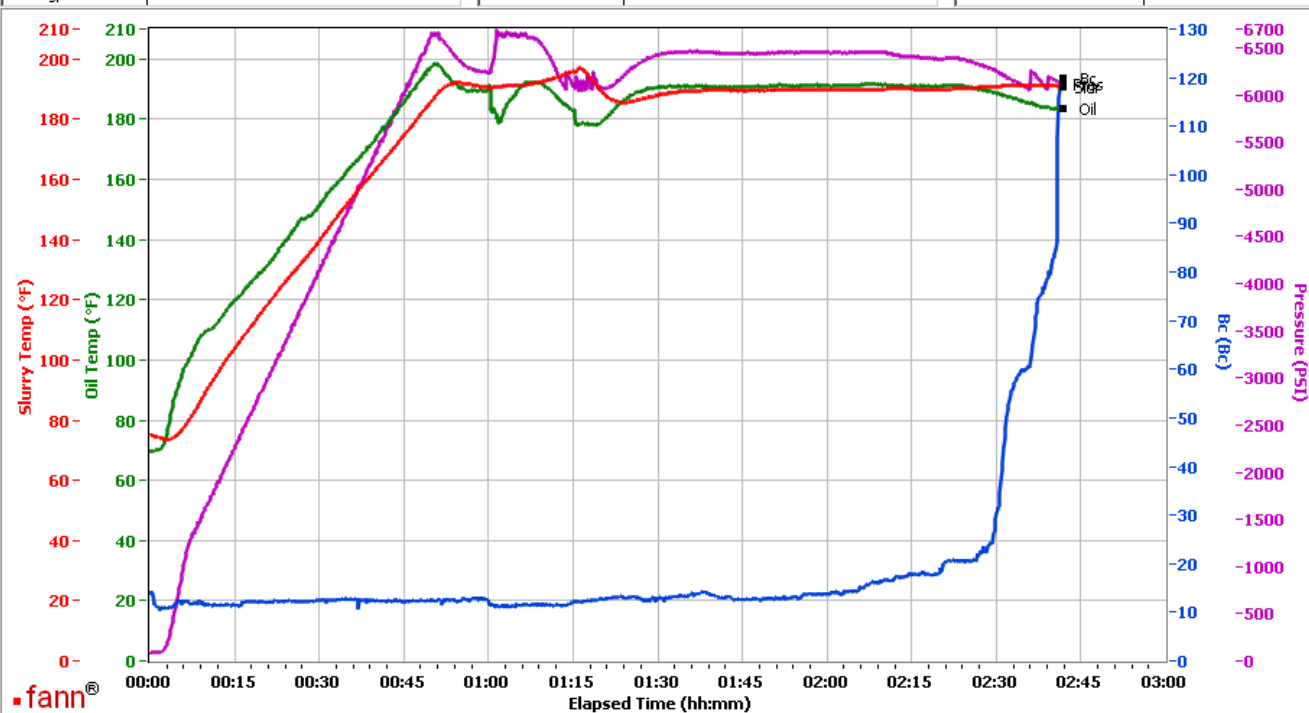
please note the heat of hydration at 2:29

Grand Junction Colorado

Fields	Values
Project Name	GJ2491712-2 TERRA BULK PRODUCTION TA
Test ID	35721697 - TT
Request ID	2491712-2
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	NR 311-3
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	08/07/18
Test Time	11:18AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	02h:30m
40.00 Bc	02h:31m
50.00 Bc	02h:31m
70.00 Bc	02h:37m
100.00 Bc	02h:40m
00h:30m	12.50
01h:00m	11.56
01h:30m	12.89



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Comments CS1715, TRAILER 8476, 370 SKS

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Operation Test Results Request ID 2491712/1

Thickening Time - ON-OFF-ON

07/AUG/2018

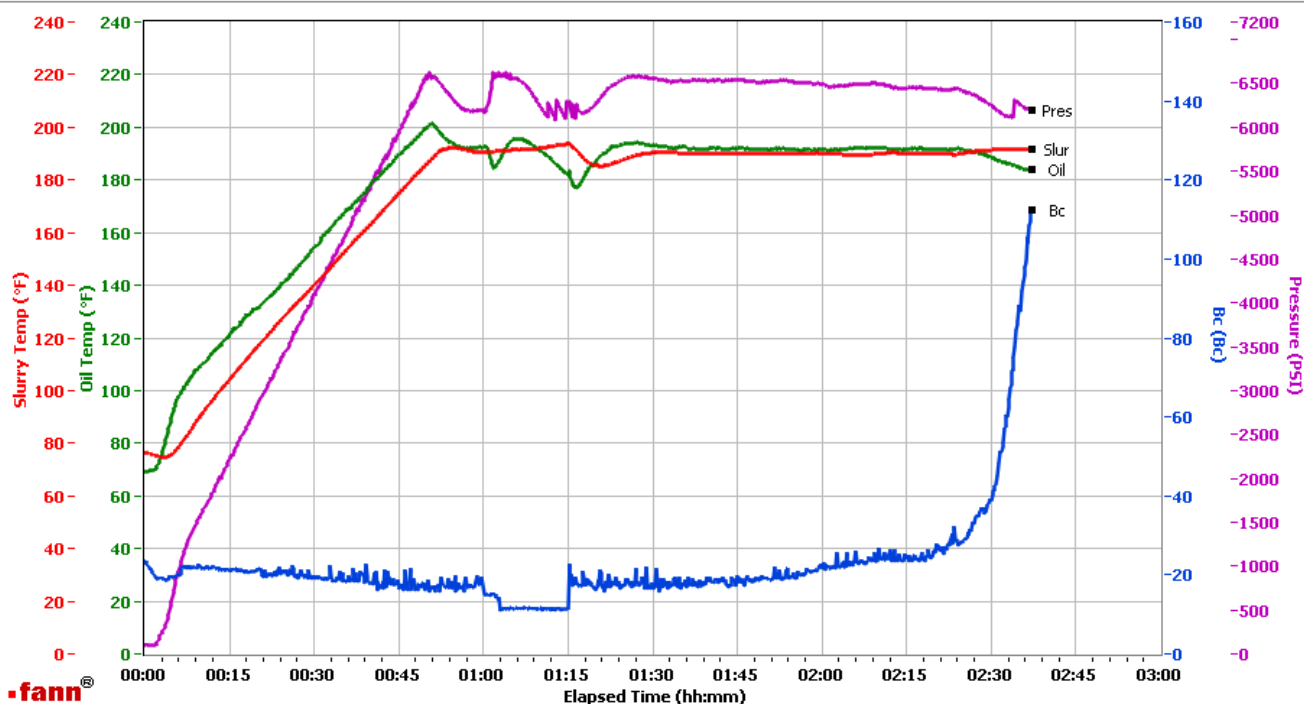
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)
190	6352	50	2:23	2:31	2:33	2:36	23	60	15

Total sks = 740

CS1714 TR#1513 370 SKS

Grand Junction, Colorado

Fields	Values	Fields	Values	Events	Results
Project Name	GJ2491712-1 TERRA PRODUCTION BULK TA	Job Type	PRODUCTION CASING	30.00 Bc	02h:23m
Test ID	35705003	Cement Type	MOUNTAIN G	40.00 Bc	02h:30m
Request ID	GJ2491712-1 TT	Cement Weight	Standard	50.00 Bc	02h:31m
Tested by	DEBA	Test Date	08/06/18	70.00 Bc	02h:33m
Customer	TERRA ENERGY PARTNERS	Test Time	10:52 PM	100.00 Bc	02h:36m
Well No	NR 311-3	Temp. Units	degF	00h:30m	19.19
Rig	H8P 318	Pressure Units	PSI	01h:00m	15.05
Casing/Liner Size	4.5"	SW Version	2.1.0.507	01h:30m	16.37



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\CDER4HJW\GJ2491712-1 TERRA PRODUCTION BULK TAIL[1].TDM5

Comments CS1714 TR#1513 370 SKS

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