

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

Date: Friday, January 04, 2019

### **NR 414-3 Production**

Terra NR 414-3 Production

API# 05-045-23911-00

Job Date: Friday, January 04, 2019

Sincerely,

**Grand Junction Cement Engineering**

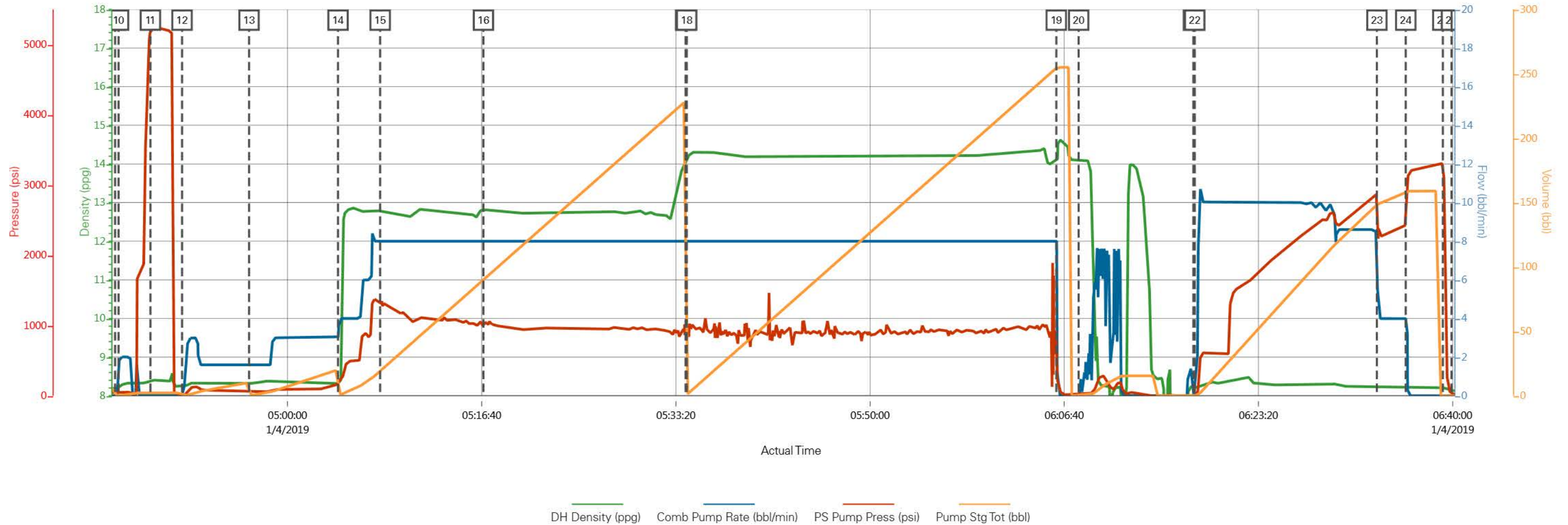
## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	1/3/2019	20:00:00	USER					Requested on Location @ 1:30
Event	2	Pre-Convoy Safety Meeting	1/3/2019	22:30:00	USER					All HES Present
Event	3	Crew Leave Yard	1/3/2019	22:45:00	USER					1 Elite, 1 660, 1 pickup
Event	4	Arrive at Location from Service Center	1/4/2019	00:45:00	USER					Rig running casing
Event	5	Assessment Of Location Safety Meeting	1/4/2019	01:15:00	USER					JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <200, temp 68 degrees
Event	6	Pre-Rig Up Safety Meeting	1/4/2019	03:30:00	USER					1 hardline to standpipe, water hoses to upright, bulk hose to 660. Elite and 660 on location 3:30. Waited on a blade to pull them onto location.
Event	7	Other	1/4/2019	04:20:00	USER					Rig Circulated 3 hours prior to cement job at 450 gpm 730 psi
Event	8	Pre-Job Safety Meeting	1/4/2019	04:25:00	USER					All HES personnel, rig crew, and company rep
Event	9	Start Job	1/4/2019	04:45:12	USER	8.29	0.00	9.00	0.00	TD 10214', TP 10207.74', SJ 32.15', OH 8 3/4", Csg 4.5", 11.6 lb/ft P100, Scsg 9.625" 32 lb/ft set at 1113', Mud 11.3 ppg.
Event	10	Fill Lines	1/4/2019	04:45:30	USER	8.28	1.20	84.00	2.00	Fresh Water
Event	11	Test Lines	1/4/2019	04:48:14	USER	8.41	0.00	5193.00	2.20	Held pressure 2 minutes no leaks
Event	12	Pump Water Spacer	1/4/2019	04:50:57	COM5	8.25	2.00	74.00	10.00	Fresh water

Event	13	Pump Mud Flush III	1/4/2019	04:56:42	COM5	8.32	3.00	200.00	20.00	Mud Flush III
Event	14	Pump Lead Cement	1/4/2019	05:04:20	COM5	12.70	8.00	1200.00	219.10	Neocem 665sks, 12.7ppg, 1.85cf/sk, 8.94gl/sk
Event	15	Check Weight	1/4/2019	05:07:57	USER					Density Verified via Mud Scales
Event	16	Check Weight	1/4/2019	05:16:49	COM5					Density Verified via Mud Scales
Event	17	Pump Tail Cement	1/4/2019	05:34:10	COM5	14.20	8.00	970.00	224.00	Thermacem 740sks, 14.2ppg, 1.7cf/sk, 7.53gl/sk
Event	18	Check Weight	1/4/2019	05:34:16	COM5					Density Verified via Mud Scales
Event	19	Shutdown	1/4/2019	06:05:59	USER					Clean lines to pit
Event	20	Clean Lines	1/4/2019	06:07:54	COM5					
Event	21	Drop Top Plug	1/4/2019	06:17:45	USER					Co-Rep Verify Plug Launched
Event	22	Pump Displacement	1/4/2019	06:17:52	USER	8.40	10.00	2880.00	157.70	3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	23	Slow Rate	1/4/2019	06:33:30	USER	8.42	4.00	2310.00	147.30	Slow Rate 10 bbls to calculated displacement
Event	24	Bump Plug	1/4/2019	06:35:59	USER	8.41	4.00	2424.00	157.70	Plug Bumped at 2424 psi, Brought up to 3311 psi
Event	25	Check Floats	1/4/2019	06:39:09	USER	8.21	0.00	3311.00	0.00	Floats held – 2 bbl back to the truck
Event	26	End Job	1/4/2019	06:39:54	USER	8.14	0.00	22.00	0.00	Good returns throughout job.
Event	27	End Job	1/4/2019	06:40:45	COM5					
Event	28	Post-Job Safety Meeting (Pre Rig-Down)	1/4/2019	06:43:00	USER					No sugar, HES top plug used, 0 add hours
Event	29	Pre-Convoy Safety Meeting	1/4/2019	07:45:00	USER					
Event	30	Crew Leave Location	1/4/2019	08:00:00	USER					Thanks For Using Halliburton Cement. Andrew Brennecke And Crew.

# TERRA ENERGY PARTNERS - NR 414-3 - 4.5" PRODUCTION



## Job Information

Request/Slurry	2524073/1	Rig Name	H&P 318	Date	26/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 414-3

## Well Information

Casing/Liner Size	4.5 in	Depth MD	10258 ft	BHST	120°C / 248°F
Hole Size	8.75 in	Depth TVD	9894 ft	BHCT	81°C / 178°F
Pressure	6226 psi				

## Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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## Cement Information - Lead 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	12.7	lbm/gal
							Slurry Yield	1.85	ft3/sack
							Water Requirement	8.96	gal/sack
							Total Mix Fluid	8.96	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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# **Operation Test Results Request ID 2524073/1**

## **Thickening Time - ON-OFF-ON, Request Test ID:36093383**

**30/DEC/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)
178	6226	58	3:56	4:23	4:23	4:23	4	68	15	4

Total Sks = 665

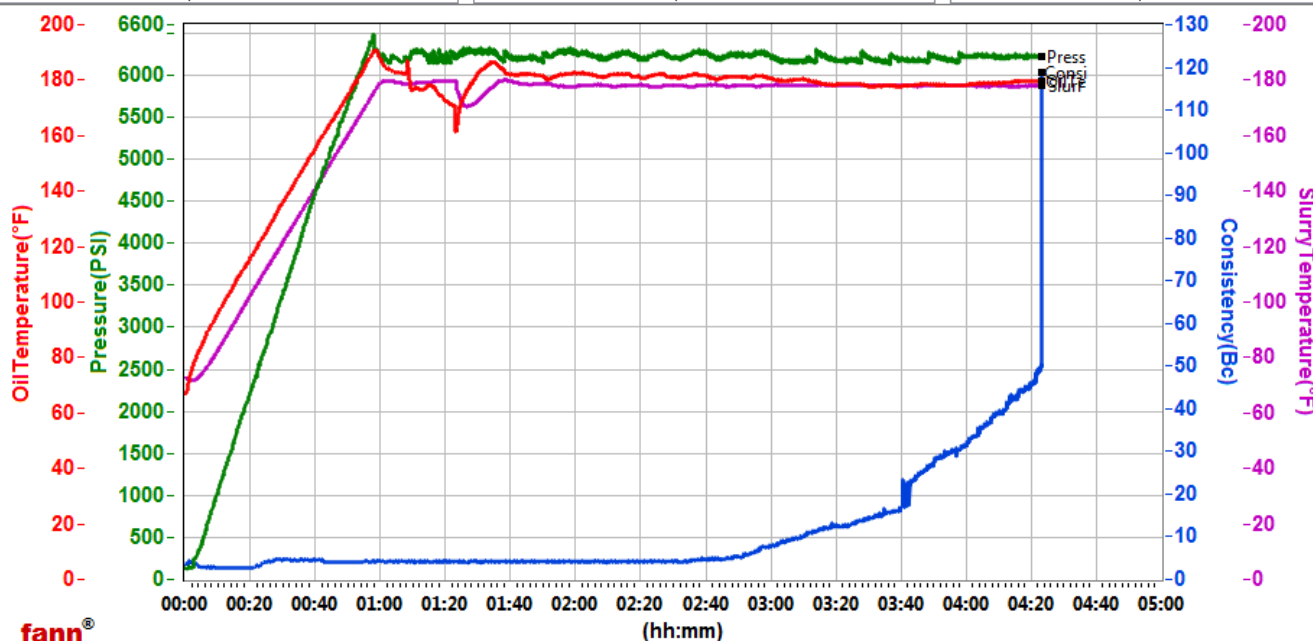
CS2692, Trailer 7304, 265 sks

CS2689, Trailer 2878, 400 sks

No deflection, 4Bc--- > 4Bc

### **GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	TempTest	Rig	H&P 318		
SW Version	1.0	Casing/Liner Size	4.5 INCH		
Test ID	36093383 - TT	Job Type	PRODUCTION CASING		
Request ID	2524073-1	Cement Weight	GCC TYPE I-II		
Tested by	CT	Comments	Standard		
Customer	TERRA ENERGY PARTN	Date Time	12/29/2018 09:57:50.572		
Well No	NR 414-3	Temp. Units	degF		



Data File C:\Users\hx25273\Desktop\HPHT Graphs\GJ2524073-1 TERRA BULK PRODUCTION LEAD.tdms

Comments Standard

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

Request/Slurry	2524074/3	Rig Name	H&P 318	Date	26/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 414-3

### Well Information

Casing/Liner Size	4.5 in	Depth MD	10258 ft	BHST	120°C / 248°F
Hole Size	8.75 in	Depth TVD	9894 ft	BHCT	81°C / 178°F
Pressure	6226 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 2524074/3

### Thickening Time - ON-OFF-ON, Request Test ID:36099599

**28/DEC/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)
178	6226	58	1:23	1:49	1:50	1:57	12	68	15	81

CS2687 TR 8476 370 SKS

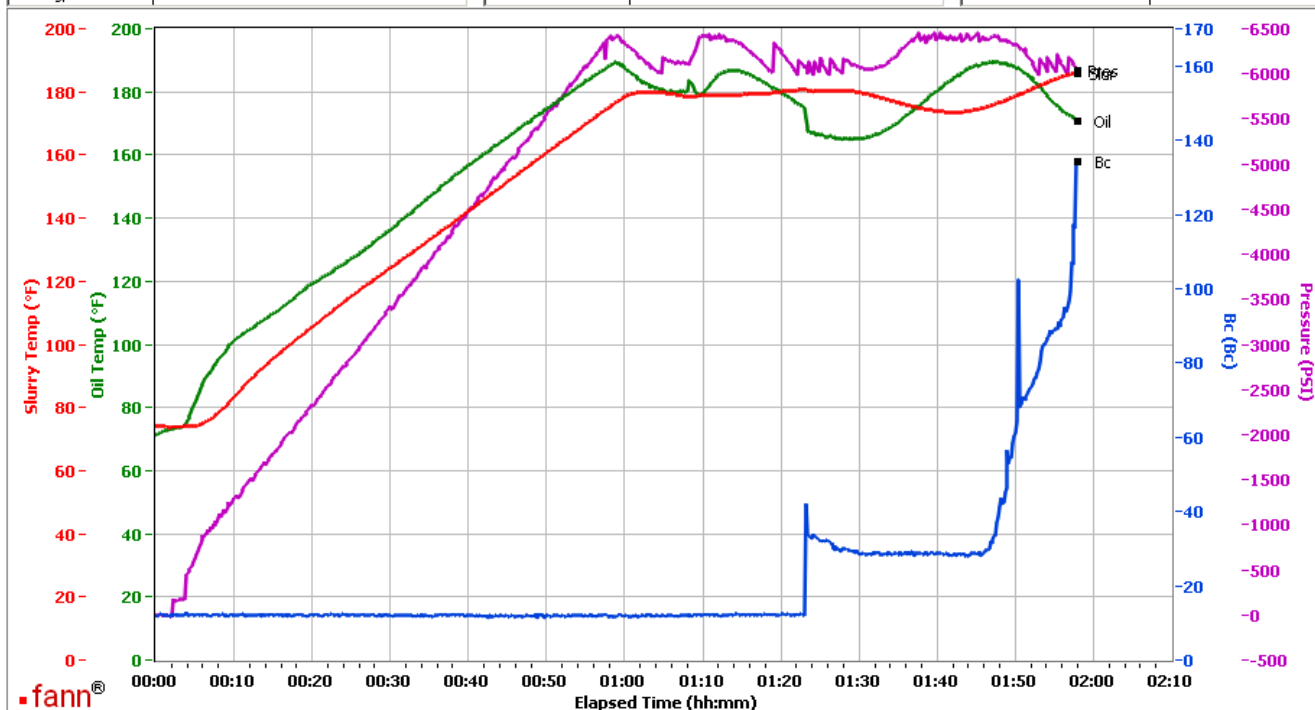
Deflected 12-- > 81-- > 33 after 1 minute.

### Grand Junction Colorado

Fields	Values
Project Name	GJ2524074-3 TERRA PRODUCTION BULK TA
Test ID	36099599-TT
Request ID	2524074-3
Tested by	JASON
Customer	TERRA ENERGY PARTNERS
Well No	NR 414-3
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	12/28/18
Test Time	08:42 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	01h:23m
40.00 Bc	01h:23m
50.00 Bc	01h:49m
70.00 Bc	01h:50m
100.00 Bc	01h:57m
00h:30m	11.98
01h:00m	11.87
01h:30m	28.67



Data File C:\Documents and Settings\M290\Desktop\Test Data\GJ2524074-3 TERRA PRODUCTION BULK TAIL.tdms

Comments CS2687 TR 8476 370 SKS

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## Operation Test Results Request ID 2524074/2

Thickening Time - ON-OFF-ON, Request Test ID:36099597

28/DEC/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)
178	6226	58	1:22	1:22	1:59	1:59	14	68	15	50

CS2686 TR 1513 370 SKS

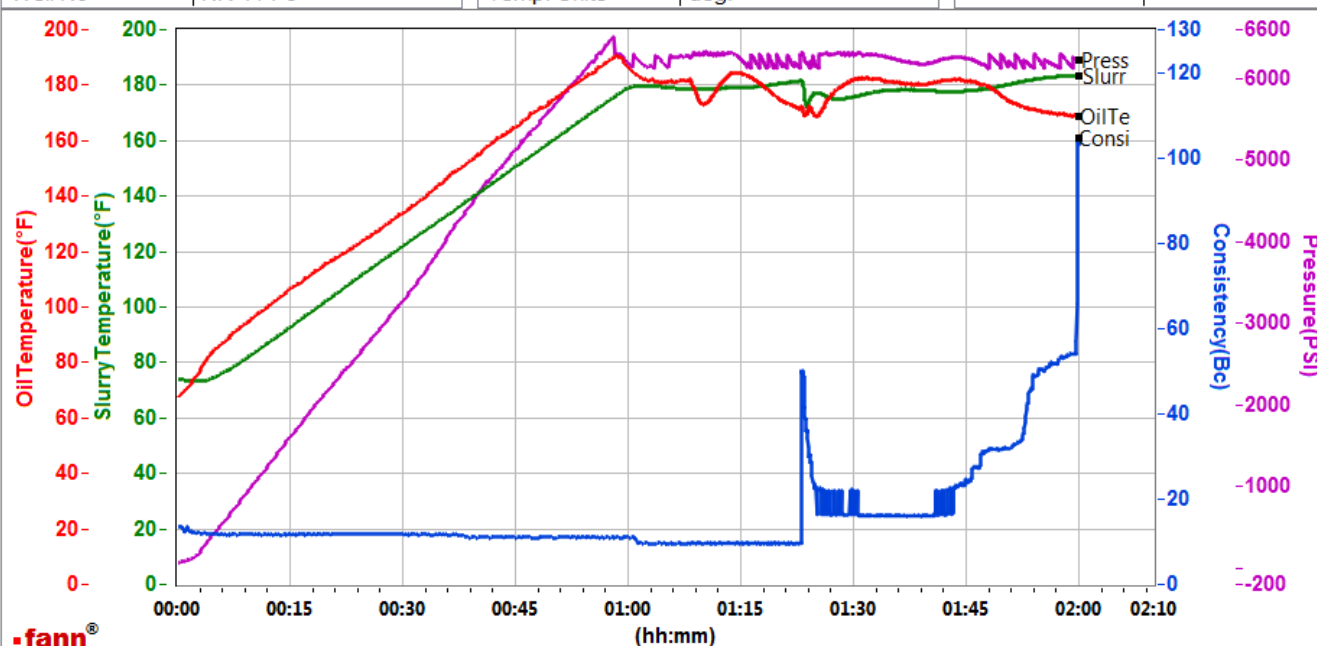
Deflected 10-- > 50-- > 32 after 1 minute. Heat of hydration started around 1:45.

### GRAND JUNCTION

Fields	Values
Project Name	GJ2524074-2 Terra Prodi
SW Version	1.0
Test ID	36099597-TT
Request ID	2524074-2
Tested by	JASON
Customer	TERRA ENERGY
Well No	NR 414-3

Fields	Values
Rig	N&P 318
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	12/28/2018 13:17:27.899
Temp. Units	degF

Events	Results
30 Bc	1:22
50 Bc	1:22
70 Bc	1:59
100 Bc	1:59



Data File N:\01 Test Graphs\GJ2524074-2 TERRA PRODUCTION BULK TAIL.tdms

Comments Standard

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## Operation Test Results Request ID 2524074/1

Thickening Time - ON-OFF-ON, Request Test ID:36093385

28/DEC/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)
178	6226	58	1:23	1:52	1:55	2:01	10	68	15	58

Total sks = 740

CS2686 TR 1513 370 SKS

CS2687 TR 8476 370 SKS

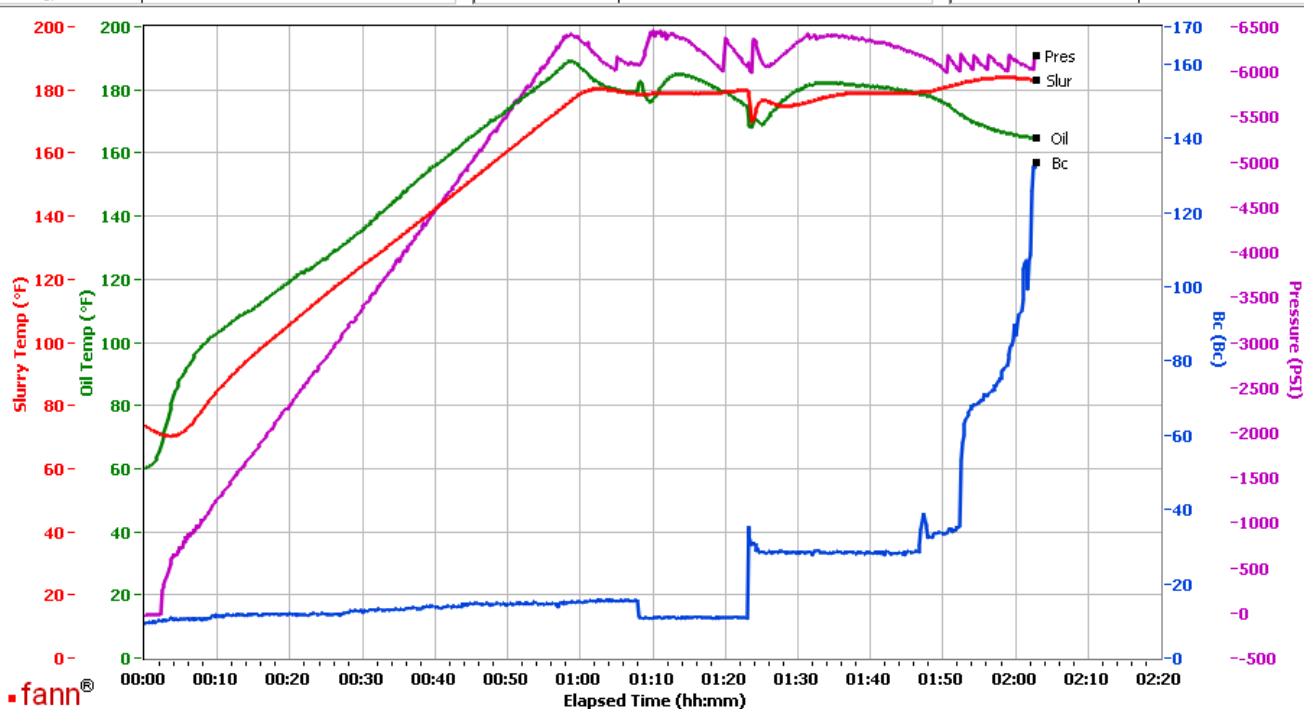
Deflected 11-- > 58-- > 30 after 1 minute. Heat of hydration started around 1:45.

### Grand Junction Colorado

Fields	Values
Project Name	GJ2524074-1 TERRA PRODUCTION BULK TA
Test ID	36093385-TT
Request ID	2524074-1
Tested by	JASON
Customer	TERRA ENERGY PARTNERS
Well No	NR 414-3
Rig	H&P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	12/28/18
Test Time	05:21 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	01h:23m
40.00 Bc	01h:52m
50.00 Bc	01h:52m
70.00 Bc	01h:55m
100.00 Bc	02h:01m
00h:30m	12.24
01h:00m	15.22
01h:30m	28.61



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\0HU90BIZ\GJ2524074-1 TERRA PRODUCTION BULK TAIL[1].tdms

Comments CS2686 TR 1513 370 SKS CS2687 TR 8476 370 SKS

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