

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Beaude Oaks**

Date: Tuesday, March 21, 2017

**Trail Ridge 313-21-597 Production**

Sincerely,

**Grand Junction Cement Engineering**

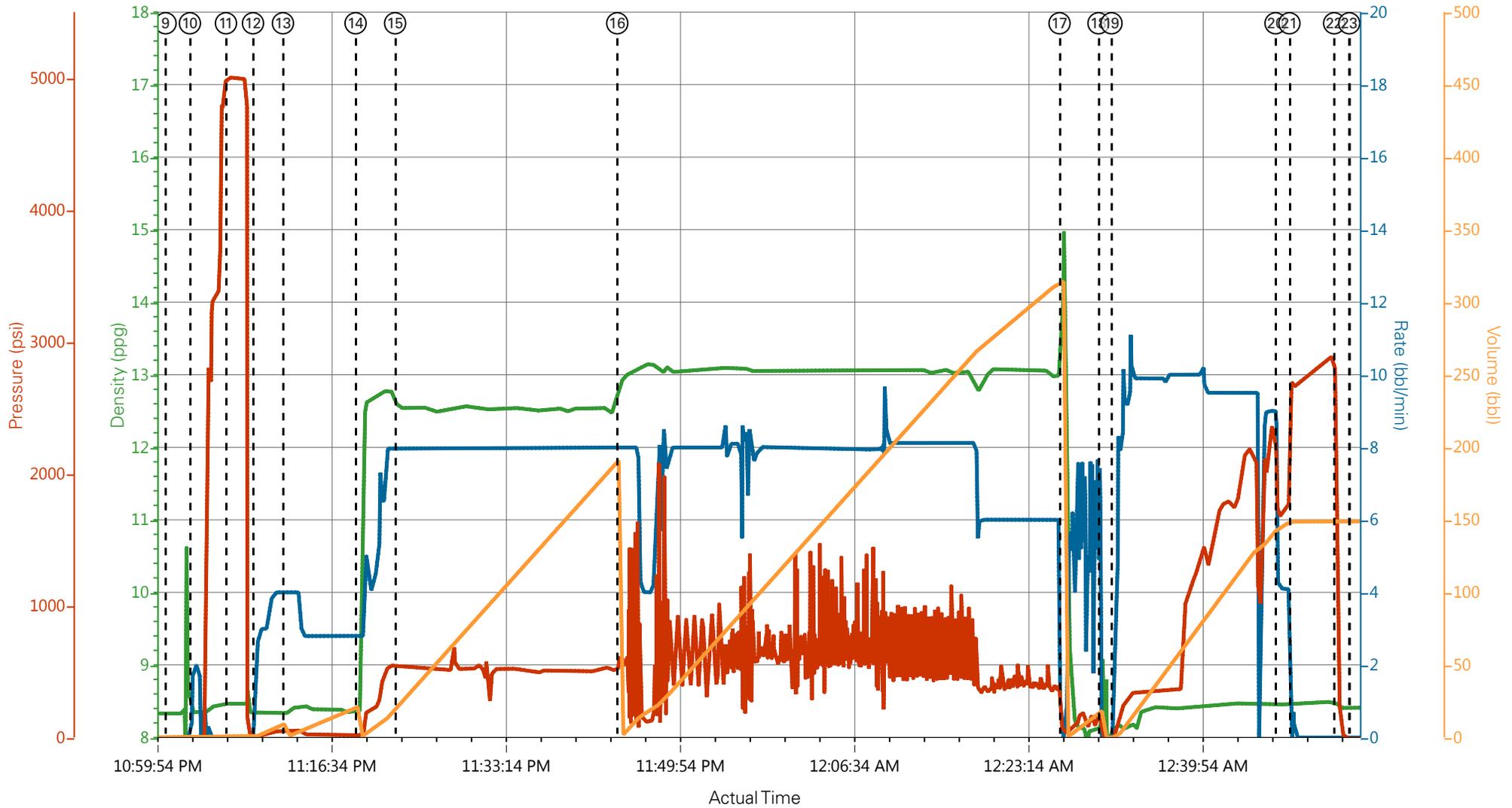
## 1.0 Real-Time Job Summary

### 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	3/20/2017	14:00:00	USER					O/L time 2100
Event	2	Pre-Convoy Safety Meeting	3/20/2017	16:15:00	USER					
Event	3	Crew Leave Yard	3/20/2017	16:30:00	USER					1 Elite, 1 660, 1 pickup
Event	4	Arrive At Location	3/20/2017	20:00:00	USER					Rig running casing
Event	5	Assessment Of Location Safety Meeting	3/20/2017	20:15:00	USER					JSA completed - customer offered/received SDS – water test pH 7.0, Cl 0, temp 55 degrees
Event	6	Pre-Rig Up Safety Meeting	3/20/2017	20:30:00	USER					
Event	7	Rig-Up Equipment	3/20/2017	20:45:00	USER					Hard line to standpipe, manifold on ground, hard line to pit, water hoses to uprights, bulk hoses to 660 and silos
Event	8	Pre-Job Safety Meeting	3/20/2017	22:40:00	USER					All HES personnel, rig crew, and company rep – rig circulating @ 10 bpm for 1 ½ hrs w/ approx. 250 psi
Event	9	Start Job	3/20/2017	23:01:00	COM5					TD 9734', TP 9727.74', SJ 28.02', Mud 8.6 ppg, 9 5/8" 32# J55 surf casing @ 2796', 4 ½" 11.6# P110 casing
Event	10	Prime Lines	3/20/2017	23:03:19	USER	8.34	2.0	27	2.0	Fresh water
Event	11	Test Lines	3/20/2017	23:06:46	COM5			5019		Pressure held well
Event	12	Pump Water Spacer 1	3/20/2017	23:09:21	COM5	8.34	4.0	110	10.0	Water ahead – returns established
Event	13	Pump Mud Flush	3/20/2017	23:12:13	COM5	8.34	4.0	144	20.0	80 lbs Mud Flush III
Event	14	Pump Lead Cement	3/20/2017	23:19:10	COM5	12.5	8.0	540	191.8	555 sks NeoCem, 12.5 ppg, 1.94 yield, 9.58 gal/sk – Tuf fiber added on fly
Event	15	Check weight	3/20/2017	23:22:57	COM5	12.5				Recirc matched mud scales
Event	16	Pump Tail Cement	3/20/2017	23:44:12	COM5	13.0	8.0	880	280.2	760 sks, NeoCem HT 13.0 ppg, 2.07 yield, 9.43 gal/sk

Event	17	Shutdown	3/21/2017	00:26:31	USER						Wash lines to pit
Event	18	Drop Top Plug	3/21/2017	00:30:15	USER						Rig supplied latch-down plug
Event	19	Pump Displacement	3/21/2017	00:31:30	COM5	8.34	10.0	2314	150.3		1 gal MMCR, 3 lbs BE-6, 2% KCl
Event	20	Slow Rate	3/21/2017	00:47:11	COM5	8.34	4.0	1690	@ 140		Returns re-established
Event	21	Bump Plug	3/21/2017	00:48:31	COM5			1720			Pipe reciprocated occasionally during cement
Event	22	Check Floats	3/21/2017	00:52:48	COM5			2705			Floats held – 1 ½ bbl flowback
Event	23	End Job	3/21/2017	00:54:14	COM5						No add hours, no sugar
Event	24	Pre-Rig Down Safety Meeting	3/21/2017	01:00:00	USER						
Event	25	Rig-Down Equipment	3/21/2017	01:15:00	USER						
Event	26	Pre-Convoy Safety Meeting	3/21/2017	02:15:00	USER						
Event	27	Crew Leave Location	3/21/2017	02:30:00	USER						Thank you for using Halliburton – Ed Deussen and crew

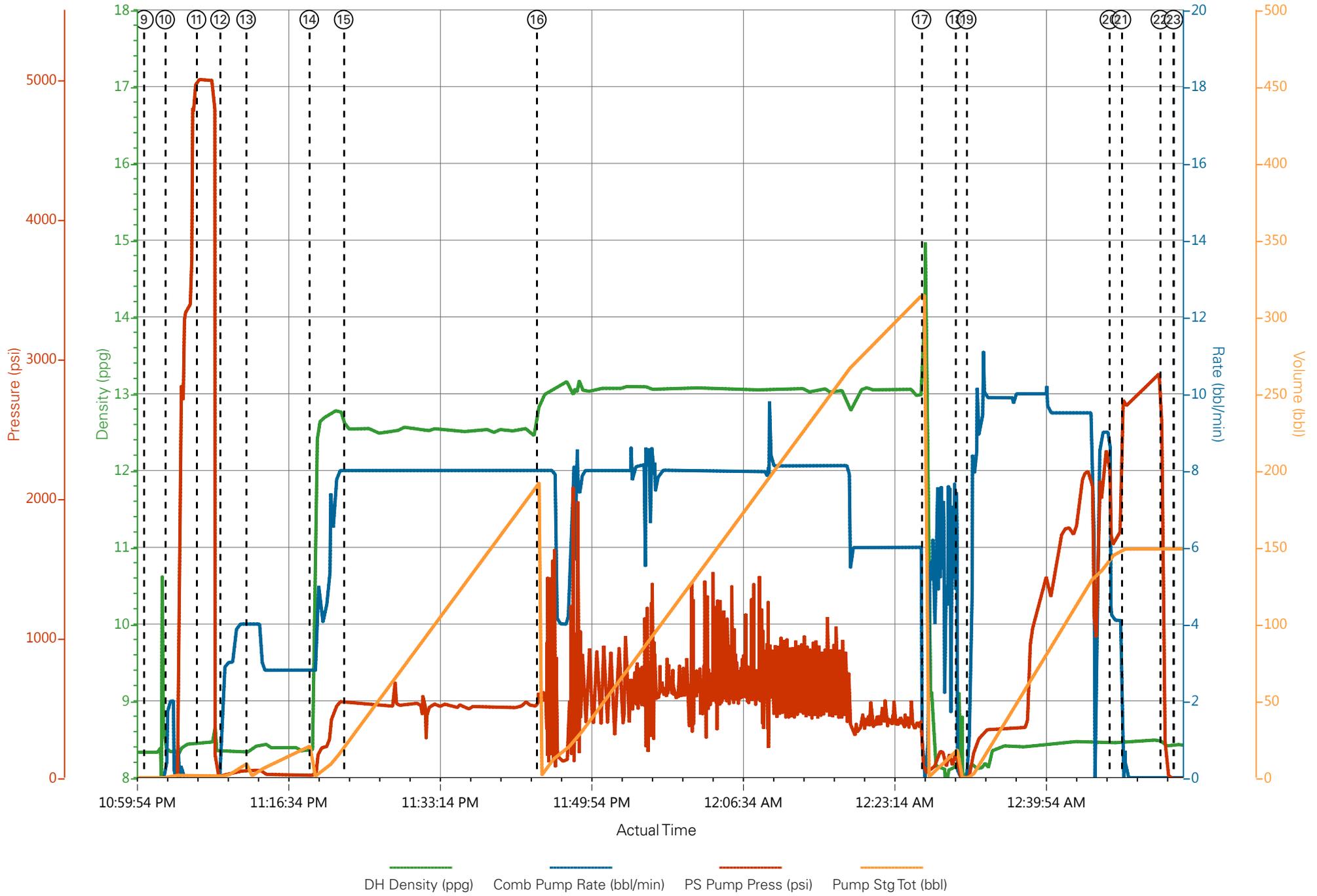
# TERRA ENERGY - TR 313-21-597 - 4 1/2" Production



— DH Density (ppg)   
 — Comb Pump Rate (bbl/min)   
 — PS Pump Press (psi)   
 — Pump Stg Tot (bbl)

- |   |                             |                       |                     |                                |                              |
|---|-----------------------------|-----------------------|---------------------|--------------------------------|------------------------------|
| ① Call Out                              | ⑥ Pre-Rig Up Safety Meeting | ⑪ Test Lines          | ⑯ Pump Tail Cement  | 21 Bump Plug                   | 26 Pre-Convoy Safety Meeting |
| ② Pre-Convoy Safety Meeting             | ⑦ Rig-Up Equipment          | ⑫ Pump Water Spacer 1 | ⑰ Shutdown          | 22 Check Floats                | 27 Crew Leave Location       |
| ③ Crew Leave Yard                       | ⑧ Pre-Job Safety Meeting    | ⑬ Pump Mud Flush      | ⑱ Drop Top Plug     | 23 End Job                     |                              |
| ④ Arrive At Location                    | ⑨ Start Job                 | ⑭ Pump Lead Cement    | ⑲ Pump Displacement | 24 Pre-Rig Down Safety Meeting |                              |
| ⑤ Assessment Of Location Safety Meeting | ⑩ Prime Lines               | ⑮ Check weight        | 20 Slow Rate        | 25 Rig-Down Equipment          |                              |

TERRA ENERGY - TR 313-21-597 - 4 1/2" Production



### Job Information

<b>Request/Slurry</b>	2374865/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	16/MAR/2017
<b>Submitted By</b>	Aaron Katz	<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>	Trail Ridge 313-21-597

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9742 ft	<b>BHST</b>	115°C / 239°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9332 ft	<b>BHCT</b>	76°C / 169°F
<b>Pressure</b>	5832 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
--------------------------	--------	-----------------------	------------	----------------	--------------

### Cement Information - Lead 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>		
		NeoCem				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.941	ft3/sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

This report is the property of Halliburton Energy Services and neither it nor any part thereof, nor a copy thereof, is to be published or disclosed without first securing the expressed written approval of Halliburton. It may however be used in the course of regular business operations by any person or concern receiving such report from Halliburton. This report is for information purposes only and the content is limited to the sample described. Halliburton makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton shall not be liable for any loss or damage regardless of cause, including any act or omission of Halliburton, resulting from the use hereof.

# Operation Test Results Request ID 2374865/1

## Thickening Time - ON-OFF-ON

18/MAR/2017

Test Temp (°F)	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)
169	5832	47	3:59	4:29	4:53	5:12	9	57	15	12

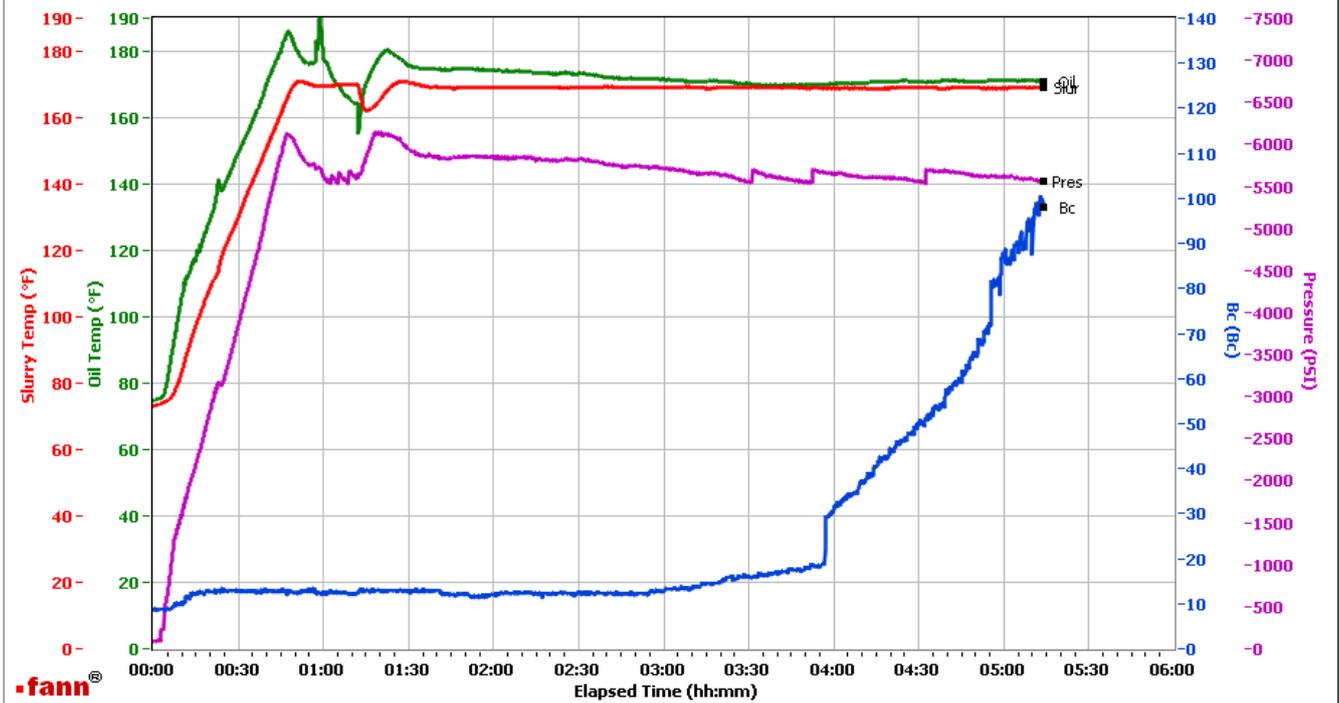
Total Sacks= 555  
 CS0562 TR 8677 400 SKS  
 CS0564 TR 6813 155 SKS  
 Composite  
 No deflection

### Grand Junction Colorado

Fields	Values
Project Name	GJ2374865-1 TEP PRODUCTION BULK LEAD
Test ID	34401547
Request ID	GJ2374865-1 TEP PRODUCTION BULK LEAD
Tested by	JASON
Customer	TEP
Well No	TR 313-21-597
Rig	H&P 271
Casing/Liner Size	4.5

Fields	Values
Job Type	PRODUCTION
Cement Type	NEOCEM
Cement Weight	Light Weight
Test Date	03/18/17
Test Time	05:46 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	03h:59m
40.00 Bc	04h:14m
50.00 Bc	04h:29m
70.00 Bc	04h:53m
100.00 Bc	05h:12m
00h:30m	12.98
01h:00m	12.45
01h:30m	12.63



Data File C:\Documents and Settings\Administrator\Desktop\Test Data\GJ2374865-1 TEP PRODUCTION BULK LEAD.tdms  
 Comments CS0562 TR 8677 400 SKS CS0564 TR 6813 155 SKS

This report is the property of Halliburton Energy Services and neither it nor any part thereof, nor a copy thereof, is to be published or disclosed without first securing the expressed written approval of Halliburton. It may however be used in the course of regular business operations by any person or concern receiving such report from Halliburton. This report is for information purposes only and the content is limited to the sample described. Halliburton makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton shall not be liable for any loss or damage regardless of cause, including any act or omission of Halliburton, resulting from the use hereof.

### Job Information

<b>Request/Slurry</b>	2374866/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	16/MAR/2017
<b>Submitted By</b>	Aaron Katz	<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>	Trail Ridge 313-21-597

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9742 ft	<b>BHST</b>	115°C / 239°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9332 ft	<b>BHCT</b>	76°C / 169°F
<b>Pressure</b>	5832 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
--------------------------	--------	-----------------------	------------	----------------	--------------

### 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>	<b>Cement Properties</b>		
		NeoCem				Slurry Density	13	lbm/gal
						Slurry Yield	2.065	ft <sup>3</sup> /sack
						Water Requirement	9.429	gal/sack
						Total Mix Fluid	9.429	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

This report is the property of Halliburton Energy Services and neither it nor any part thereof, nor a copy thereof, is to be published or disclosed without first securing the expressed written approval of Halliburton. It may however be used in the course of regular business operations by any person or concern receiving such report from Halliburton. This report is for information purposes only and the content is limited to the sample described. Halliburton makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton shall not be liable for any loss or damage regardless of cause, including any act or omission of Halliburton, resulting from the use hereof.

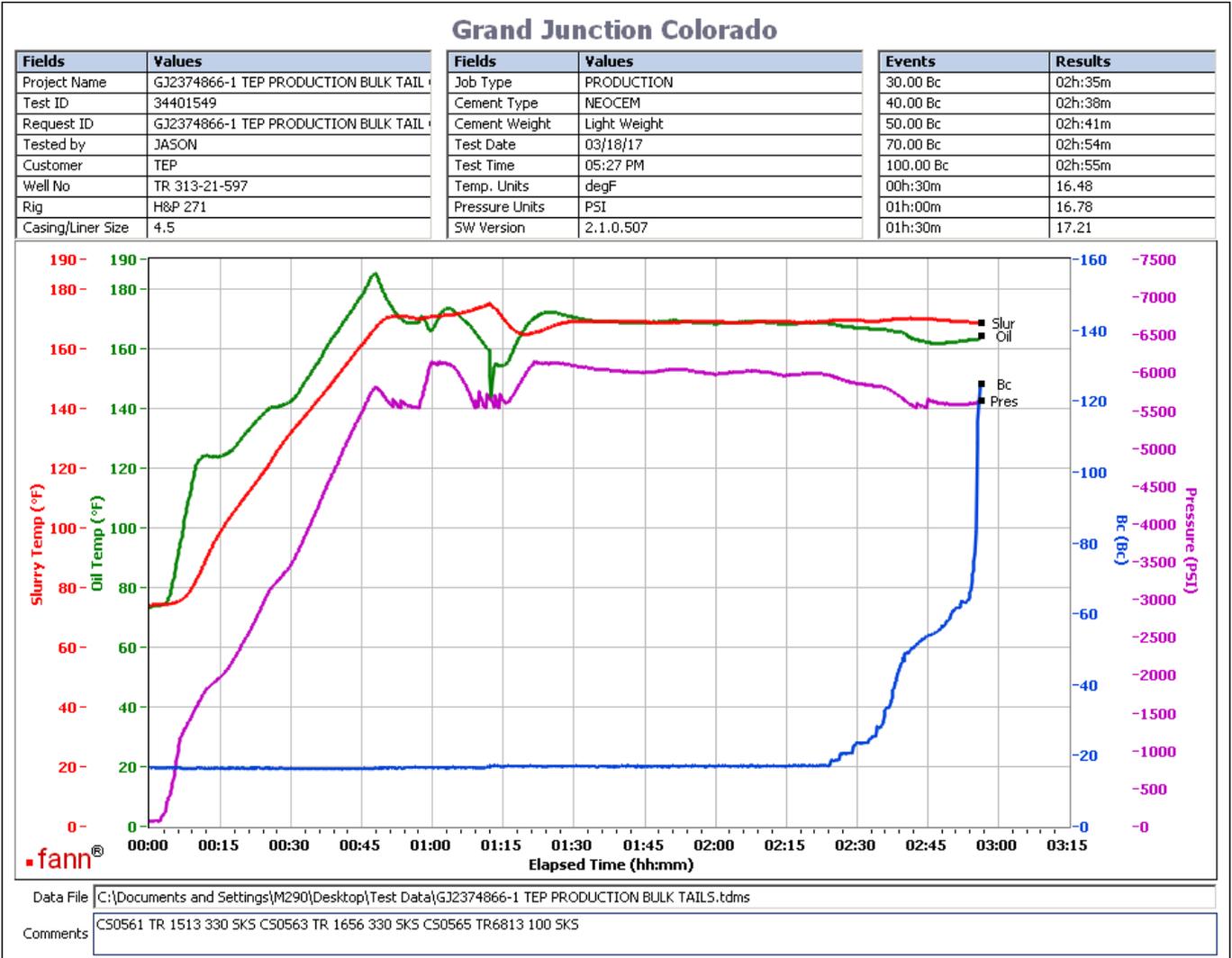
**Operation Test Results Request ID 2374866/1**

**Thickening Time - ON-OFF-ON**

**18/MAR/2017**

Test Temp (°F)	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)
169	5832	47	2:35	2:41	2:54	2:55	17	57	15	17

Total sks = 760  
 CS0561 TR 1513 330 SKS  
 CS0563 TR 1656 330 SKS  
 CS0565 TR 6813 100 SKS  
 Composite  
 No deflection



This report is the property of Halliburton Energy Services and neither it nor any part thereof, nor a copy thereof, is to be published or disclosed without first securing the expressed written approval of Halliburton. It may however be used in the course of regular business operations by any person or concern receiving such report from Halliburton. This report is for information purposes only and the content is limited to the sample described. Halliburton makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton shall not be liable for any loss or damage regardless of cause, including any act or omission of Halliburton, resulting from the use hereof.