

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

Date: Wednesday, April 18, 2018

### **Terra RU 523-17**

API # 05-045-23735-00  
Terra RU 523-17 Production  
Job Date: Sunday, April 15, 2018

Sincerely,

**Grand Junction Cement Engineering**

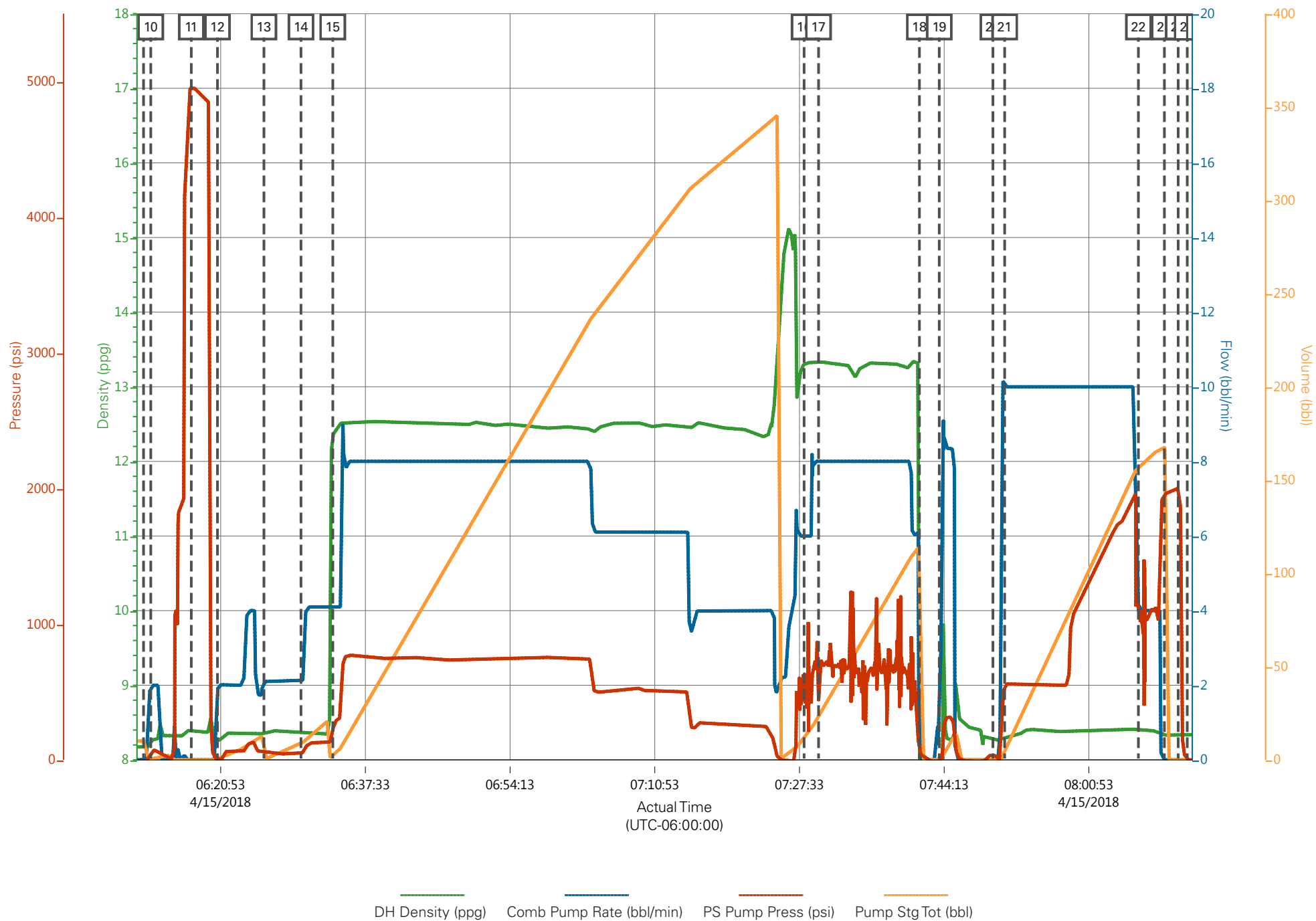
## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	4/14/2018	18:30:00	USER					REQUESTED ON LOCATION @ 0000
Event	2	Pre-Convoy Safety Meeting	4/14/2018	20:30:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	4/14/2018	20:35:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive at Location from Service Center	4/14/2018	21:45:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	4/14/2018	22:00:00	USER					MET WITH COMP REP AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 71F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	4/14/2018	22:10:00	USER					ALL HES PRESENT
Event	7	Rig-Up Completed	4/14/2018	23:00:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	4/15/2018	05:33:50	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	4/15/2018	06:12:00	COM3					TD 10390', TP 10384.9', SJ 30.06', OH 8.75", CSG 4.5" 11.6#, MUD 9.0 PPG. RIG CIRCULATED WELL @ 10 BPM WITH 1100 PSI.
Event	10	Prime Pumps	4/15/2018	06:12:50	USER	53.00	8.33	1.00	2.00	8.33 PPG FRESH WATER
Event	11	Test Lines	4/15/2018	06:17:30	COM3	4960.00	8.33	0.50	0.50	ALL LINES HELD PRESSURE AT 4960 PSI

Event	12	Pump Spacer 1	4/15/2018	06:20:31	COM3	140.00	8.33	2.00	10.00	8.33 PPG FRESH WATER (10 BBL)
Event	13	Pump Spacer 2	4/15/2018	06:25:52	COM3	155.00	8.33	4.00	20.00	8.4 PPG MUDFLUSH III (20 BBL)
Event	14	Check Weight	4/15/2018	06:30:08	COM3					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	15	Pump Lead Cement	4/15/2018	06:33:48	COM3	720.00	12.30	8.00	2.50	NEOCEM CEMENT 930 SKS (321 BBLS), 12.5 PPG, 1.94 FT3/SK, 9.6 GAL/SK
Event	16	Pump Tail Cement	4/15/2018	07:28:05	COM3	660.00	13.30	8.00	11.90	THERMACEM CEMENT 265 SKS (82 BBLS), 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK
Event	17	Check Weight	4/15/2018	07:29:45	COM3					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Shutdown	4/15/2018	07:41:22	USER					END OF CMT
Event	19	Clean Lines	4/15/2018	07:43:39	USER					WASH UP PUMPS AND LINES
Event	20	Drop Top Plug	4/15/2018	07:49:50	USER					PLUG WENT, VERIFIED BY CO REP
Event	21	Pump Displacement	4/15/2018	07:51:11	COM3	1944.00	8.33	10.00	150.40	8.34 PPG FRESH WATER (160.4 BBLS) 3 BAGS BE6, 1 GAL MMCR & 16 SKS KCL
Event	22	Slow Rate	4/15/2018	08:06:35	USER	1205.00	8.33	4.00	10.00	SLOW RATE TO 4 BPM PER CO REP TO LAND PLUG
Event	23	Bump Plug	4/15/2018	08:09:35	COM3	2004.00	8.33	0.00	160.50	LAND PLUG AT 1204 PSI, BROUGHT UP TO 2003PSI
Event	24	Check Floats	4/15/2018	08:11:10	USER	2003.00	8.32	0.00	0.00	FLOATS HELD, 1 BBL BACK TO TRUCK
Event	25	End Job	4/15/2018	08:12:13	COM3					RETURNS TO START JOB AND THROUGHOUT CEMENT AND NO RETURNS DURING DISPLACEMENT, LAND PRESSURE WAS ABOUT HALF OF CALCULATED, PIPE WAS RECIPROCATED
Event	26	Post-Job Safety Meeting (Pre Rig-Down)	4/15/2018	08:13:38	USER					ALL HES PRESENT
Event	27	Rig-Down Completed	4/15/2018	08:49:59	USER					ALL HES PRESENT
Event	28	Pre-Convoy Safety Meeting	4/15/2018	09:00:33	USER					ALL HES PRESENT
Event	29	Crew Leave Location	4/15/2018	09:05:53	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW

# TERRA - RU 523-17 - 4.5" PRODUCTION



## Job Information

Request/Slurry	2466123/1	Rig Name	H&P 318	Date	09/APR/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	RU 523-17

## Well Information

Casing/Liner Size	4.5 in	Depth MD	10599 ft	BHST	127°C / 260°F
Hole Size	8.75 in	Depth TVD	10578 ft	BHCT	92°C / 198°F
Pressure	6705 psi				

## Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
-------------------	----------------	---------

## Cement Information - Lead Design



Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties	
						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 2466123/1

## Thickening Time - ON-OFF-ON

12/APR/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)
198	6705	52	4:38	4:56	5:00	5:00	6	62	15	7

Total sks =930

CS0862, Trailer 2878, 400 sks

CS0861, Trailer 4064, 130 sks

CS0864, Trailer 1513, 400 sks

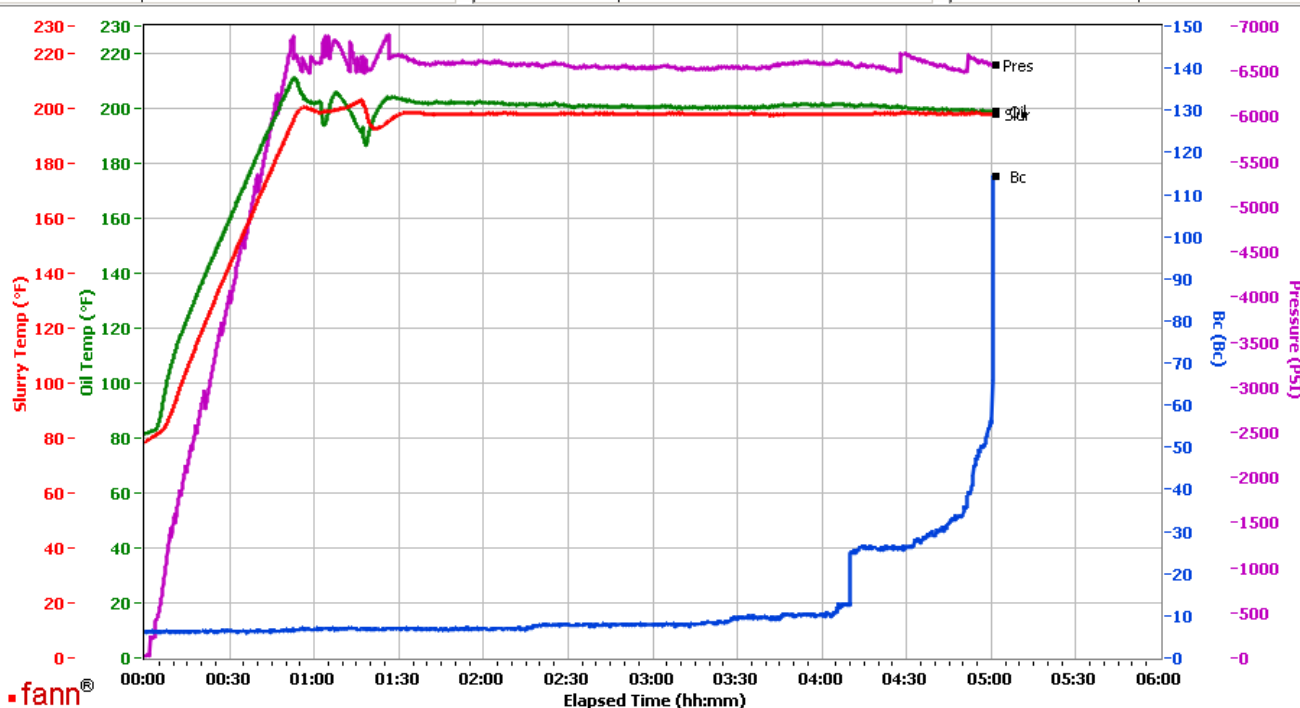
No deflection.

## Grand Junction, Colorado

Fields	Values
Project Name	2466123-1 TERRA BULK PRODUCTION LEAD
Test ID	35404530 - TT
Request ID	2466123-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	RU 523-17
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	04/12/18
Test Time	04:49 AM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:38m
40.00 Bc	04h:52m
50.00 Bc	04h:56m
70.00 Bc	05h:00m
100.00 Bc	05h:00m
00h:30m	6.24
01h:00m	6.91
01h:30m	6.96



Data File C:\Documents and Settings\M290\Desktop\Test Data\GJ2466123-1 TERRA BULK PRODUCTION LEAD.tdms

Comments CS0862, TRAILER 2878, 400 SKS - CS0861, TRAILER 4064, 130 SKS - CS0864, TRAILER 1513, 400 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.

# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

Request/Slurry	2466124/1	Rig Name	H&P 318	Date	09/APR/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	RU 523-17

### Well Information

Casing/Liner Size	4.5 in	Depth MD	10599 ft	BHST	127°C / 260°F
Hole Size	8.75 in	Depth TVD	10578 ft	BHCT	92°C / 198°F
Pressure	6705 psi				

### Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
-------------------	----------------	---------

### 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>		
						Slurry Density	13.3	lbm/gal
						Slurry Yield	1.733	ft3/sack
						Water Requirement	7.799	gal/sack
						Total Mix Fluid	7.799	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 2466124/1

## Thickening Time - ON-OFF-ON

13/APR/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)
198	6705	52	7:03	7:14	7:56	8:16	15	62	15	11

Total sks = 265

CS0866, Trailer 8321, 265 sks

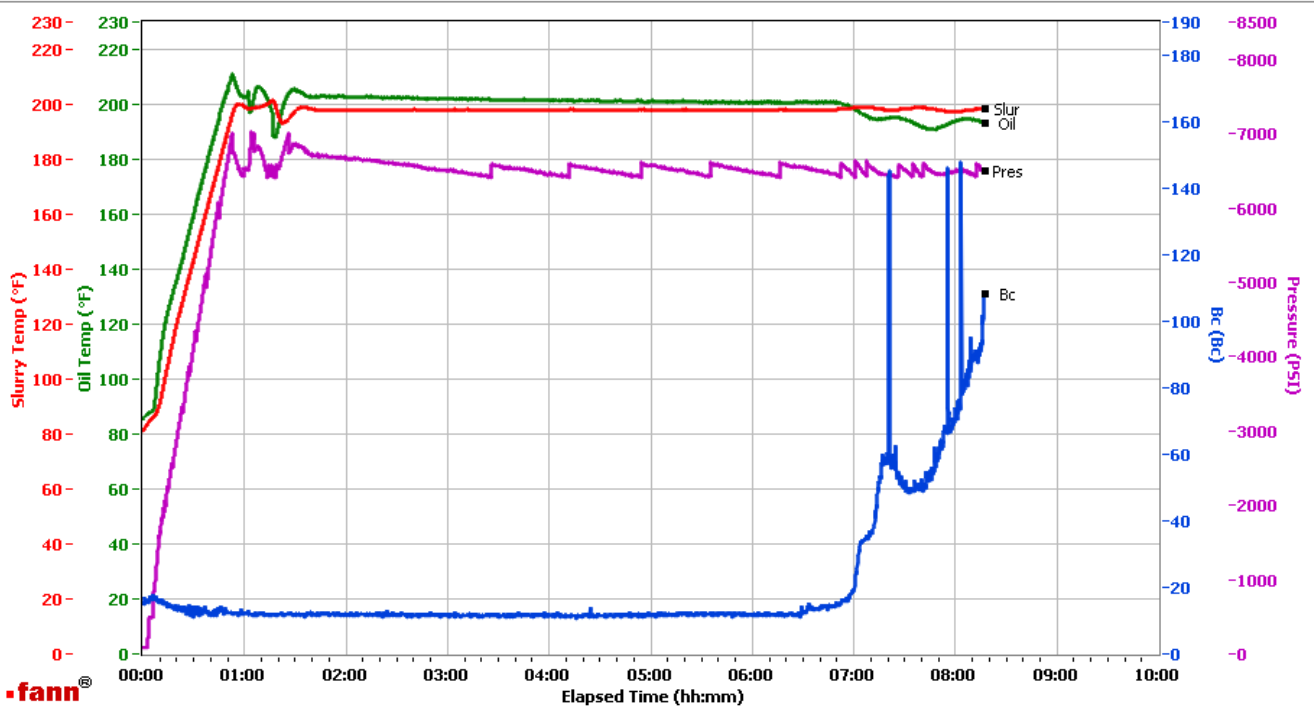
No deflection

## Grand Junction Colorado

Fields	Values
Project Name	2466124-1 TERRA BULK PRODUCTION TAIL
Test ID	35404532 - TT
Request ID	2466124-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	RU 523-17
Rig	H8P 318
Casing/Liner Size	4.5 INCH

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	MOUNTAIN G
Cement Weight	Standard
Test Date	04/12/18
Test Time	11:18 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	07h:03m
40.00 Bc	07h:12m
50.00 Bc	07h:14m
70.00 Bc	07h:56m
100.00 Bc	08h:16m
00h:30m	14.08
01h:00m	11.72
01h:30m	12.21



Data File C:\Documents and Settings\Administrator\Desktop\Test Data\GJ2466124-1 TERRA BULK PRODUCTION TAIL.tdms

Comments CS0866, TRAILER 8321, 265 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.