

# HALLIBURTON

iCem<sup>®</sup> Service

**TERRA ENERGY LTD.**

**For: Terra**

Date: Tuesday, February 13, 2018

**SR 314-12 Production PJR**

API #: 05-045-23453

Sincerely,

Grand Junction Cement Engineering

## 1.0 Real-Time Job Summary

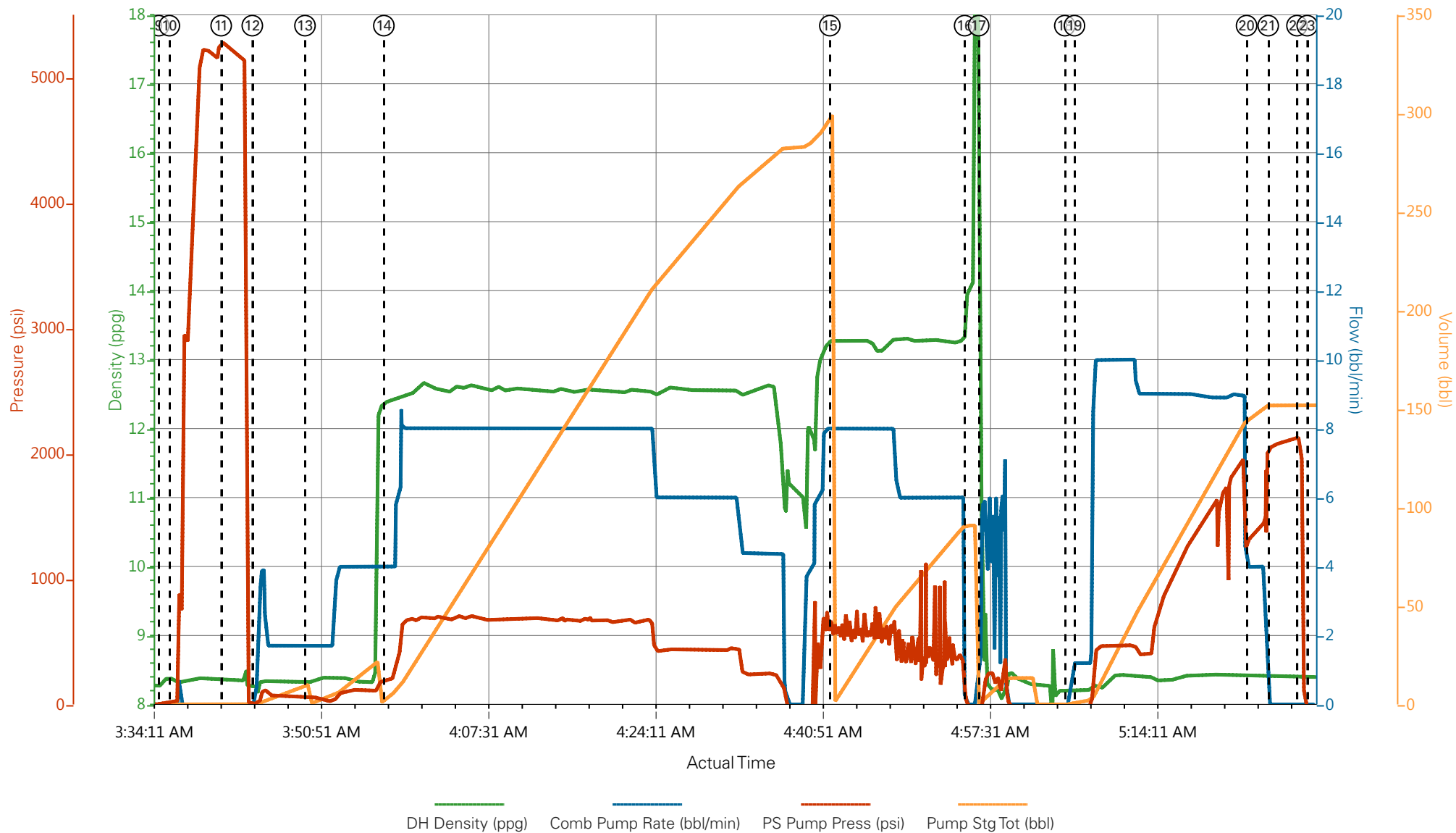
## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Pump Stage Total (bbl)	Comments
Event	1	Call Out	2/12/2018	12:00:00	USER					REQUESTED ON LOCATION @ 1900 AND THEN CHANGED TO 2300
Event	2	Pre-Convoy Safety Meeting	2/12/2018	14:25:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	2/12/2018	14:30:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive At Loc	2/12/2018	17:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	2/12/2018	20:00:00	USER					MET WITH COMP REP, J. PHILIPS AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 61F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	2/12/2018	20:10:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	2/12/2018	20:20:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	2/13/2018	02:00:00	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	2/13/2018	03:35:00	COM6					TD 9978', TP 9968.22', SJ 30.07', OH 8.75'', CSG 4.5'' 11.6#, MUD 9.2 PPG. RIG CIRCULATED WELL @ 10

BPM WITH 1100 PSI.										
Event	10	Prime Pumps	2/13/2018	03:36:03	COM6	125.00	8.36	1.00	2.0	8.33 PPG FRESH WATER
Event	11	Test Lines	2/13/2018	03:41:12	COM6	5276.00	8.36	0.50	5.0	ALL LINES HELD PRESSURE AT 5274 PSI
Event	12	Pump Spacer 1	2/13/2018	03:44:19	COM6	165.00	8.33	4.00	10.0	8.33 PPG FRESH WATER (10 BBL)
Event	13	Pump Spacer 2	2/13/2018	03:49:34	COM6	130.00	8.33	4.00	20.0	8.4 PPG MUDFLUSH III (20 BBL)
Event	14	Pump Lead Cement	2/13/2018	03:57:25	COM6	671.00	12.50	8.00	279.0	NEOCHEM CEMENT 805 SKS (279 BBLS), 12.5 PPG, 1.96 FT3/SK, 9.35 GAL/SK
Event	15	Pump Tail Cement	2/13/2018	04:41:52	COM6	503.00	13.30	8.00	82.0	THERMACEM CEMENT 265 SKS (82 BBLS), 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK
Event	16	Shutdown	2/13/2018	04:55:18	USER					END OF CMT
Event	17	Clean Lines	2/13/2018	04:56:41	USER					WASH UP PUMPS AND LINES TO THE PIT
Event	18	Drop Top Plug	2/13/2018	05:05:17	USER					PLUG WENT, VERIFIED BY CO REP
Event	19	Pump Displacement	2/13/2018	05:06:14	COM6	1965.00	8.30	9.00	144.6	8.34 PPG FRESH WATER (154.6 BBLS) 3 BAGS BE6, 1 GAL MMCR & 15 SKS KCL
Event	20	Slow Rate	2/13/2018	05:23:23	USER	1526.00	8.33	4.00	10.0	SLOW RATE TO 4 BPM PER CO REP TO LAND PLUG
Event	21	Bump Plug	2/13/2018	05:25:33	USER	2061.00	8.32	4.00	154.6	LAND PLUG AT 1526 PSI, BROUGHT UP TO 2061 PSI
Event	22	Check Floats	2/13/2018	05:28:25	USER	2136.00	8.33	0.00	154.6	FLOATS HELD, 1 BBL BACK TO TRUCK
Event	23	End Job	2/13/2018	05:29:26	USER					LOST RETURNS WHILE ON TAIL CEMENT AND GAINED PARTIAL RETURNS DURING DISPLACEMENT, PIPE WAS

						NOT RECIPROCATED
Event	24	Post-Job Safety Meeting (Pre Rig-Down)	2/13/2018	05:32:39	USER	ALL HES PRESENT
Event	25	Rig-Down Equipment	2/13/2018	05:34:33	USER	ALL HES PRESENT
Event	26	Pre-Convoy Safety Meeting	2/13/2018	06:07:37	USER	ALL HES PRESENT
Event	27	Crew Leave Location	2/13/2018	06:09:20	USER	THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW

# TEP - SR 314-12 - 4.5" PRODUCTION



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

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Created: 2018-02-12 21:27:26, Version: 4.2.393

Edit

Customer : TERRA ENERGY LTD.

Job Date : 2/12/2018

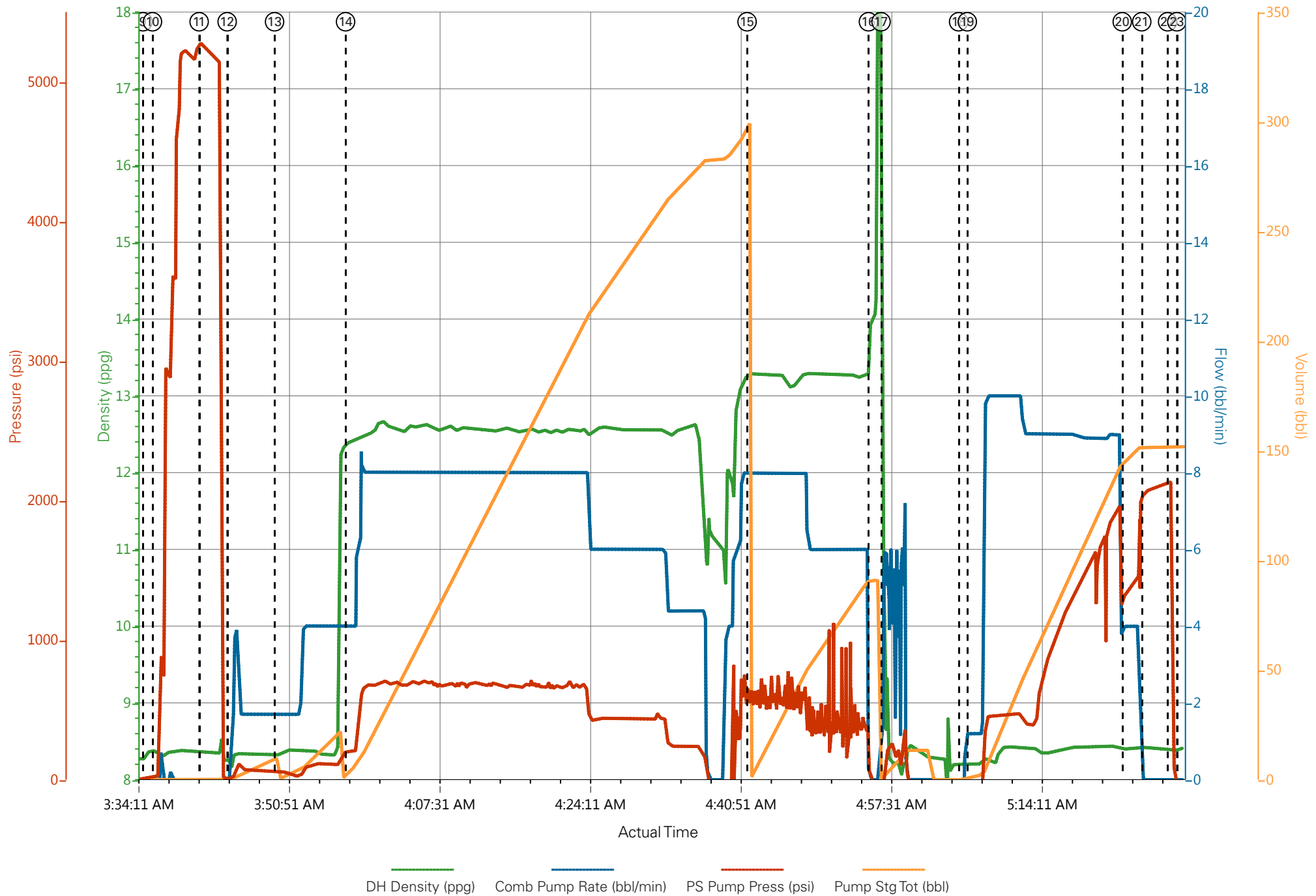
Well : SR 314-12

Representative : J.PHILIPS

Sales Order # : 904632760

ELITE 2 : C.SMITH/ D.PORTER

# TEP - SR 314-12 - 4.5" PRODUCTION



## Job Information

Request/Slurry	2451856/1	Rig Name	H&P 318	Date	07/FEB/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	SR 314-12

## Well Information

Casing/Liner Size	4.5 in	Depth MD	9933 ft	BHST	116°C / 241°F
Hole Size	8.75 in	Depth TVD	9475 ft	BHCT	77°C / 171°F
Pressure	5933 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	12.5	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		

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## Operation Test Results Request ID 2451856/1

### Thickening Time - ON-OFF-ON

11/FEB/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)
171	5933	48	5:50	5:50	6:06	7:20	6	58	15	6

Total sks = 805

CS0412, Trailer 0812, 402.5 sks

CS0413, Trailer 8658, 402.5 sks

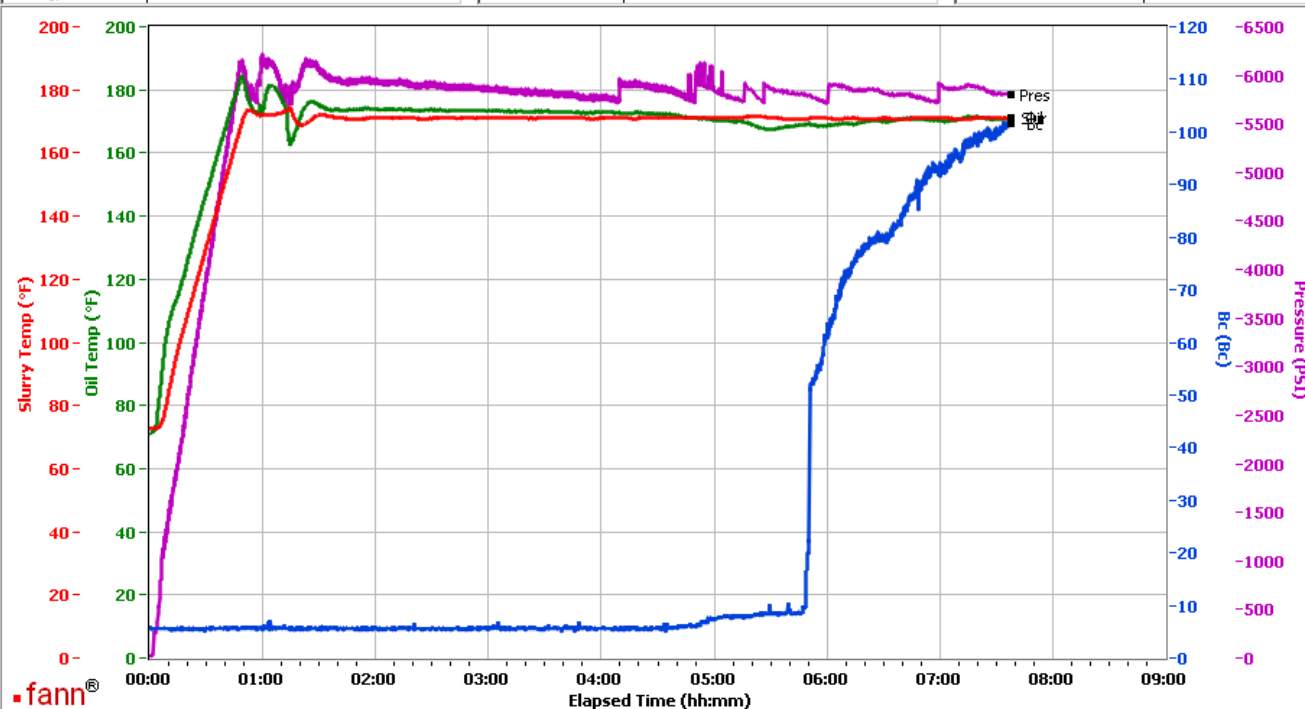
no deflection was observed. 6Bc--- > 6Bc

### Grand Junction Colorado

Fields	Values
Project Name	2451856-1 TERRA BULK PRODUCTION LEAD
Test ID	35239187 - TT
Request ID	2451856-1
Tested by	CT
Customer	TERRA ENERGY PARTNERS
Well No	SR 314-12
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	02/10/18
Test Time	01:43 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	05h:50m
40.00 Bc	05h:50m
50.00 Bc	05h:50m
70.00 Bc	06h:06m
100.00 Bc	07h:20m
00h:30m	5.50
01h:00m	5.66
01h:30m	5.87



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\4TIJ89YN\GJ2451856-1 TERRA BULK PRODUCTION LEAD[1].tdms

Comments CS0412, TRAILER 0812, 402.5 SKS - CS0413, TRAILER 8658, 402.5 SKS

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

<b>Request/Slurry</b>	2451857/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	07/FEB/2018
<b>Submitted By</b>	Patrick Ealey	<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>	SR 314-12

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9933 ft	<b>BHST</b>	116°C / 241°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9475 ft	<b>BHCT</b>	77°C / 171°F
<b>Pressure</b>	5933 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	<b>Mud Trade Name</b>	<b>Density</b>
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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>	<b>Cement Properties</b>		
		ThermaCem				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		

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# Operation Test Results Request ID 2451857/1

## Thickening Time - ON-OFF-ON

10/FEB/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)
171	5933	48	2:56	3:07	3:08	3:20	11	58	15	10

265 sks tail

CS0414, Trailer 4549, 265 sks

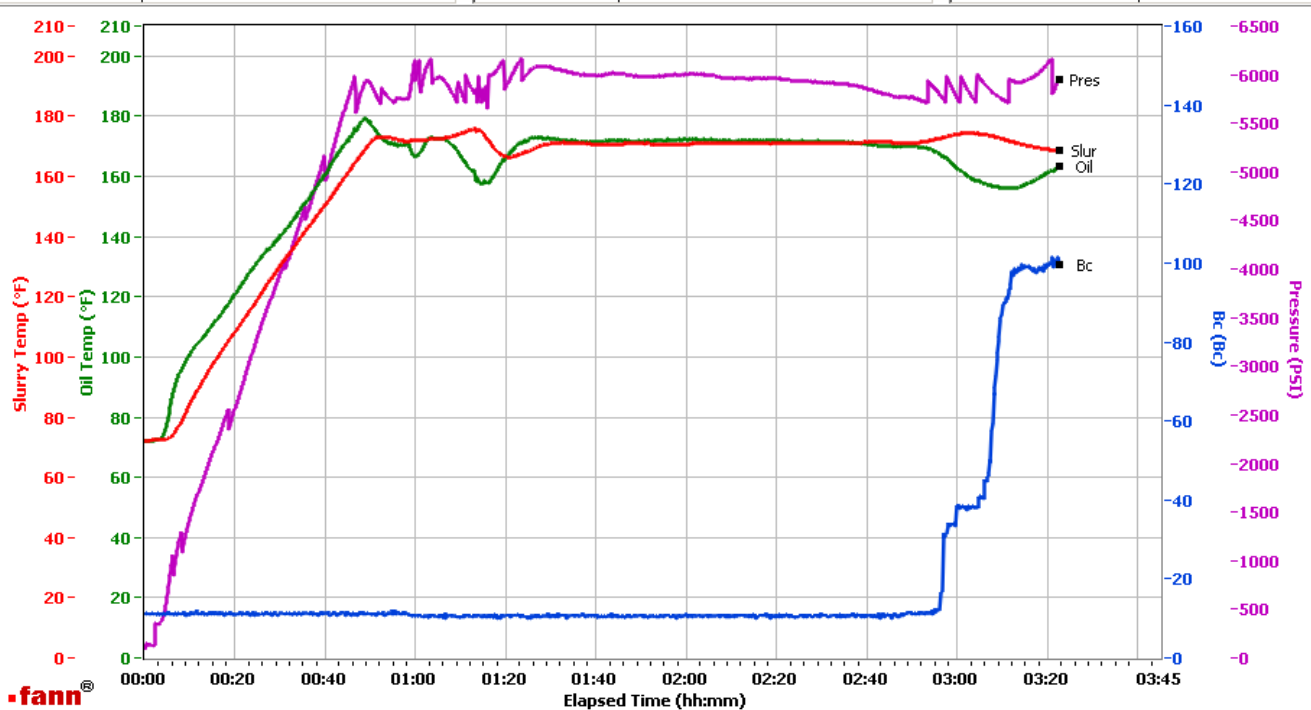
Deflection: 10 – 10

## Grand Junction Colorado

Fields	Values
Project Name	2451857-1 TERRA BULK PRODUCTION TAIL
Test ID	35239189 - TT
Request ID	2451857-1
Tested by	CT
Customer	TERRA ENERGY
Well No	SR 314-12
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	03/20/11
Test Time	02:02 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.1219

Events	Results
30.00 Bc	02h:56m
40.00 Bc	03h:04m
50.00 Bc	03h:07m
70.00 Bc	03h:08m
100.00 Bc	03h:20m
00h:30m	11.40
01h:00m	10.49
01h:30m	10.43



Data File C:\Documents and Settings\HPHT\Local Settings\Temporary Internet Files\Content.IE5\8HEN8T6Z\GJ2451857-1 TERRA BULK PRODUCTION TAIL[1].tdms

Comments CS0414, TRAILER 4549, 265 SKS

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