

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

**For: Terra**

Date: Tuesday, December 12, 2017

**SR 413-12 Production PJR**

API# 05-045-23443-00

Sincerely,

**Grand Junction Cement Engineering**

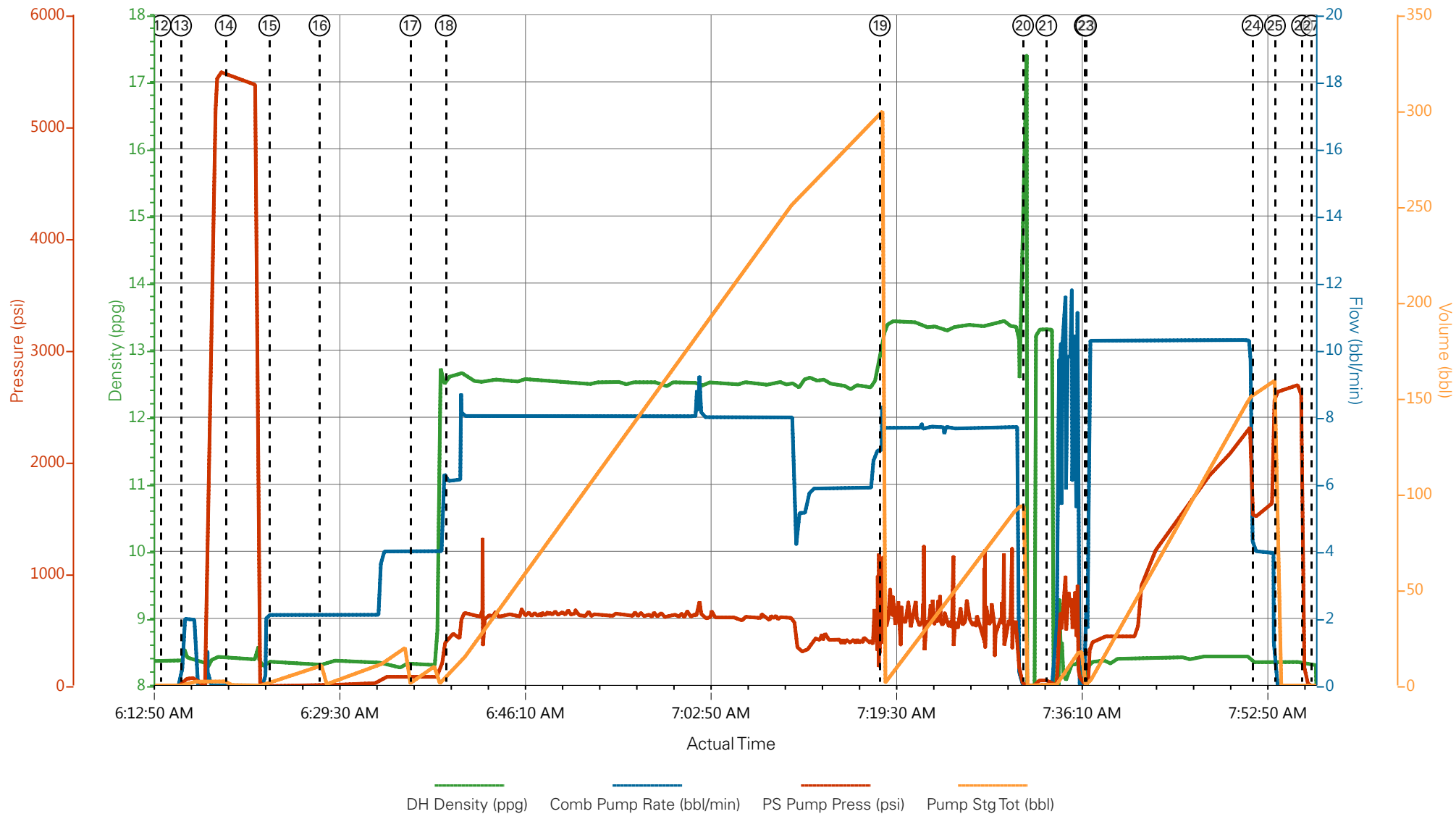
## 2.0 Real-Time Job Summary

## 2.1 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	12/11/2017	20:30:00	USER					
Event	2	Pre-Convoy Safety Meeting	12/11/2017	23:00:00	USER					
Event	3	Crew Leave Yard	12/11/2017	23:10:00	USER					ELITE 4, 10713212 660, 10951250 PICKUP
Event	4	Arrive At Loc	12/12/2017	01:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	12/12/2017	01:20:00	USER					JSA COMPLETED OSR SIGNED WOC
Event	6	Other	12/12/2017	01:30:00	USER					WATER TEST PH-7, CH-0, TEMP-65
Event	7	Pre-Rig Up Safety Meeting	12/12/2017	01:45:00	USER					JSA COMPLETED
Event	8	RIG UP EQUIPMENT	12/12/2017	01:45:01	USER					1 ELITE, 1 660, 1 SILO, MANIFOLD ON GROUND BY PUMP, IRON TRAILER IRON RAN TO PIT, ELITE IRON RAN TO RIGS STAND PIPE
Event	9	Other	12/12/2017	01:50:00	USER					YP- 11, PV-10 @ 92, 7 FT. RAT HOLE, RIG CIRCULATED FOR 1:20 WITH 1153 PSI WITH 1000 CFM AIR @ 450 ST/MIN, GOOD RETURNS THROUGHOUT JOB, PIPE RECIPERCATED 5 FEET+/- DURING CEMENT
Event	10	Pre-Job Safety Meeting	12/12/2017	05:30:00	USER					JSA COMPLETED
Event	11	Other	12/12/2017	05:35:00	USER					4.5 11.6# TP- 9837, TD-9844, S.J.- 31.95, HOLE- 8 3/4, MUD#- 9.3, 9 5/8 SET @ 1134
Event	12	Start Job	12/12/2017	06:13:44	COM5					
Event	13	Prime Pumps	12/12/2017	06:15:34	COM5					
Event	14	Test Lines	12/12/2017	06:19:34	COM5					5493 PSI TEST GOOD
Event	15	Pump Spacer 1	12/12/2017	06:23:29	COM5	8.33	2.10	65.0	10	FRESH WATER

Event	16	Pump Spacer 2	12/12/2017	06:28:00	COM5	8.33	2.10	86.0	20	MUD FLUSH
Event	17	Pump Spacer 1	12/12/2017	06:36:09	COM5	8.33	4.00	71.00	10	FRESH WATER
Event	18	Pump Lead Cement	12/12/2017	06:39:20	COM5	12.50	8.00	630	279.8	810 SKS, 12.5 PPG, 1.94 FT3/SK, 9.6 GAL/SK
Event	19	Pump Tail Cement	12/12/2017	07:18:19	COM5	13.30	8.00	675	81.9	265 SKS, 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK
Event	20	Shutdown	12/12/2017	07:31:11	COM5					TO DROP TOP PLUG AND WASH LINES
Event	21	Clean Lines	12/12/2017	07:33:16	COM5					WASH UP PUMPS AND LINES TO PIT, BLEW DOWN STAND PIPE IRON TO PIT FROM FLOOR
Event	22	Drop Top Plug	12/12/2017	07:36:43	COM5					AWAY
Event	23	Pump Displacement	12/12/2017	07:36:50	USER	8.33	10.00	2300	151.9	KCL WATER WITH 3 BAGS BE-6, 1 GAL MMCR
Event	24	Slow Rate	12/12/2017	07:51:47	USER	8.33	4.00	1550.0	141	TO BUMP PLUG
Event	25	Bump Plug	12/12/2017	07:53:48	COM5	8.33	4.0	1630	151.9	PLUG BUMPED
Event	26	Check Floats	12/12/2017	07:56:13	USER			2650		FLOATS HELD, 1.5 BBLS BACK TO PUMP
Event	27	End Job	12/12/2017	07:57:03	COM5					
Event	28	Post-Job Safety Meeting (Pre Rig-Down)	12/12/2017	08:10:00	USER					JSA COMPLETED
Event	29	Rig Down Lines	12/12/2017	09:00:00	USER					
Event	30	Pre-Convoy Safety Meeting	12/12/2017	09:30:00	USER					
Event	31	Crew Leave Location	12/12/2017	09:45:00	USER					THANK YOU FOR USING HALLIBURTON CEMENT, JAMES LEIST AND CREW

# TEP SR 413-12 4.5 PRODUCTION CASING



- |   |                          |                    |   |                              |
|---|--------------------------|--------------------|---|------------------------------|
| ① Call Out                              | ⑧ RIG UP EQUIPMENT       | ⑮ Pump Spacer 1    | 22 Drop Top Plug                          | 29 Rig Down Lines            |
| ② Pre-Convoy Safety Meeting             | ⑨ Other                  | ⑯ Pump Spacer 2    | 23 Pump Displacement                      | 30 Pre-Convoy Safety Meeting |
| ③ Crew Leave Yard                       | ⑩ Pre-Job Safety Meeting | ⑰ Pump Spacer 1    | 24 Slow Rate                              | 31 Crew Leave Location       |
| ④ Arrive At Loc                         | ⑪ Other                  | ⑱ Pump Lead Cement | 25 Bump Plug                              |                              |
| ⑤ Assessment Of Location Safety Meeting | ⑫ Start Job              | ⑲ Pump Tail Cement | 26 Check Floats                           |                              |
| ⑥ Other                                 | ⑬ Prime Pumps            | 20 Shutdown        | 27 End Job                                |                              |
| ⑦ Pre-Rig Up Safety Meeting             | ⑭ Test Lines             | 21 Clean Lines     | 28 Post-Job Safety Meeting (Pre Rig-Down) |                              |

▼ **HALLIBURTON** | iCem® Service

Created: 2017-12-11 22:19:17, Version: 4.2.393

Edit

Customer : TERRA ENERGY PARTNERS-EBUS

Job Date : 12/12/2017 2:26:13 AM

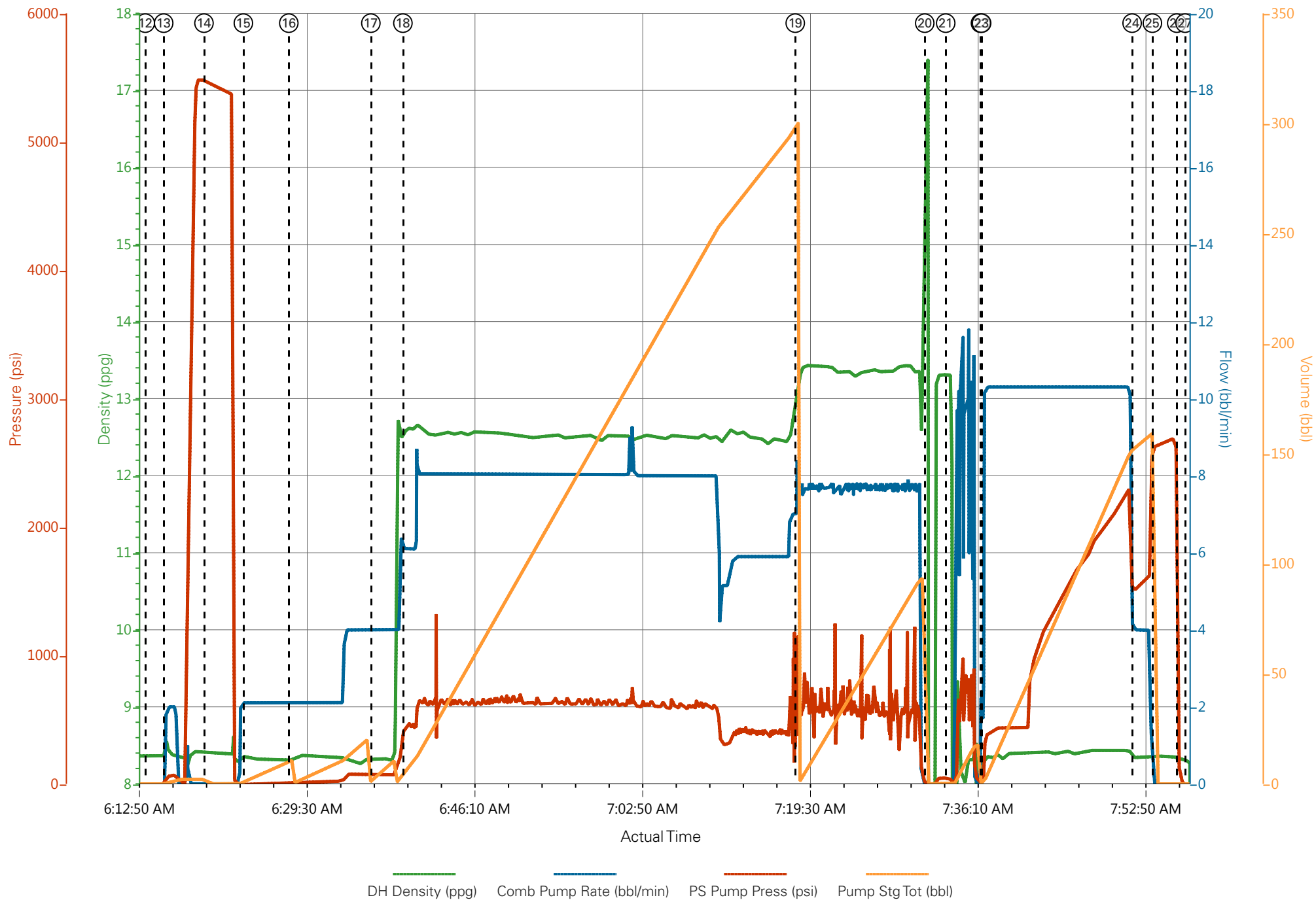
Well : SR 413-12

Representative : NATHAN BURR

Sales Order # : 904496001

ELITE 4 : WES GOWEN

# TEP SR 413-12 4.5 PRODUCTION CASING



# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Lead

### Job Information

<b>Request/Slurry</b>	2437010/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	07/DEC/2017
<b>Submitted By</b>	Derek James	<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 413-12

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9830 ft	<b>BHST</b>	116°C / 241°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9470 ft	<b>BHCT</b>	77°C / 171°F
<b>Pressure</b>	5929 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	<b>Mud Trade Name</b>	<b>Density</b>
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### 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 Lead				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		

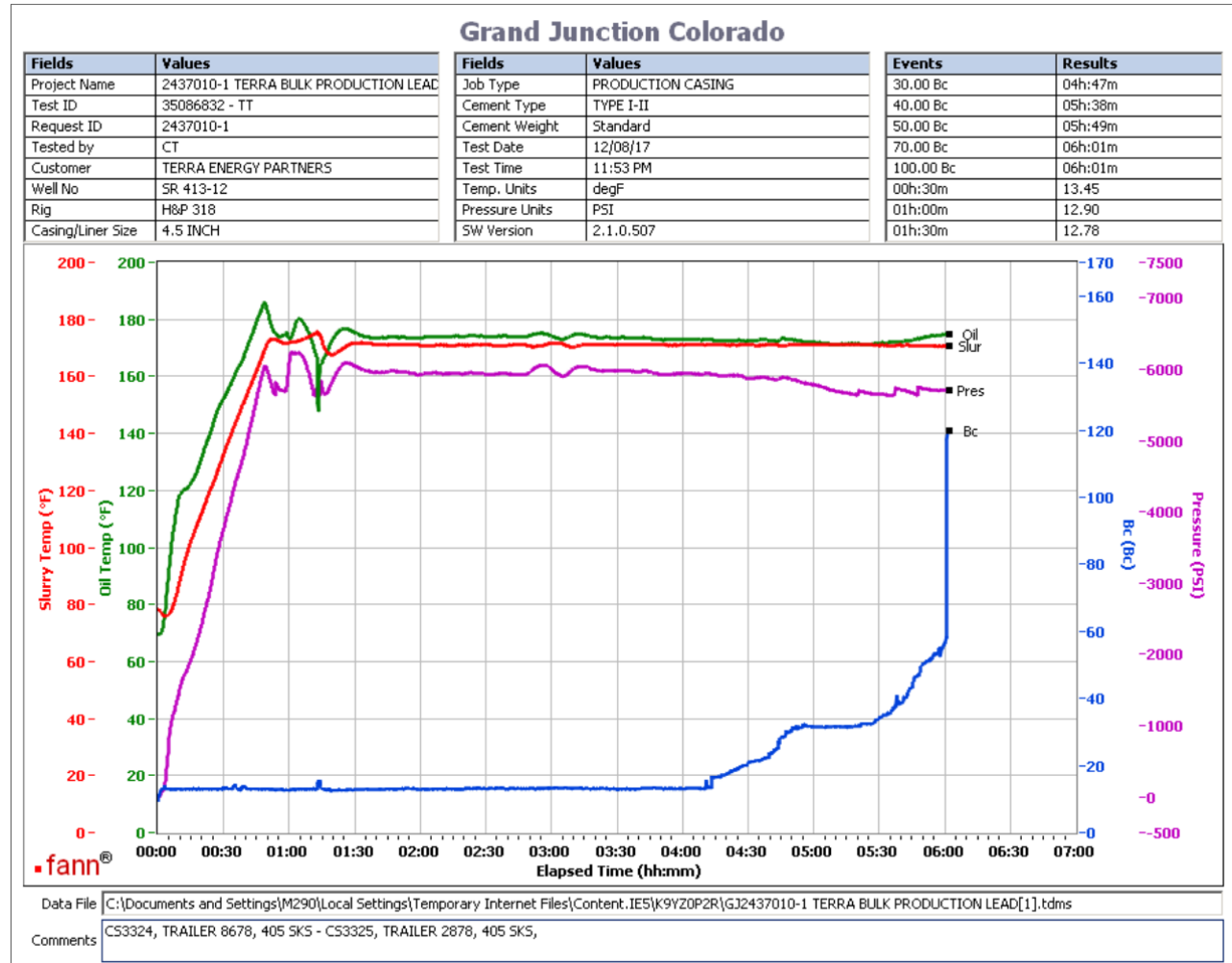
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# **Operation Test Results Request ID 2437010/1**

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

**08/DEC/2017**

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	5929	48	4:47	5:49	6:01	6:01	9	58	15	16



Total sks=810  
 CS3324, Trailer 8678, 405 sks  
 CS3325, Trailer 2878, 405 sks  
 Deflected 14--> 16

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

<b>Request/Slurry</b>	2437011/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	07/DEC/2017
<b>Submitted By</b>	Derek James	<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 413-12

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9830 ft	<b>BHST</b>	116°C / 241°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9470 ft	<b>BHCT</b>	77°C / 171°F
<b>Pressure</b>	5929 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



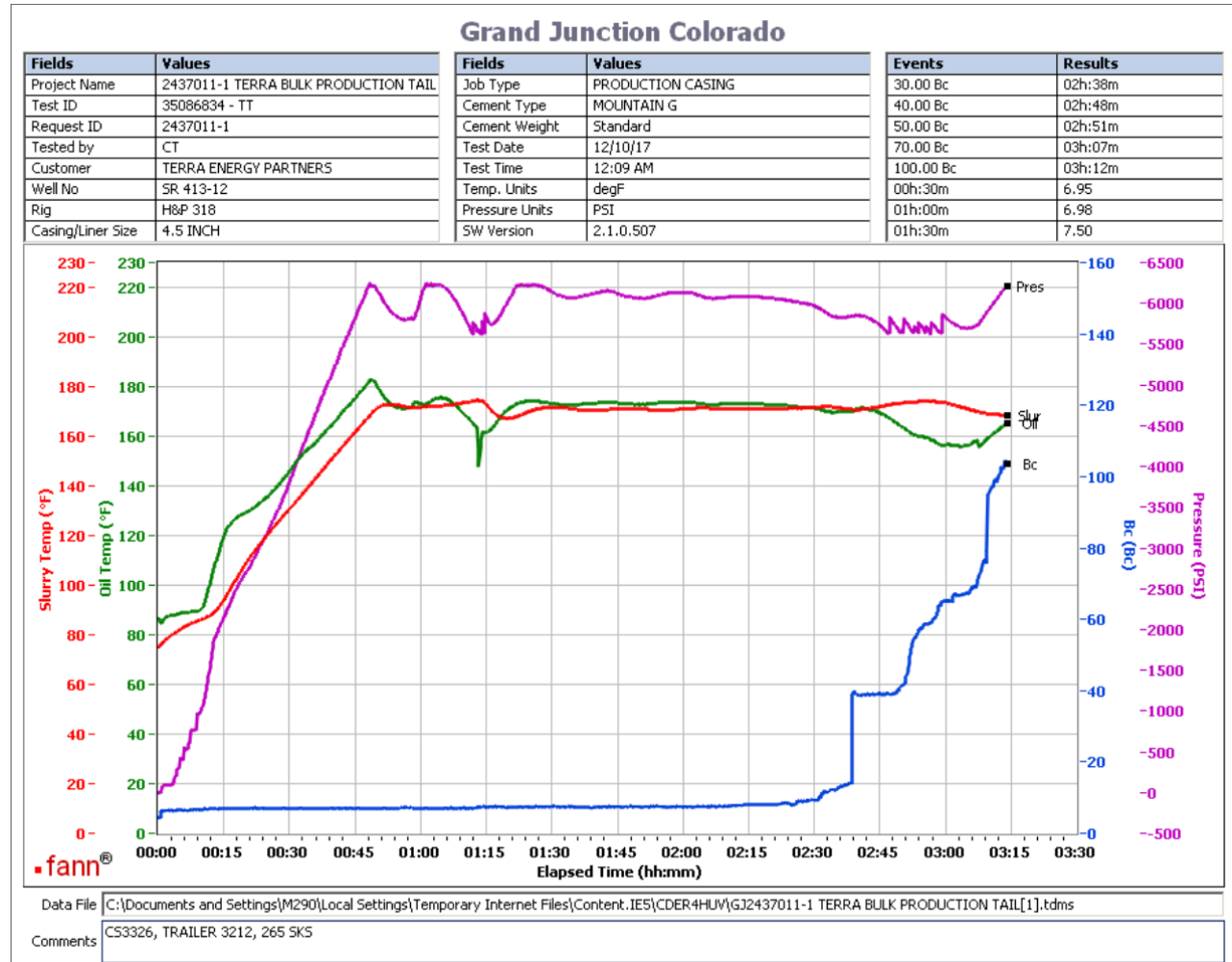
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		ThermaCem Tail				Slurry Density	13.3	lbm/gal
						Slurry Yield	1.733	ft3/sack
						Water Requirement	7.799	gal/sack
						Total Mix Fluid	7.799	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

09/DEC/2017

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	5929	48	2:38	2:51	3:07	3:12	4	58	15	7



265 sks tail  
CS3326, Trailer 3212, 265 sks  
Deflection: 7 - 7

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