

# HALLIBURTON

iCem<sup>®</sup> Service

## **Terra Energy Partners**

**For: Terra**

Date: Saturday, December 02, 2017

**Ware SR 433-12 Production PJR**

API #: 05-045-23456

Sincerely,

**Grand Junction Engineering Team**

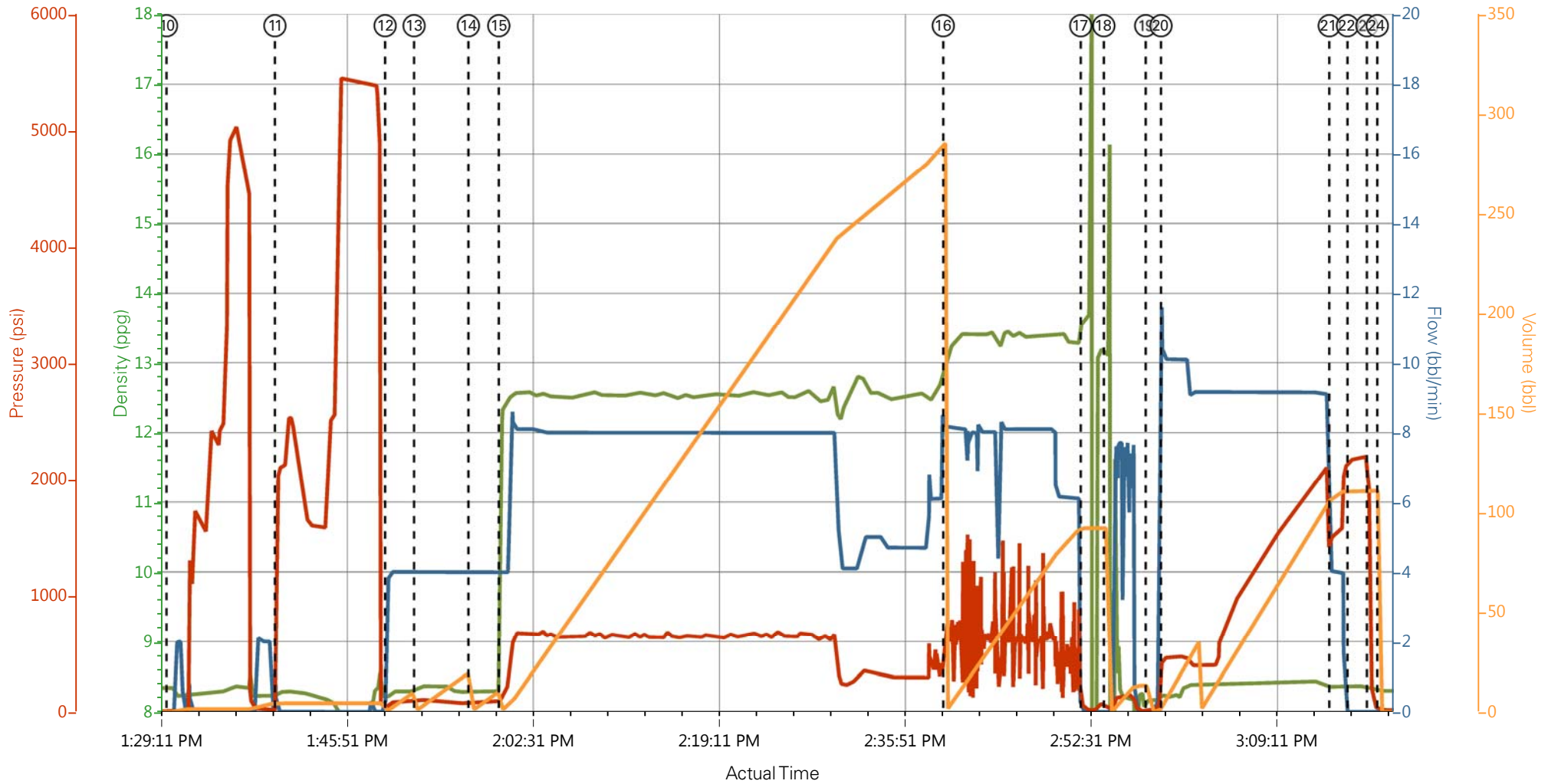
## 2.0 Real-Time Job Summary

### 2.1 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	12/2/2017	06:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	12/2/2017	08:40:00	USER					
Event	3	Crew Leave Yard	12/2/2017	09:00:00	USER					
Event	4	Arrive At Loc	12/2/2017	11:00:00	USER					
Event	5	Assessment Of Location Safety Meeting	12/2/2017	11:05:00	USER					
Event	6	Spot Equipment	12/2/2017	11:10:00	USER					
Event	7	Pre-Rig Up Safety Meeting	12/2/2017	11:15:00	USER					
Event	8	Rig-Up Equipment	12/2/2017	11:20:00	USER					
Event	9	Pre-Job Safety Meeting	12/2/2017	13:00:00	USER					
Event	10	Start Job	12/2/2017	13:30:00	COM5					TD: 9596 TP: 9589 SJ: 27.65' MW: 9.4PPG 4 1/2" 11.6#/FT CSG IN 8 3/4" OH WATER TEST: PH: 7 POTASSIUM: 700 CHLORIDES: 0 SULFATES: <200 TEMP: 58 DEGREES
Event	11	Test Lines	12/2/2017	13:39:42	COM5	8.33	0.00	5000.00	2.0	5000 PSI TEST, INITIAL PRESSURE TEST FAILED, FOUND A VALVE ON GROUND MANIFOLD TO BE LEAKING. CHANGED VALVE OUT AND RETESTED.
Event	12	Pump Spacer 1	12/2/2017	13:49:34	COM5	8.33	4.00	140.00	10.0	FRESH H2O SPACER 10 BBL

Event	13	Pump Spacer 2	12/2/2017	13:52:10	COM5	8.40	4.00	135.00	20.0	MUDFLUSH SPACER 20 BBL
Event	14	Pump Spacer 1	12/2/2017	13:57:02	COM5	8.33	4.00	130.00	10.0	FRESH H2O SPACER 10 BBL
Event	15	Pump Lead Cement	12/2/2017	13:59:45	COM5	12.50	8.00	700.00	279.9	810 SKS @ 12.5 PPG 1.94 YLD 9.6 GAL/SK H2O
Event	16	Pump Tail Cement	12/2/2017	14:39:34	COM5	13.30	8.00	587.00	81.6	265 SKS @ 13.3 PPG 1.73 YLD 7.81 GAL/SK H2O
Event	17	Shutdown	12/2/2017	14:51:53	USER					
Event	18	Clean Lines	12/2/2017	14:53:57	COM5					
Event	19	Drop Top Plug	12/2/2017	14:57:42	COM5					PLUG AWAY
Event	20	Pump Displacement	12/2/2017	14:59:04	COM5	8.48	10.00	2100.00	148.2	FRESH H2O DISPLACEMENT W/ KCL, MMCR, BE-6
Event	21	Slow Rate	12/2/2017	15:14:08	USER	8.48	4.00	1550.00	138.0	PRESSURE PRIOR TO SLOWING RATE WAS 2100 PSI, 1550 PSI AT 4 BPM
Event	22	Bump Plug	12/2/2017	15:15:46	COM5	8.48	4.00	2161.00	148.2	FINAL CIRCULATING PRESSURE WAS 1585 PSI. PLUG BUMPED AT CALCULATED
Event	23	Check Floats	12/2/2017	15:17:31	COM5	8.33	0.00	1331.00	110.7	FLOATS HELD, GAINED 1 BBL BACK TO PUMP
Event	24	End Job	12/2/2017	15:18:27	COM5					
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	12/2/2017	15:25:00	USER					GOOD CIRCULATION THROUGHOUT JOB. PIPE WAS RECIPROCATED THROUGHOUT JOB. NO ADD HOURS CHARGED.
Event	26	Rig-Down Equipment	12/2/2017	15:30:00	USER					
Event	27	Pre-Convoy Safety Meeting	12/2/2017	16:55:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING
Event	28	Crew Leave Location	12/2/2017	17:00:00	USER					ANTHONY ANDREWS AND CREW

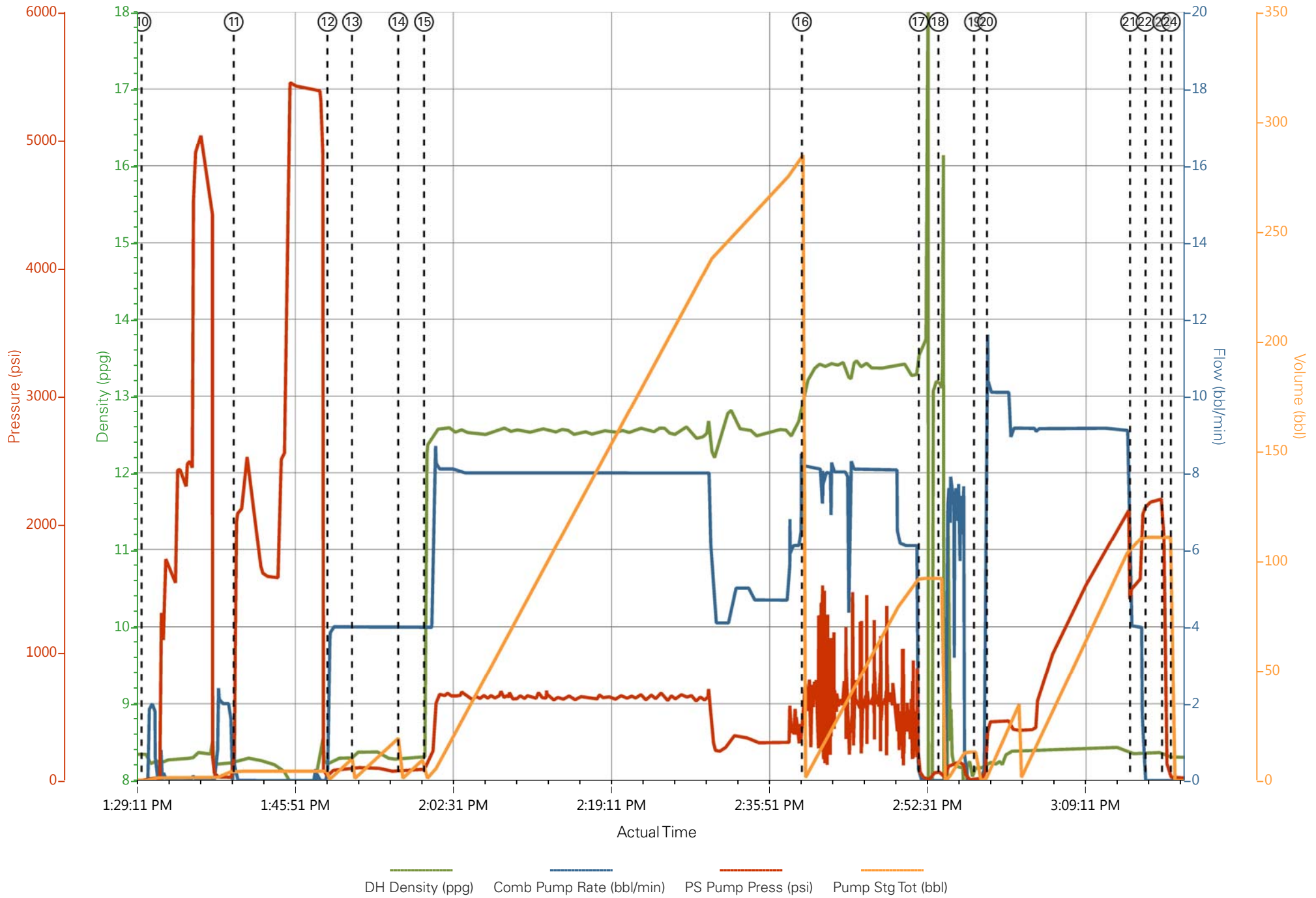
# TEP - WARE SR 433-12 - 4 1/2" PRODUCTION



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

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

# TEP - WARE SR 433-12 - 4 1/2" PRODUCTION



## Job Information

<b>Request/Slurry</b>	2434901/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	27/NOV/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 433-12

## Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9553 ft	<b>BHST</b>	116°C / 241°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9466 ft	<b>BHCT</b>	77°C / 171°F
<b>Pressure</b>	5926 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	ft <sup>3</sup> /sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

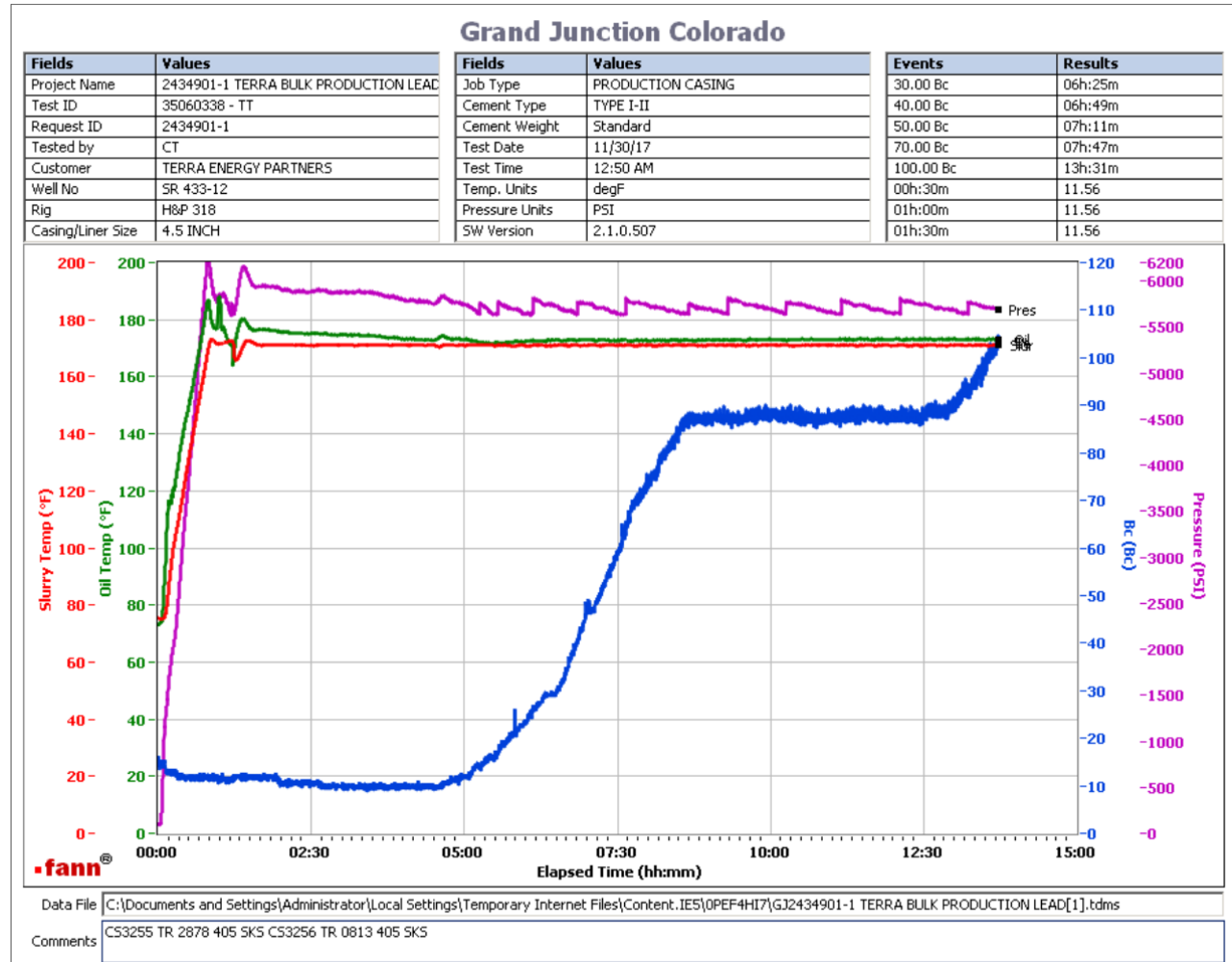
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# Operation Test Results Request ID 2434901/1

## Thickening Time - ON-OFF-ON

30/NOV/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	5926	48	6:25	7:11	7:47	13:31	16	58	15	11



Total sks= 810  
 Composite:  
 CS3255 TR 2878 405 SKS  
 CS3256 TR 0813 405 SKS  
 no deflection was observed. 11Bc--- > 11Bc

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**Job Information**

<b>Request/Slurry</b>	2434902/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	27/NOV/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 433-12

**Well Information**

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<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	8466 ft	<b>BHCT</b>	77°C / 171°F
<b>Pressure</b>	5926 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** 

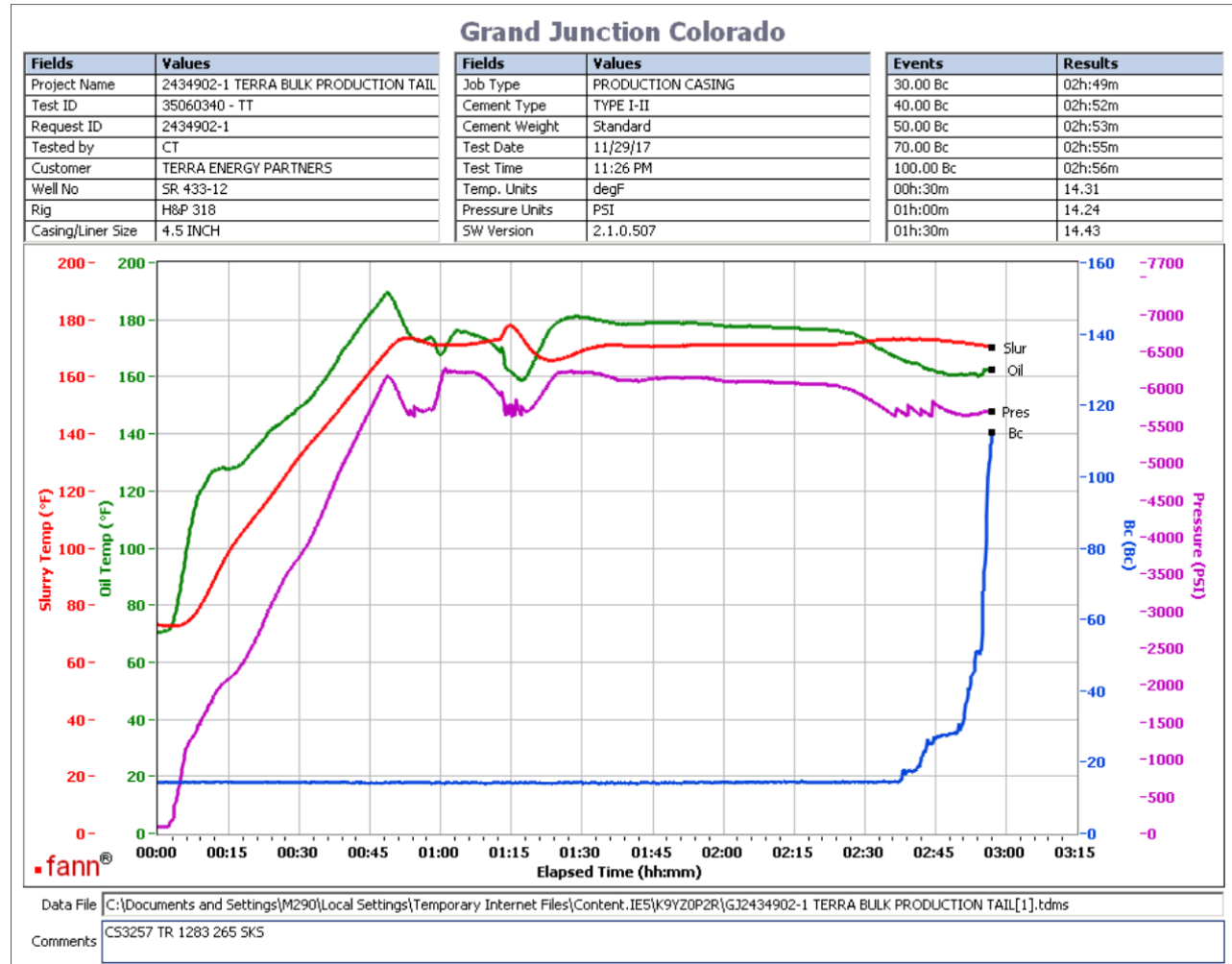
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		ThermaCem Tail				Slurry Density	13.3	lbm/gal
						Slurry Yield	1.733	ft3/sack
						Water Requirement	7.799	gal/sack
						Total Mix Fluid	7.799	gal/sack
						Water Source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

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Thickening Time - ON-OFF-ON

29/NOV/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	5926	48	2:49	2:53	2:55	2:56	14	58	15	14



265 sks tail  
 CS3257 TR 1283 265 SKS  
 No deflection. Heat of hydration started around 2:30.

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