

# HALLIBURTON

iCem<sup>®</sup> Service

## **Terra Energy Partners**

**For: Terra**

Date: Monday, December 04, 2017

**PA 543-26 Production PJR**

API #: 05-045-23652

Sincerely,

**Grand Junction Engineering Team**

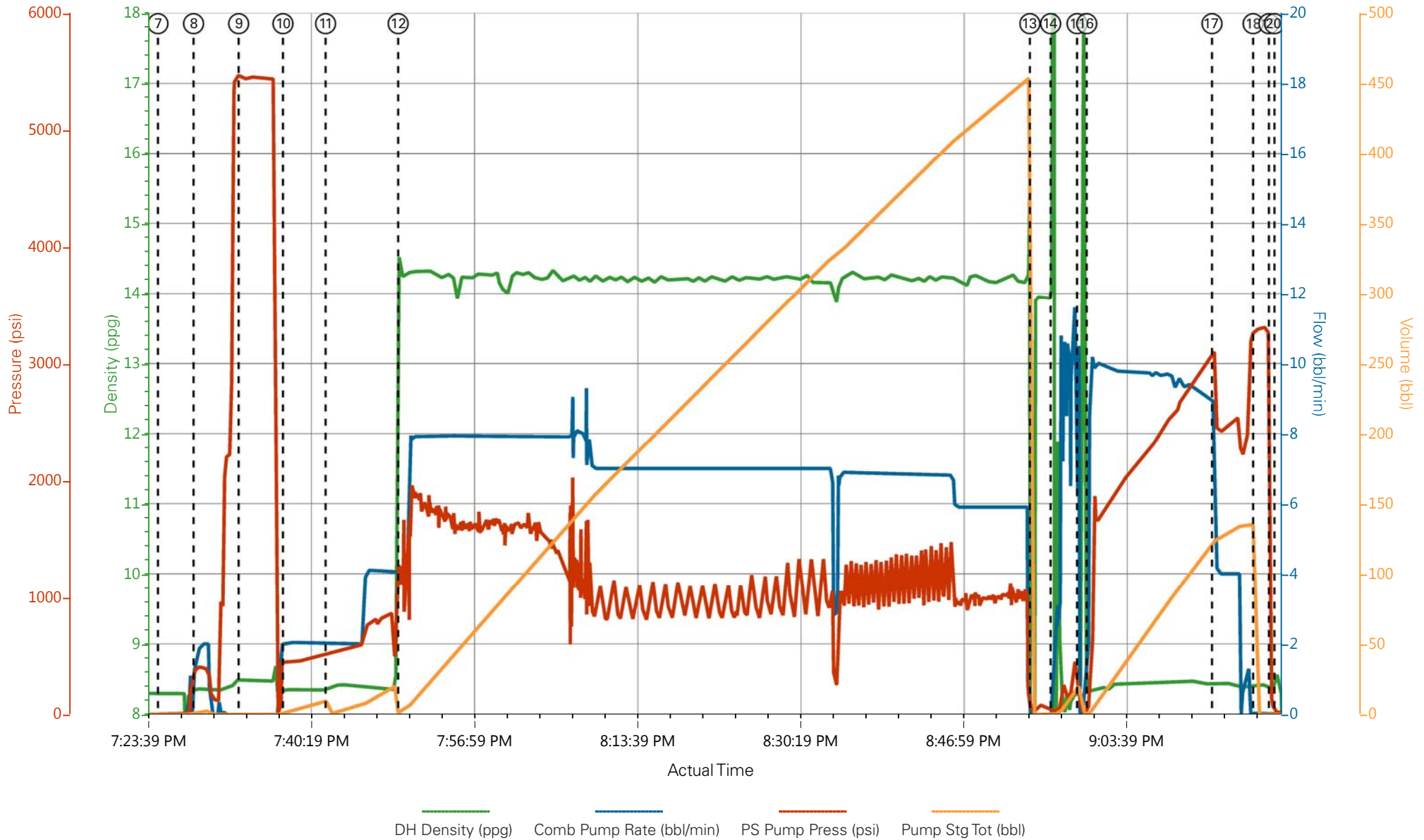
## 2.0 Real-Time Job Summary

### 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	12/4/2017	09:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	12/4/2017	11:45:00	USER					ALL HES PERSONNEL
Event	3	Arrive at Rig	12/4/2017	13:00:00	USER					RIG RUNNING CASING, THEN CIRCULATED FOR 1.5 HOURS AT 400 GPM
Event	4	Assessment Of Location Safety Meeting	12/4/2017	13:30:00	USER					ALL HES PERSONNEL
Event	5	Pre-Rig Up Safety Meeting	12/4/2017	14:00:00	USER					ALL HES PERSONNEL
Event	6	Pre-Job Safety Meeting	12/4/2017	16:00:00	USER					ALL ON LOCATION PERSONNEL
Event	7	Start Job	12/4/2017	19:25:00	COM5					4.5, 11.6# TP-8610.48, TD-8615, S.J.-29.62, HOLE-8 3/4, MUD#-12.0, 9 5/8 SET @ 1135
Event	8	Prime Pumps	12/4/2017	19:28:38	COM5					FRESH WATER
Event	9	Test Lines	12/4/2017	19:33:14	COM5					5441 PSI
Event	10	Pump Spacer 1	12/4/2017	19:37:46	COM5	8.33	2.00	442.00	10.0	FRESH WATER
Event	11	Pump Spacer 2	12/4/2017	19:42:07	COM5	8.33	2.00	521.00	20.0	MUD FLUSH
Event	12	Pump Cement	12/4/2017	19:49:32	COM5	14.20	7.00	1238	428.3	1730 SKS, 428.3 BBLS, 14.2 PPG, 1.39 FT3/SK, 6.36 GAL/SK
Event	13	Shutdown	12/4/2017	20:54:03	COM5					TO WASH PUMPS AND LINES

Event	14	Clean Lines	12/4/2017	20:56:10	COM5						TO PIT
Event	15	Drop Top Plug	12/4/2017	20:58:52	COM5						USED 3RD PARTY LATCH DOWN PLUG, AWAY
Event	16	Pump Displacement	12/4/2017	20:59:52	COM5	8.33	10.00	3080	132.9		KCL WATER WITH 3 BAGS BE-6, 1 GAL MMCR
Event	17	SLOW RATE	12/4/2017	21:12:39	COM5	8.33	4.00	2410	123.0		SLOW RATE TO BUMP PLUG
Event	18	Bump Plug	12/4/2017	21:16:51	COM5	8.33	4.00	2550	132.9		PLUG BUMPED
Event	19	CHECK FLOATS	12/4/2017	21:18:28	COM5			3300			FLOATS HELD 0.75 BBL BACK TO TRUCK
Event	20	End Job	12/4/2017	21:19:02	COM5						GOOD CIRCULATION THROUGH OUT JOB
Event	21	Post-Job Safety Meeting (Pre Rig-Down)	12/4/2017	21:40:18	USER						ALL HES PERSONNEL
Event	22	Rig Down Lines	12/4/2017	21:40:22	USER						
Event	23	Pre-Convoy Safety Meeting	12/4/2017	21:40:26	USER						ALL HES PERSONNEL
Event	24	Crew Leave Location	12/4/2017	21:40:35	USER						THANK YOU FOR USING HALLIBURTON CEMENT, JAMES LEIST AND CREW

# TEP PA 543-26 4.5 PRODUCTION CASING



- |   |                          |                 |                     |   |
|---|--------------------------|-----------------|---------------------|---|
| ① Call Out                              | ⑥ Pre-Job Safety Meeting | ⑪ Pump Spacer 2 | ⑬ Pump Displacement | 21 Post-Job Safety Meeting (Pre Rig-Down) |
| ② Pre-Convoy Safety Meeting             | ⑦ Start Job              | ⑫ Pump Cement   | ⑭ SLOW RATE         | 22 Rig Down Lines                         |
| ③ Arrive at Rig                         | ⑧ Prime Pumps            | ⑬ Shutdown      | ⑮ Bump Plug         | 23 Pre-Convoy Safety Meeting              |
| ④ Assessment Of Location Safety Meeting | ⑨ Test Lines             | ⑭ Clean Lines   | ⑯ CHECK FLOATS      | 24 Crew Leave Location                    |
| ⑤ Pre-Rig Up Safety Meeting             | ⑩ Pump Spacer 1          | ⑮ Drop Top Plug | ⑰ End Job           |   |

▼ **HALLIBURTON** | iCem® Service

Created: 2017-12-04 11:14:03, Version: 4.2.393

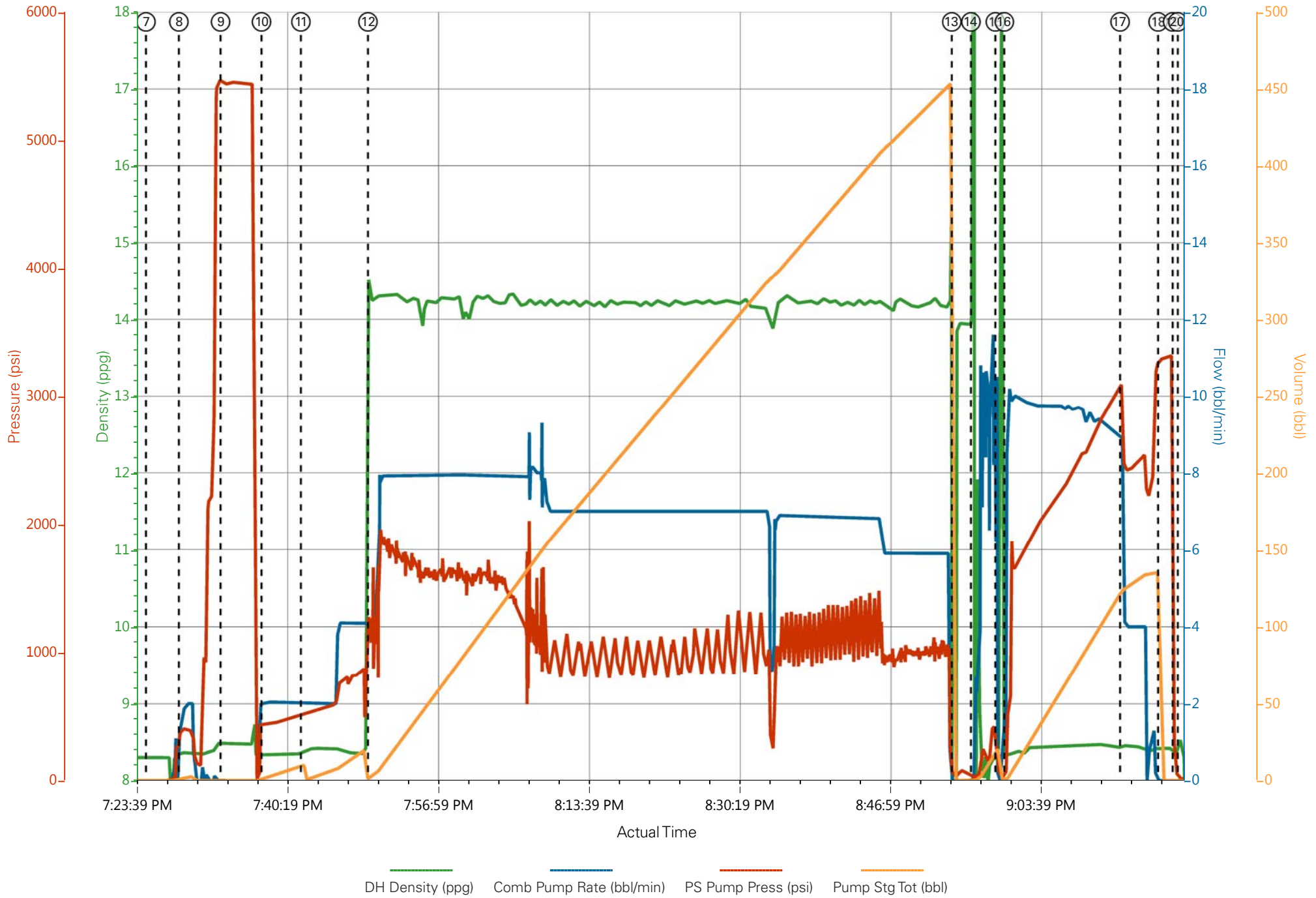
[Edit](#)

Customer : TERRA ENERGY PARTNERS-EBUS  
 Representative : COY BURR

Job Date : 12/4/2017 5:54:05 PM  
 Sales Order # : 904467370

Well : pa 543-26  
 ELITE 1 : WES GOWEN

# TEP PA 543-26 4.5 PRODUCTION CASING



### Job Information

<b>Request/Slurry</b>	2435400/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	29/NOV/2017
<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>	PA 543-26

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8597 ft	<b>BHST</b>	101°C / 213°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	7828 ft	<b>BHCT</b>	62°C / 144°F
<b>Pressure</b>	4787 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	AMC	<b>Mud Trade Name</b>		<b>Density</b>	
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### Cement Information - Primary Design

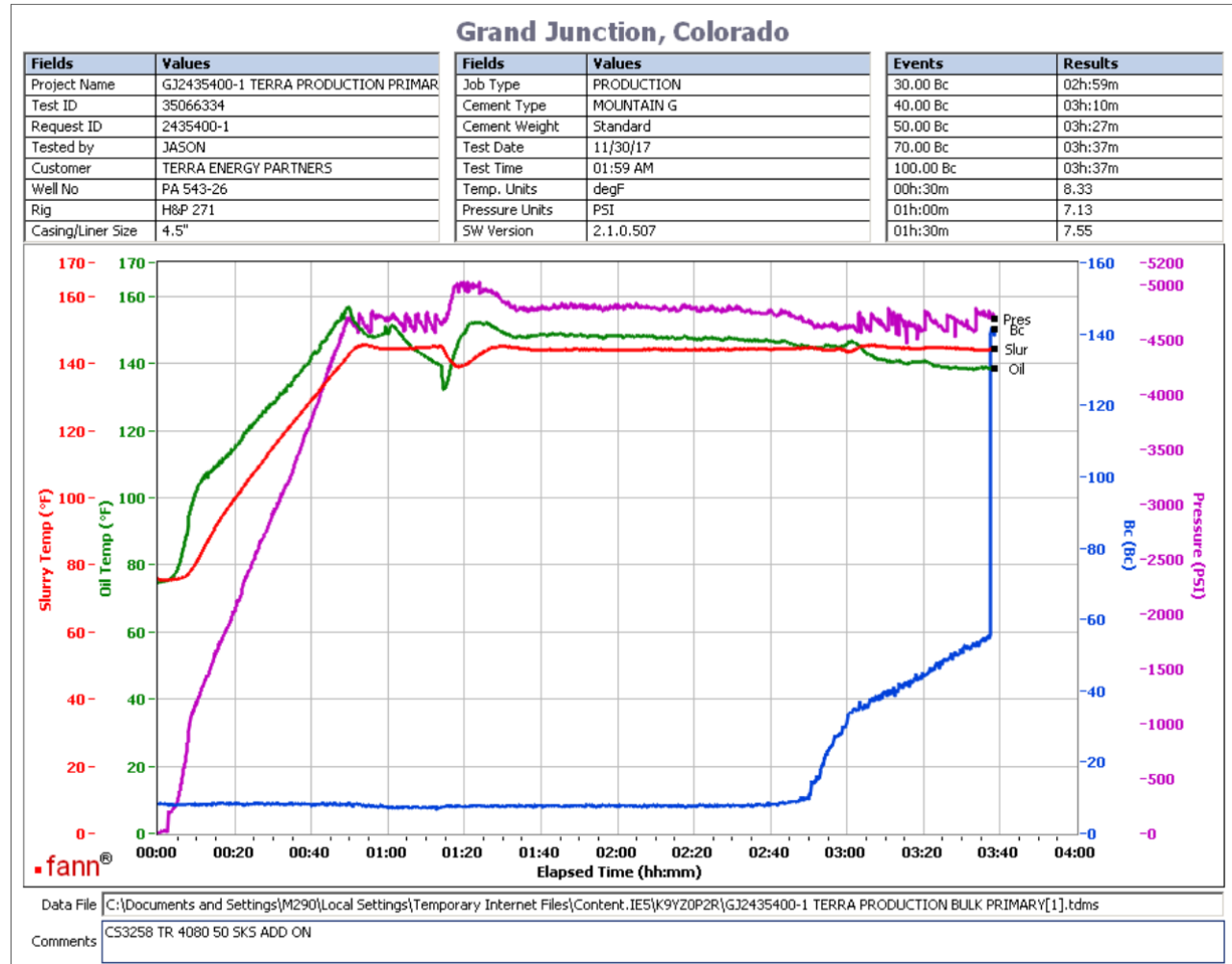
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		HalCem Primary				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.387	ft3/sack
						Water Requirement	6.36	gal/sack
						Total Mix Fluid	6.36	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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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)
144	4787	49	2:59	3:27	3:37	3:37	8	59	15	8



1730 sks Total  
 CS3258 TR 4080 50 SKS Add-on  
 deflected from 7Bc--- > 8Bc  
 please review the graph, heat of hydration at 3:00hrs. possible pump time 3hrs

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**Job Information**

<b>Request/Slurry</b>	2434894/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	27/NOV/2017
<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>	PA 543-26

**Well Information**

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8597 ft	<b>BHST</b>	101°C / 213°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	7828 ft	<b>BHCT</b>	62°C / 144°F
<b>Pressure</b>	4787 psi				

**Drilling Fluid Information**

<b>Mud Supplier Name</b>	AMC	<b>Mud Trade Name</b>		<b>Density</b>	
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**Cement Information - Primary Design** 

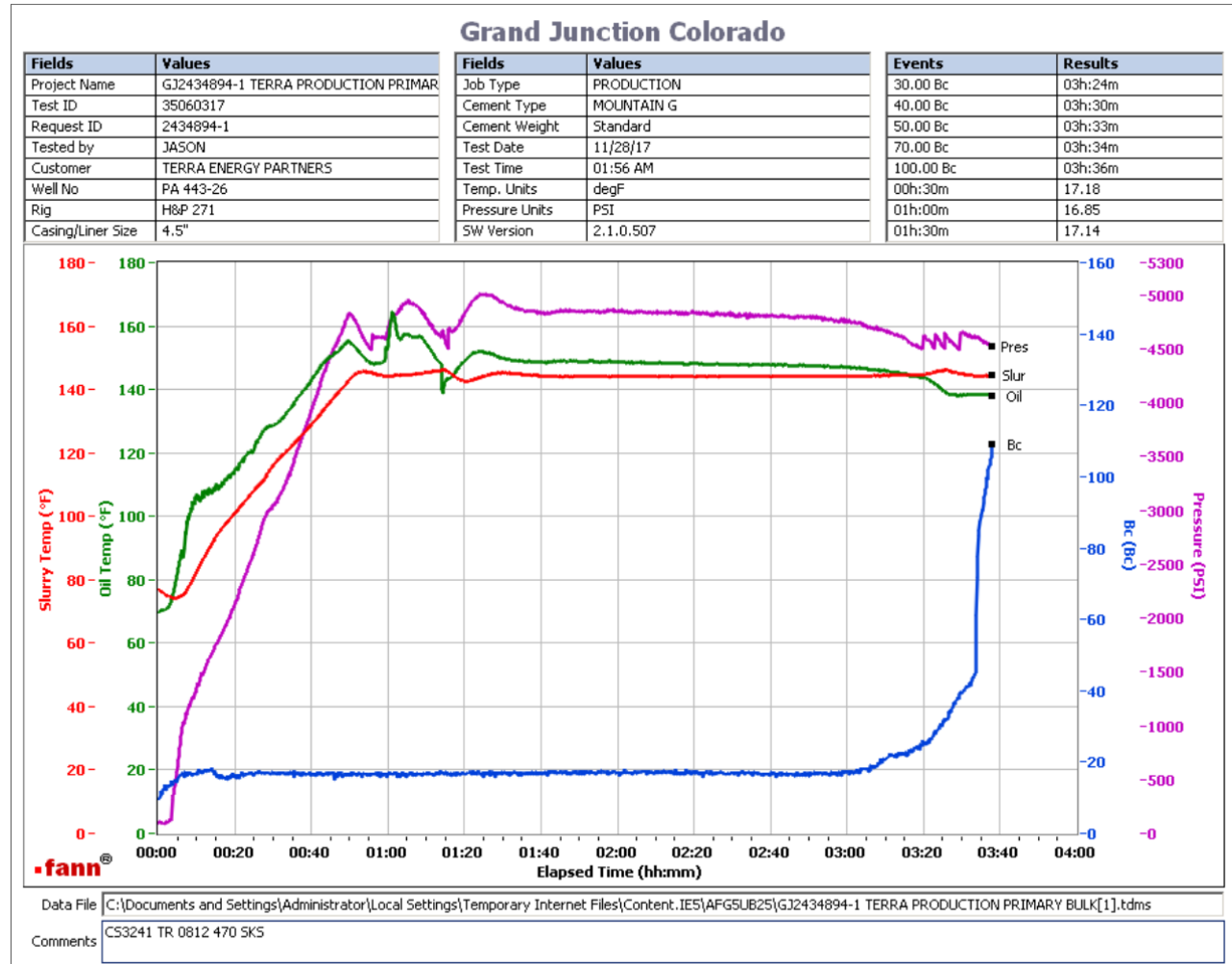
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		HalCem Primary				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.387	ft3/sack
						Water Requirement	6.36	gal/sack
						Total Mix Fluid	6.36	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

27/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)
144	4787	49	3:24	3:33	3:34	3:36	9	59	15	17



1730 sks Total

CS3241 TR 0812 470 SKS

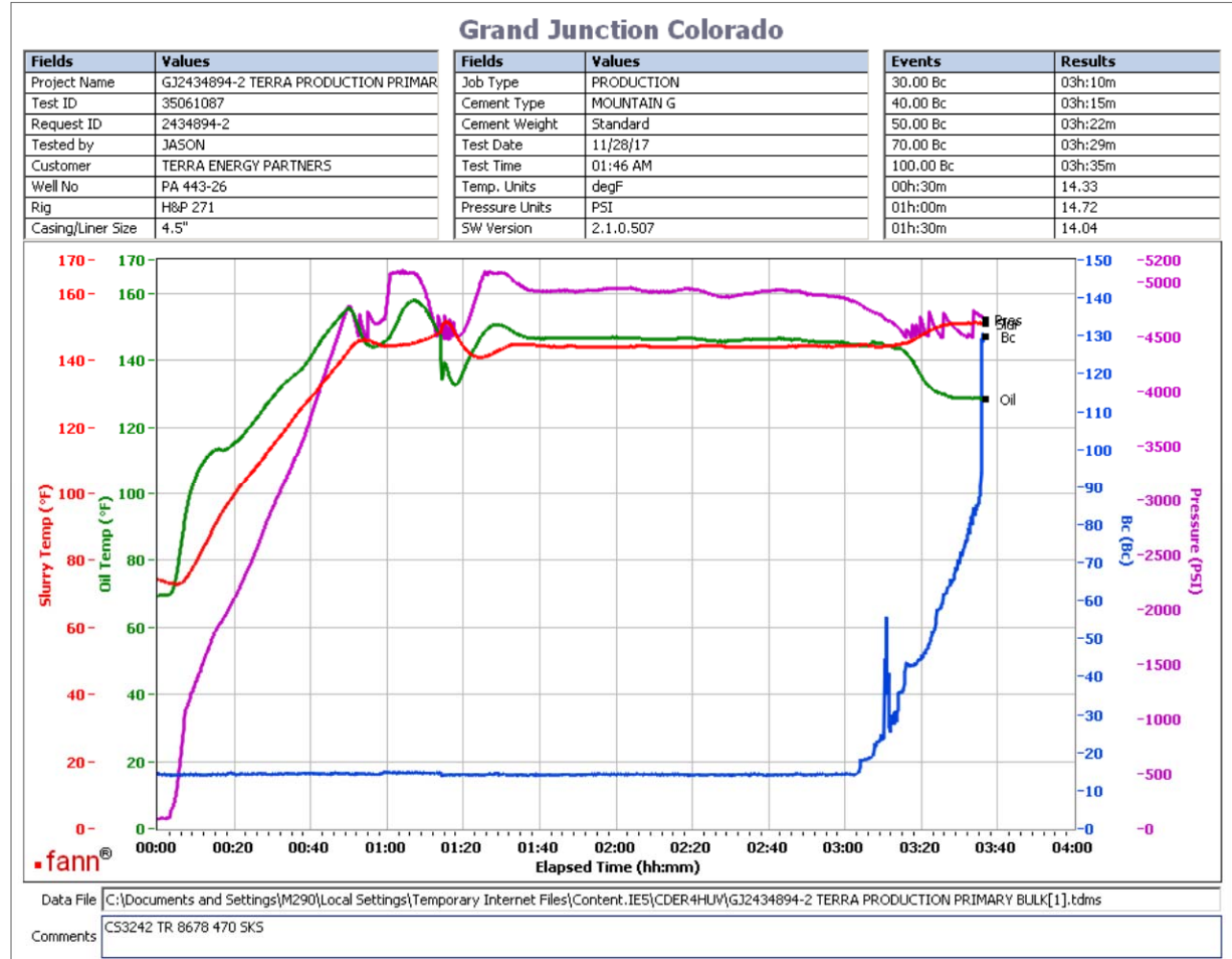
No deflection. Heat of hydration started around 3:20. Slurry was not balled up around paddle when test was taken off.

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**Operation Test Results Request ID 2434894/2**

**Thickening Time - ON-OFF-ON 28/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)
144	4787	49	3:10	3:22	3:29	3:35	14	59	15	15



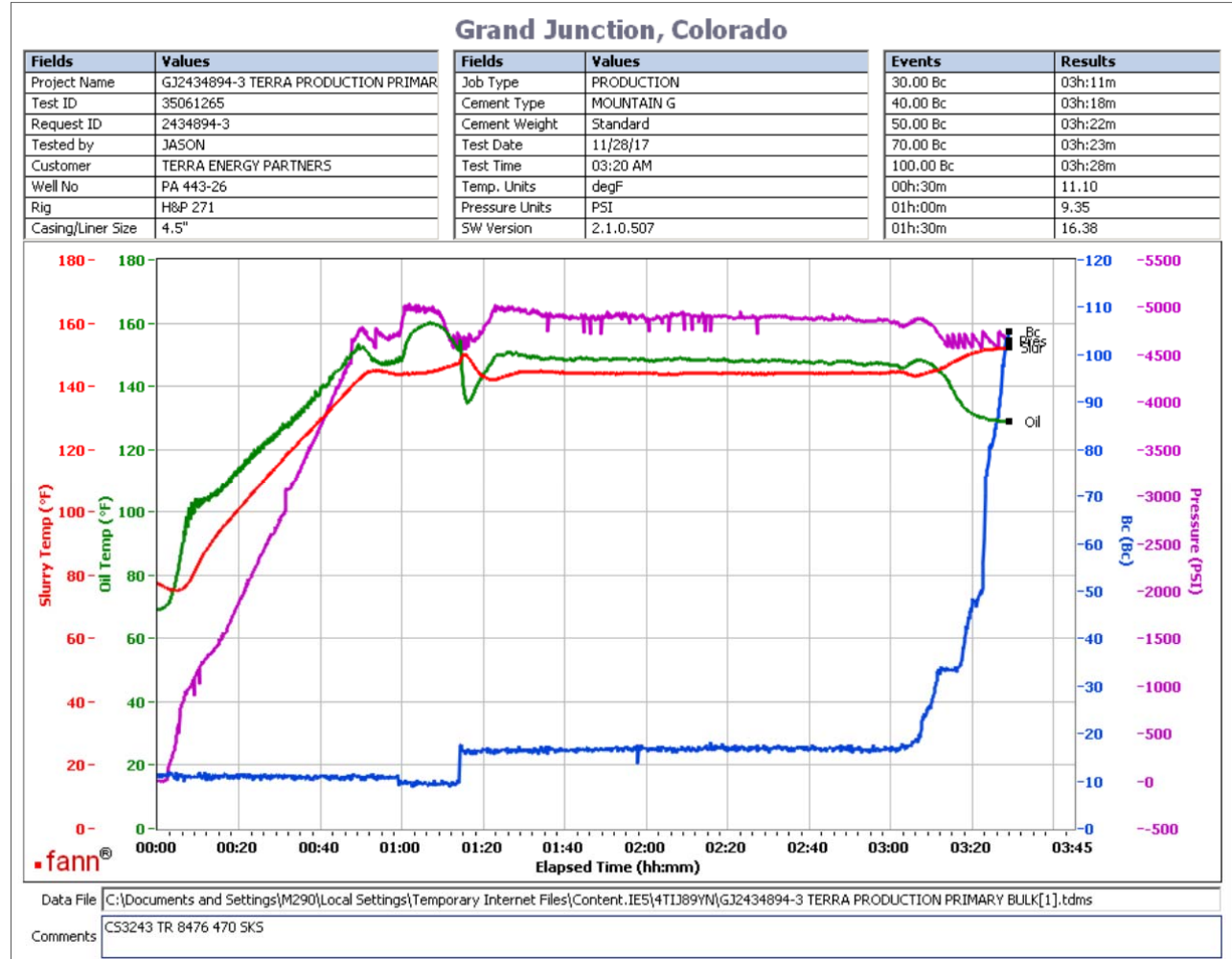
1730 sks Total  
 CS3242 TR 8678 470 SKS  
 no deflection was observed. 15Bc--- > 15BC  
 please note heat of hydration at 3:13. results were taken from the graph due to mechanical spike.

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**Operation Test Results Request ID 2434894/3**

**Thickening Time - ON-OFF-ON 28/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)
144	4787	49	3:11	3:22	3:23	3:28	11	59	15	19



1730 sks Total  
 CS3243 TR 8476 470 SKS  
 deflected from 10Bc---- > 19Bc---- > 17Bc within one minute.  
 please review the graph for heat of hydration at 3:10

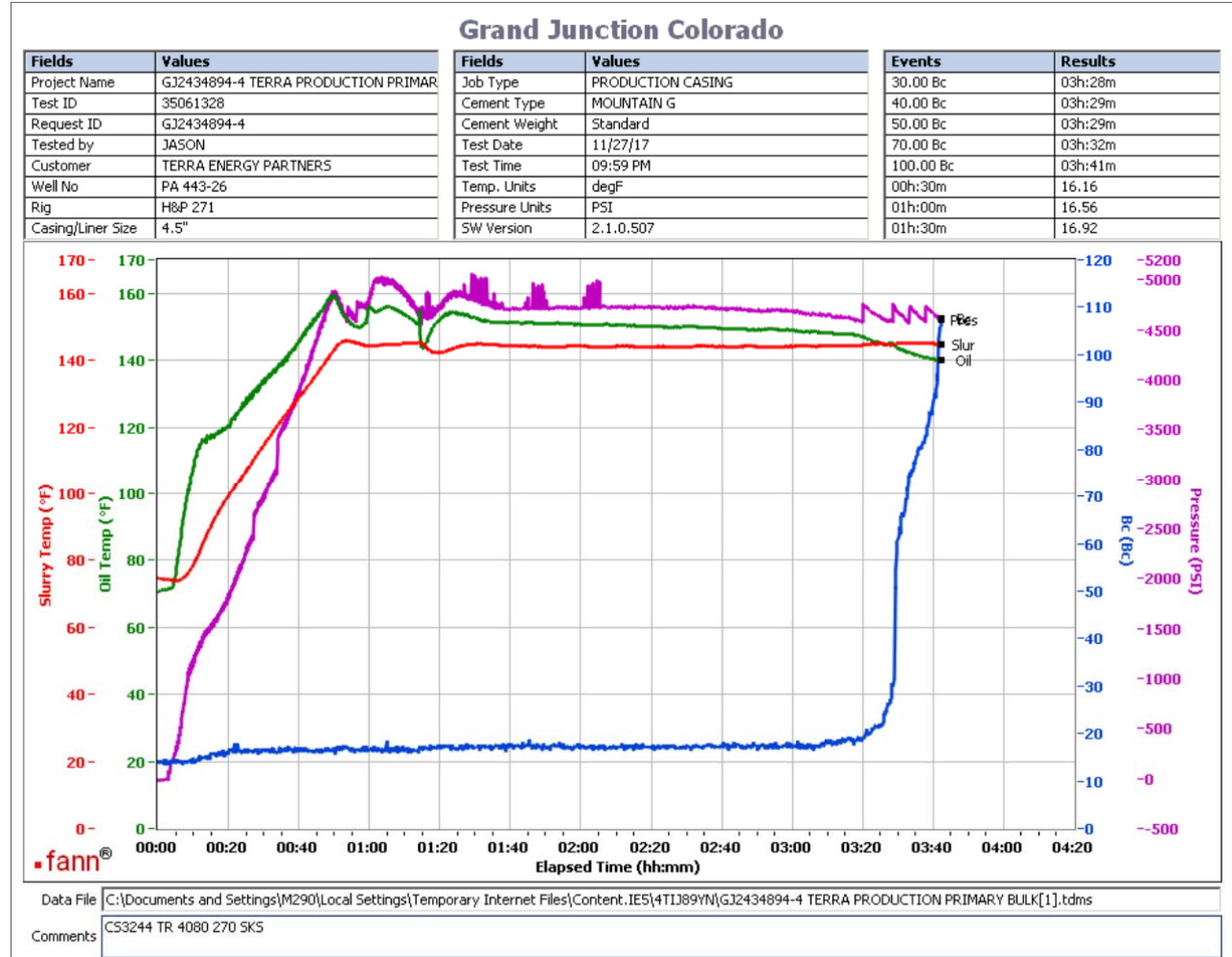
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**Operation Test Results Request ID 2434894/4**

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

**28/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)
144	4787	49	3:28	3:29	3:32	3:41	14	59	15	14



1730 sks Total  
 CS3244 TR 4080 270 SKS  
 deflection was taken from the graph. 14Bc--- > 14Bc

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