

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Monday, July 31, 2017

**TR 22-23-597 Production PJR**

API # 05-045-23464-00

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

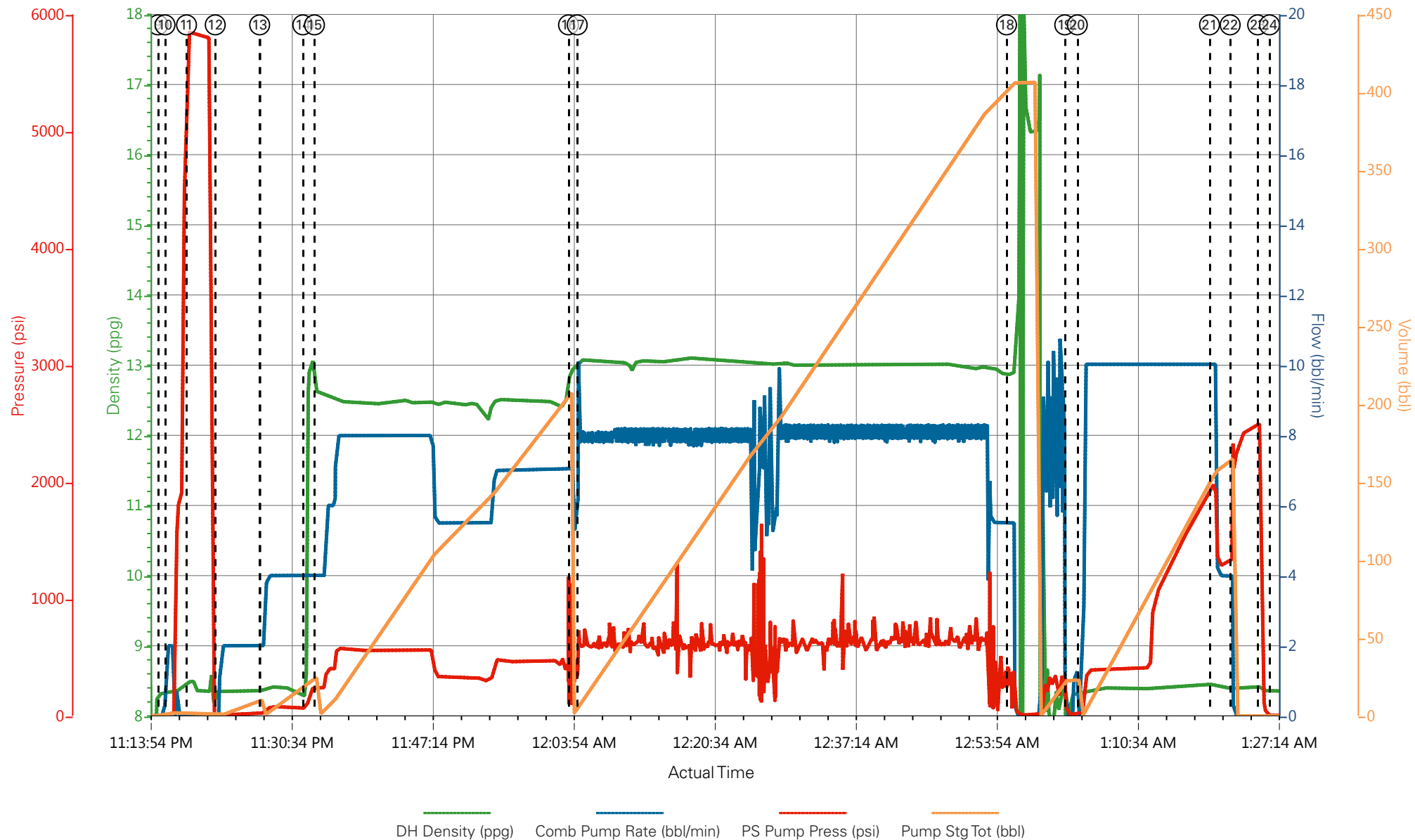
## 1.1 Job Event Log

| Type  | Seq. No. | Graph Label                           | Date      | Time     | Source | DH Density<br>(ppg) | Comb Pump Rate<br>(bbl/min) | PS Pump Press<br>(psi) | Pump Stg Tot<br>(bbl) | Comments   |
|-------|----------|---------------------------------------|-----------|----------|--------|---------------------|-----------------------------|------------------------|-----------------------|--|
| Event | 1        | Call Out                              | 7/30/2017 | 12:00:00 | USER   |                     |                             |                        |                       | REQUESTED ON LOCATION @ 18:00  |
| Event | 2        | Pre-Convoy Safety Meeting             | 7/30/2017 | 14:15:00 | USER   |                     |                             |                        |                       | ALL HES EMPLOYEES PRESENT  |
| Event | 3        | Crew Leave Yard                       | 7/30/2017 | 14:30:00 | USER   |                     |                             |                        |                       | 1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 450 SERVICE PICKUP   |
| Event | 4        | Arrive At Loc                         | 7/30/2017 | 18:00:00 | USER   |                     |                             |                        |                       | RIG RUNNING CASING UPON HES ARRIVAL  |
| Event | 5        | Assessment Of Location Safety Meeting | 7/30/2017 | 18:30:00 | USER   |                     |                             |                        |                       | MET WITH COMP REP, AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7.5, CHLORIDES- 0, TEMP- 60 F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES. |
| Event | 6        | Spot Equipment                        | 7/30/2017 | 20:00:00 | USER   |                     |                             |                        |                       | 1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 450 SERVICE PICKUP   |
| Event | 7        | Pre-Rig Up Safety Meeting             | 7/30/2017 | 20:45:00 | USER   |                     |                             |                        |                       | ALL HES EMPLOYEES PRESENT  |
| Event | 8        | Pre-Job Safety Meeting                | 7/30/2017 | 22:30:00 | USER   |                     |                             |                        |                       | ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 10.5 BPM PRIOR TO JOB PRESSURE @ 380 PSI, WILL HAVE 1500 DOWN THE PARASITE.   |
| Event | 9        | Start Job                             | 7/30/2017 | 23:15:07 | USER   |                     |                             |                        |                       | TD 10,229', TP 10,219', SJ 28.36', SURFACE CSG 9 5/8" 36# J-55 SET @ 3013' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 8.9 VIS 45 PPG  |

|       |    |                    |           |          |      |      |      |      |     |   |
|-------|----|--------------------|-----------|----------|------|------|------|------|-----|---|
| Event | 10 | Prime Lines        | 7/30/2017 | 23:15:57 | USER | 8.33 | 2.0  | 24   | 2   | FRESH WATER   |
| Event | 11 | Pressure Test      | 7/30/2017 | 23:18:29 | USER |      |      | 5800 |     | PRESSURE HELD   |
| Event | 12 | Pump H2O Spacer    | 7/30/2017 | 23:21:53 | COM5 | 8.33 | 2.0  | 23   | 10  | FRESH WATER   |
| Event | 13 | Pump Mud Flush III | 7/30/2017 | 23:27:08 | COM5 | 8.4  | 4.0  | 78   | 20  | 80 LBS MUD FLUSH III  |
| Event | 14 | Pump Lead Cement   | 7/30/2017 | 23:32:14 | COM5 | 12.5 | 8.0  | 500  | 199 | 575 SKS NEOCEM CMT 12.5 PPG, 1.94 FT3/SK, 9.58 GAL/SK. WITH 1 BOXES OF TUF-FIBER THROUGHOUT         |
| Event | 15 | Check weight       | 7/30/2017 | 23:33:37 | COM5 |      |      |      |     | WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES   |
| Event | 16 | Pump Tail Cement   | 7/31/2017 | 00:03:38 | COM5 | 13.0 | 8.0  | 660  | 327 | 885 SKS NEOCEM CMT 13.0 PPG, 2.07 FT3/SK, 9.43 GAL/SK.  |
| Event | 17 | Check weight       | 7/31/2017 | 00:04:40 | COM5 |      |      |      |     | WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES   |
| Event | 18 | Shutdown           | 7/31/2017 | 00:55:24 | USER |      |      |      |     | END OF CMT. BLEW AIR THROUGH LINES TO PIT FROM FLOOR THEN WASHED UP PUMP AND LINES, RE-PRIMED LINE. |
| Event | 19 | Drop Top Plug      | 7/31/2017 | 01:02:17 | COM5 |      |      |      |     | VERIFIED BY FLAG INDICATOR AND CO REP THAT 3RD PARTY LATCH DOWN PLUG LAUNCHED.                      |
| Event | 20 | Pump Displacement  | 7/31/2017 | 01:03:46 | COM5 | 8.4  | 10.0 | 2000 | 148 | 1 GAL MMCR IN FIRST 10 BBLS, 3 LBS BE-6 IN FIRST 30 BBLS, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT  |
| Event | 21 | Slow Rate          | 7/31/2017 | 01:19:24 | USER | 8.4  | 4.0  | 1280 | 10  | SLOWED TO BUMP LATCH DOWN PLUG  |
| Event | 22 | Bump Plug          | 7/31/2017 | 01:21:50 | COM5 | 8.4  | 4.0  | 1340 | 158 | BUMPED LATCH DOWN PLUG  |
| Event | 23 | Check Floats       | 7/31/2017 | 01:25:05 | USER |      |      | 2440 |     | FLOATS HELD 1.5 BBL FLOW BACK TO TANK   |

|       |    |                           |           |          |      |   |
|-------|----|---------------------------|-----------|----------|------|---|
| Event | 24 | End Job                   | 7/31/2017 | 01:26:29 | USER | 1500 ON PARASITE DURING CEMENT. ON DISPLACEMENT IT WAS CUT BACK AND THEN SHUTOFF. |
| Event | 25 | Pre-Convoy Safety Meeting | 7/31/2017 | 02:45:00 | USER | ALL HES EMPLOYEES PRESENT   |
| Event | 26 | Crew Leave Location       | 7/31/2017 | 03:00:00 | USER | THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW                   |

# TERRA, CHEVRON TR 22-23-597, 4 1/2" PRODUCTION



- |   |                             |                      |                      |                              |                        |
|---|-----------------------------|----------------------|----------------------|------------------------------|------------------------|
| ① Call Out                              | ⑥ Spot Equipment            | ⑪ Pressure Test      | ⑯ Pump Tail Cement   | 21 Slow Rate                 | 26 Crew Leave Location |
| ② Pre-Convoy Safety Meeting             | ⑦ Pre-Rig Up Safety Meeting | ⑫ Pump H2O Spacer    | ⑰ Check weight       | 22 Bump Plug                 |                        |
| ③ Crew Leave Yard                       | ⑧ Pre-Job Safety Meeting    | ⑬ Pump Mud Flush III | ⑱ Shutdown           | 23 Check Floats              |                        |
| ④ Arrive At Loc                         | ⑨ Start Job                 | ⑭ Pump Lead Cement   | ⑲ Drop Top Plug      | 24 End Job                   |                        |
| ⑤ Assessment Of Location Safety Meeting | ⑩ Prime Lines               | ⑮ Check weight       | 20 Pump Displacement | 25 Pre-Convoy Safety Meeting |                        |

▼ **HALLIBURTON** | iCem® Service

Created: 2017-07-30 19:24:47, Version: 4.2.393

Edit

Customer : TEP ROCKY MOUNTAIN LLC

Job Date : 7/30/2017

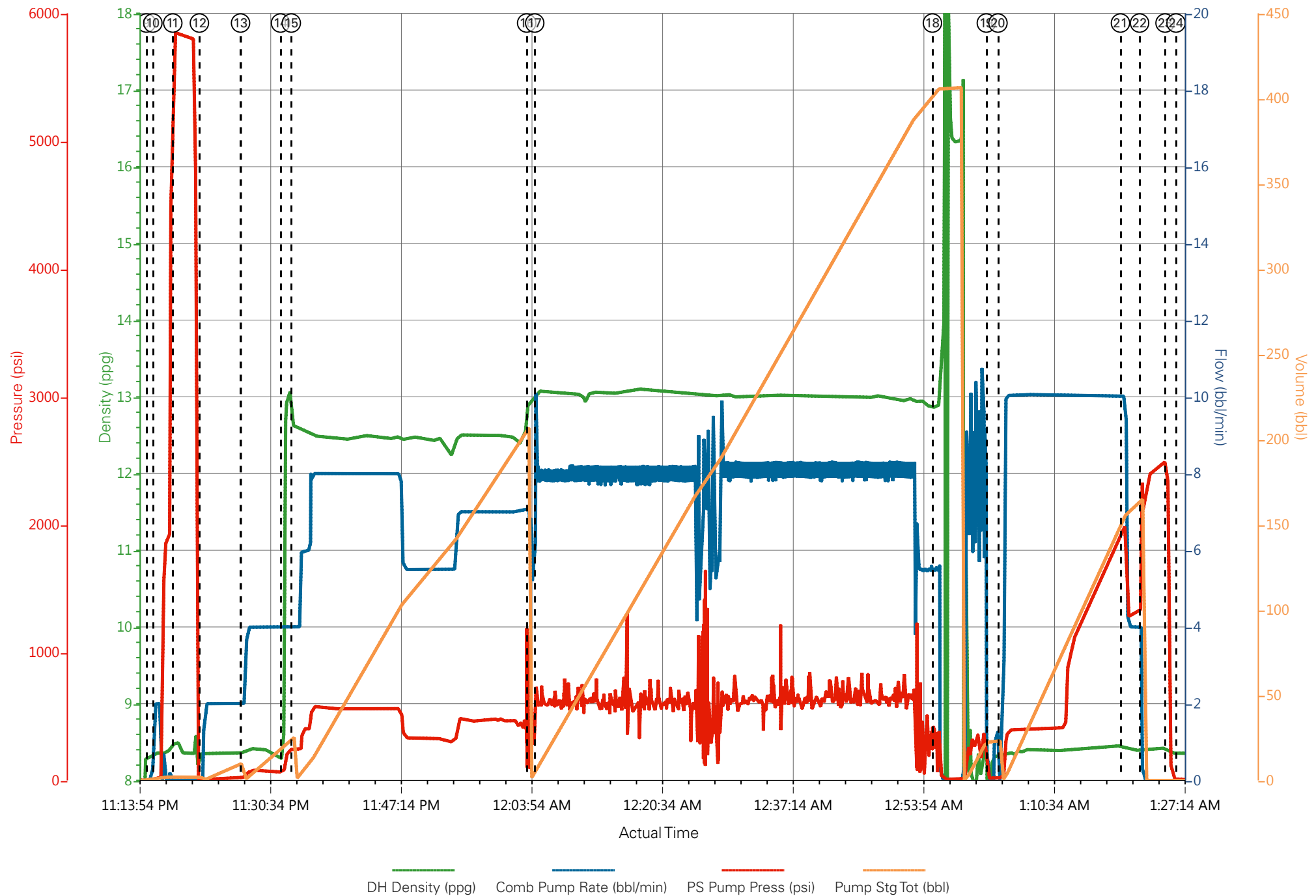
Well : CHEVRON TR 22-23-597

Representative : MATT HUTSON

Sales Order # : 904192143

ELITE 4 : HYDE / ANGELO

# TERRA, CHEVRON TR 22-23-597, 4 1/2" PRODUCTION



# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Lead

### Job Information

|                       |                       |                 |                   |                   |                |
|-----------------------|-----------------------|-----------------|-------------------|-------------------|----------------|
| <b>Request/Slurry</b> | 2405353/1             | <b>Rig Name</b> | H&P 271           | <b>Date</b>       | 25/JUL/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>       | TR 22-23-597   |

### Well Information

|                          |          |                  |          |             |               |
|--------------------------|----------|------------------|----------|-------------|---------------|
| <b>Casing/Liner Size</b> | 4.5 in   | <b>Depth MD</b>  | 10425 ft | <b>BHST</b> | 123°C / 254°F |
| <b>Hole Size</b>         | 8.75 in  | <b>Depth TVD</b> | 10225 ft | <b>BHCT</b> | 89°C / 193°F  |
| <b>Pressure</b>          | 6460 psi |                  |          |             |               |

### Drilling Fluid Information

|                          |        |                       |            |                |              |
|--------------------------|--------|-----------------------|------------|----------------|--------------|
| <b>Mud Supplier Name</b> | Baroid | <b>Mud Trade Name</b> | BARADRIL-N | <b>Density</b> | 10.4 lbm/gal |
|--------------------------|--------|-----------------------|------------|----------------|--------------|

### 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           |             |          |

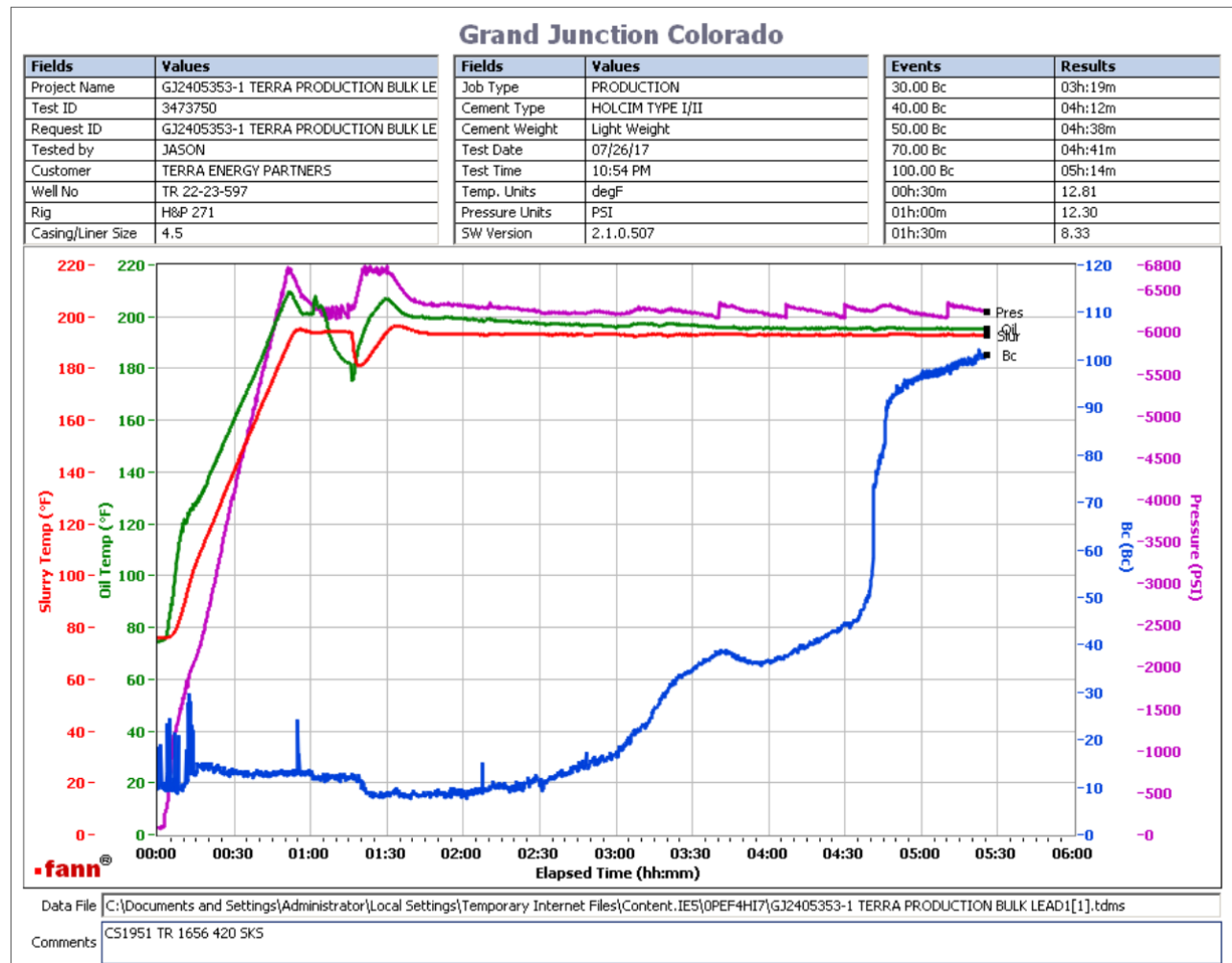
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# **Operation Test Results Request ID 2405353/1**

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

**27/JUL/2017**

| Test Temp<br>(°F) | Pressure (psi) | Reached in<br>(min) | 50 Bc<br>(hh:mm) | 70 Bc<br>(hh:mm) | 100 Bc<br>(hh:mm) | Start Bc | Stirring<br>before stop<br>(mins) | Static Period<br>(min) | Peak reading<br>(BC) |
|-------------------|----------------|---------------------|------------------|------------------|-------------------|----------|-----------------------------------|------------------------|----------------------|
| 153               | 6460           | 51                  | 4:38             | 4:41             | 5:14              | 18       | 61                                | 15                     | 13                   |



Total sks = 575  
 CS1951 TR 1656 420 SK  
 Deflected from 12Bc---- > 13Bc

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## Operation Test Results Request ID 2405353/2

### Thickening Time - ON-OFF-ON

27/JUL/2017

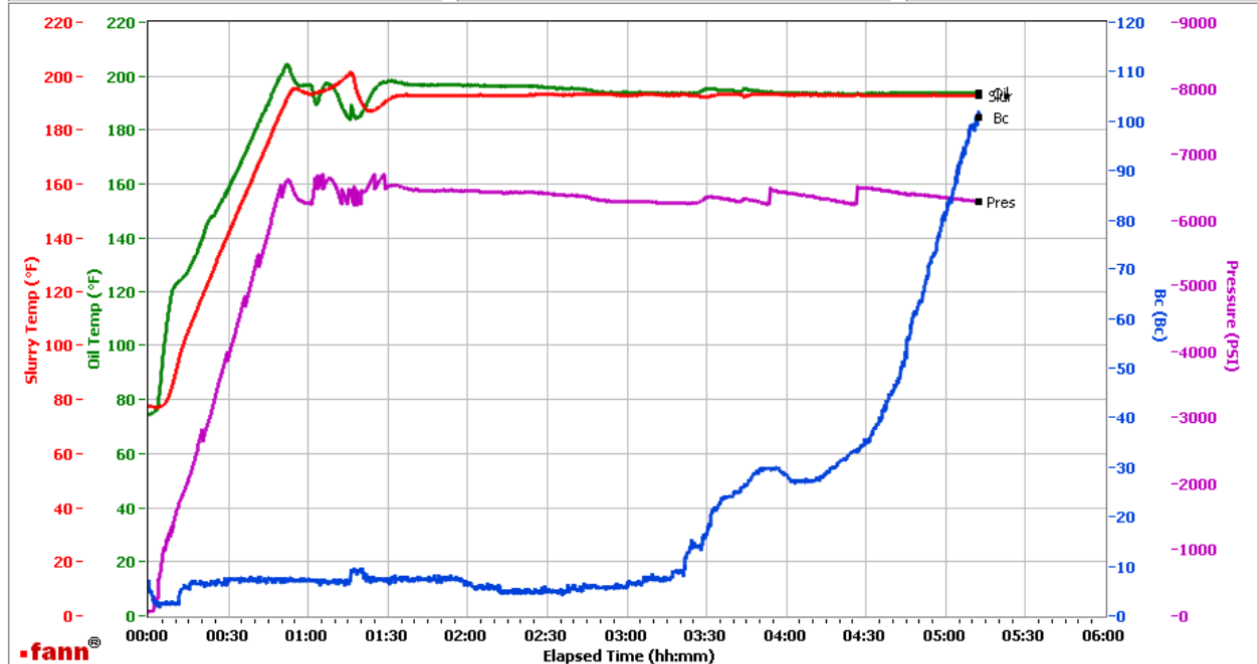
| Test Temp<br>(°F) | Pressure<br>(psi) | Reached in<br>(min) | 30 Bc<br>(hh:mm) | 50 Bc<br>(hh:mm) | 70 Bc<br>(hh:mm) | 100 Bc<br>(hh:mm) | Start Bc | Stirring<br>before stop<br>(mins) | Static<br>Period (min) | Peak<br>reading<br>(BC) |
|-------------------|-------------------|---------------------|------------------|------------------|------------------|-------------------|----------|-----------------------------------|------------------------|-------------------------|
| 193               | 6460              | 51                  | 3:50             | 4:43             | 4:53             | 5:11              | 7        | 61                                | 15                     | 8                       |

### Grand Junction Colorado

| Fields            | Values                               |
|-------------------|--------------------------------------|
| Project Name      | 2405353-2 TERRA ENERGY BULK PRODUCTI |
| Test ID           | 34737795 - TT                        |
| Request ID        | 2405353-2                            |
| Tested by         | CT                                   |
| Customer          | TERRA ENERGY                         |
| Well No           | TR 22-23-597                         |
| Rig               | H&P 271                              |
| Casing/Liner Size | 4.5 INCH                             |

| Fields         | Values            |
|----------------|-------------------|
| Job Type       | PRODUCTION CASING |
| Cement Type    | TYPE I-II         |
| Cement Weight  | Standard          |
| Test Date      | 09/03/10          |
| Test Time      | 10:39 AM          |
| Temp. Units    | degF              |
| Pressure Units | PSI               |
| SW Version     | 2.1.0.1219        |

| Events    | Results |
|-----------|---------|
| 30.00 Bc  | 03h:50m |
| 40.00 Bc  | 04h:36m |
| 50.00 Bc  | 04h:43m |
| 70.00 Bc  | 04h:53m |
| 100.00 Bc | 05h:11m |
| 00h:30m   | 7.57    |
| 01h:00m   | 7.47    |
| 01h:30m   | 6.68    |



Data File C:\Documents and Settings\HPHT\Local Settings\Temporary Internet Files\Content.IE5\KD2P41SJ\GJ2405353-2 TERRA ENERGY BULK PRODUCTION LEAD TT[1].tdms

Comments CS1960, TRAILER 1283, 155 SKS

Total sks = 575

CS1960, Trailer 1283, 155 sks

Deflected 6-- > 8

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

|                       |                       |                 |                   |                   |                |
|-----------------------|-----------------------|-----------------|-------------------|-------------------|----------------|
| <b>Request/Slurry</b> | 2405354/1             | <b>Rig Name</b> | H&P 271           | <b>Date</b>       | 25/JUL/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>       | TR 22-23-597   |

### Well Information

|                          |          |                  |          |             |               |
|--------------------------|----------|------------------|----------|-------------|---------------|
| <b>Casing/Liner Size</b> | 4.5 in   | <b>Depth MD</b>  | 10425 ft | <b>BHST</b> | 123°C / 254°F |
| <b>Hole Size</b>         | 8.75 in  | <b>Depth TVD</b> | 10225 ft | <b>BHCT</b> | 89°C / 193°F  |
| <b>Pressure</b>          | 6460 psi |                  |          |             |               |

### Drilling Fluid Information

|                          |        |                       |            |                |              |
|--------------------------|--------|-----------------------|------------|----------------|--------------|
| <b>Mud Supplier Name</b> | Baroid | <b>Mud Trade Name</b> | BARADRIL-N | <b>Density</b> | 10.4 lbm/gal |
|--------------------------|--------|-----------------------|------------|----------------|--------------|

### 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> |             |          |
|-------------|------------|------------------------|--------------------|--------------------|----------------|--------------------------|-------------|----------|
|             |            | NeoCem Tail            |                    |                    |                | Slurry Density           | 13          | lbm/gal  |
|             |            |                        |                    |                    |                | Slurry Yield             | 2.065       | ft3/sack |
|             |            |                        |                    |                    |                | Water Requirement        | 9.424       | gal/sack |
|             |            |                        |                    |                    |                | Total Mix Fluid          | 9.424       | gal/sack |
|             |            |                        |                    |                    |                | Water Source             | Fresh Water |          |
|             |            |                        |                    |                    |                | Water Chloride           |             |          |

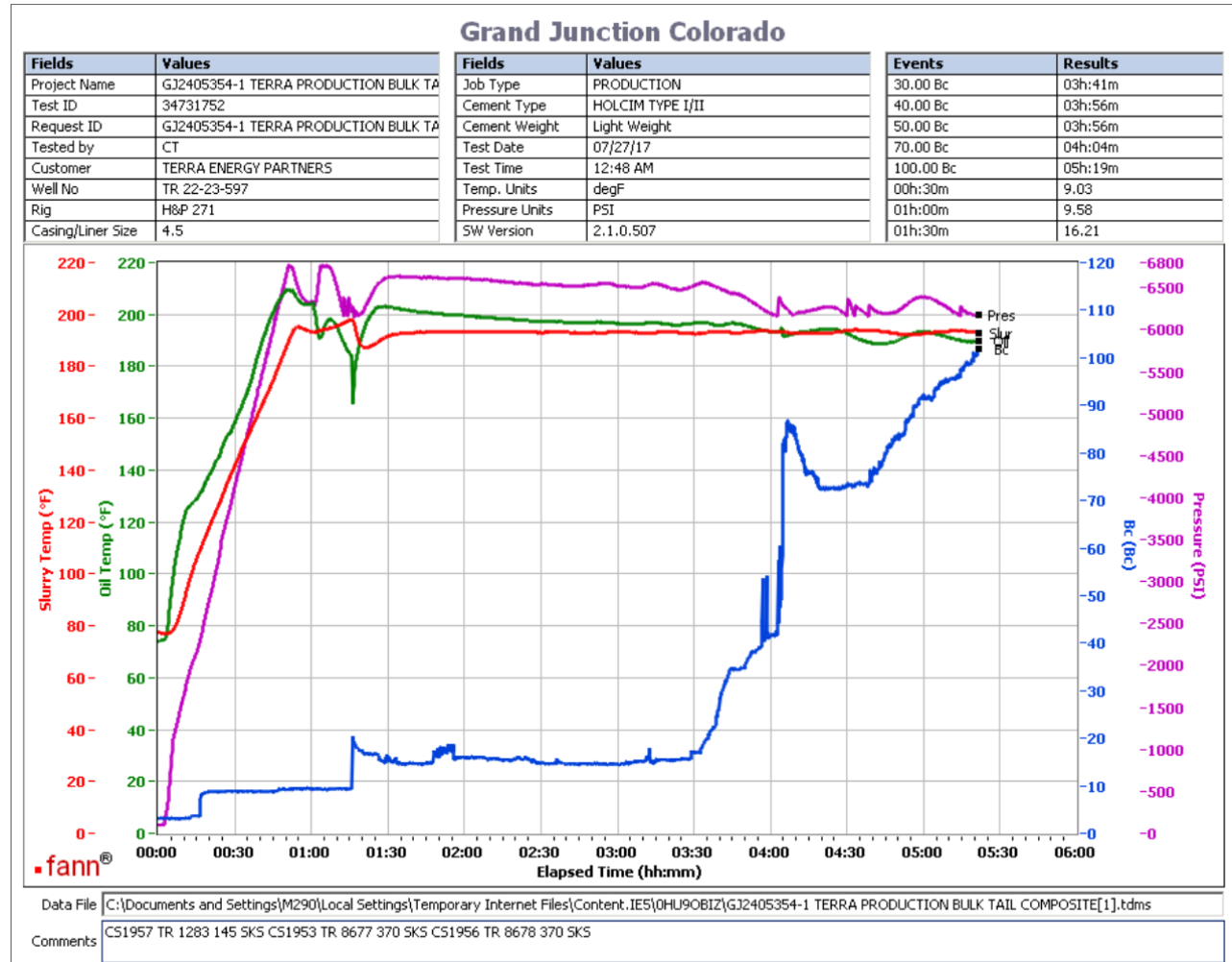
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# **Operation Test Results Request ID 2405354/1**

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

**27/JUL/2017**

| Test Temp<br>(°F) | Pressure<br>(psi) | Reached in<br>(min) | 30 Bc<br>(hh:mm) | 50 Bc<br>(hh:mm) | 70 Bc<br>(hh:mm) | 100 Bc<br>(hh:mm) | Start Bc | Stirring<br>before stop<br>(mins) | Static<br>Period (min) | Peak<br>reading<br>(BC) |
|-------------------|-------------------|---------------------|------------------|------------------|------------------|-------------------|----------|-----------------------------------|------------------------|-------------------------|
| 193               | 6460              | 51                  | 3:41             | 3:56             | 4:04             | 6:19              | 3        | 61                                | 15                     | 21                      |



Total sks 885 Deflected from 9Bc---- > 21Bc---- > 19Bc within one minute

Composite:

CS1957, Trailer 1283, 145 sks

CS1953, Trailer 8677, 370 sks

CS1956, Trailer 8678, 370 sks

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