

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra Energy**

### **Ware SR 14-12**

Ware SR 14-12 Production  
API# 05-045-23436-00  
Job Date: Saturday, January 06, 2018

Sincerely,

**Grand Junction Cement Engineering**

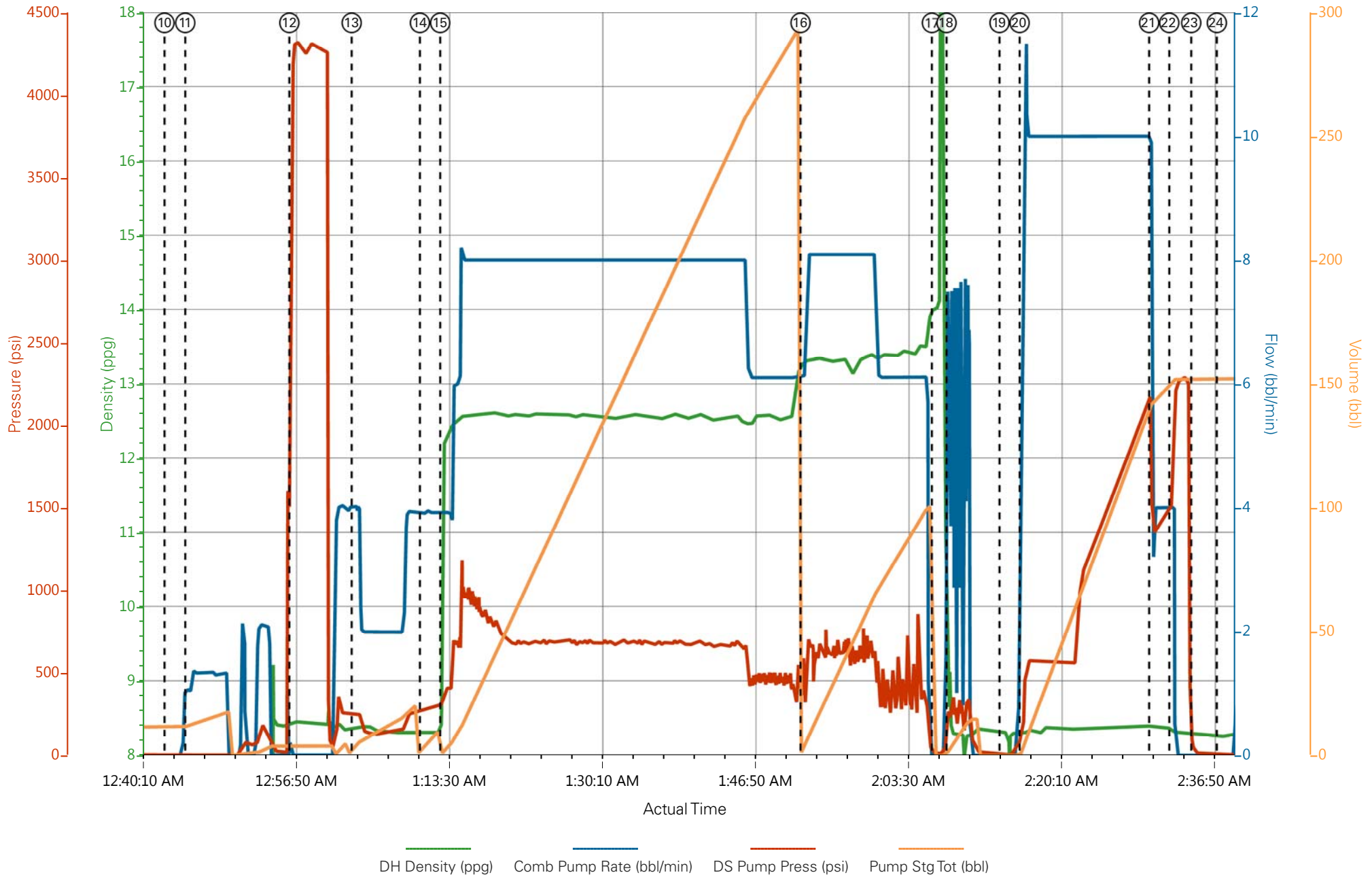
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

| Type  | Seq. No. | Graph Label                           | Date     | Time     | Source | Downhole Density<br><i>(ppg)</i> | Combined Pump Rate<br><i>(bbl/min)</i> | Driv-Side Pump Pressure<br><i>(psi)</i> | Pump Stage Total<br><i>(bbl)</i> | Comments   |
|-------|----------|---------------------------------------|----------|----------|--------|----------------------------------|--|---|----------------------------------|--|
| Event | 1        | Call Out                              | 1/6/2018 | 15:00:00 |        |                                  |  |   |                                  | Requested on Location @ 21:00  |
| Event | 2        | Pre-Convoy Safety Meeting             | 1/6/2018 | 17:00:00 |        |                                  |  |   |                                  |  |
| Event | 3        | Crew Leave Yard                       | 1/6/2018 | 17:20:00 |        |                                  |  |   |                                  | 1 Elite, 1 660, 1 pickup   |
| Event | 4        | Arrive At Loc                         | 1/6/2018 | 21:00:00 |        |                                  |  |   |                                  | Rig running casing   |
| Event | 5        | Assessment Of Location Safety Meeting | 1/6/2018 | 21:10:00 |        |                                  |  |   |                                  | JSA completed - Customer offered/received SDS - water test pH 7.0, CI <200, temp 54 degrees                        |
| Event | 6        | Pre-Rig Up Safety Meeting             | 1/6/2018 | 21:20:00 |        |                                  |  |   |                                  |  |
| Event | 7        | Rig-Up Equipment                      | 1/6/2018 | 21:30:00 |        |                                  |  |   |                                  | DME iron to ground manifold, standpipe, hardline to pit. Water hoses to both uprights, bulk hoses to silo and 660. |
| Event | 8        | Pre-Job Safety Meeting                | 1/6/2018 | 23:00:00 |        |                                  |  |   |                                  | All HES personnel, rig crew, and company rep.  |
| Event | 9        | Other                                 | 1/6/2018 | 23:20:00 |        |                                  |  |   |                                  | Rig Circulated 1 hr prior to cement job at 10 bpm 880 psi. Mud report PV 20 YP 13                                  |
| Event | 10       | Start Job                             | 1/7/2018 | 00:42:50 |        |                                  |  |   |                                  | TD 9912, TP 9902, SJ 30.92, OH 8 3/4", CSG 4 1/2" 11.6#, SURFACE CSG 9 5/8" 32.3# @ 1133'                          |
| Event | 11       | Fill Lines                            | 1/7/2018 | 00:45:05 |        | 8.33                             | 2                                      | 185                                     | 5                                | Fresh Water  |
| Event | 12       | Test Lines                            | 1/7/2018 | 00:56:25 |        |                                  |  | 4380                                    |                                  | Held pressure 2 minutes, No Leaks  |
| Event | 13       | Mud Flush                             | 1/7/2018 | 01:03:12 |        | 8.4                              | 2                                      | 285                                     | 20                               | 80 # mud flush III   |

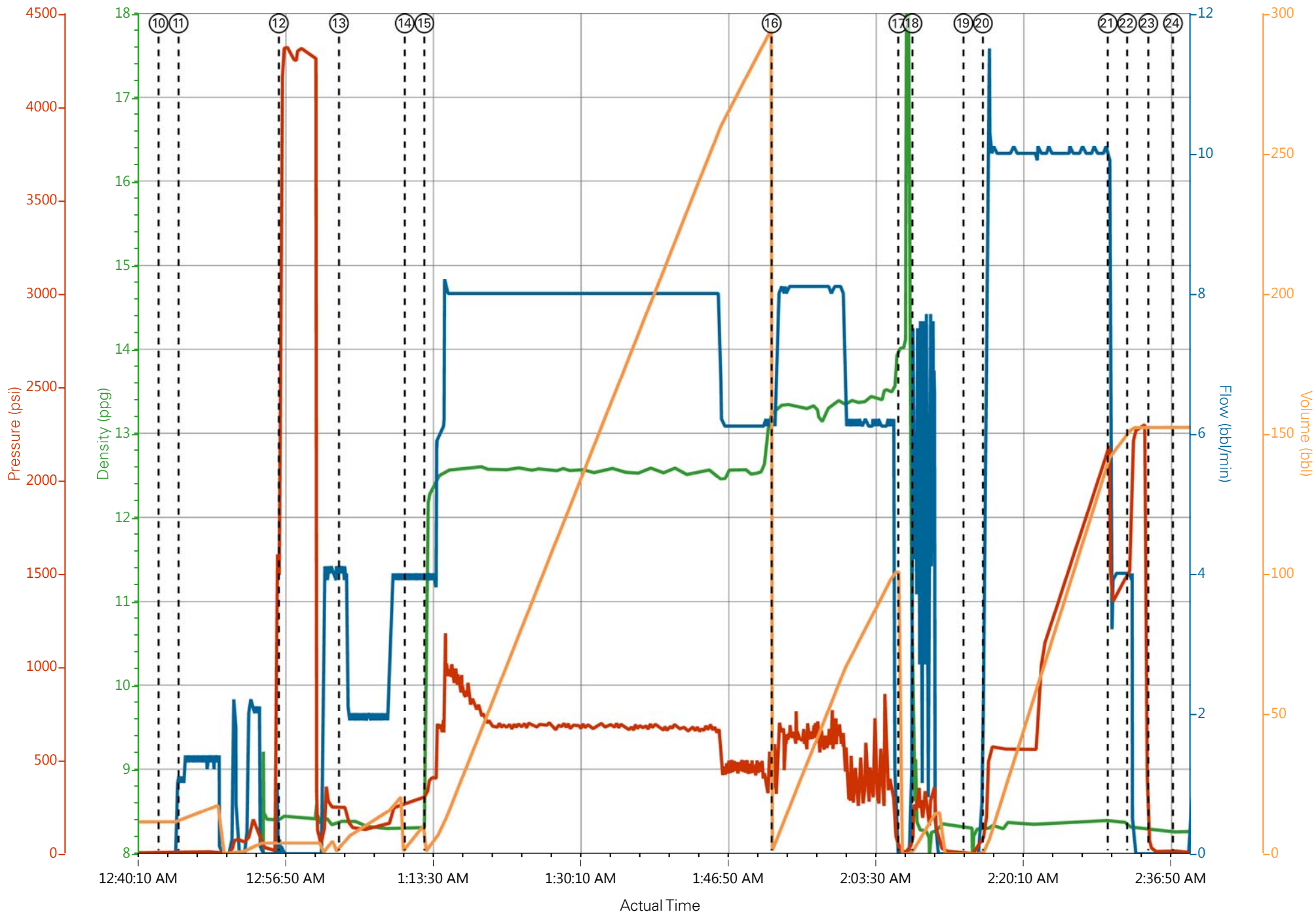
|       |    |                             |          |          |      |    |      |       |  |
|-------|----|-----------------------------|----------|----------|------|----|------|-------|--|
| Event | 14 | Pump Spacer                 | 1/7/2018 | 01:10:38 | 8.33 | 4  | 240  | 10    | Fresh water  |
| Event | 15 | Pump Lead Cement            | 1/7/2018 | 01:12:50 | 12.3 | 8  | 940  | 278.1 | 805 sks, 12.5 ppg, 1.94 yield, 9.6 gal-sk                      |
| Event | 16 | Pump Tail Cement            | 1/7/2018 | 01:52:04 | 13.3 | 8  | 660  | 81.7  | 265 sks, 13.3 ppg , 1.73 yield, 7.81 gal-sk                    |
| Event | 17 | Shutdown                    | 1/7/2018 | 02:06:21 |      |    |      |       |  |
| Event | 18 | Clean Lines                 | 1/7/2018 | 02:07:57 |      |    |      |       |  |
| Event | 19 | Drop Top Plug               | 1/7/2018 | 02:13:43 |      |    |      |       | Co-Rep Verify Plug Launched                                    |
| Event | 20 | Pump Displacement           | 1/7/2018 | 02:15:54 | 8.4  | 10 | 2170 |       | 3 lbs BE-6, 1 gal MMCR, 2% KCl                                 |
| Event | 21 | Slow Rate                   | 1/7/2018 | 02:30:00 | 8.4  | 4  | 1500 | 143   | Slow Rate 10 bbls to Calculated Displacement                   |
| Event | 22 | Bump Plug                   | 1/7/2018 | 02:32:12 | 8.4  | 4  | 2270 | 153   | Plug Bumped at 1500 psi, Brought up to 2270 psi                |
| Event | 23 | Check Floats                | 1/7/2018 | 02:34:35 |      |    |      |       | Floats Held 1.5 bbl Back to Truck                              |
| Event | 24 | End Job                     | 1/7/2018 | 02:37:22 |      |    |      |       | Good returns throughout job. Pipe was reciprocated during job. |
| Event | 25 | Pre-Rig Down Safety Meeting | 1/7/2018 | 03:01:59 |      |    |      |       | No sugar, HES top plug used, 0 add hours                       |
| Event | 26 | Rig-Down Equipment          | 1/7/2018 | 03:06:38 |      |    |      |       |  |
| Event | 27 | Pre-Convoy Safety Meeting   | 1/7/2018 | 03:16:38 |      |    |      |       |  |
| Event | 28 | Crew Leave Location         | 1/7/2018 | 03:19:27 | USER |    |      |       | Thanks For Using Halliburton Cement                            |

# SR 14-12 Production



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

# SR 14-12 Production



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

### Job Information

|                       |                       |                 |                   |                   |                |
|-----------------------|-----------------------|-----------------|-------------------|-------------------|----------------|
| <b>Request/Slurry</b> | 2442053/2             | <b>Rig Name</b> | H&P 318           | <b>Date</b>       | 02/JAN/2018    |
| <b>Submitted By</b>   | Aaron Katz            | <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 14-12       |

### Well Information

|                          |          |                  |         |             |               |
|--------------------------|----------|------------------|---------|-------------|---------------|
| <b>Casing/Liner Size</b> | 4.5 in   | <b>Depth MD</b>  | 9900 ft | <b>BHST</b> | 116°C / 241°F |
| <b>Hole Size</b>         | 8.75 in  | <b>Depth TVD</b> | 9523 ft | <b>BHCT</b> | 77°C / 171°F  |
| <b>Pressure</b>          | 5970 psi |                  |         |             |               |

### Drilling Fluid Information

|                          |                       |                |
|--------------------------|-----------------------|----------------|
| <b>Mud Supplier Name</b> | <b>Mud Trade Name</b> | <b>Density</b> |
|--------------------------|-----------------------|----------------|

### 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                 |                    |                    |                | 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 2442053/2

## Thickening Time - ON-OFF-ON

**04/JAN/2018**

| Test Temp (degF) | Pressure (psi) | Reached in (min) | 30 Bc (hh:mm) | 50 Bc (hh:mm) | 70 Bc (hh:mm) | Start Bc | Stirring before stop (mins) | Static Period (min) | Peak reading (BC) | Termination time (hh:mm) | Termination Bc |
|------------------|----------------|------------------|---------------|---------------|---------------|----------|-----------------------------|---------------------|-------------------|--------------------------|----------------|
| 171              | 5970           | 48               | 5:47          | 5:54          | 6:15          | 8        | 58                          | 16                  | 8                 | 9:41                     | 83             |

CS0022 TR 8678 402.5 SKS

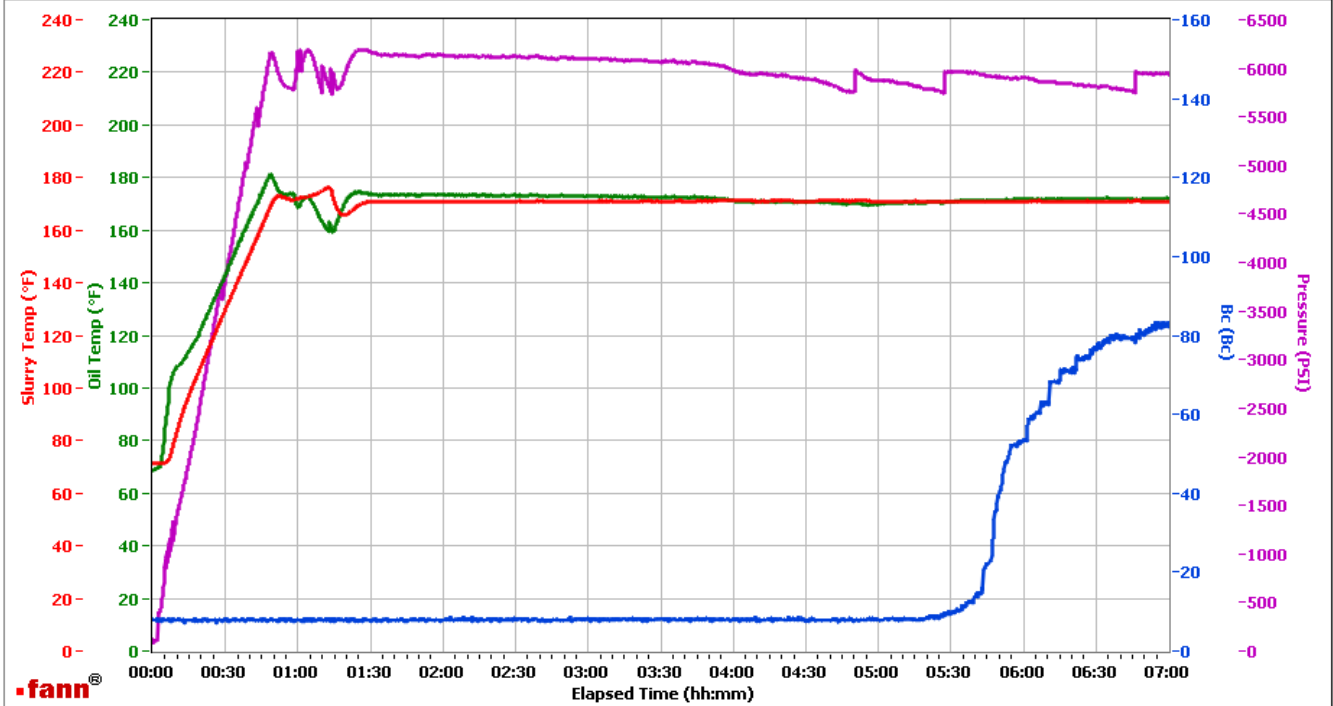
Deflection: 8 – 8

### Grand Junction Colorado

| Fields            | Values                               |
|-------------------|--------------------------------------|
| Project Name      | GJ2442053-2 TERRA PRODUCTION LEAD BL |
| Test ID           | 35149781                             |
| Request ID        | 2442053-2                            |
| Tested by         | JASON                                |
| Customer          | TERRA ENERGY PARTNERS                |
| Well No           | SR 14-12                             |
| Rig               | H&P 318                              |
| Casing/Liner Size | 4.5 INCH                             |

| Fields         | Values            |
|----------------|-------------------|
| Job Type       | PRODUCTION CASING |
| Cement Type    | GCC TYPE I-II     |
| Cement Weight  | Light Weight      |
| Test Date      | 02/10/11          |
| Test Time      | 09:14 PM          |
| Temp. Units    | degF              |
| Pressure Units | PSI               |
| SW Version     | 2.1.0.1219        |

| Events    | Results |
|-----------|---------|
| 30.00 Bc  | 05h:47m |
| 40.00 Bc  | 05h:49m |
| 50.00 Bc  | 05h:54m |
| 70.00 Bc  | 06h:15m |
| 100.00 Bc | NaN     |
| 00h:30m   | 7.70    |
| 01h:00m   | 8.06    |
| 01h:30m   | 7.60    |



Data File: C:\Documents and Settings\H\PH\Local Settings\Temporary Internet Files\Content.IE5\8HEN6T6Z\GJ2442053-2 TERRA PRODUCTION LEAD BULK[1].tdms  
 Comments: CS0022 TR 8678 402.5 SKS

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# Operation Test Results Request ID 2442053/1

## Thickening Time - ON-OFF-ON

04/JAN/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              | 5970           | 48               | 4:56           | 5:23           | 5:41           | 6:22            | 15       | 58                          | 15                  | 15                |

Total sks=805

CS0021 TR 8677 402.5 SKS

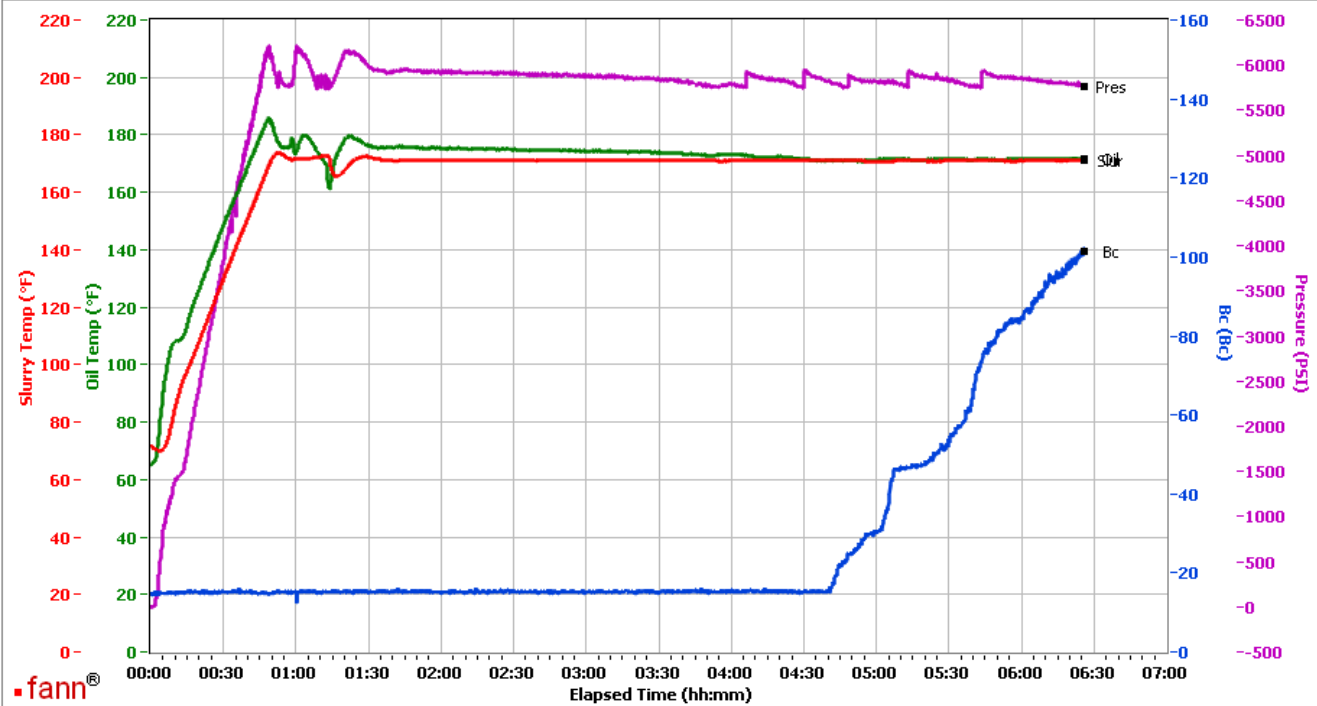
Deflection: 15 – 15

### Grand Junction Colorado

| Fields            | Values                               |
|-------------------|--------------------------------------|
| Project Name      | GJ2442053-1 TERRA BULK PRODUCTION LE |
| Test ID           | 35146821 - TT                        |
| Request ID        | 2442053-1                            |
| Tested by         | CT                                   |
| Customer          | TERRA ENERGY PARTNERS                |
| Well No           | SR 14-12                             |
| Rig               | H8P 318                              |
| Casing/Liner Size | 4.5 INCH                             |

| Fields         | Values            |
|----------------|-------------------|
| Job Type       | PRODUCTION CASING |
| Cement Type    | GCC TYPE I-II     |
| Cement Weight  | Standard          |
| Test Date      | 01/03/18          |
| Test Time      | 09:28 PM          |
| Temp. Units    | degF              |
| Pressure Units | PSI               |
| SW Version     | 2.1.0.507         |

| Events    | Results |
|-----------|---------|
| 30.00 Bc  | 04h:56m |
| 40.00 Bc  | 05h:05m |
| 50.00 Bc  | 05h:23m |
| 70.00 Bc  | 05h:41m |
| 100.00 Bc | 06h:22m |
| 00h:30m   | 15.22   |
| 01h:00m   | 15.25   |
| 01h:30m   | 15.04   |



Data File C:\Documents and Settings\M290\Local Settings\Temporary Internet Files\Content.IE5\4TIJ89YN\GJ2442053-1 TERRA BULK PRODUCTION LEAD[1].tdms

Comments CS0021 TR 8677 402.5 SKS

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### Job Information

|                       |                       |                 |                   |                   |                |
|-----------------------|-----------------------|-----------------|-------------------|-------------------|----------------|
| <b>Request/Slurry</b> | 2442054/1             | <b>Rig Name</b> | H&P 318           | <b>Date</b>       | 02/JAN/2018    |
| <b>Submitted By</b>   | Aaron Katz            | <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 14-12       |

### Well Information

|                          |          |                  |         |             |               |
|--------------------------|----------|------------------|---------|-------------|---------------|
| <b>Casing/Liner Size</b> | 4.5 in   | <b>Depth MD</b>  | 9900 ft | <b>BHST</b> | 116°C / 241°F |
| <b>Hole Size</b>         | 8.75 in  | <b>Depth TVD</b> | 9523 ft | <b>BHCT</b> | 77°C / 171°F  |
| <b>Pressure</b>          | 5970 psi |                  |         |             |               |

### Drilling Fluid Information

|                          |  |                       |  |                |  |
|--------------------------|--|-----------------------|--|----------------|--|
| <b>Mud Supplier Name</b> |  | <b>Mud Trade Name</b> |  | <b>Density</b> |  |
|--------------------------|--|-----------------------|--|----------------|--|

### 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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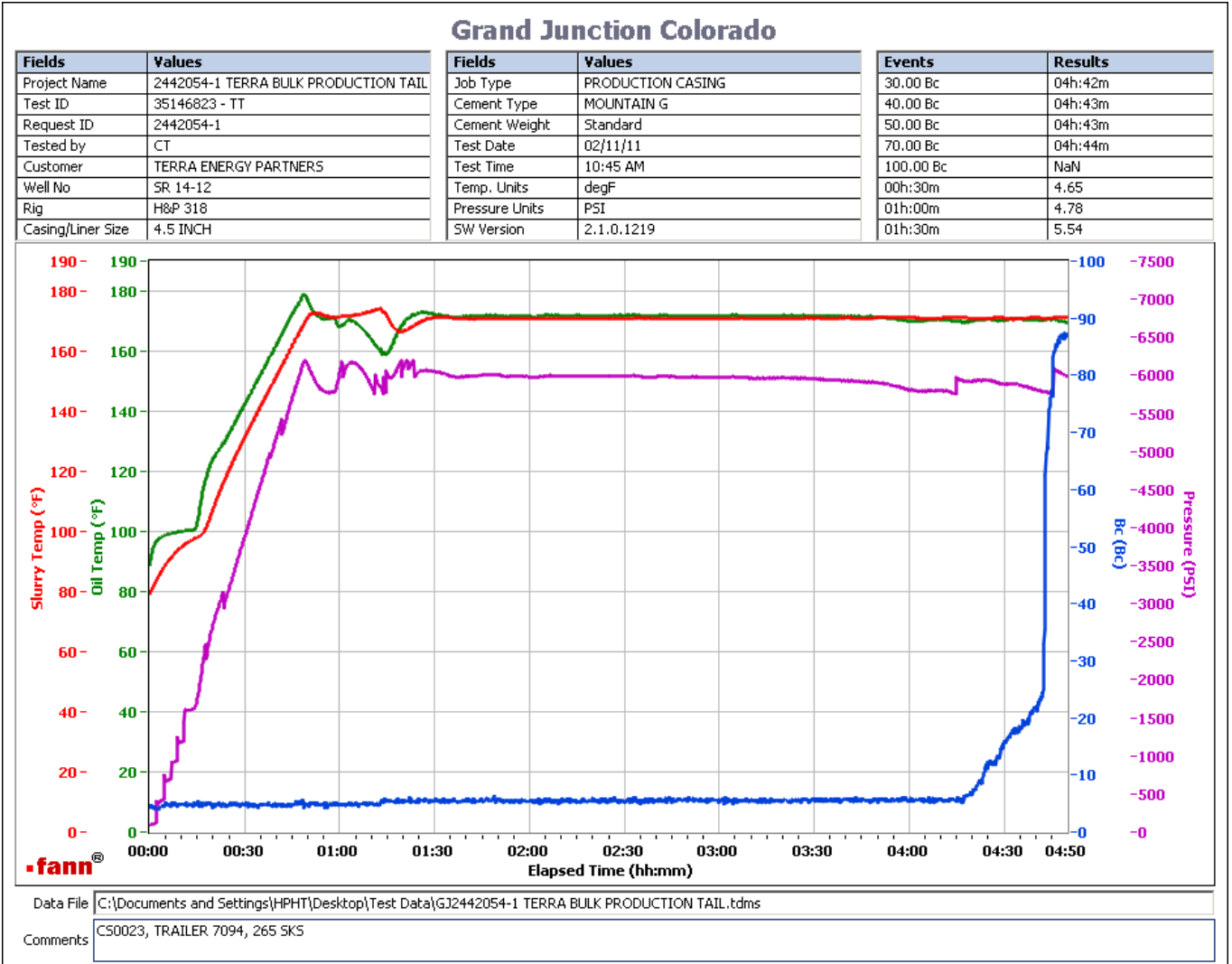
**Operation Test Results Request ID 2442054/1**

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

**04/JAN/2018**

| Test Temp (degF) | Pressure (psi) | Reached in (min) | 30 Bc (hh:mm) | 50 Bc (hh:mm) | 70 Bc (hh:mm) | Start Bc | Stirring before stop (mins) | Static Period (min) | Peak reading (BC) | Termination time (hh:min) | Termination Bc |
|------------------|----------------|------------------|---------------|---------------|---------------|----------|-----------------------------|---------------------|-------------------|---------------------------|----------------|
| 171              | 5970           | 48               | 4:42          | 4:43          | 4:44          | 4        | 58                          | 15                  | 6                 | 5:26                      | 86             |

265 sks tail  
 CS0023, Trailer 7094, 265 sks  
 Deflected 5-- > 6



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