

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

United States of America, COLORADO

### **For: Terra**

Date: Tuesday, October 09, 2018

### **Clough NR 343-3 Production**

API# 05-045-23910

Sincerely,

**Grand Junction Cement Engineering**

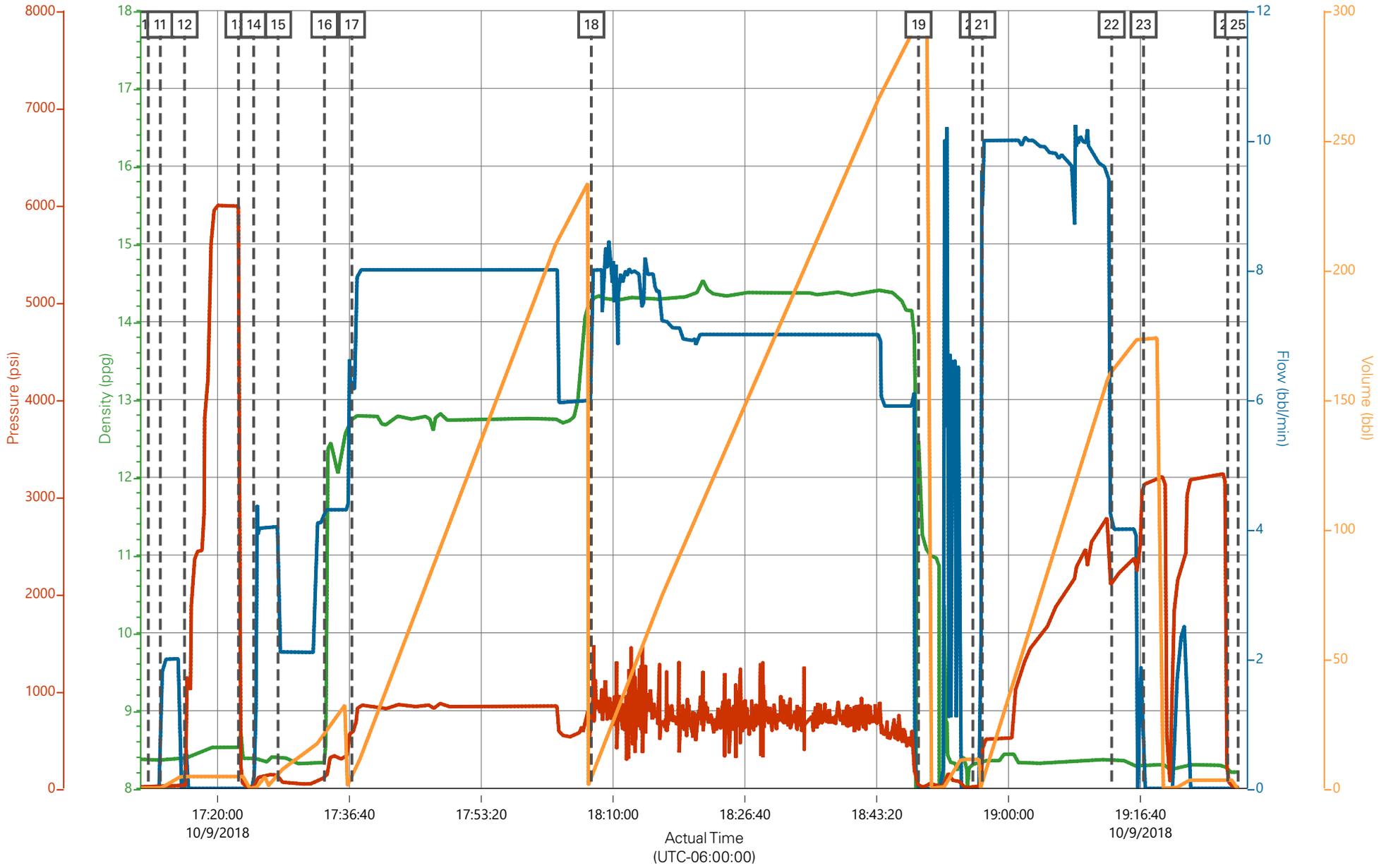
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	10/9/2018	06:00:00						Requested on Location @ 13:00
Event	2	Pre-Convoy Safety Meeting	10/9/2018	08:50:00						
Event	3	Crew Leave Yard	10/9/2018	09:00:00						1 Elite, 1 660, 1 pickup
Event	4	Arrive At Loc	10/9/2018	13:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	10/9/2018	13:05:00						JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <200, temp 48 degrees
Event	6	Pre-Rig Up Safety Meeting	10/9/2018	13:10:00						
Event	7	Rig-Up Equipment	10/9/2018	13:15:00						DME iron to ground manifold, standpipe, hardline to pit. Water hoses to both uprights, bulk hoses to Silo and 660.
Event	8	Other	10/9/2018	16:41:25						Rig Circulated 2.5 hrs prior to cement job at 9 bpm 1150 psi. Mud scales calibrated to drinking water prior to job.
Event	9	Pre-Job Safety Meeting	10/9/2018	16:51:22						All HES personnel, rig crew, and company rep.
Event	10	Start Job	10/9/2018	17:11:15						TD 10610', TP 10603.58', SJ 31.35', OH 8.75'', Csg 4.5'' 11.6 lb/ft P-110 Prev. Csg. 9.625'' 36# @ 1128', Mud 11.7 ppg.
Event	11	Fill Lines	10/9/2018	17:12:46		8.33	2	40	5	Fresh Water
Event	12	Test Lines	10/9/2018	17:15:50				6097		Held pressure 2 minutes
Event	14	Pump Spacer	10/9/2018	17:24:34		8.33	4	135	5	Fresh Water
Event	15	Pump Spacer	10/9/2018	17:27:39		8.4	4	100	20	80 lbs. Mud Flush III
Event	16	Check Weight	10/9/2018	17:33:31						Density verified via mud cup
Event	17	Pump Lead Cement	10/9/2018	17:36:59		12.7	8	940	222.4	675 sks, 12.7 ppg, 1.85 yield, 8.94 gal/sk

Event	18	Pump Tail Cement	10/9/2018	18:07:15	14.2	8	1200	224	740 sks, 14.2 ppg, 1.7 Yield, 7.53 gal/sk
Event	19	Shutdown	10/9/2018	18:48:37					Wash lines to pit
Event	20	Drop Top Plug	10/9/2018	18:55:29					Co-Rep Verify Plug Launched
Event	21	Pump Displacement	10/9/2018	18:56:41	8.4	10	2860	163.9	3 lbs BE-6, 1 gal MMCR, 2% KCl
Event	22	Slow Rate	10/9/2018	19:13:02	8.4	4	2400	163.9	Slow Rate 10 bbls to Calculated Displacement
Event	23	Bump Plug	10/9/2018	19:17:04			3250		Plug Bumped at 2400 psi, Brought up to 3250 psi
Event	24	Check Floats	10/9/2018	19:27:42					Floats held – 2 bbl back to the truck
Event	25	End Job	10/9/2018	19:29:01					Good returns throughout job. Pipe was not reciprocated during job.
Event	26	Pre-Rig Down Safety Meeting	10/9/2018	19:35:00					No sugar, HES top plug used, 0 add hours
Event	28	Pre-Convoy Safety Meet	10/9/2018	19:55:50					
Event	29	Crew Leave Location	10/9/2018	20:00:00	USER				Thanks for using Halliburton Cement, Chris Martinez and crew.

# TERRA Clough NR343-3 4 1/2" Production



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

### Job Information

<b>Request/Slurry</b>	2504930/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	27/SEP/2018
<b>Submitted By</b>	Connor Matthews	<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>	NR 343-3

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10623 ft	<b>BHST</b>	121°C / 250°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9984 ft	<b>BHCT</b>	82°C / 180°F
<b>Pressure</b>	6289 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

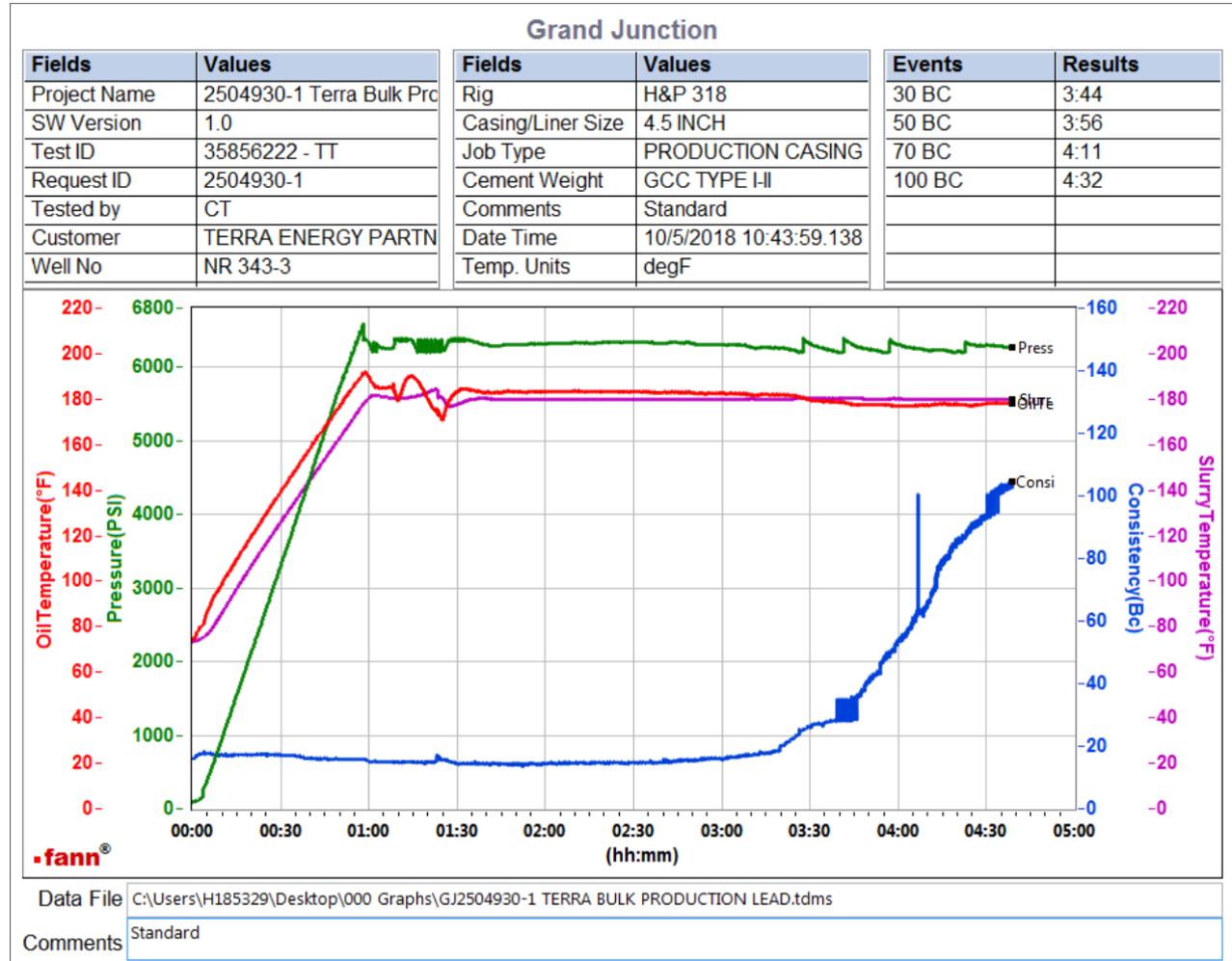
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem Lead				Slurry Density	12.7	lbm/gal
						Slurry Yield	1.851	ft3/sack
						Water Requirement	8.949	gal/sack
						Total Mix Fluid	8.949	gal/sack
						Water Source	Fresh Water	
						Water Chloride	N/A	

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Thickening Time - ON-OFF-ON

06/OCT/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)
180	6289	58	3:44	3:56	4:11	4:32	15	68	15	17



Total sks = 675  
 CS2227, Trailer 8476, 400 sks  
 CS2228, Trailer 4549, 275 sks  
 Deflection: 15 - 17

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### Job Information

<b>Request/Slurry</b>	2504931/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	27/SEP/2018
<b>Submitted By</b>	Connor Matthews	<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>	NR 343-3

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<b>Pressure</b>	6289 psi				

### Drilling Fluid Information

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### Cement Information - Tail Design

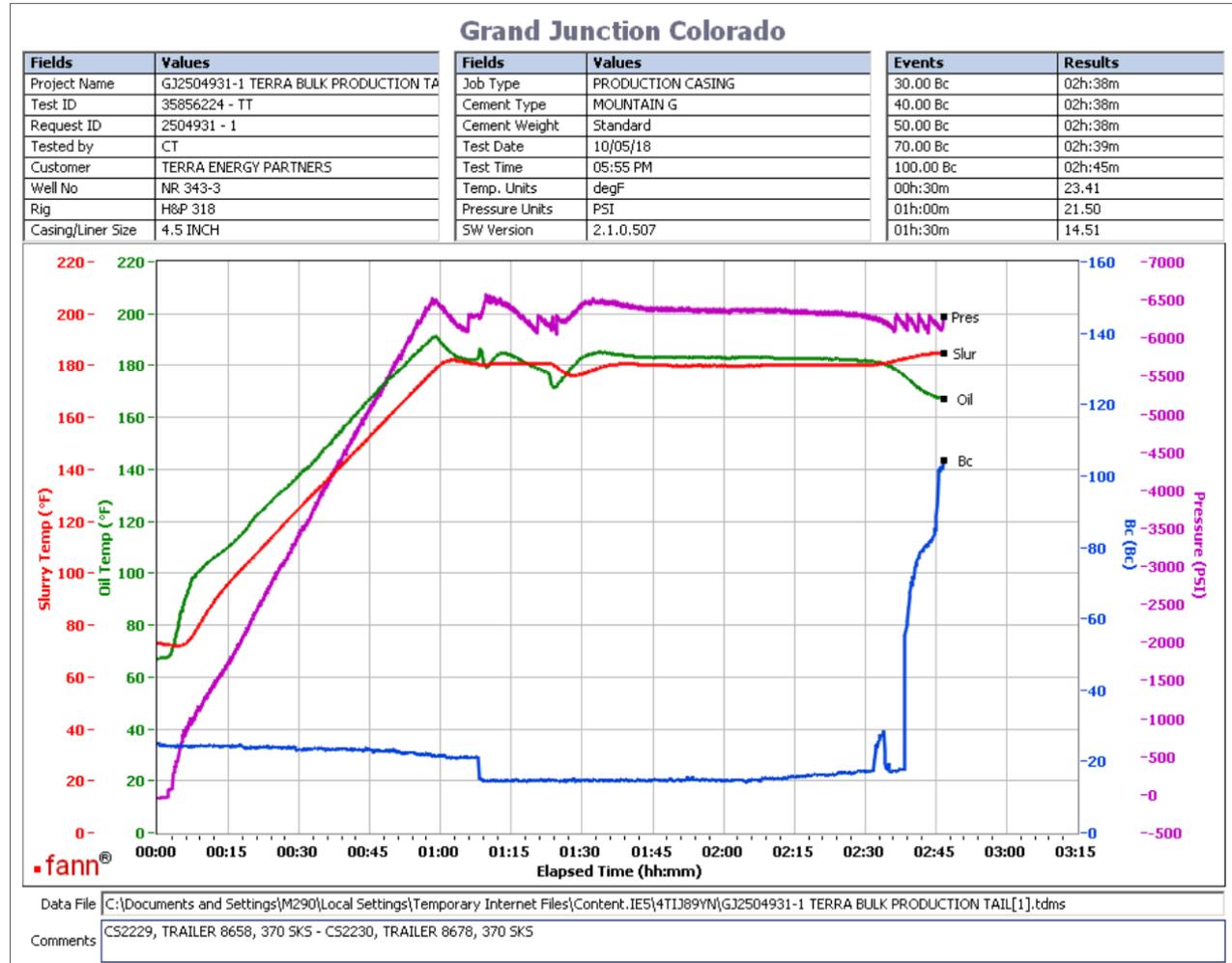
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		Expandacem Tail				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.704	ft3/sack
						Water Requirement	7.53	gal/sack
						Total Mix Fluid	7.53	gal/sack
						Water Source	Fresh Water	
						Water Chloride	N/A	

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180	6289	58	2:38	2:38	2:39	2:45	25	68	15	15



Total sks = 740 sks  
 CS2229, Trailer 8658, 370 sks  
 CS2230, Trailer 8678, 370 sks  
 Deflection: 21 - 15

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