

# HALLIBURTON

iCem<sup>®</sup> Service

## **TEP ROCKY MOUNTAIN LLC**

**For: Terra**

Date: Wednesday, August 23, 2017

## **SR 322-12 Production**

API #05-045-23428-00

Sincerely,

**Grand Junction Cement Engineering**

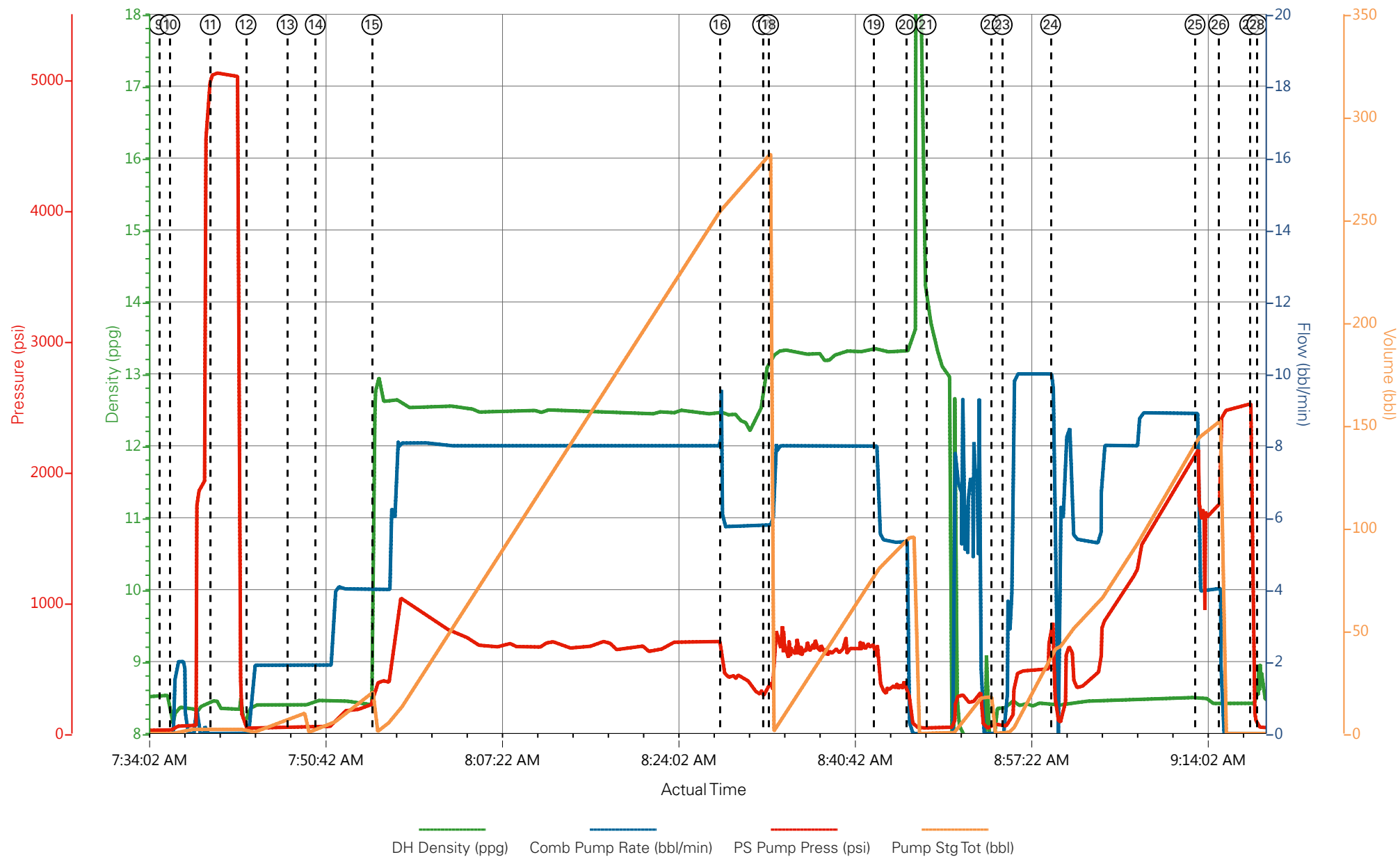
## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/22/2017	20:00:00	USER					REQUESTED ON LOCATION @ 3:00
Event	2	Pre-Convoy Safety Meeting	8/22/2017	21:45:00	USER					ALL HES EMPLOYEES PRESENT
Event	3	Crew Leave Location	8/22/2017	22:00:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	8/23/2017	00:00:00	USER					RIG ON BOTTOM WITH CASING CIRCULATING UPON HES ARRIVAL
Event	5	Assessment Of Location Safety Meeting	8/23/2017	00:15:00	USER					ALL HES EMPLOYEES PRESENT
Event	6	Spot Equipment	8/23/2017	00:30:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	7	Pre-Rig Up Safety Meeting	8/23/2017	01:00:00	USER					ALL HES EMPLOYEES PRESENT
Event	8	Pre-Job Safety Meeting	8/23/2017	07:00:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 11 BPM PRIOR TO JOB PRESSURE @ 760 PSI.
Event	9	Start Job	8/23/2017	07:35:15	USER					TP 9450', SJ 32.15', SURFACE CSG 9 5/8" 32.3# H-40 SET @ 1116' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 9.9
Event	10	Prime Lines	8/23/2017	07:36:16	USER	8.33	2.0	60	2	FRESH WATER
Event	11	Test Lines	8/23/2017	07:40:06	COM5			5050		PRESSURE HELD
Event	12	Pump H2O Spacer	8/23/2017	07:43:28	COM5	8.33	2.0	60	10	FRESH WATER
Event	13	Check weight	8/23/2017	07:47:21	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES

Event	14	Pump Mud Flush III	8/23/2017	07:50:01	COM5	8.4	4.0	230	20	80 LBS MUD FLUSH III MIXED IN 20 BBLS H2O
Event	15	Pump Lead Cement	8/23/2017	07:55:21	COM5	12.5	8.0	650	270	780 SKS NEOCEM CMT 12.5 PPG, 1.94 FT3/SK, 9.6 GAL/SK, WITH 90 LBS TUF-FIBER THROUGHOUT
Event	16	Slow Rate	8/23/2017	08:28:14	USER					SLOWED TO END SILO AND SWAP TO TAIL CEMENT
Event	17	Check weight	8/23/2017	08:32:16	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Pump Tail Cement	8/23/2017	08:32:50	COM5	13.3	8.0	650	81.6	265 SKS THERMACEM CMT 13.3 PPG, 1.73 FT3/SK, 7.81 GAL/SK.
Event	19	Slow Rate	8/23/2017	08:42:46	USER					SLOWED TO END CEMENT
Event	20	Shutdown	8/23/2017	08:45:49	USER					END OF CEMENT
Event	21	Clean Pump And Lines	8/23/2017	08:47:42	COM5					WASHED UP INTO PIT USED 16 BBLS
Event	22	Drop Top Plug	8/23/2017	08:53:50	USER					VERIFIED BY FLAG INDICATOR AND COMPANY REP
Event	23	Pump Displacement	8/23/2017	08:54:54	COM5	8.4	9.0	2170	136.5	1 GAL MMCR IN FIRST 10 BBLS, 3 LBS BE-6 IN FIRST 30 BBLS, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT
Event	24	Shutdown	8/23/2017	08:59:28	USER					HAD TO SHUTDOWN DUE TO WATER DELIVERY.
Event	25	Slow Rate	8/23/2017	09:13:07	USER	8.4	4.0	1680	10	SLOWED TO BUMP PLUG
Event	26	Bump Plug	8/23/2017	09:15:21	COM5	8.4	4.0	1700	146.5	PLUG BUMPED
Event	27	Check Floats	8/23/2017	09:18:17	USER			2440		FLOATS HELD 1.5 BBL FLOW BACK TO TANK
Event	28	End Job	8/23/2017	09:18:57	USER					PARTIAL RETURNS THROUGHOUT JOB
Event	29	Post-Job Safety Meeting (Pre Rig-Down)	8/23/2017	09:30:00	USER					ALL HES EMPLOYEES PRESENT
Event	30	Pre-Convoy Safety Meeting	8/23/2017	11:45:00	USER					LEFT PLUG CONTAINER, 2 2", 1 1" AND 1502 T ON CASING ALSO LEFT BEHIND THE BAIL BASKETT
Event	31	Crew Leave Location	8/23/2017	12:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW

# TERRA - YOUBERG SR 322-12 - 4 1/2" PRODUCTION



- |                             |   |                             |                   |                      |                      |
|-----------------------------|---|-----------------------------|-------------------|----------------------|----------------------|
| ① Call Out                  | ④ Arrive At Loc                         | ⑦ Pre-Rig Up Safety Meeting | ⑩ Prime Lines     | ⑬ Check weight       | ⑯ Slow Rate          |
| ② Pre-Convoy Safety Meeting | ⑤ Assessment Of Location Safety Meeting | ⑧ Pre-Job Safety Meeting    | ⑪ Test Lines      | ⑭ Pump Mud Flush III | ⑰ Check weight       |
| ③ Crew Leave Location       | ⑥ Spot Equipment                        | ⑨ Start Job                 | ⑫ Pump H2O Spacer | ⑮ Pump Lead Cement   | ⑱ Shutdown           |
|                             |   |                             |                   | ⑲ Pump Tail Cement   | ⑳ Clean Pump And Lin |

▼ HALLIBURTON | iCem® Service

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Edit

Customer: TEP ROCKY MOUNTAIN LLC

Job Date: 8/23/2017

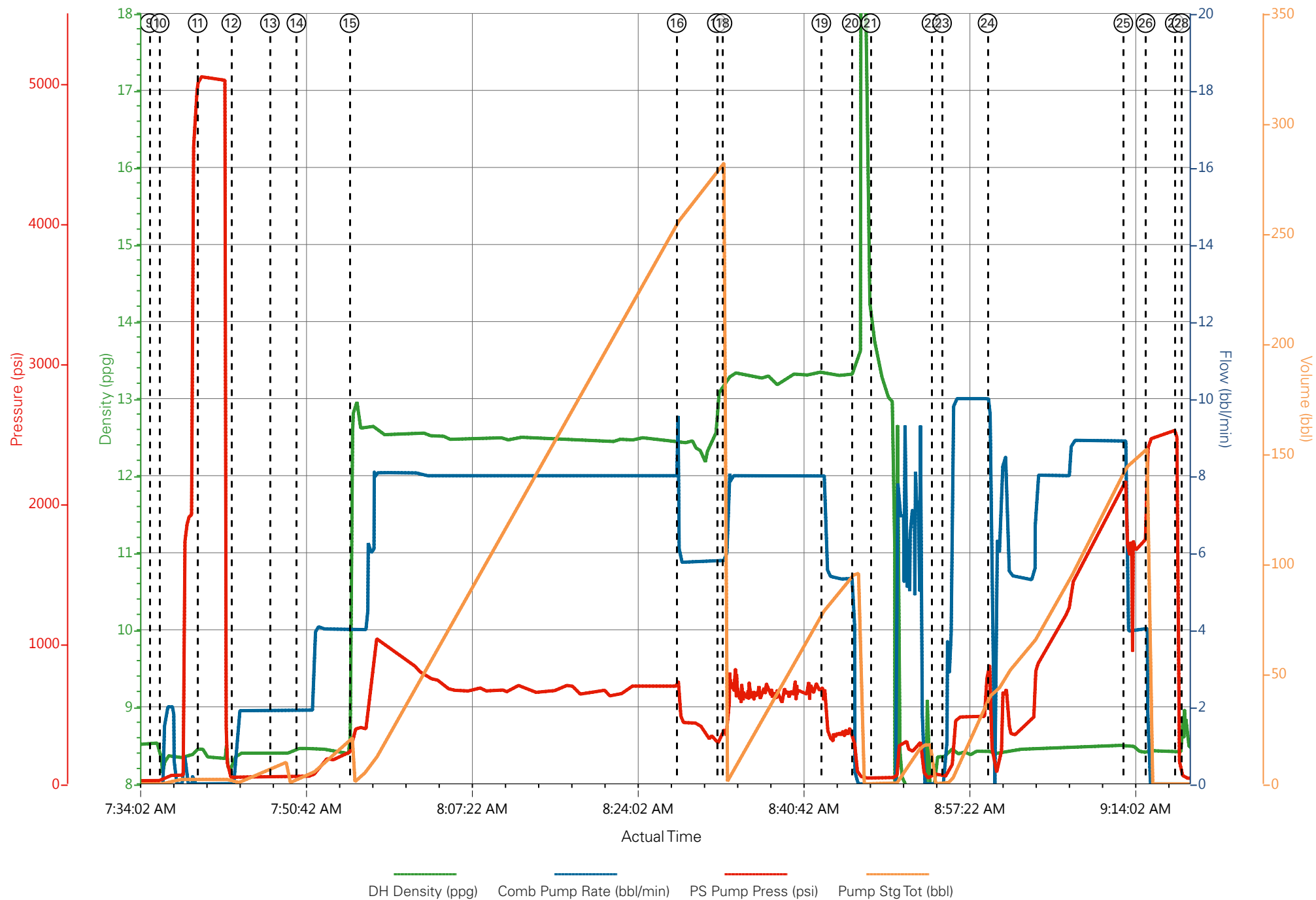
Well: SR 322-12

Representative: DANNY BONNETTE

Sales Order #: 904247977

E4: HYDE / ANGELO

# TERRA - YOUNBERG SR 322-12 - 4 1/2" PRODUCTION



# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Lead

### Job Information

<b>Request/Slurry</b>	2410509/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	18/AUG/2017
<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 322-12

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9481 ft	<b>BHST</b>	115°C / 239°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9325 ft	<b>BHCT</b>	76°C / 169°F
<b>Pressure</b>	5830 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	ft3/sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

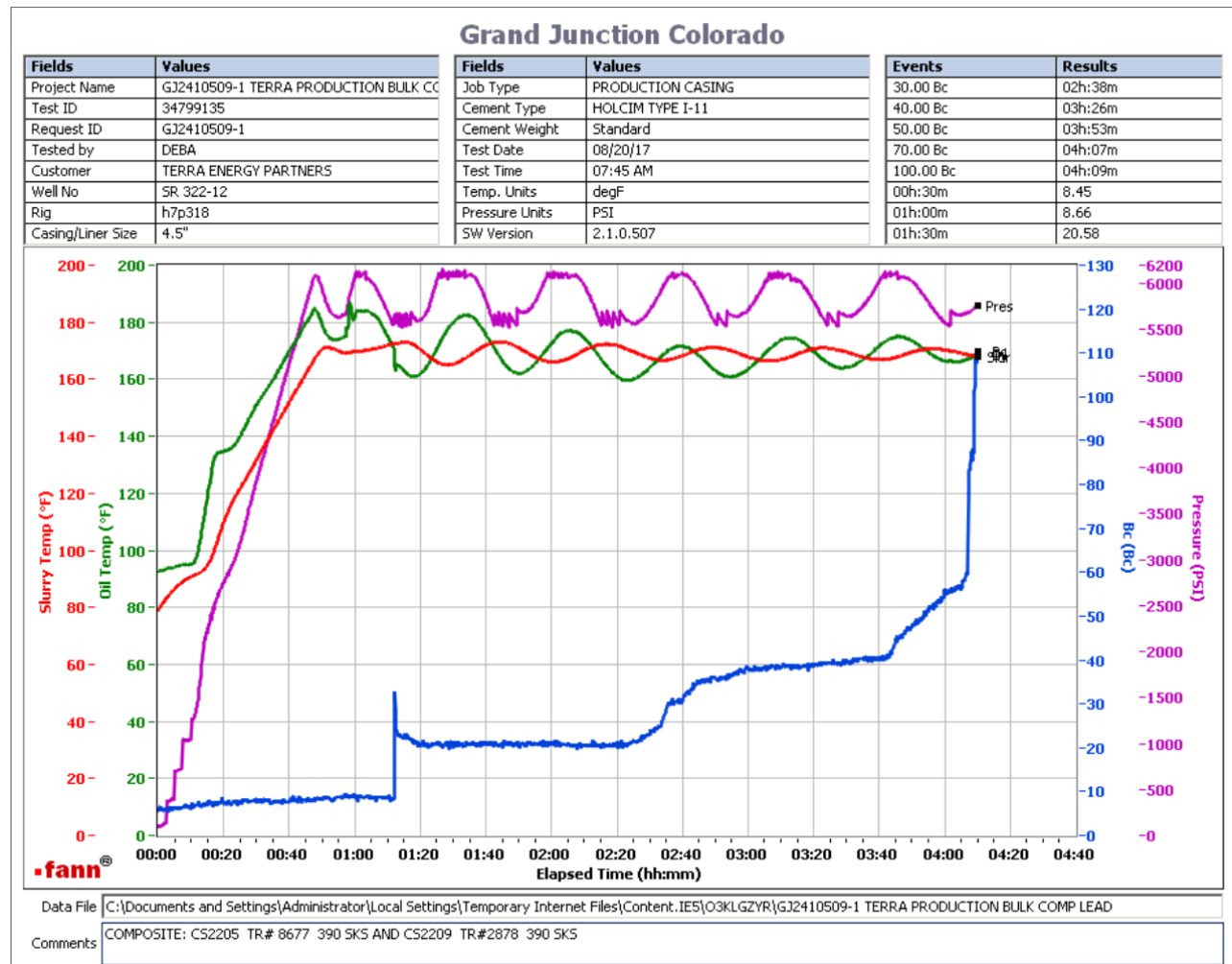
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# **Operation Test Results Request ID 2410509/1**

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

**20/AUG/2017**

Test Temp (°F)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)
169	5830	47	2:38	3:23	4:07	4:09	6	57	15



Total sks= 780

composite: CS2205 TR#8677 390 SKS

CS2209 TR# 2878 390 SKS

Confirmation TT

deflected from 8Bc--- > 32Bc--- > 23Bc within one minute. results of deflection taken from the graph. please see temp instability

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

<b>Request/Slurry</b>	2410510/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	18/AUG/2017
<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 322-12

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	9481 ft	<b>BHST</b>	115°C / 239°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9325 ft	<b>BHCT</b>	76°C / 169°F
<b>Pressure</b>	5830 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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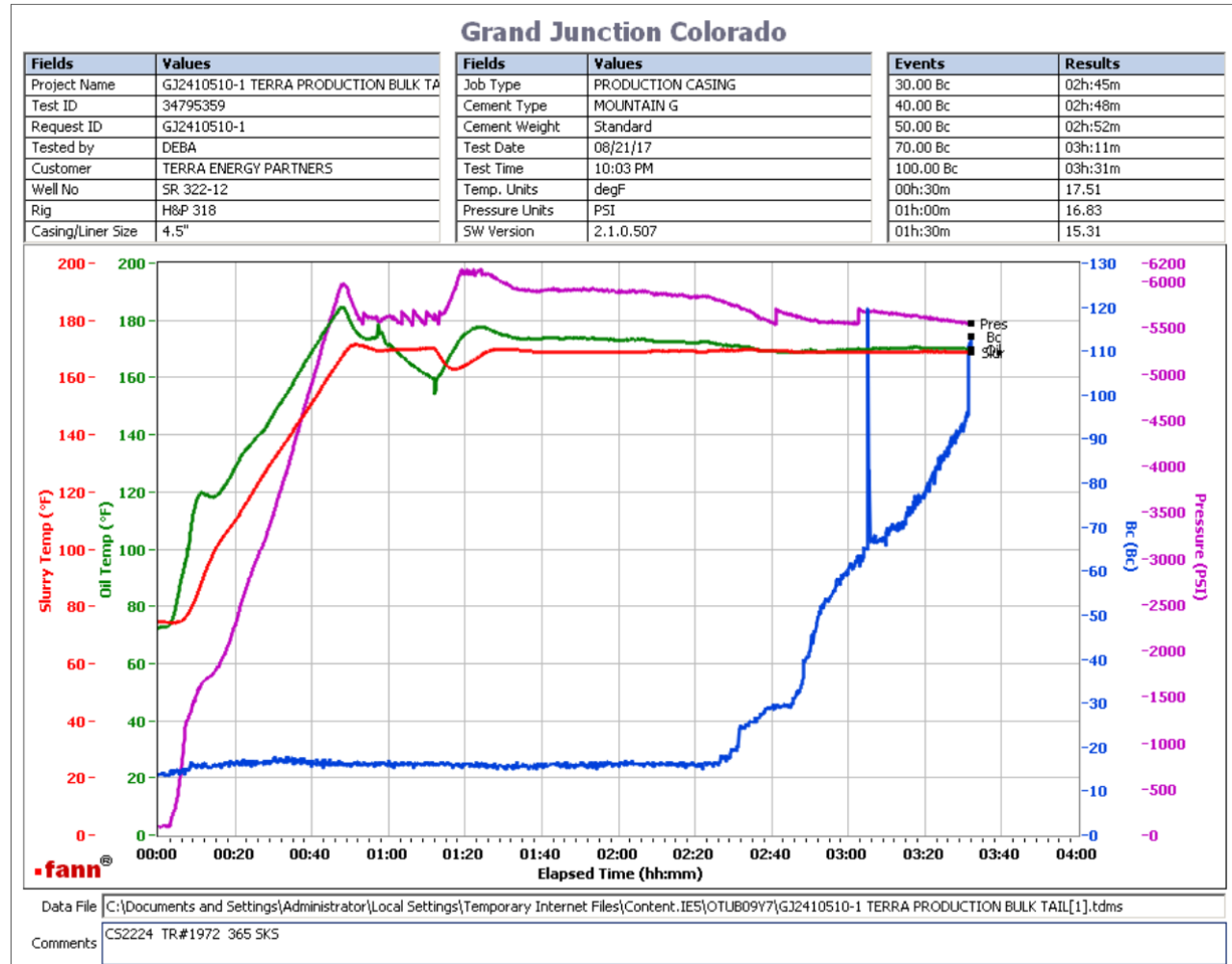


# Operation Test Results Request ID 2410510/1

## Thickening Time - ON-OFF-ON

21/AUG/2017

Test Temp (°F)	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)
169	5830	47	2:45	2:52	3:11	3:31	14	57	15	16



265 sks tail  
CS2224 TR#1972 265 SKS  
no deflection 16Bc--- > 16Bc

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