

# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC-EBUS**

United States of America, COLORADO

**For: Aaron Duncan**

Date: Saturday, August 25, 2018

**BCU 0993-21-10W Surface PJR**

API# 05-077-10521-00

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	Comb Pump Rate (bbl/min)	DH Density (ppg)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/25/2018	02:00:00	USER					REQUESTED ON LOCATION TIME 07:00
Event	2	Depart Yard Safety Meeting	8/25/2018	04:00:00	USER					WITH HES, 1 F-450, 1 ELITE CEMENTING UNIT, 1 660 BULK TRUCK, JSA COMPLETED
Event	3	Arrive At Loc	8/25/2018	05:40:00	USER					RIG RUNNING CASING UPON HES, ARRIVAL
Event	4	Assessment Of Location Safety Meeting	8/25/2018	06:00:00	USER					WITH HES, JSA COMPLETED, SDS OFFERED FOR ALL HES MATERIALS
Event	5	Pre-Rig Up Safety Meeting	8/25/2018	06:10:00	USER					WITH HES, JSA COMPLETED
Event	6	Rig-Up Equipment	8/25/2018	06:20:00	USER					1 LINE RAN TO THE FLOOR, 1 9.625 IN QUICK-LATCH PLUG CONTAINER
Event	7	Other	8/25/2018	06:30:00	USER					TD 1546 FT, SET AT 1536FT, CSG 1540 FT 8.625 IN 32 LB/FT J-55, HOLE 11 IN, SHOE 42.84 FT
Event	8	Other	8/25/2018	06:40:00	USER					RIG CIRCULATION, BBL, 10 BBL/MIN, 188 PSI, RAT HOLE LENGTH 10 FT, PIPE WAS STATIC, MW 9.4 LB/GAL WBM
Event	9	Other	8/25/2018	06:50:00	USER					WATER TEST PH 8.1 , CHLOR 0, TEMP 75DEG F
Event	10	Pre-Job Safety Meeting	8/25/2018	08:00:00	USER	-20.00	0.00	8.36	33.30	WITH HES, TEP, AND H&P 318
Event	11	Start Job	8/25/2018	08:15:00	USER	-19.00	0.00	8.36	33.30	
Event	12	Fill Lines	8/25/2018	08:25:56	USER	27.00	2.00	8.37	1.30	5 BBL FRESH WATER, RETURNS AT 2 BBL AWAY
Event	13	Test Lines	8/25/2018	08:31:16	USER	3313.00	0.00	8.40	2.70	LOW TEST AT 880 PSI, HIGH TEST AT 3313 PSI,

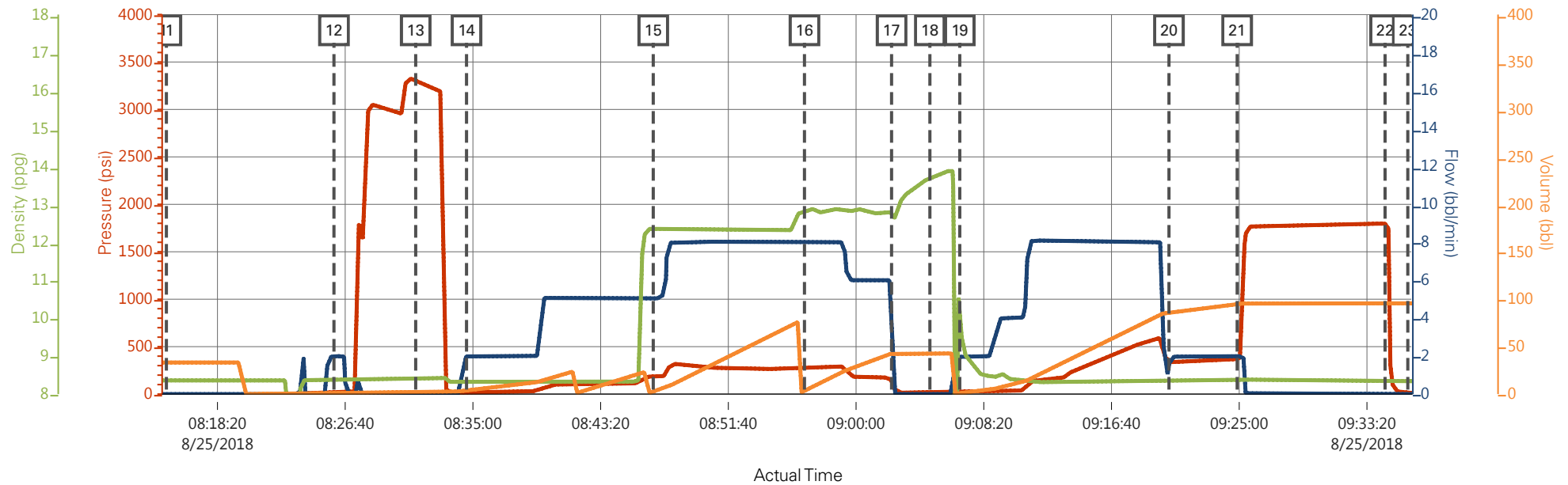
PRESSURE HOLDING										
Event	14	Pump Fresh Water Spacer	8/25/2018	08:34:35	USER	29.00	2.00	8.34	3.50	40 BBL FRESH WATER
Event	15	Pump Lead Cement	8/25/2018	08:46:46	USER	186.00	5.00	12.37	2.50	MIXED AT 12.3 LB/GAL, 177 SKS, 2.46 FT3/SK, 14,17 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	16	Pump Tail Cement	8/25/2018	08:56:38	USER	292.00	8.00	12.84	3.50	MIXED AT 12.8 LB/GAL, 100 SKS, 2.18 FT3/SK, 12.11 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	17	Shutdown	8/25/2018	09:02:19	USER	130.00	0.00	12.80	42.80	
Event	18	Drop Top Plug	8/25/2018	09:04:49	USER	10.00	0.00	13.70	42.80	PLUG LAUNCHED, CUSTOMER WITNESSED
Event	19	Pump Displacement	8/25/2018	09:06:46	USER	30.00	2.00	10.10	0.90	FRESH WATER
Event	20	Slow Rate	8/25/2018	09:20:25	USER	338.00	1.60	8.34	85.90	SLOWED AT 80 BBL AWAY TO 2 BBL/MIN
Event	21	Bump Plug	8/25/2018	09:24:52	USER	368.00	2.00	8.34	94.80	PLUG BUMPED AT CALCULATED DISPLACEMENT, 377 PSI
Event	22	Check Floats	8/25/2018	09:34:31	USER	1797.00	0.00	8.38	95.70	FLOATS HOLDING, 1 BBL RETURNED TO THE TRUCK, PERFORMED A 10 MIN. CASING TEST AT 1700 PSI, PRESSURE HOLDING
Event	23	End Job	8/25/2018	09:36:00	USER	10.00	0.00	8.34	95.70	GOOD CIRCULATION, RIG USED HES TOP PLUG, RIG USED 40 LBS SUGAR, NO ADD HOURS
Event	24	Pre-Rig Down Safety Meeting	8/25/2018	09:38:00	USER					WITH HES, JSA COMPLETD
Event	25	Rig Down Lines	8/25/2018	09:45:00	USER					
Event	26	Pre-Convoy Safety Meeting	8/25/2018	09:50:00	USER					WITH HES, JSA COMPLETED
Event	27	Other	8/25/2018	10:10:00	USER					SPACER 40 BBL FRESH WATER, LEAD CEMENT 77.5 BBL, TAIL CEMENT 38.8 BBL, FINAL DISPLACEMENT 91.2 BBL, 20 BBL CEMENT

CIRCULATED TO SURFACE, TOP OF TAIL  
CEMENT 737 FT

THANKS FOR USING HALLIBURTON, JOHN  
KEANE AND CREW

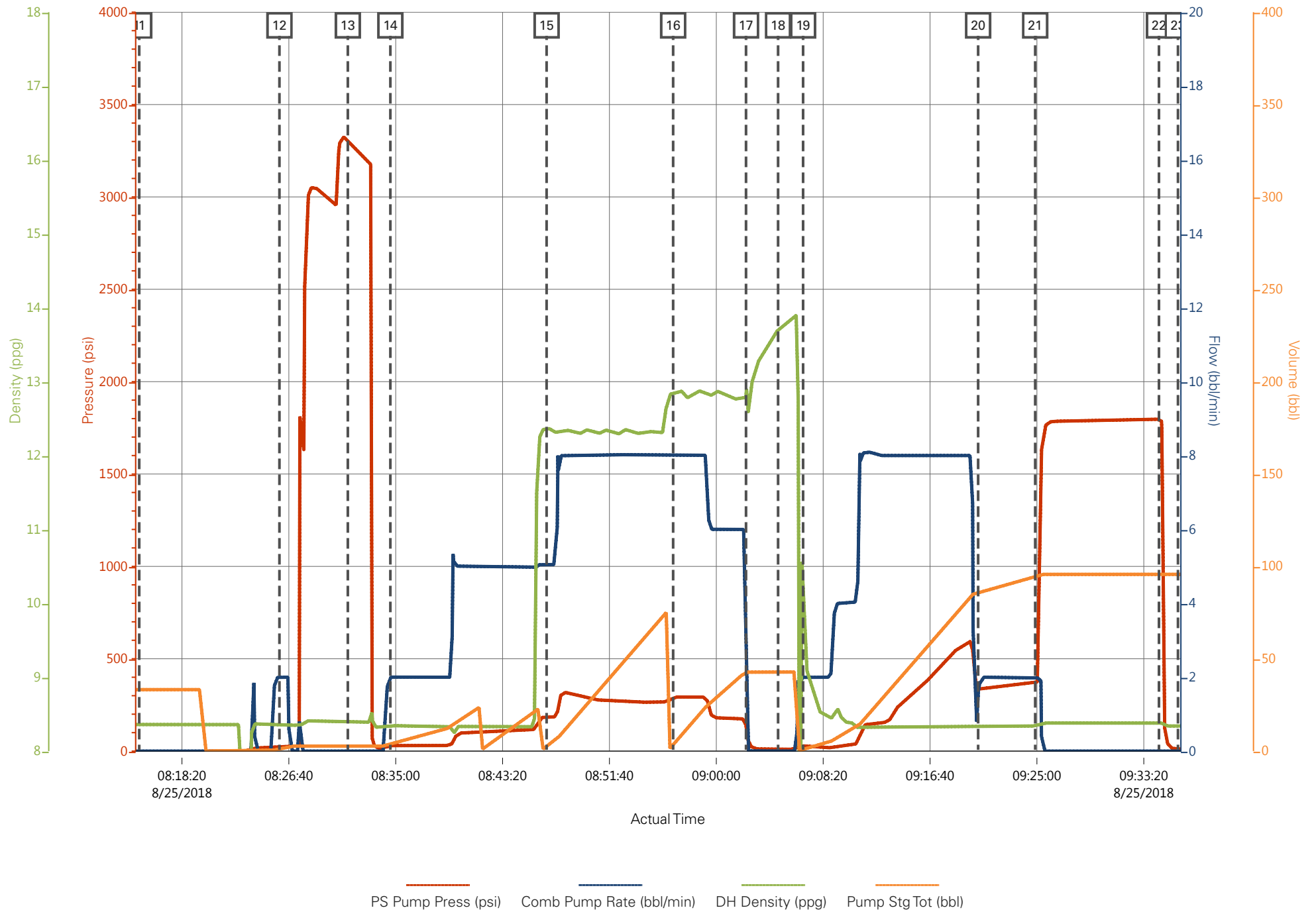
Event 28 Crew Leave Location 8/25/2018 10:15:00 USER

# LARAMIE ENERGY - BCU-993-21-10W - SURFACE



Description	Actual Time	PS Pump Press (psi)	Comb Pump Rate (bbl/min)	DH Density (ppg)	Pump Stg Tot (bbl)	
11 Start Job	08:15:00	-19.00	0.00	8.36	33.30	
12 Fill Lines	08:25:56	27.00	2.00	8.37	1.30	
13 Test Lines	08:31:16	3313.00	0.00	8.40	2.70	
14 Pump Fresh Water Spacer	08:34:35	29.00	2.00	8.34	3.50	
15 Pump Lead Cement	08:46:46	186.00	5.00	12.37	2.50	
16 Pump Tail Cement	08:56:38	292.00	8.00	12.84	3.50	
17 Shutdown	09:02:19	130.00	0.00	12.80	42.80	
18 Drop Top Plug	09:04:49	10.00	0.00	13.70	42.80	
19 Pump Displacement	09:06:46	30.00	2.00	10.10	0.90	
20 Slow Rate	09:20:25	338.00	1.60	8.34	85.90	
21 Bump Plug	09:24:52	368.00	2.00	8.34	94.80	
22 Check Floats	09:34:31	1797.00	0.00	8.38	95.70	
23 End Job	09:36:00	10.00	0.00	8.34	95.70	

# LARAMIE ENERGY - BCU-993-21-10W - SURFACE



# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC-EBUS**

United States of America, COLORADO

**For: Aaron Duncan**

Date: Monday, August 27, 2018

**BCU 0993-21-10W Production PJR**

API# 05-077-10521-00

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

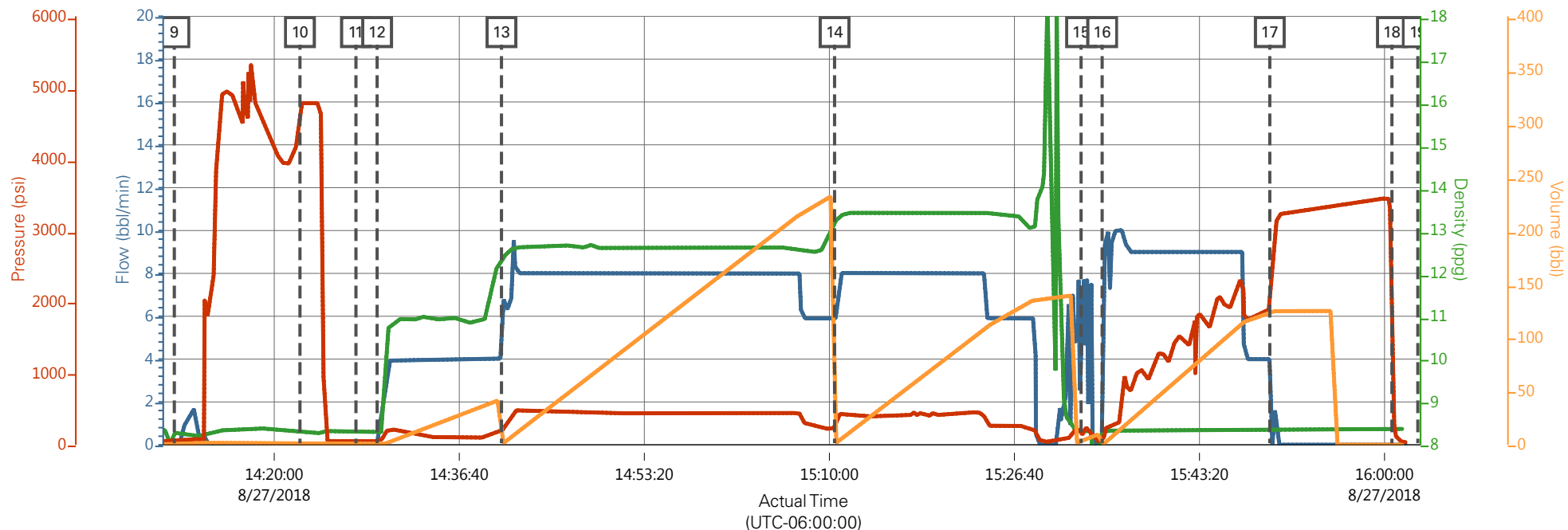
### 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/27/2018	07:00:00	USER					REQUESTED ON LOCATION 8/27/18 @ 13:30
Event	2	Depart Yard Safety Meeting	8/27/2018	09:55:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	8/27/2018	10:00:00	USER					
Event	4	Arrive At Loc	8/27/2018	11:30:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	8/27/2018	11:45:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	8/27/2018	11:50:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	8/27/2018	12:00:00	USER					
Event	8	Pre-Job Safety Meeting	8/27/2018	13:45:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER
Event	9	Start Job	8/27/2018	14:11:00	COM4					4 1/2"-11.6# CASING IN 7 7/8" OH, TD 7743', TP 7733', ST 86', MUD 9.0 PPG, WATER TEMP 65, PH 7, CHLORIDES 0
Event	10	Test Lines	8/27/2018	14:22:19	COM4			5000.00		TEST LINES TO 5000 PSI
Event	11	Drop Bottom Plug	8/27/2018	14:27:22	USER					PLUG AWAY
Event	12	Pump Spacer 1	8/27/2018	14:29:16	COM4	4.00	11.00	200.00	40.00	40 BBLS TUNED SPACER AT 11.0 PPG
Event	13	Pump Lead Cement	8/27/2018	14:40:28	COM4	8.00	12.50	430.00	216.30	216.3 BBLS LEAD CEMENT, 626 SKS @ 12.5 PPG / 1.94 YLD / 9.59 GAL/SK



Event	14	Pump Tail Cement	8/27/2018	15:10:28	COM4	8.00	13.30	400.00	108.80	108.8 BBLS TAIL CEMENT, 351 SKS @ 13.3 PPG / 1.74 YLD / 7.8 GAL/SK
Event	15	Drop Top Plug	8/27/2018	15:32:40	USER					PLUG AWAY
Event	16	Pump Displacement	8/27/2018	15:34:34	COM4	10.00	8.40	2230.00	118.50	118.5 BBLS H2O DISPLACEMENT WITH 1 GAL MMCR, 5 GALLONS CLA-WEB AND 5 GALLONS BIOCIDES FROM CUSTOMER THROUGHOUT
Event	17	Bump Plug	8/27/2018	15:49:40	COM4	4.00	8.40	1900.00	118.5	PLUG BUMPED AT CALCULATED, FINAL CIRCULATING PRESSURE 1900 PSI BROUGHT TO 3200 PSI FOR 10 MINUTE CASING TEST
Event	18	CHECK FLOATS	8/27/2018	16:00:40	COM4			3455.00		FINAL PRESSURE 3455 PSI, FLOATS HELD, 1.5 BBL BACK TO PUMP
Event	19	End Job	8/27/2018	16:03:00	COM4					PIPE LEFT STATIC, GOOD RETURNS THROUGHOUT, 5 BBLS SPACER TO SURFACE, 1 - 4 1/2" TOP AND 1 - 4 1/2" BOTTOM PLUG USED, 1 GAL MMCR AND 5 GAL CLA-WEB USED, NO SUGAR AND NO ADD HOURS CHARGED
Event	20	Pre-Rig Down Safety Meeting	8/27/2018	16:25:00	USER					JSA COMPLETED
Event	21	Rig-Down Equipment	8/27/2018	16:30:00	USER					
Event	22	Pre-Convoy Safety Meeting	8/27/2018	16:55:00	USER					JSA COMPLETED
Event	23	Crew Leave Location	8/27/2018	17:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO - RYAN MARTIN AND CREW

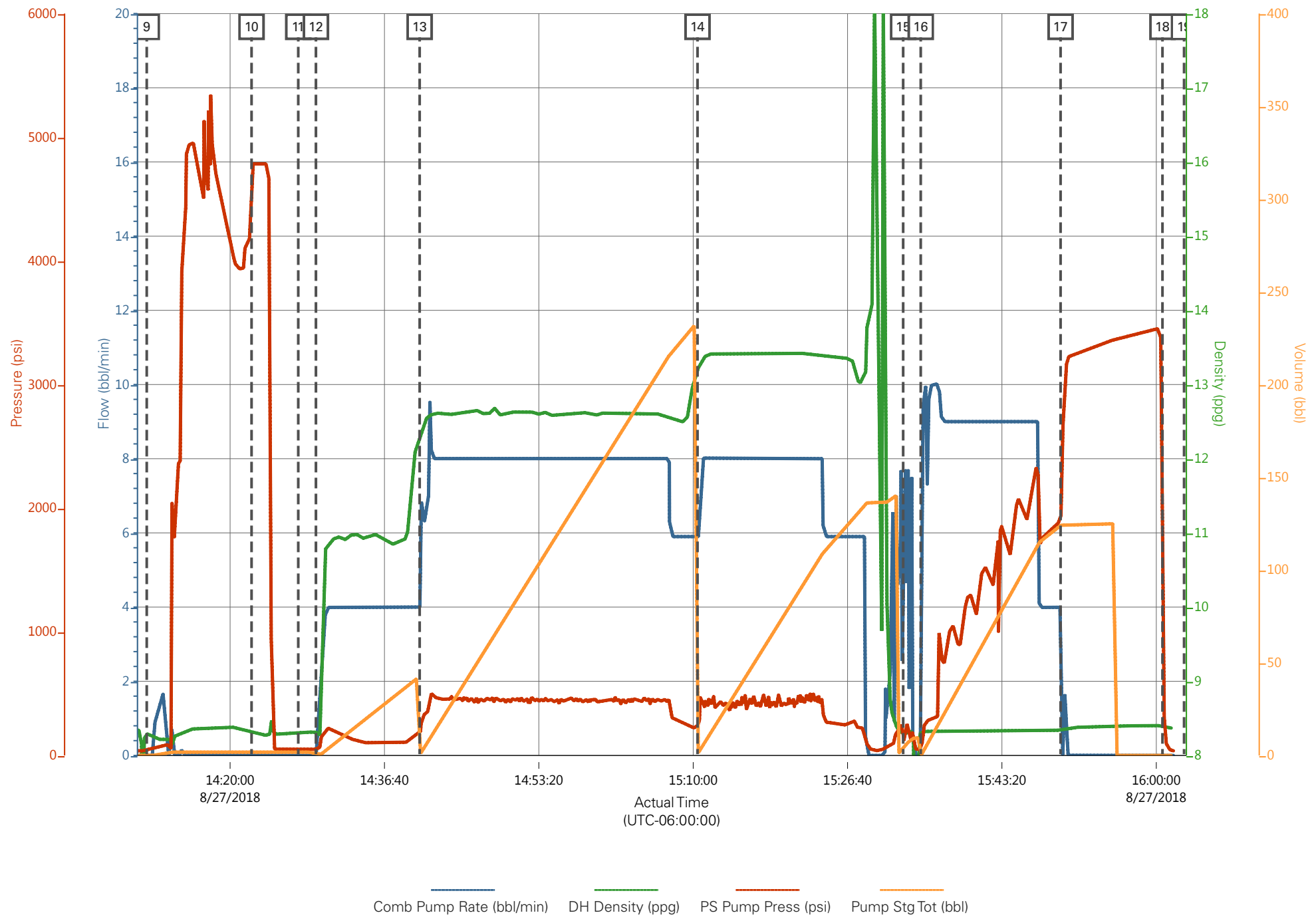
# LARAMIE - BCU 993-21-10W - 4 1/2" PRODUCTION CASING



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

Description	Actual Time (UTC-06:00:00)	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)
9 Start Job	14:11:00	0.00	8.30	38.00	0.00
10 Test Lines	14:22:19	0.00	8.30	4785.00	1.80
11 Drop Bottom Plug	14:27:22	0.00	8.31	49.00	1.80
12 Pump Spacer 1	14:29:16	0.00	8.32	49.00	0.00
13 Pump Lead Cement	14:40:28	4.00	12.31	174.00	0.50
14 Pump Tail Cement	15:10:28	5.90	13.20	242.00	1.00
15 Drop Top Plug	15:32:40	5.50	8.26	122.00	3.90
16 Pump Displacement	15:34:34	0.00	8.31	63.00	0.00
17 Bump Plug	15:49:40	4.00	8.34	1895.00	124.20
18 CHECK FLOATS	16:00:40	0.00	8.39	2010.00	0.00
19 End Job	16:03:00	n/a	n/a	n/a	n/a

# LARAMIE - BCU 993-21-10W - 4 1/2" PRODUCTION CASING



### Job Information

<b>Request/Slurry</b>	2496523/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	23/AUG/2018
<b>Submitted By</b>	Connor Matthews	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Laramie Energy	<b>Location</b>	Garfield	<b>Well</b>	BCU 0993-21-10W

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	7753 ft	<b>BHST</b>	100°C / 212°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	7682 ft	<b>BHCT</b>	61°C / 141°F
<b>Pressure</b>	4677 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	9.9 lbm/gal
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### Cement Information - Lead Design



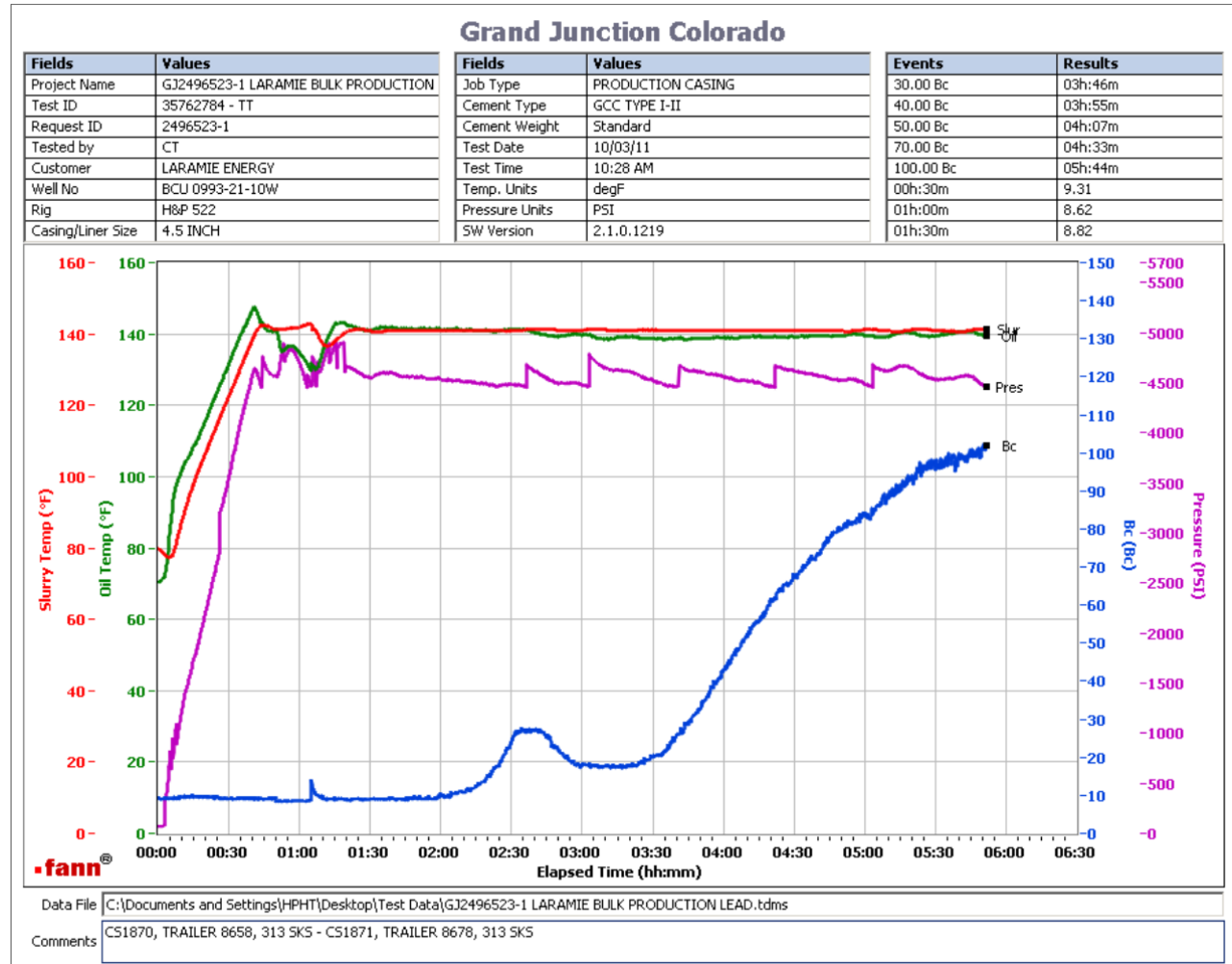
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem Lead				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.945	ft3/sack
						Water Requirement	9.614	gal/sack
						Total Mix Fluid	9.614	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

27/AUG/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)
141	4677	40	3:46	4:07	4:33	5:44	9	50	15	25



Total sks = 720

CS1870, Trailer 8658, 313 sks

CS1871, Trailer 8678, 313 sks

Deflection: 9-- > 25-- > 12 after 1 minute. Slight temp oscillation started around 2:30. 40% of slurry was core set and balled up around paddle.

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### Job Information

<b>Request/Slurry</b>	2496524/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	23/AUG/2018
<b>Submitted By</b>	Connor Matthews	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Laramie Energy	<b>Location</b>	Garfield	<b>Well</b>	BCU 0993-21-10W

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	7753 ft	<b>BHST</b>	100°C / 212°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	7682 ft	<b>BHCT</b>	61°C / 141°F
<b>Pressure</b>	4677 psi				

### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	9.9 lbm/gal
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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	1.736	ft3/sack
						Water Requirement	7.787	gal/sack
						Total Mix Fluid	7.787	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride	N/A	

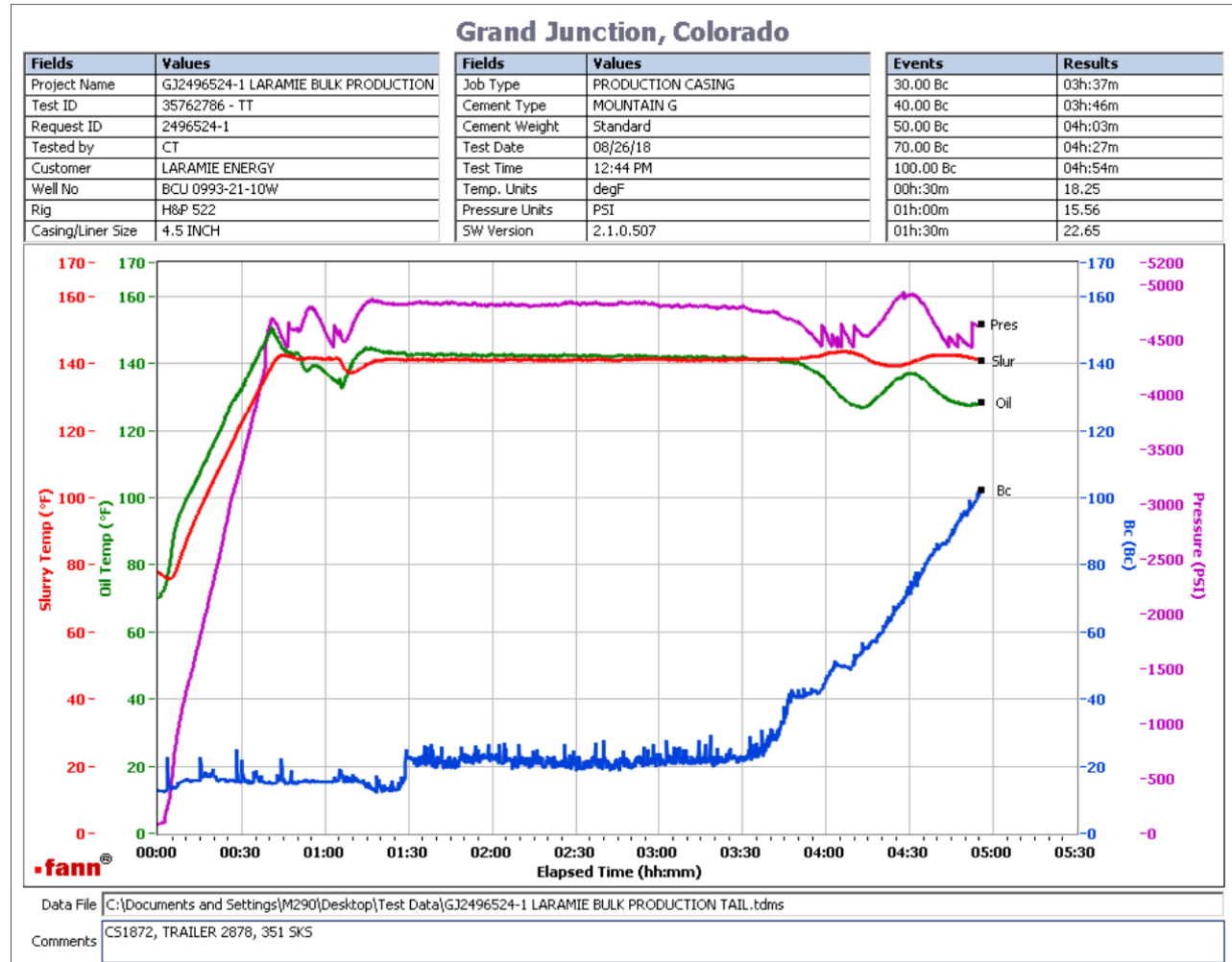
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# **Operation Test Results Request ID 2496524/1**

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

**27/AUG/2018**

Test Temp (degF)	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)	Peak reading (BC)
141	4677	40	3:37	4:03	4:27	4:54	13	50	15	18



Total sks = 408

CS1872, Trailer 2878, 351 sks

Deflection:16-- > 18. Please note that heat of hydration started around 3:40.

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