

# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC-EBUS**

United States of America, COLORADO

**For: Aaron Duncan**

Date: Sunday, July 29, 2018

**Cascade Creek 697-03-17W Surface PJR**

API #05-045-23815-00

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

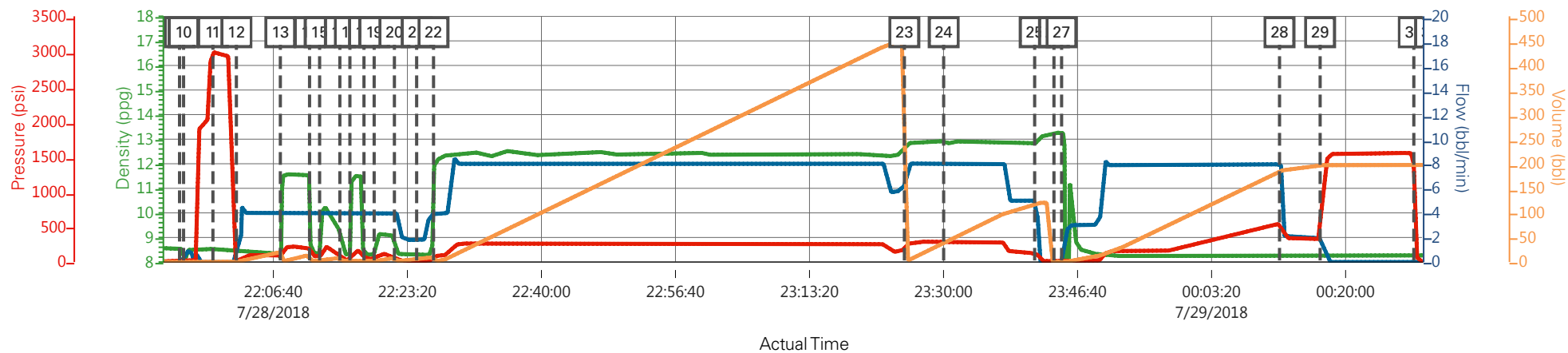
## 1.1 Job Event Log

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	7/28/2018	15:30:00	USER					REQUESTED ON LOCATION @ 20:00
Event	2	Depart Yard Safety Meeting	7/28/2018	17:15:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	7/28/2018	17:30:00	USER					1 HT 400 PUMP TRUCK E8, 1 660 BULK TRUCK, 1 SUPERFLUSH TRANSPORT, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	7/28/2018	19:30:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	7/28/2018	19:45:00	USER					MET WITH COMP REP, WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE. COMP REP WAS OFFERED SDS FOR ALL CHEMICALS USED BY HES.
Event	6	Spot Equipment	7/28/2018	20:10:00	USER					1 HT 400 PUMP TRUCK E8, 1 660 BULK TRUCK, 1 SUPERFLUSH TRANSPORT, 1 550 SERVICE PICKUP
Event	7	Pre-Rig Up Safety Meeting	7/28/2018	20:30:00	USER					ALL HES PRESENT
Event	8	Pre-Job Safety Meeting	7/28/2018	21:30:00	USER					RIG CIRCULATED @ 10 BPM WITH 77 PSI AND NO RETURNS.
Event	9	Start Job	7/28/2018	21:55:00	COM5					TD 2540', TP 2530', SJ 43.71', OH 14 3/4", CSG 9 5/8" 36# J-55, MUD 9.2 PPG
Event	10	Prime Lines	7/28/2018	21:55:30	COM5	8.33	.9	20	2	FRESH WATER
Event	11	Test Lines	7/28/2018	21:59:09	COM5			3000		PRESSURE HELD
Event	12	Pump H2O Spacer	7/28/2018	22:02:04	COM5	8.33	4.0	80	20	20 BBL FRESH WATER

Event	13	Pump Super Flush	7/28/2018	22:07:32	COM5	11.7	4.0	150	10	10 BBL SUPER FLUSH
Event	14	Pump H2O Spacer	7/28/2018	22:11:10	COM5	8.33	4.0	80	5	5 BBL FRESH WATER
Event	15	Pump Calcium Chloride	7/28/2018	22:12:25	COM5	10.0	4.0	120	10	10 BBL CALCIUM CHLORIDE WATER (10 SKS)
Event	16	Pump H2O Spacer	7/28/2018	22:14:56	COM5	8.33	4.0	20	5	5 BBL FRESH WATER
Event	17	Pump Super Flush	7/28/2018	22:16:11	COM5	11.7	4.0	100	10	10 BBL SUPER FLUSH
Event	18	Pump H2O Spacer	7/28/2018	22:17:56	COM5	8.33	4.0	45	5	5 BBL FRESH WATER
Event	19	Pump Calcium Chloride	7/28/2018	22:19:12	COM5	10.0	4.0	120	10	10 BBL CALCIUM CHLORIDE WATER (10 SKS)
Event	20	Pump H2O Spacer	7/28/2018	22:21:43	COM5	8.33	4.0	30	10	10 BBL FRESH WATER
Event	21	Check Weight	7/28/2018	22:24:29	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	22	Pump Lead Cement	7/28/2018	22:26:35	COM5	12.3	8.0	250	428	1015 SKS VARICEM CMT (428 BBLs), 12.3 PPG, 2.37 FT3/SK, 13.74 GAL/SK
Event	23	Pump Tail Cement	7/28/2018	23:25:08	COM5	12.8	8.0	280	110	292 SKS VARICEM CMT (110 BBL), 12.8 PPG, 2.11 FT3/SK, 11.75 GAL/SK
Event	24	Check Weight	7/28/2018	23:30:01	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	25	Shutdown	7/28/2018	23:41:20	USER					END OF CEMENT
Event	26	Drop Top Plug	7/28/2018	23:43:44	USER					VERIFIED BY FLAG INDICATOR
Event	27	Pump Displacement	7/28/2018	23:44:41	COM5	8.33	8.0	550	182	FRESH WATER
Event	28	Slow Rate	7/29/2018	00:11:47	USER	8.33	2.0	350	10	SLOWED TO BUMP PLUG
Event	29	Bump Plug	7/29/2018	00:16:50	COM5	8.33	2.0	350	192	PLUG BUMPED, TOOK PSI UP TO 1500 FOR 10 MIN. CSG TEST. NO RETURNS DURING JOB.
Event	30	Check Floats	7/29/2018	00:28:29	USER			1553		FLOATS HELD 1.5 BBL FLOWED BACK TO TRUCK
Event	31	Pre-Rig Down Safety	7/29/2018	00:30:30	USER					SAFETY HUDDLE / RIGGED DOWN FLOOR / RIGGED UP

Meeting										INTO CELLUR FOR CLEARING THE PARASITE AND TOPOUT
Event	32	Clear Parasite	7/29/2018	00:49:20	COM5	8.4	2.2	450	12	PUMPED 12 BBLs SUGAR WATER (20 LBS SUGAR) DOWN THE PARASITE.
Event	33	Wait on Cement	7/29/2018	00:57:05	USER					WAITING UNTIL 02:00 TO START TOPOUT
Event	34	Pump H2O Ahead	7/29/2018	02:09:09	USER					PUMPED WATER AHEAD TO ESTABLISH FLOW
Event	35	Super Flush	7/29/2018	02:18:10	USER					WHILE MIXING TOPOUT DUMPED 5 BBLs SUPER FLUSH DOWN ANNULUS
Event	36	Pump Cement	7/29/2018	02:23:49	USER	15.6			25	TOPOUT CEMENT 15.6 PPG, 1.19 FT3/SK, 5.24 GAL/SK. PUMPED 117 SKS (25 BBL)
Event	37	End Job	7/29/2018	03:15:57	COM5					USED 25 BBL SUPER FLUSH, 20 BAGS CALCIUM CHLORIDE, 70 LBS SUGAR, 117 SKS TOPOUT. CHARGED 8 HRS FOR SUPERFLUSH TRANSPORT.
Event	38	Post-Job Safety Meeting (Pre Rig-Down)	7/29/2018	03:30:00	USER					ALL HES PRESENT
Event	39	Pre-Convoy Safety Meeting	7/29/2018	04:45:00	USER					ALL HES PRESENT
Event	40	Depart Location	7/29/2018	05:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW

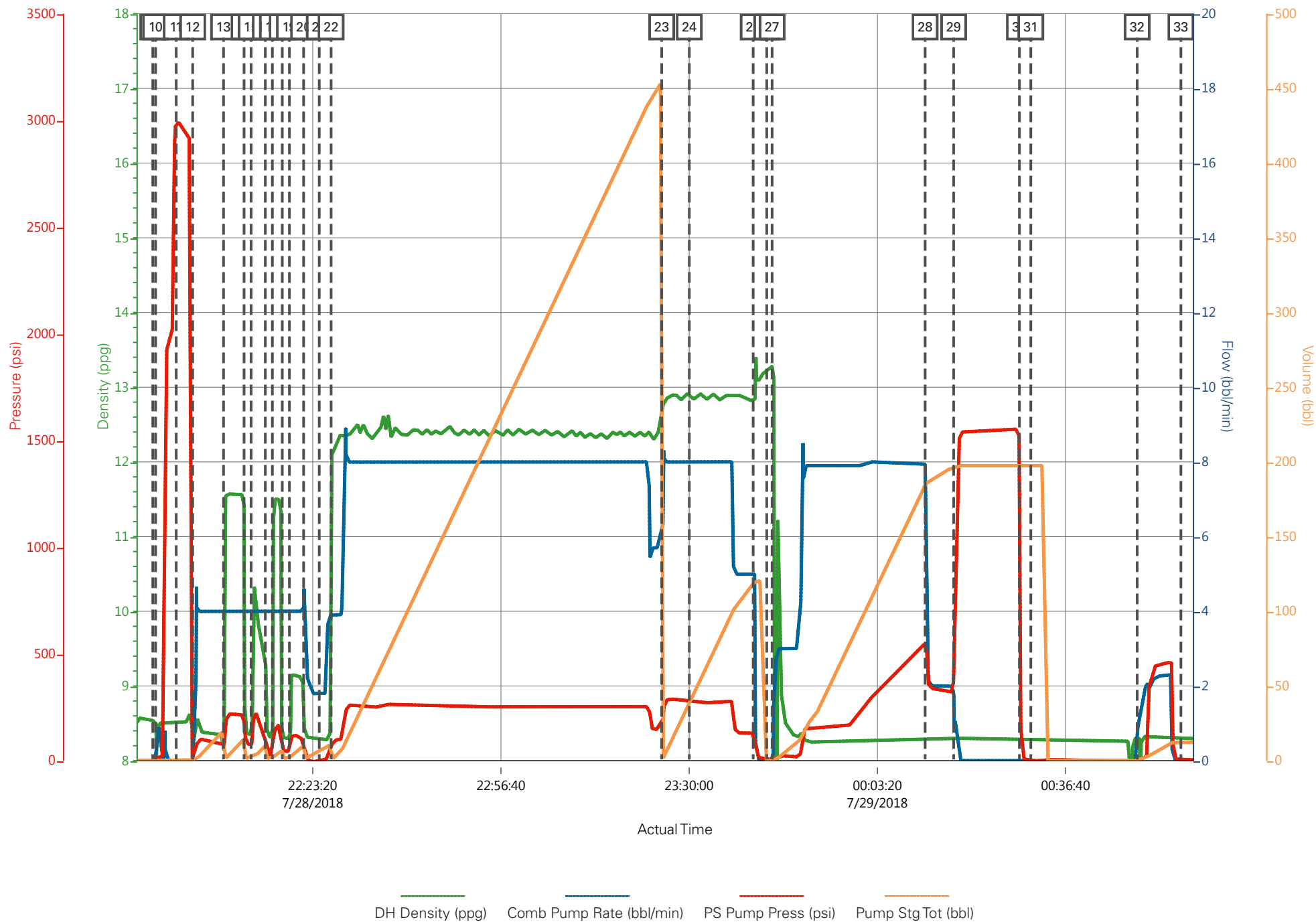
# Laramie - CC 697-03-17W - 9 5/8" SURFACE



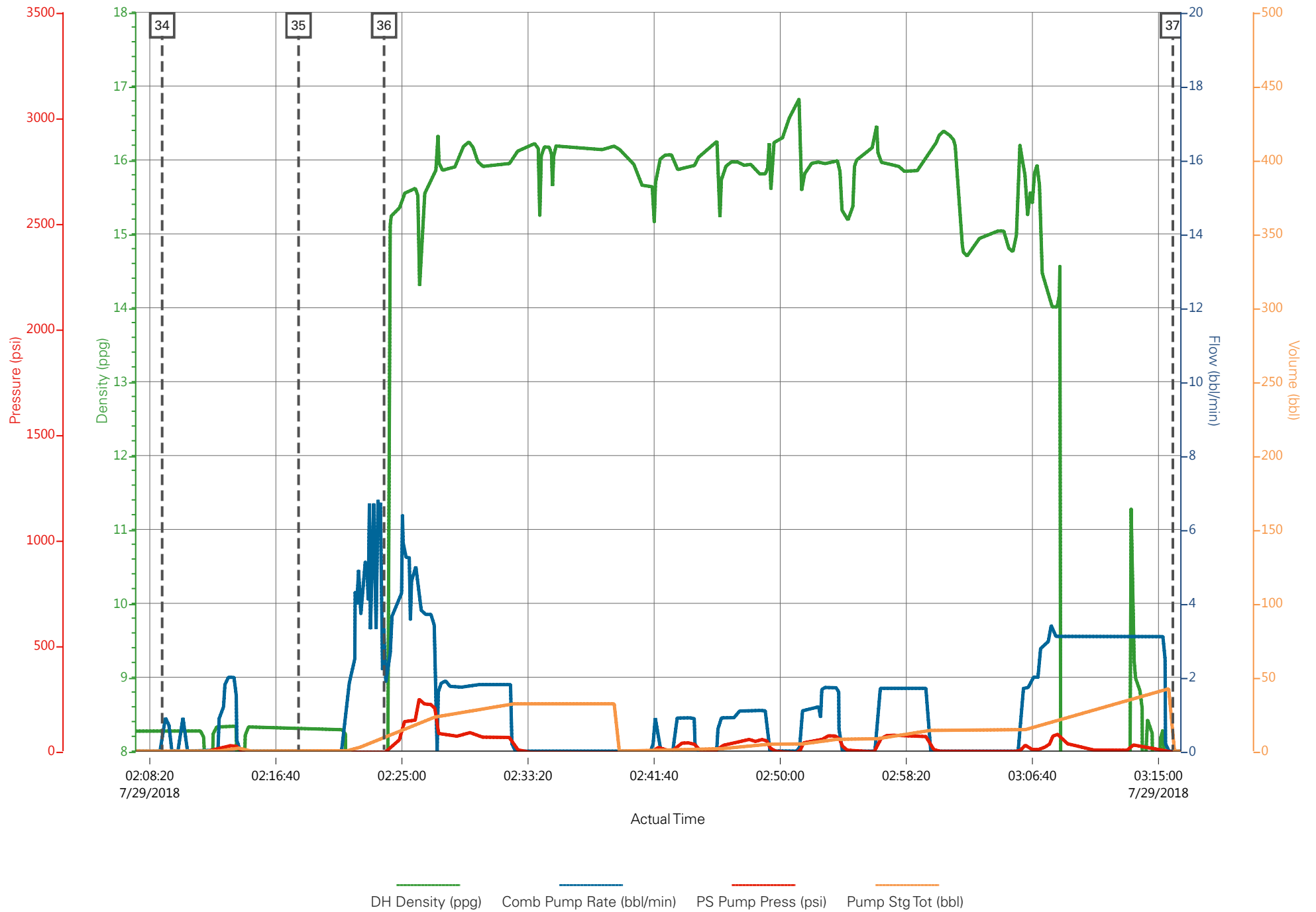
— DH Density (ppg)
 — Comb Pump Rate (bbl/min)
 — PS Pump Press (psi)
 — Pump Stg Tot (bbl)

Description	Actual Time	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)
9 Start Job	21:55:00	8.54	0.00	1.00	0.00
10 Prime Lines	21:55:30	8.54	0.00	0.00	0.00
11 Test Lines	21:59:09	8.54	0.00	2994.00	0.70
12 Pump H2O Spacer	22:02:04	8.47	0.00	10.00	0.70
13 Pump Super Flush	22:07:32	8.34	4.00	72.00	20.10
14 Pump H2O Spacer	22:11:10	11.15	4.00	199.00	0.00
15 Pump Calcium Chloride	22:12:25	8.34	4.00	72.00	0.00
16 Pump H2O Spacer	22:14:56	9.30	4.00	114.00	0.00
17 Pump Super Flush	22:16:11	8.31	4.00	27.00	5.00
18 Pump H2O Spacer	22:17:56	8.31	4.00	67.00	0.00
19 Pump Calcium Chloride	22:19:12	8.29	4.00	42.00	0.00
20 Pump H2O Spacer	22:21:43	8.64	4.00	69.00	0.00
21 Check Weight	22:24:29	8.29	1.80	-2.00	6.30
22 Pump Lead Cement	22:26:35	11.13	3.90	55.00	11.50
23 Pump Tail Cement	23:25:08	12.64	6.10	184.00	454.30
24 Check Weight	23:30:01	12.89	8.00	286.00	38.50
25 Shutdown	23:41:20	12.83	5.00	130.00	118.60

# Laramie - CC 697-03-17W - 9 5/8" SURFACE



# Laramie - CC 697-03-17W - Topout



# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC**

United States of America, COLORADO

Date: Monday, August 27, 2018

**CASCADE CREEK 697-03-17W**

API # 05-045-23815

Laramie Cascade Creek 697-03-17W Production

Job Date: Friday, August 03, 2018

Sincerely,

**Grand Junction Cement Engineering**



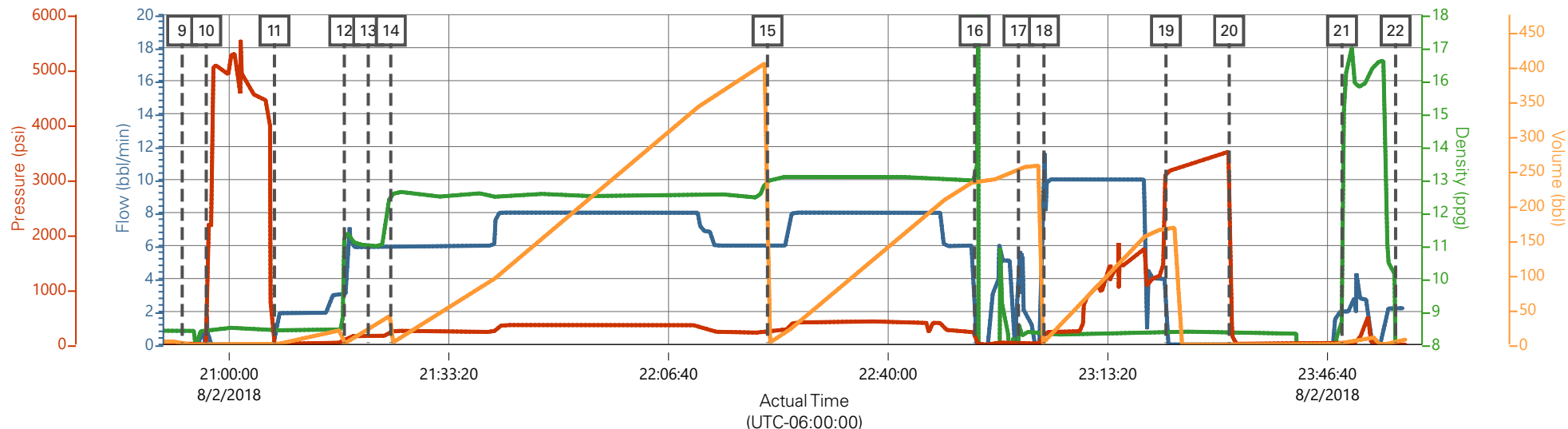
## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/2/2018	14:00:00	USER					REQUESTED ON LOCATION 8/2/18 @ 20:00
Event	2	Depart Yard Safety Meeting	8/2/2018	15:55:00	USER					JSA COMPLETED
Event	3	Crew Leave Shop	8/2/2018	16:00:00	USER					
Event	4	Arrive At Loc	8/2/2018	18:00:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	8/2/2018	18:15:00	USER					JSA COMPLETED
Event	6	Pre-Rig Up Safety Meeting	8/2/2018	18:25:00	USER					JSA COMPLETED
Event	7	Rig-Up Equipment	8/2/2018	18:30:00	USER					
Event	8	Pre-Job Safety Meeting	8/2/2018	20:30:00	USER					JSA COMPLETED, PRESSURIZED MUD SCALES CALIBRATED TO FRESH WATER
Event	9	Start Job	8/2/2018	20:52:52	COM4					4 1/2"-11.6# CASING IN 8 3/4" OH, TC 10382', TP 10371.4', ST 81.8', MUD 9.3 PPG, WATER TEMP 65, PH 7, CHLORIDES 0
Event	10	Test Lines	8/2/2018	20:56:31	COM4			5000.00		TEST LINES TO 5000 PSI, HAD TO BUMP NUMEROUS TIMES, HELD AFTER LINING OUT AROUND 4500 PSI
Event	11	PUMP MUDFLUSH	8/2/2018	21:06:52	COM4	3.00	8.40	20.00	20.00	20 BBL MUDFLUSH
Event	12	PUMP TUNED SPACER	8/2/2018	21:17:28	COM4	6.00	11.00	160.00	40.00	40 BBL TUNED SPACER @ 11.0 PPG
Event	13	Drop Bottom Plug	8/2/2018	21:21:06	COM4					PLUG AWAY

Event	14	Pump Lead Cement	8/2/2018	21:24:31	COM4	8.00	12.50	350.00	366.90	366.9 BBL LEAD CEMENT, 1062 SKS @ 12.5 PPG / 1.94 YLD / 9.59 GAL/SK
Event	15	Pump Tail Cement	8/2/2018	22:21:41	COM4	8.00	13.00	400.00	200.90	200.9 BBLS TAIL CEMENT, 545 SKS @ 13.0 PPG / 2.07 YLD / 9.41 GAL/SK
Event	16	Shutdown	8/2/2018	22:53:07	COM4					
Event	17	Drop Top Plug	8/2/2018	22:59:46	COM4					PLUG AWAY
Event	18	Pump Displacement	8/2/2018	23:03:38	USER	10.00	8.40	1790.00	159.50	159.5 BBL H2O DISPLACEMENT WITH 1 GAL MMCR, 5 GAL CLA-WEB AND 5 GAL BIOCIDES PROVIDED BY CUSTOMER
Event	19	Bump Plug	8/2/2018	23:22:09	COM4	4.00	8.40	1300.00	159.50	PLUG BUMPED AT CALCULATED, FINAL CIRCULATING PRESSURE AT 4 BBL/MIN 1300 PSI BROUGHT TO 3000 PSI FOR 10 MIN. CASING TEST
Event	20	CHECK FLOATS	8/2/2018	23:31:45	COM4					FLOATS HELD, 2 BBL BACK TO PUMP
Event	21	FILL PARASITE	8/2/2018	23:48:52	COM4	2.00	15.60	130.00	7.40	7.4 BBLS CEMENT, 35 SKS @ 15.6 PPG / 1.19 YLD / 5.2 GAL/SK, 130 PSI AT 2 BBL/MIN
Event	22	End Job	8/2/2018	23:57:00	COM4					PIPE LEFT STATIC, GOOD RETURNS UNTIL DISPLACEMENT, AIR SHUT OFF AT 50 BBLS AWAY IN DISPLACEMENT NO RETURNS AFTER THAT, 1 GAL MMCR, 5 GAL CLA-WEB USED, NO SUGAR USED AND NO ADD HOURS CHARGED
Event	23	Pre-Rig Down Safety Meeting	8/3/2018	00:15:00	USER					JSA COMPLETED
Event	24	Rig-Down Equipment	8/3/2018	00:20:00	USER					
Event	25	Pre-Convoy Safety Meeting	8/3/2018	00:55:00	USER					JSA COMPLETED
Event	26	Crew Leave Location	8/3/2018	01:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, CO - RYAN MARTIN AND CREW

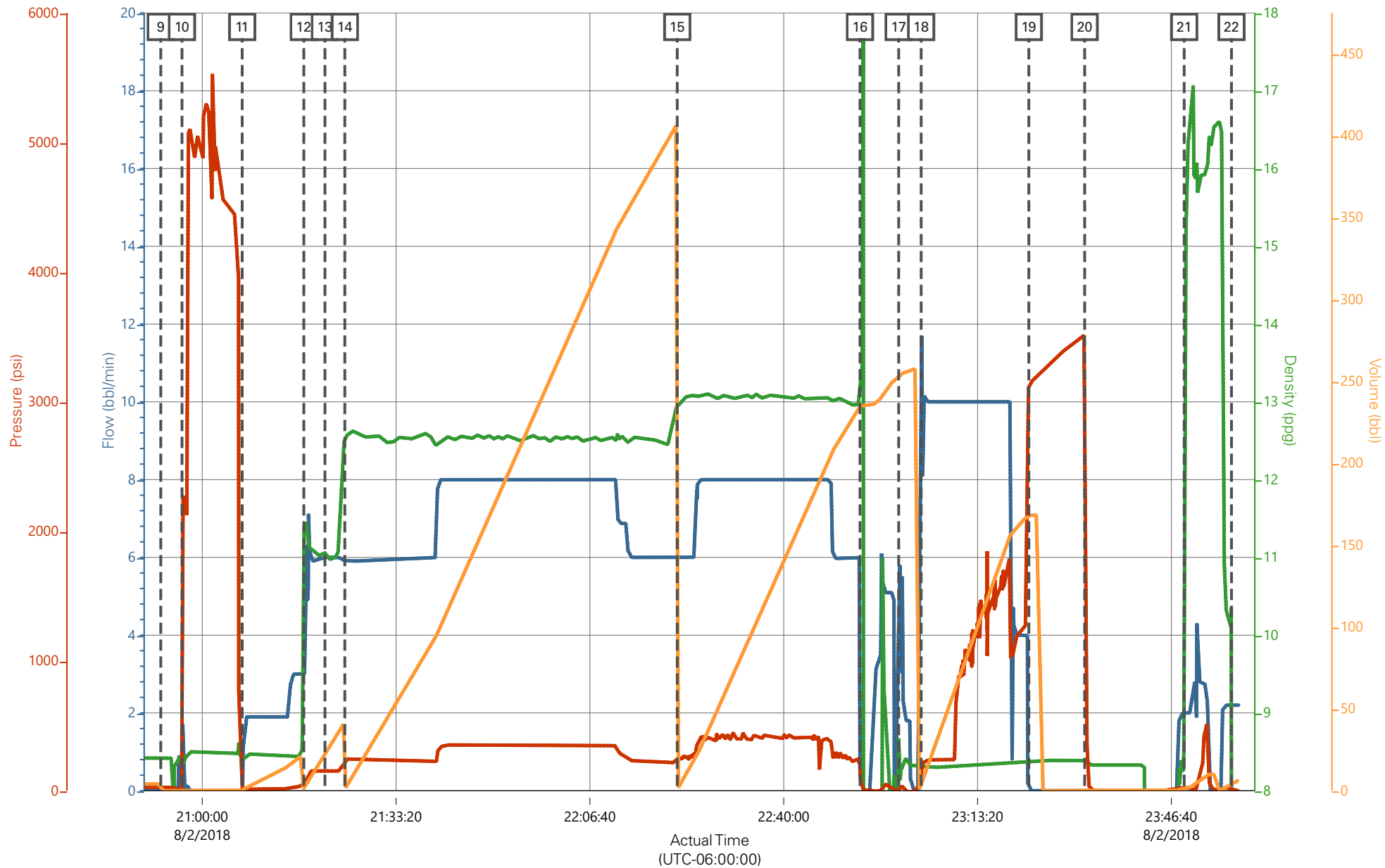
# LARAMIE - CASCADE CREEK 697-03-17W - 4 1/2" PRODUCTION CASING



Comb Pump Rate (bbl/min) 2.2    DH Density (ppg) -0.01    PS Pump Press (psi) -2    Pump Stg Tot (bbl) 7

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	20:52:52	0.00	8.42	25.00	0.00
10 Test Lines	20:56:31	0.00	8.40	7.00	0.20
11 PUMP MUFLUSH	21:06:52	0.00	8.40	6.00	0.30
12 PUMP TUNED SPACER	21:17:28	3.00	11.24	48.00	1.40
13 Drop Bottom Plug	21:21:06	6.00	11.06	150.00	21.60
14 Pump Lead Cement	21:24:31	5.90	12.54	242.00	0.90
15 Pump Tail Cement	22:21:41	6.00	12.96	239.00	0.70
16 Shutdown	22:53:07	0.40	12.98	149.00	235.50
17 Drop Top Plug	22:59:46	3.10	8.71	0.00	252.10
18 Pump Displacement	23:03:38	9.70	8.30	195.00	3.00
19 Bump Plug	23:22:09	0.00	8.39	3128.00	168.30
20 CHECK FLOATS	23:31:45	0.00	8.39	3517.00	0.00
21 FILL PARASITE	23:48:52	2.00	10.19	8.00	2.40
22 End Job	23:57:00	2.20	7.15	7.00	3.70

# LARAMIE - CASCADE CREEK 697-03-17W - 4 1/2" PRODUCTION CASING



Comb Pump Rate (bbl/min) 2.2 DH Density (ppg) -0.01 PS Pump Press (psi) -2 Pump Stg Tot (bbl) 7

### Job Information

<b>Request/Slurry</b>	2490590/1	<b>Rig Name</b>		<b>Date</b>	26/JUL/2018
<b>Submitted By</b>	Lukas Van Zyl	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Laramie Energy	<b>Location</b>	Garfield	<b>Well</b>	CC 0697-03-17W

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10400 ft	<b>BHST</b>	121°C / 249°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9954 ft	<b>BHCT</b>	82°C / 179°F
<b>Pressure</b>	6268 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	1.946	ft3/sack
						Water Requirement	9.615	gal/sack
						Total Mix Fluid	9.615	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

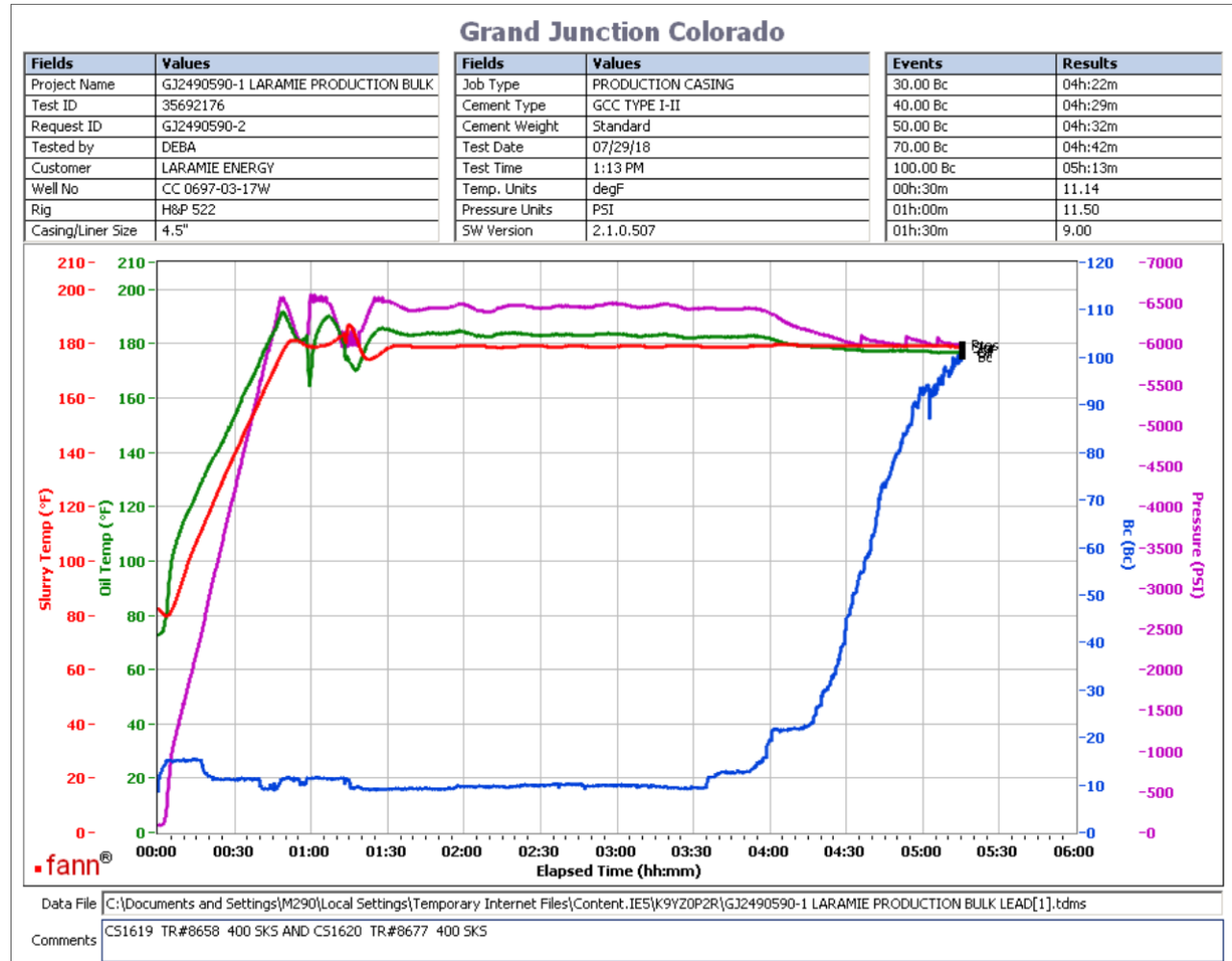
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# **Operation Test Results Request ID 2490590/1**

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

**29/JUL/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)
179	6268	48	4:22	4:32	4:42	5:15	8	58	15	10



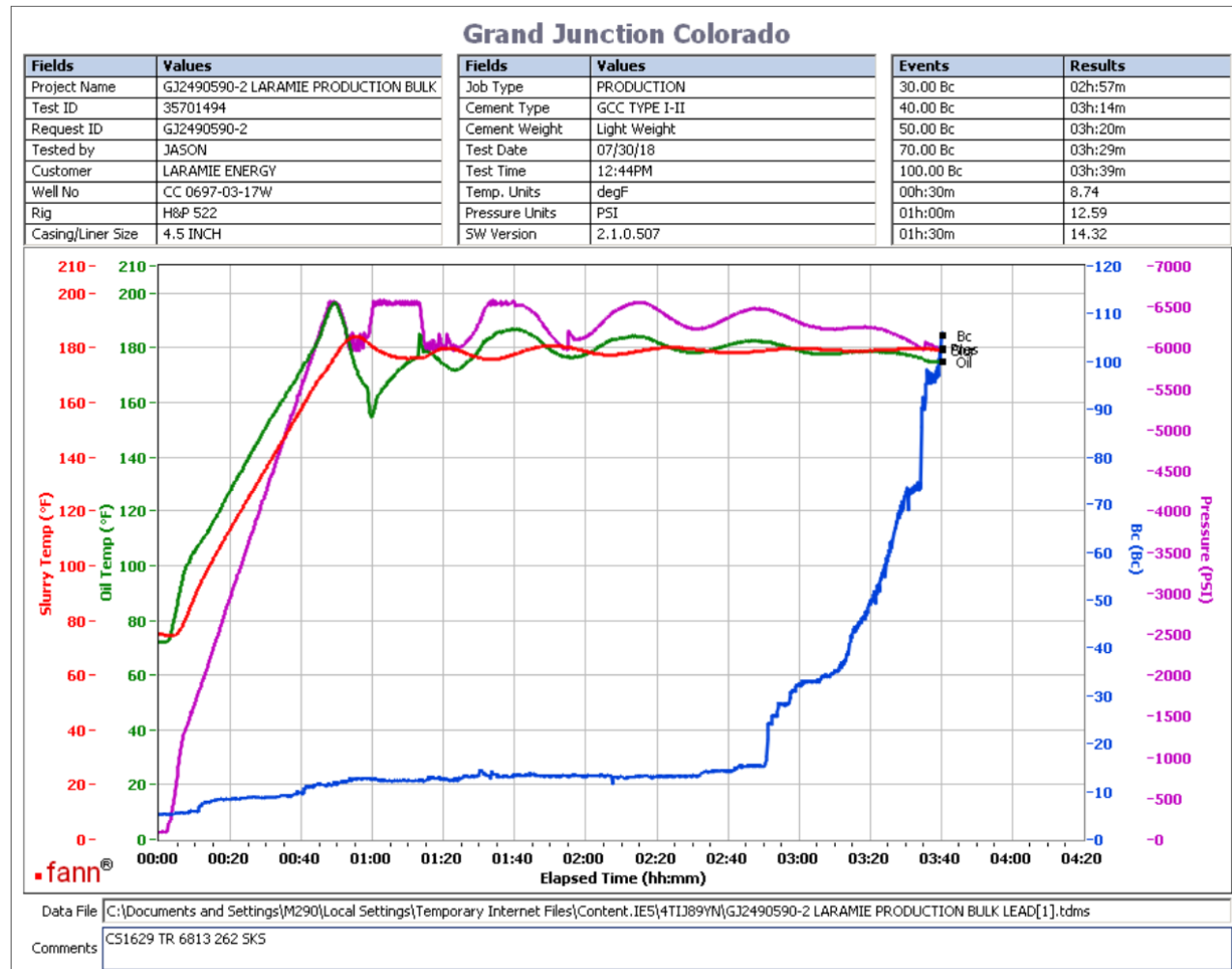
Total SKS = 1062  
 CS1619 TR#8658 400 SKS  
 CS1620 TR#8677 400 SKS  
 no deflection, 10Bc--- > 10Bc

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Thickening Time - ON-OFF-ON

30/JUL/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)
179	6268	48	2:57	3:20	3:29	3:39	5	58	15	12



Total SKS = 1062  
 CS1629 TR 6813 262 SKS  
 deflected from 12Bc--- > 12Bc

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

<b>Request/Slurry</b>	2490591/1	<b>Rig Name</b>		<b>Date</b>	26/JUL/2018
<b>Submitted By</b>	Lukas Van Zyl	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Laramie Energy	<b>Location</b>	Garfield	<b>Well</b>	CC 0697-03-17W

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10400 ft	<b>BHST</b>	121°C / 249°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9954 ft	<b>BHCT</b>	82°C / 179°F
<b>Pressure</b>	6268 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>		
		NeoCem HT Tail				Slurry Density	13	lbm/gal
						Slurry Yield	2.069	ft3/sack
						Water Requirement	9.408	gal/sack
						Total Mix Fluid	9.408	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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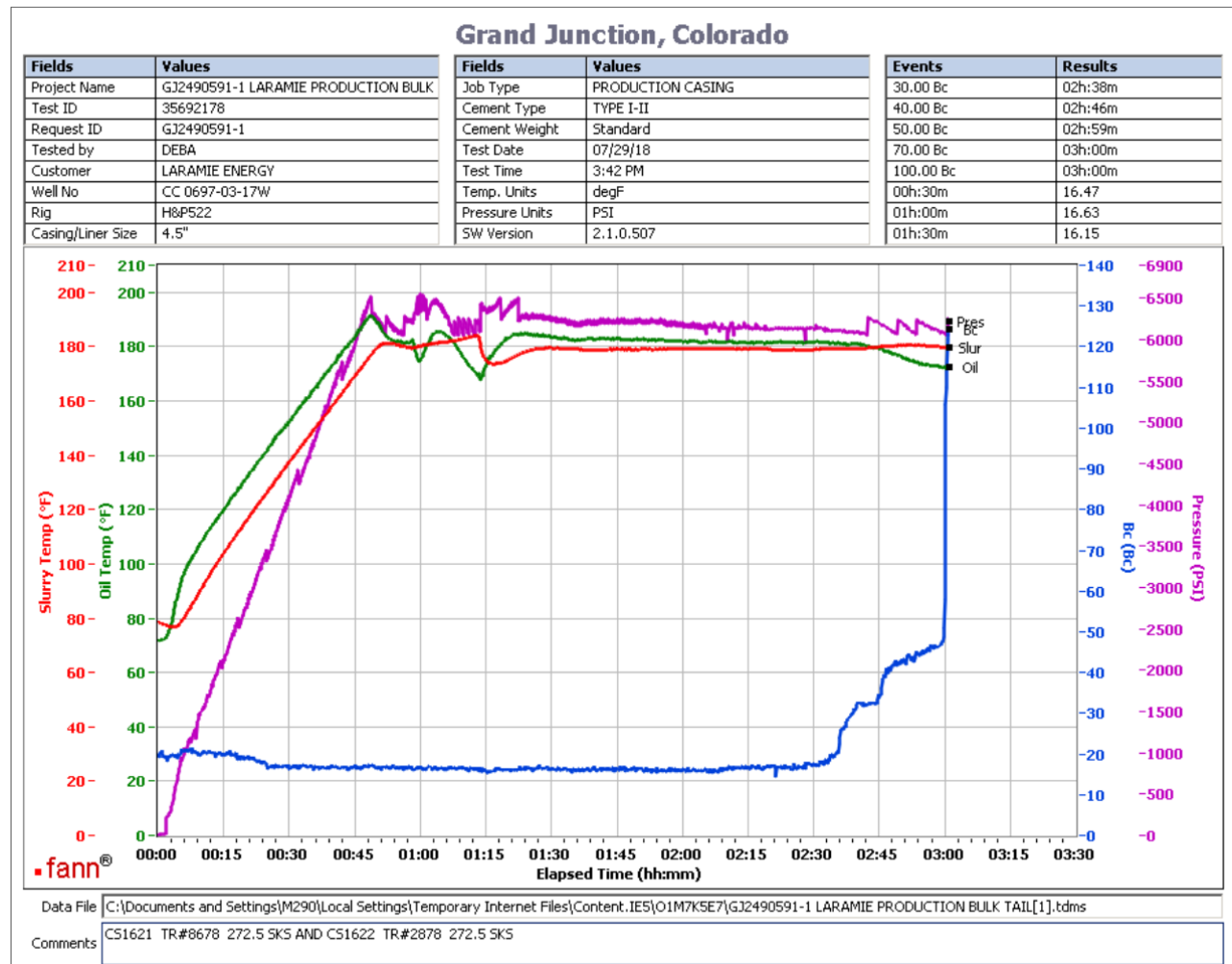


# **Operation Test Results Request ID 2490591/1**

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

**29/JUL/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)
179	6268	48	2:38	2:59	3:00	3:00	20	58	15	16



Total SKS = 545  
 CS1621 TR#8678 272.5 SKS  
 CS1622 TR#2878 272.5 SKS  
 no deflection, 16Bc--- > 16Bc  
 please note heat of hydration at 2:46

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