

# HALLIBURTON

iCem<sup>®</sup> Service

## **LARAMIE ENERGY II LLC**

**For: Laramie**

Date: Friday, April 20, 2018

**Gunderson 0994-13-17E Surface PJR**

**API #: 05-077-10529**

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

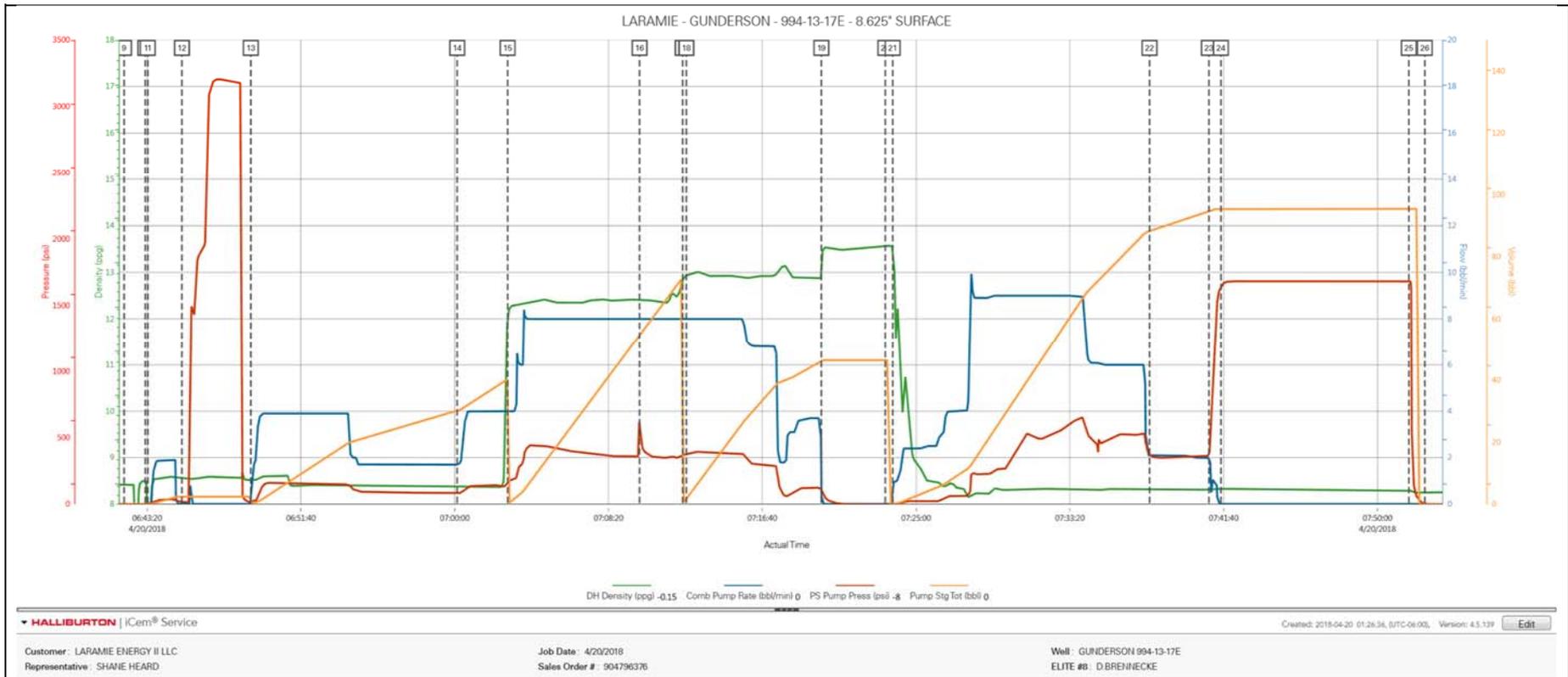
### 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	PS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	4/20/2018	00:01:00	USER					ON LOCATION REQUESTED 6:00
Event	2	Pre-Convoy Safety Meeting	4/20/2018	02:15:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	4/20/2018	02:30:00	USER					
Event	4	Arrive at Location from Service Center	4/20/2018	04:30:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	4/20/2018	04:35:00	USER					MET WITH COMPANY REP SDS OFFERED
Event	6	Pre-Rig Up Safety Meeting	4/20/2018	04:50:00	USER					1-ELITE, 1-660 BULK TRAILER, 8.625" QL, 2" PUMP IRON, 4" SUCTION HOSE
Event	7	Rig-Up Completed	4/20/2018	06:00:00	USER					
Event	8	Pre-Job Safety Meeting	4/20/2018	06:30:00	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	4/20/2018	06:42:05	COM5	8.42	0.00	1.00	0.00	TD-1553', TP-1547', SJ-42.95', OH-11", CSG-8.625" 28# J55, MUD-9.2PPG
Event	10	Drop Bottom Plug	4/20/2018	06:43:14	COM5	8.50	0.00	-1.00	0.00	PLUG AWAY
Event	11	Prime Pumps	4/20/2018	06:43:22	COM5	8.40	2.00	40.00	3.00	FRESH WATER
Event	12	Test Lines	4/20/2018	06:45:13	COM5	8.57	0.00	3205.00	3.10	ALL PRESSURE HELD
Event	13	Pump Spacer 1	4/20/2018	06:48:57	COM5	8.52	4.00	150.00	40.0	FRESH WATER
Event	14	Check Weight	4/20/2018	07:00:08	COM5					WEIGHT VERIFIED BY PRESSURIZED MUD SCALES

Event	15	Pump Lead Cement	4/20/2018	07:02:52	COM5	12.30	8.00	400.00	73.20	167SKS, 12.3PPG, 2.46CF/SK, 14.17GL/SK
Event	16	Bottom Plug Rupture	4/20/2018	07:10:01	USER	12.40	8.10	595.00	54.60	
Event	17	Pump Tail Cement	4/20/2018	07:12:21	COM5	12.82	8.00	390.00	42.3	109SKS, 12.8PPG, 2.18CF/SK, 12.11GL/SK
Event	18	Check Weight	4/20/2018	07:12:33	COM5					WEIGHT VERIFIED BY PRESSURIZED MUD SCALES
Event	19	Shutdown	4/20/2018	07:19:52	USER					WASHED UP ON TOP OF PLUG
Event	20	Drop Top Plug	4/20/2018	07:23:20	USER					PLUG AWAY
Event	21	Pump Displacement	4/20/2018	07:23:44	COM5	8.33	9.00	623.00	93.9	FRESH WATER
Event	22	Slow Rate	4/20/2018	07:37:39	USER	8.31	2.10	372.00	84.0	SLOW RATE LAST 10 BBLS
Event	23	Bump Plug	4/20/2018	07:40:52	COM5	8.32	2.00	362.00	93.9	PLUG BUMPED 362 PSI
Event	24	Casing Test	4/20/2018	07:41:31	COM5	8.33	0.00	1644.00	95.40	10 MINUTE CASING TEST
Event	25	Check Floats	4/20/2018	07:51:42	USER	8.28	0.00	1682.00	95.40	FLOATS HELD 1 BBL BACK
Event	26	End Job	4/20/2018	07:52:34	COM5	8.26	0.00	3.00	0.00	GOOD RETURNS THROUGH OUT JOB, 33 BBLS CEMENT TO SURFACE
Event	27	Post-Job Safety Meeting (Pre Rig-Down)	4/20/2018	07:58:00	USER					ALL HES PRESENT
Event	28	Rig-Down Completed	4/20/2018	08:30:00	USER					
Event	29	Pre-Convoy Safety Meeting	4/20/2018	08:50:00	USER					ALL HES PRESENT
Event	30	Crew Leave Location	4/20/2018	09:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON, ANDREW BRENNECKE AND CREW

3.0 Attachments

3.1 8.5 SURFACE-Custom Results.png



# HALLIBURTON

iCem<sup>®</sup> Service

## **LARAMIE ENERGY II LLC**

**For: Laramie**

Date: Monday, April 23, 2018

**GUNDERSON 994-13-17E Production PJR**

**API #: 05-077-10529**

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

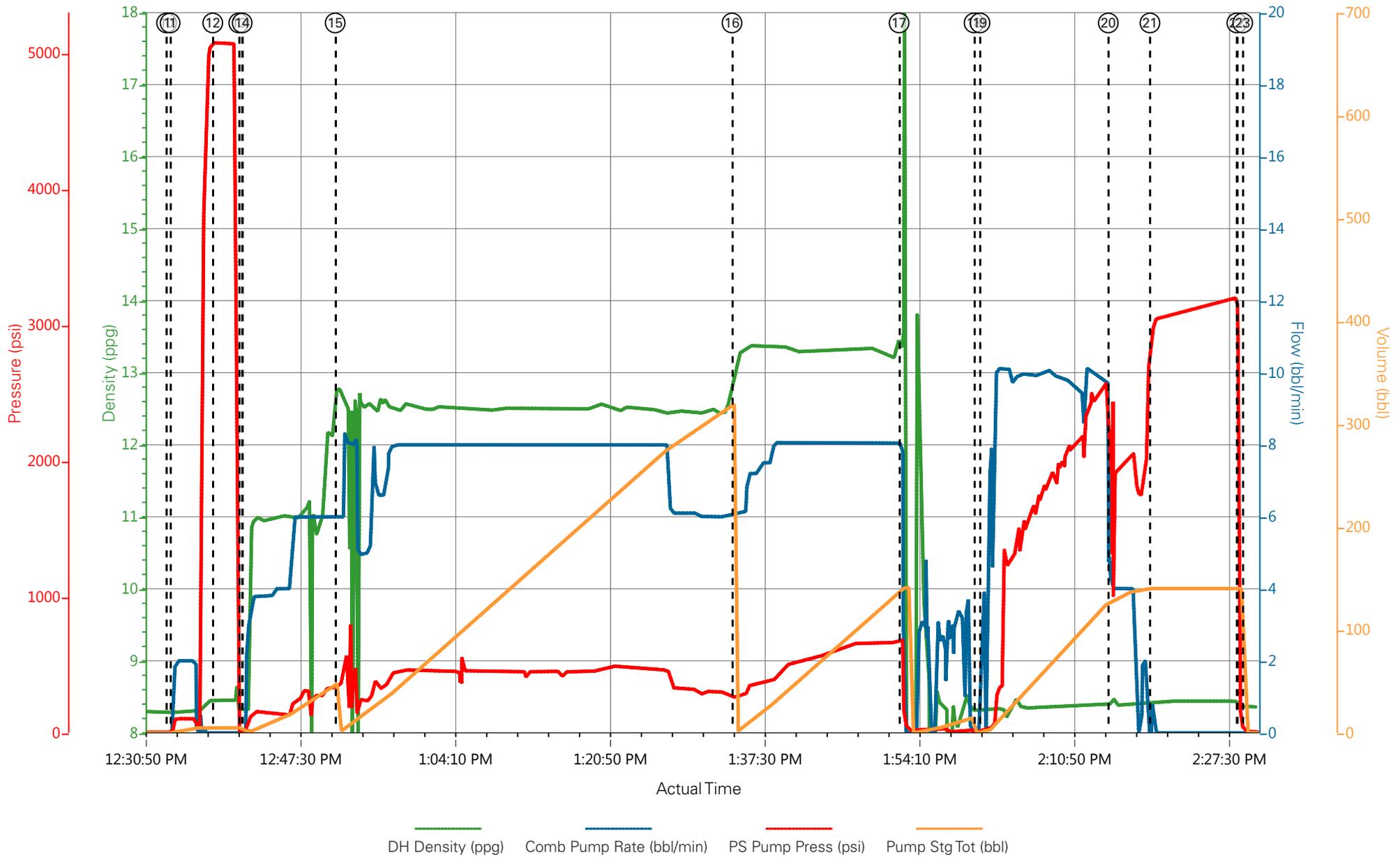
### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Downhole Density <i>(ppg)</i>	Combined Pump Rate <i>(bbl/min)</i>	Pass-Side Pump Pressure <i>(psi)</i>	Pump Stage Total <i>(bbl)</i>	Comments
Event	1		Call Out	4/23/2018	05:00:00	USER					ON LOCATION 11:00
Event	2		Pre-Convoy Safety Meeting	4/23/2018	07:30:00	USER					JOURNEY CREATED - ALL HES INVOLVED IN SAFETY MEETING
Event	3		Crew Leave Yard	4/23/2018	08:00:00	USER					1-F-550 PICKUP, 1-ELITE PUMP TRUCK, 1-660 BULK TRUCK
Event	4		Arrive At Loc	4/23/2018	09:30:00	USER					HES ARRIVED 1.5 HOURS EARLY
Event	5		Assessment Of Location Safety Meeting	4/23/2018	09:45:00	USER					RIG WAS RUNNING CASING - HES REP SPOKE WITH COMPANY REP PRIOR TO SPOTTING EQUIPMENT
Event	6		Pre-Rig Up Safety Meeting	4/23/2018	10:00:00	USER					JSA FILLED OUT AND REVIEWED BY ALL HES ON LOCATION
Event	7		Rig-Up Equipment	4/23/2018	10:15:00	USER					RIG-UP IRON TO THE RIG STAND PIPE - WATER HOSES TO BOTH RIG UPRIGHTS AND BULK EQUIPMENT TO PUMP TRUCK
Event	8		Well Info/Water Test	4/23/2018	10:30:00	USER					TD: 8285FT TP: 8275FT SJ: 84.49FT OH: 7 7/8" CSG: 4 1/2" 11.6# P-110 SRF: 1530FT 8 5/8" 24# J-55 WTR TEST- TEMP: 55 CHLOR: 0 PH: 7
Event	9		Rig-Up Completed	4/23/2018	11:30:00	USER					COMPLETED SAFELY

Event	10	Start Job	4/23/2018	12:33:24	COM5					START JOB
Event	11	Fill Lines	4/23/2018	12:33:47	USER	8.34	2	108	5	FILL LINES WITH 5BBLs OF FRESH WATER AHEAD TO PRESSURE TEST - PRESSURE WAS 108 PSI AT 2 BPM
Event	12	Test Lines	4/23/2018	12:38:23	COM5			5100		PRESSURE TEST LINES TO 5100 PSI - PRESSURE TEST GOOD
Event	13	Check weight	4/23/2018	12:41:11	COM5					VERIFIED WEIGHT OF FIRST TUB OF TUNED SPACER VIA PRESSURIZED MUD SCALES
Event	14	Tuned Spacer	4/23/2018	12:41:33	COM5	11	6	370	40	40BBLs OF TUNED SPACER 11PPG 4.86YIELD 31.9GAL/SK WEIGHT OF TUNED SPACER VERIFIED VIA PRESSURIZED MUD SCALES THROUGHOUT
Event	15	Pump Lead Cement	4/23/2018	12:51:34	COM5	12.5	8	485	298.5	864SKS OF NEOCEM CEMENT (298.5BBLs) 12.5PPG 1.94YIELD 9.6GAL/SK WEIGHT OF LEAD CEMENT VERIFIED VIA PRESSURIZED MUD SCALES THROUGHOUT LEAD CEMENT
Event	16	Pump Tail Cement	4/23/2018	13:34:18	COM5	13.3	8	671	121.7	395SKS OF THERMACEM CEMENT (121.7BBLs) 13.3PPG 1.73YIELD 7.81GAL/SK WEIGHT OF CEMENT VERIFIED VIA PRESSURIZED MUD SCALES THROUGHOUT TAIL CEMENT
Event	17	Shutdown	4/23/2018	13:52:18	USER					SHUTDOWN END OF CEMENT - CLEAN LINES TO RIG CELLAR - READY TANKS FOR DISPLACEMENT

Event	18	Drop Top Plug	4/23/2018	14:00:22	USER					TOP PLUG LAUNCHED NO PROBLEMS
Event	19	Pump Displacement	4/23/2018	14:01:00	COM5	8.45	10	2575	116.9	FRESH WATER DISPLACEMENT WITH 1-GAL MMCR, 5-GAL OF CLA-WEB AND 5-GAL OF BIOCIDES PROVIDED BY RIG
Event	20	Slow Rate	4/23/2018	14:14:49	USER	8.45	4	1900	10	SLOW RATE TO LAND THE PLUG - PRESSURE PRIOR TO SLOWING WAS 2575PSI AT 10 BPM - PRESSURE AFTER SLOWING WAS 1900PSI AT 4BPM
Event	21	Bump Plug	4/23/2018	14:19:19	COM5	8.45	4	1950	126.9	PLUG BUMPED AT CALCULATED DISPLACEMENT - PRESSURE WAS 1950 PSI TOOK TO 3000 PSI FOR 10-MIN CASING TEST
Event	22	Check Floats	4/23/2018	14:28:40	USER			3202		FLOATS HELD 1.5BBLS BACK TO TANKS - 40BBLS OF TUNED SPACER TO SURFACE - RIG USED 40 POUNDS OF SUGAR
Event	23	End Job	4/23/2018	14:29:18	COM5					THANK YOU FOR CHOOSING HALLIBURTON CEMENT CARL KUKUS AND CREW
Event	24	Pre-Rig Down Safety Meeting	4/23/2018	14:30:00	USER					JSA REVIEWED - ALL HES INVOLVED IN SAFETY MEETING
Event	25	Rig-Down Equipment	4/23/2018	14:40:00	USER					WASH UP AND BLOW DOWN PUMP TRUCK - RIG DOWN ALL LINES AND EQUIPMENT
Event	26	Rig-Down Completed	4/23/2018	15:40:00	USER					COMPLETED SAFELY
Event	27	Pre-Convoy Safety	4/23/2018	15:45:00	USER					JOURNEY CREATED - ALL

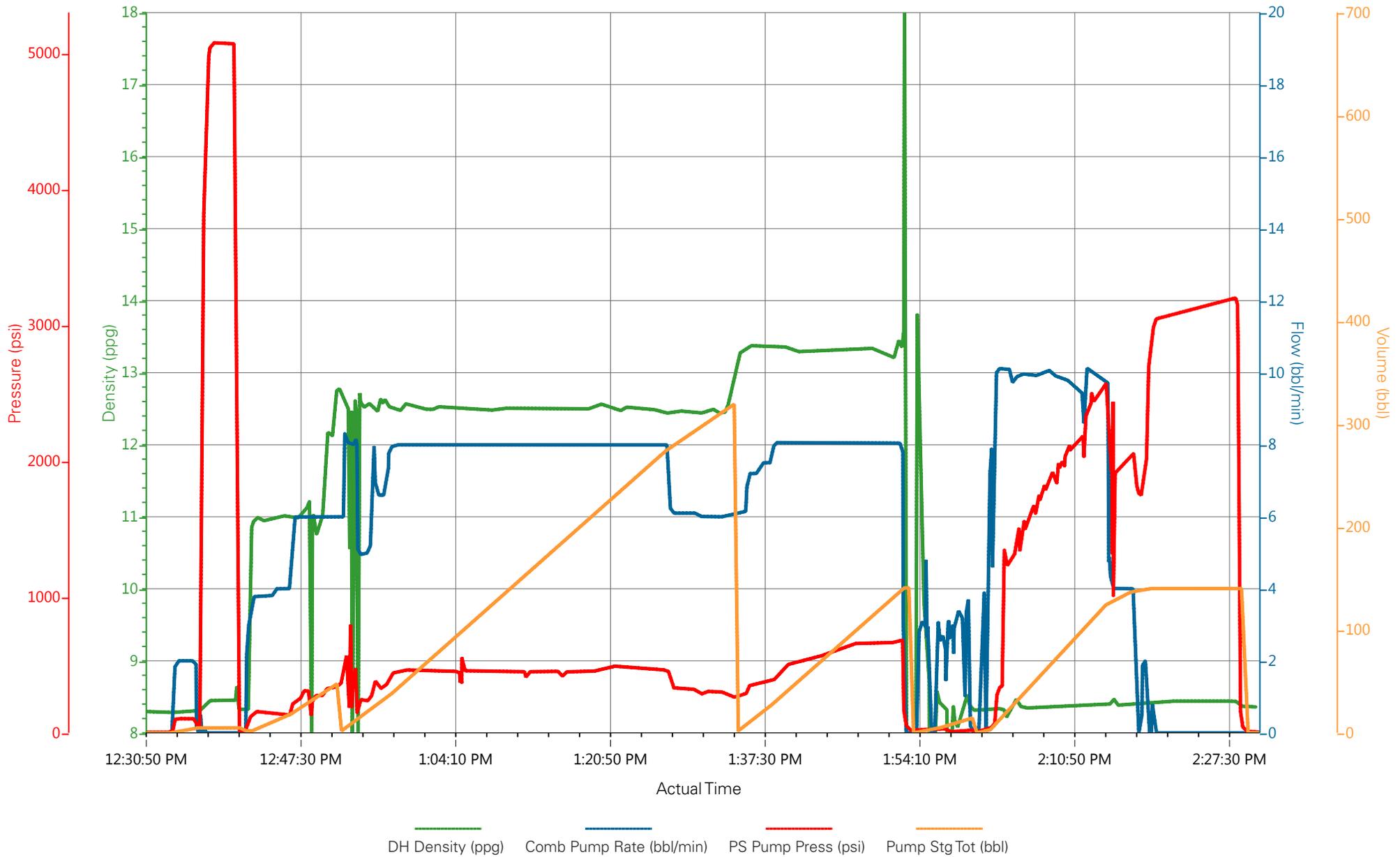
# LARAMIE - GUNDERSON 994-13-17E - 904796825 - 4 1/2" PRODUCTION



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

- ① Call Out      ③ Crew Leave Yard      ⑤ Assessment Of Location Safety Meeting      ⑦ Rig-Up Equipment      ⑨ Rig-Up Completed      ⑪ Fill Lines      ⑬ Check weight      ⑮ Pump Lead Cement
- ② Pre-Convoy Safety Meeting      ④ Arrive At Loc      ⑥ Pre-Rig Up Safety Meeting      ⑧ Well Info/Water Test      ⑩ Start Job      ⑫ Test Lines      ⑭ Tuned Spacer      ⑯ Pump Tail Cement

# LARAMIE - GUNDERSON 994-13-17E - 904796825 - 4 1/2" PRODUCTION



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

## Job Information

Request/Slurry	2468007/1	Rig Name	H&P 522	Date	18/APR/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Laramie Energy	Location	Garfield	Well	Gunderson 994-13-17E

## Well Information

Casing/Liner Size	4.5 in	Depth MD	8288 ft	BHST	114°C / 237°F
Hole Size	7.875 in	Depth TVD	7642 ft	BHCT	77°C / 170°F
Pressure	4649 psi				

## Drilling Fluid Information

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

Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties		
		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		

## Operation Test Results Request ID 2468007/1

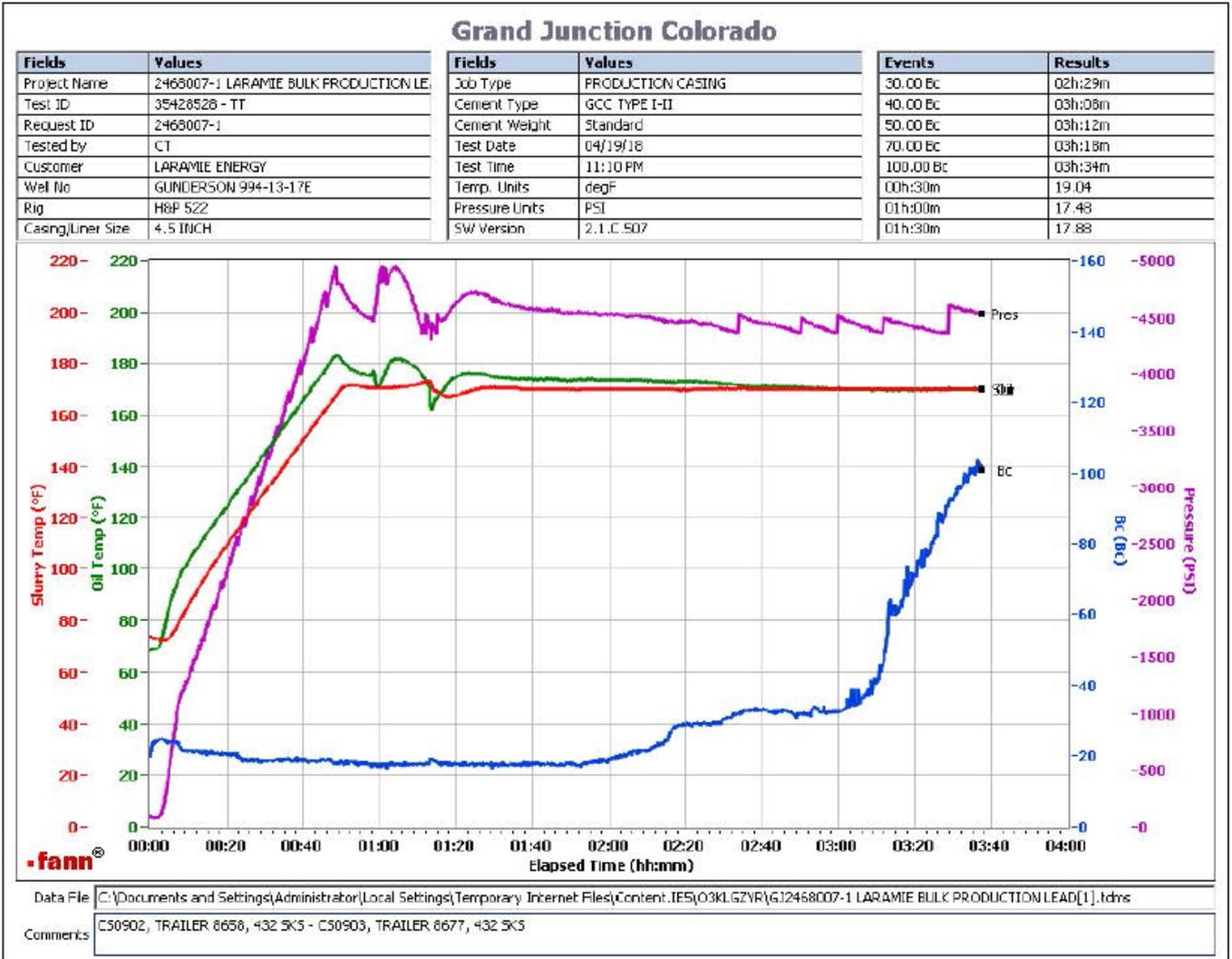
<b>Mixability (0 - 5) - 0 is not mixable</b>	<b>19/APR/2018</b>	
Mixability rating (0 - 5)	Avg rpm mixing under load (~12,000)	Blend addition time (sec) @ 4,000 RPM

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**Thickening Time - ON-OFF-ON** **20/APR/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)
170	4649	48	2:29	3:12	3:18	3:34	20	58	15	19

Total sks = 864  
 CS0902, Trailer 8658, 432 sks  
 CS0903, Trailer 8677, 432 sks  
 Deflection: 18 - 19



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### Job Information

<b>Request/Slurry</b>	2468008/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	18/APR/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>	Gunderson 994-13-17E

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8288 ft	<b>BHST</b>	114°C / 237°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	7642 ft	<b>BHCT</b>	77°C / 170°F
<b>Pressure</b>	4649 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				Slurry Density	13.3 lbm/gal
						Slurry Yield	1.733 ft <sup>3</sup> /sack
						Water Requirement	7.799 gal/sack
						Total Mix Fluid	7.799 gal/sack
						Water Source	Field (Fresh) Water
						Water Chloride	N/A

### Operation Test Results Request ID 2468008/1

**Mixability (0 - 5) - 0 is not mixable** **19/APR/2018**

Mixability rating (0 - 5)	Avg rpm mixing under load (~12,000)
5	12000

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

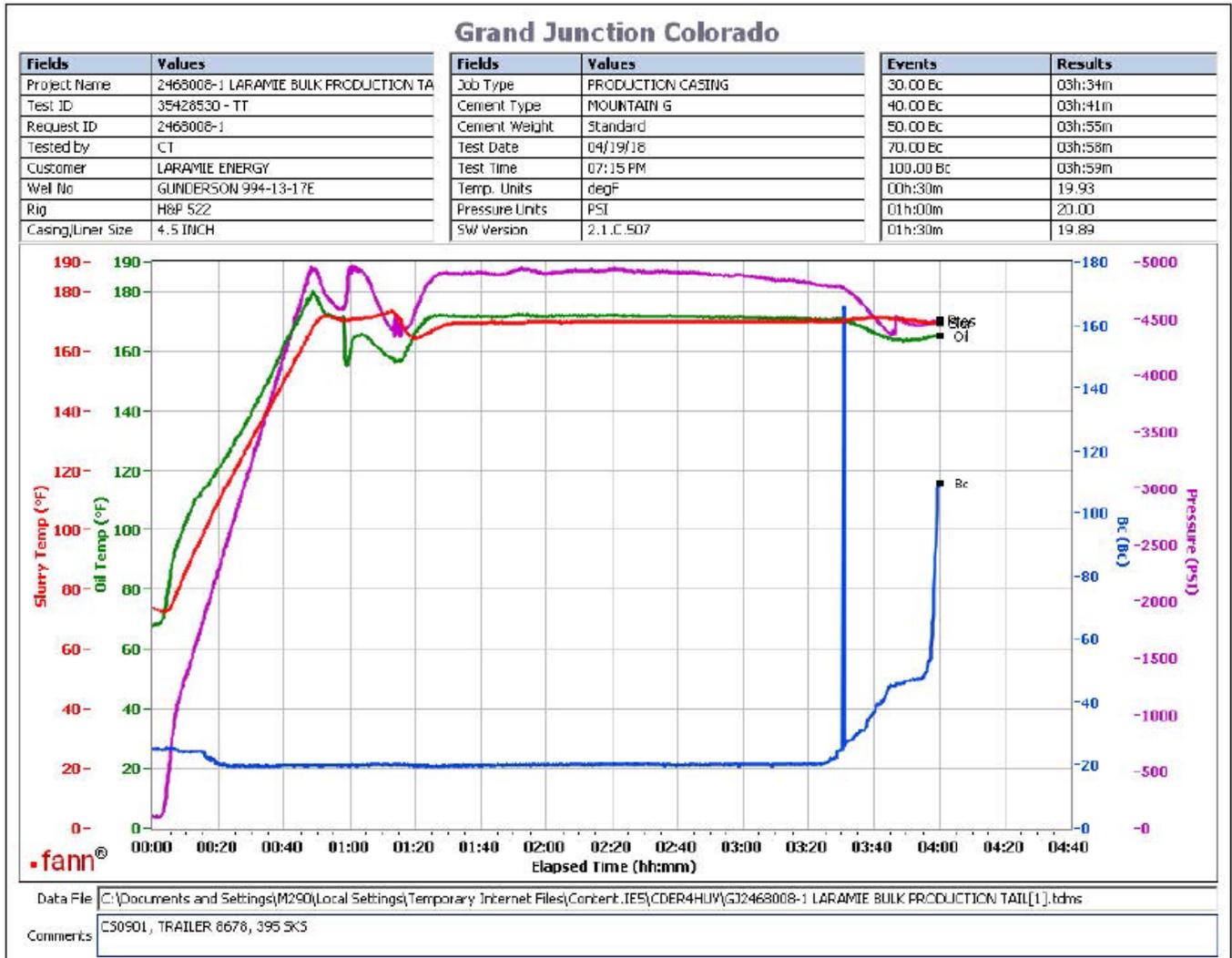
**19/APR/2018**

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)
170	4649	48	3:34	3:55	3:58	3:59	25	58	15	20

Total sks = 395

CS0901, Trailer 8678, 395 sks

No deflection and results were taken from graph due to mechanical spike. Please note heat of hydration started around 3:30.



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