

# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC**

United States of America, COLORADO

Date: Wednesday, September 26, 2018

**Buzzard Creek Unit 0993-21-06E Surface**

Laramie BCU 0993-21-06E Surface

API # 05-077-10519-00

Sincerely,

**Grand Junction Cementing Engineering**

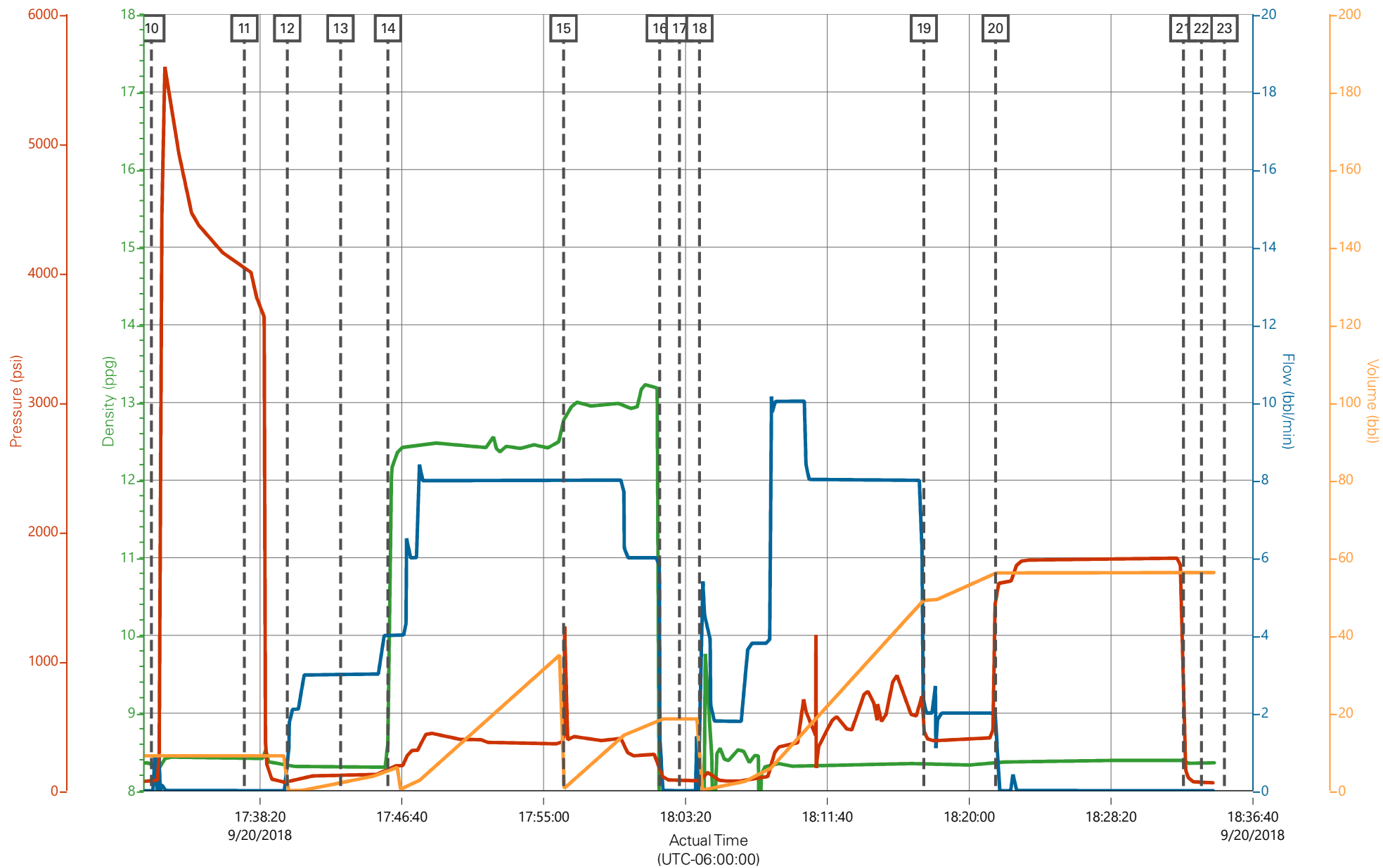
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Activity	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	PS Pmp Stg Tot (bbl)	Comments
Event	1	Call Out	9/20/2018	12:00:00						Requested on Location @ 17:00
Event	2	Pre-Convoy Safety Meeting	9/20/2018	15:00:00						
Event	3	Crew Leave Yard	9/20/2018	15:10:00						1 Elite, 1 660's, 1 pickup
Event	4	Arrive At Loc	9/20/2018	17:00:00						Rig running casing
Event	5	Assessment Of Location Safety Meeting	9/20/2018	17:10:00						JSA completed - Customer offered/received SDS - water test pH 7.0, Cl <200, temp 60 degrees
Event	6	Pre-Rig Up Safety Meeting	9/20/2018	17:11:00						
Event	7	Rig-Down Equipment	9/20/2018	17:15:00						DME iron to ground manifold, standpipe. Water hoses to both uprights, bulk hose to 660.
Event	8	Other	9/20/2018	17:17:52						Fresh Water
Event	9	Pre-Job Safety Meeting	9/20/2018	17:25:00						All HES personnel, rig crew, and company rep.
Event	10	Other	9/20/2018	17:31:57						TD 1550', TP 1540', SJ 39.65', OH 11", Csg 8 5/8" 36 lb/ft J-55, Mud 9.3 ppg.
Event	11	Test Lines	9/20/2018	17:37:25				3040		Held pressure 2 minutes
Event	12	Pump Spacer	9/20/2018	17:39:56		8.33	4	140	20	Fresh Water
Event	13	Check Weight	9/20/2018	17:43:04						Density verified via mud cup
Event	14	Pump Lead Cement	9/20/2018	17:45:51		12.3	8	445	74.9	171 sacks, 12.3 ppg, 2.46 yield, 14.17 gal/sk

Event	15	Pump Tail Cement	9/20/2018	17:56:10	12.8	8	410	36.5	94 sks, 12.8 ppg, 2.18 Yield, 12.11 gal/sk
Event	16	Shutdown	9/20/2018	18:01:49					Wash up on plug
Event	17	Drop Top Plug	9/20/2018	18:02:59					Co-Rep Verify Plug Launched
Event	18	Pump Displacement	9/20/2018	18:04:09	8.33	10	900	91.4	Fresh Water
Event	19	Slow Rate	9/20/2018	18:17:20	8.33	2	330	81	Slow Rate 10 bbls to Calculated Displacement
Event	20	Bump Plug	9/20/2018	18:21:33			1738		Plug Bumped at 330 psi, Brought up to 1738 psi, 10 min casing test @ 1738 psi
Event	21	Check Floats	9/20/2018	18:32:35					Floats held – .5 bbl back to the truck
Event	22	Other	9/20/2018	18:33:39					Good returns throughout job. 20 bbl of cement to surface
Event	23	Pre-Rig Down Safety Meeting	9/20/2018	18:35:00					40 lbs of sugar used, HES top and bottom plug used, 0 add hours.
Event	24	Rig-Down Equipment	9/20/2018	18:40:00					
Event	25	Pre-Convoy Safety Meeting	9/20/2018	18:55:00					
Event	26	Crew Leave Location	9/20/2018	19:00:00					Thanks for using Halliburton Cement, Chris Martinez and crew.

# Laramie, BCU 993-21-06E, 8 5/8" Surface



DH Density (ppg) 8.36

Comb Pump Rate (bbl/min) 0

DS Pump Press (psi) 62

PS Pmp Stg Tot (bbl) 56.2

# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC**

United States of America, COLORADO

Date: Monday, October 22, 2018

**BCU-993-21-06E Production**

Laramie BCU-993-21-06E Production

Job Date: Monday, September 24, 2018

API# 05-077-10519-00

Sincerely,

**Grand Junction Cement Engineering**

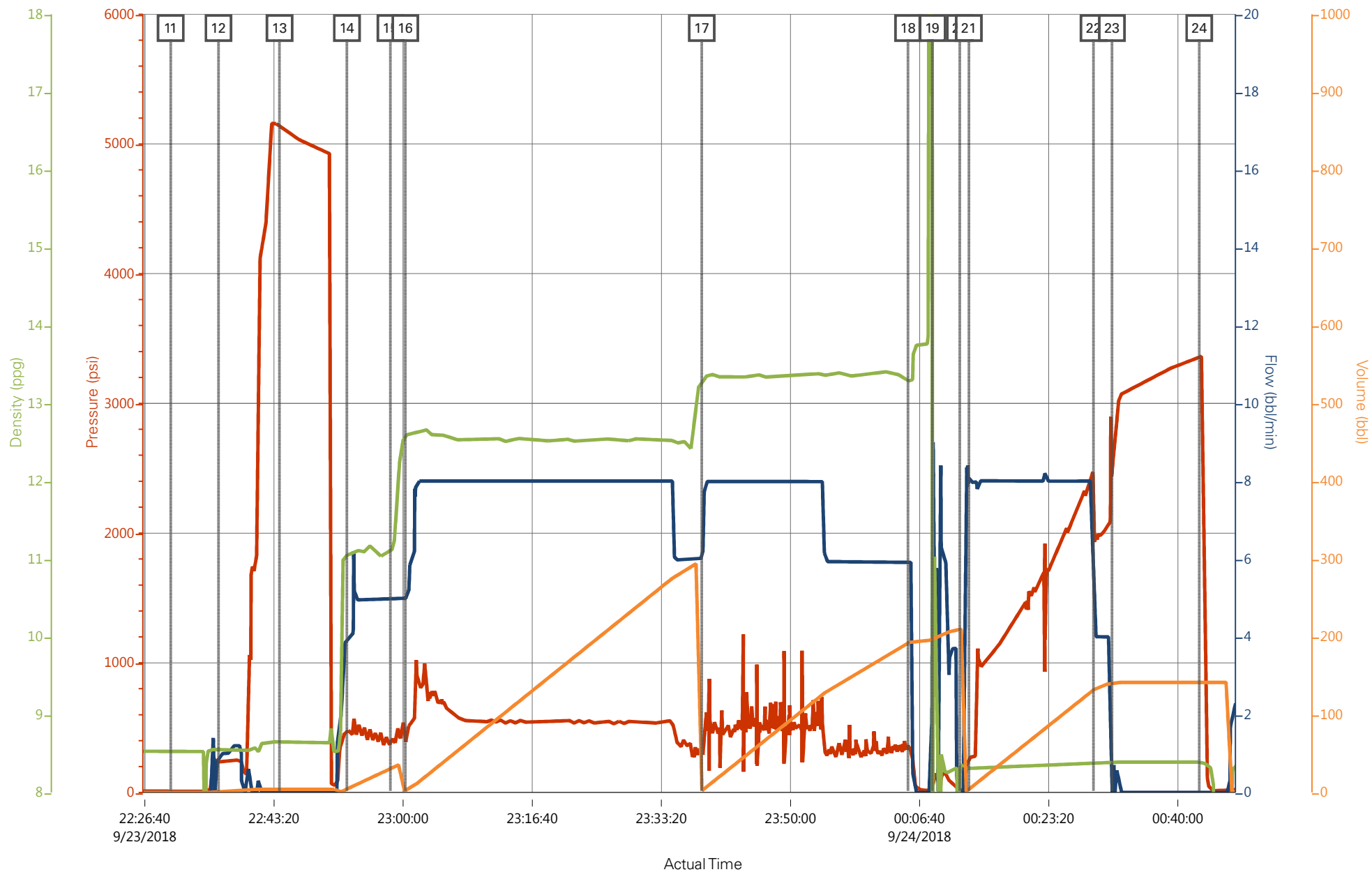
## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Activity	Date	Time	Source	PS Pump Press (psi)	Comb Pump Rate (bbl/min)	DH Density (ppg)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	9/23/2018	13:30:00	USER					REQUESTED ON LOCATION TIME 20:00
Event	2	Pre-Convoy Safety Meeting	9/23/2018	16:35:00	USER					WITH HES, JSA COMPLETED, 1 F-550, 1 ELITE CEMENTING UNIT, 1 660 BULK TRUCK
Event	3	Arrive At Loc	9/23/2018	18:00:00	USER					RIG RUNNING CASING, UPON HES ARRIVAL, ALL EQUIPMENT AND MATERIALS ON LOCATION
Event	4	Assessment Of Location Safety Meeting	9/23/2018	18:10:00	USER					WITH HES, JSA COMPLETED, SDS OFFERED FOR ALL HES MATERIALS
Event	5	Pre-Rig Up Safety Meeting	9/23/2018	18:20:00	USER					WITH HES, 1 LINE RAN TO THE FLOOR, 1 LINE RAN TO THE PIT, MANIFOLD ON THE GROUND, 1 4.5 IN QUICK-LATCH PLUG CONTAINER
Event	6	Rig-Up Equipment	9/23/2018	18:30:00	USER					
Event	7	Comment	9/23/2018	19:00:00	USER					TEMP 63 DEG F, PH 7.0, CHLOR 0
Event	8	Comment	9/23/2018	19:10:00	USER					TD 9184 FT, TP 9174 FT 4.5 IN 11.6 LB/FT P-110, HOLE 7.875 IN, SHOE 83.64 FT, SURFACE SET AT 1540 FT 8.625 IN 32 LB/FT J-55
Event	9	Comment	9/23/2018	19:20:00	USER					RIG CIRCULATION, 862 BBL, 10 BBL/MIN, 1270 PSI, MWT 9.4 LB/GAL WBM, PIPE WAS STATIC, RAT HOLE LENGTH 10 FT, PASON GAS 168 UNITS
Event	10	Start Job	9/23/2018	21:29:40	COM4	9.00	0.00	8.52	0.00	
Event	11	Pre-Job Safety Meeting	9/23/2018	22:30:00	USER	10.00	0.00	8.53	0.00	WITH HES, LARAMIE ENERGY, AND HP 522
Event	12	Other	9/23/2018	22:36:10	USER	250.00	0.80	8.55	0.60	4 BBL FRESH WATER

Event	13	Test Lines	9/23/2018	22:44:03	USER	5134.00	0.00	8.65	4.00	LOW TEST AT 800 PSI, HIGH TEST AT 5205 PSI, PRESSURE HOLDING
Event	14	Pump Spacer 2	9/23/2018	22:52:45	USER	488.00	4.00	11.04	3.10	MIXED AT 11 LB/GAL, 40 BBL, 4.86 FT3/SK, 31.9 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	15	Drop Bottom Plug	9/23/2018	22:58:21	USER	385.00	5.00	11.12	30.10	PLUG LAUNCHED, CUSTOMER WITNESSED
Event	16	Pump Lead Cement	9/23/2018	23:00:17	USER	380.00	4.90	12.59	2.40	MIXED AT 12.5 LB/GAL (NEOCHEM), 784 SKS, 1.94 FT3/SK, 9.59 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	17	Pump Tail Cement	9/23/2018	23:38:33	USER	266.00	6.00	13.28	2.10	MIXED AT 13.0 LB/GAL, (THERMOCEM) 496 SKS, 1.74 FT3/SK, 7.80 GAL/SK, DENSITY VERIFIED USING PRESSURIZED MUD SCALES
Event	18	Shutdown	9/24/2018	00:05:10	USER	370.00	5.90	13.28	191.70	
Event	19	Clean Lines	9/24/2018	00:08:18	USER	13.00	3.00	19.86	195.60	WASHED PUMPS AND LINES TO THE CELLAR
Event	20	Drop Top Plug	9/24/2018	00:11:51	USER	14.00	0.00	8.30	209.90	PLUG LAUNCHED, CUSTOMER WITNESSED
Event	21	Pump Displacement	9/24/2018	00:13:01	USER	265.00	8.10	8.32	3.30	FRESH WATER, 1 GAL MMCR ADDED TO THE FIRST 10 BBL, 5 GAL CLA WEB ADDED, 5 GAL BIOCIDES ADDED (SUPPLIED BY THE RIG)
Event	22	Slow Rate	9/24/2018	00:29:07	USER	1921.00	4.00	8.38	132.10	SLOWED AT 131 BBL AWAY TO 4 BBL/MIN
Event	23	Bump Plug	9/24/2018	00:31:29	USER	2529.00	0.00	8.38	141.20	PLUG BUMPED AT CALCULATED DISPLACEMENT, 2100 PSI
Event	24	Check Floats	9/24/2018	00:42:46	USER	3359.00	0.00	8.39	141.40	FLOATS HOLDING, PERFORMED A 10 MIN CASING TEST 3400 PSI, PRESSURE HOLDING, 1.5 BBL RETURNED TO THE TANKS
Event	25	End Job	9/24/2018	00:50:00	USER	28.00	0.00	7.27	6.40	GOOD CIRCULATION, NO ADD HOURS, RIG USED 80 LBS SUGAR, RIG USED TOP AND BOTTOM PLUGS
Event	26	Pre-Rig Down Safety Meeting	9/24/2018	00:55:00	USER					WITH HES, JSA COMPLETED
Event	27	Rig Down Lines	9/24/2018	01:10:00	USER					
Event	28	Pre-Convoy Safety Meeting	9/24/2018	01:20:00	USER					WITH HES, JSA COMPLETED
Event	29	Comment	9/24/2018	01:20:00	USER					SPACER 40 BBL TUNED SPACER III, LEAD CEMENT 270.9 BBL, TAIL CEMENT 153.7 BBL, FINAL DISPLACEMENT 141 BBL, 40 BBL TUNED SPACER III CIRCULATED TO SURFACE, ESTIMATED TOP OF LEAD CEMENT SURFACE, ESTIMATED TOP OF TAIL 4214 FT
Event	30	Crew Leave Location	9/24/2018	01:35:00	USER					THANKS FOW USING HALLIBURTON, JOHN KEANE AND CREW

# LARAMIE ENERGY - BCU-993-21-06E - PRODUCTION





### Job Information

<b>Request/Slurry</b>	2501591/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	17/SEP/2018
<b>Submitted By</b>	Aaron Katz	<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 0993-21-06E

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8394 ft	<b>BHST</b>	111°C / 231°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	9112 ft	<b>BHCT</b>	71°C / 159°F
<b>Pressure</b>	5176 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	1.944	ft3/sack
						Water Requirement	9.607	gal/sack
						Total Mix Fluid	9.607	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride		

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# Operation Test Results Request ID 2501591/1

## Thickening Time - ON-OFF-ON

20/SEP/2018

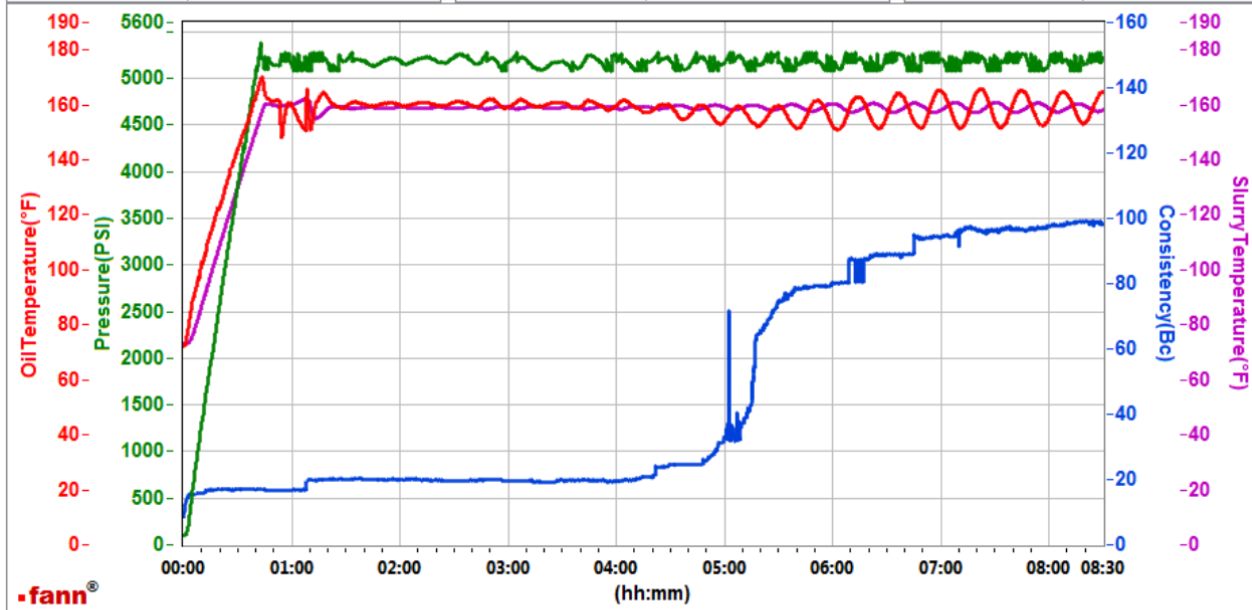
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
159	5176	43	4:56	5:15	5:25	8:21	8	53	15	20

## GRAND JUNCTION

Fields	Values
Project Name	2501591-1 Laramie Bulk
SW Version	1.0
Test ID	35825910-TT
Request ID	2501591-1
Tested by	DEBA
Customer	LARAMIE ENERGY
Well No	BCU 0993-21-06E

Fields	Values
Rig	H&P 522
Casing/Liner Size	4.5INCH
Job Type	PRODUCTION CASING
Cement Weight	GCCTYPE III
Comments	Light Weight
Date Time	9/19/2018 13:49:45.665
Temp. Units	degF

Events	Results
30 BC	4:56
50 BC	5:15
70 BC	5:25
100 BC	8:21



Data File \\Corp.Halliburton.com\NA\GJU\Public\Z Lab\HPHT 2\GJ2501591-1 LARAMIE PRODUCTION BULK LEAD.tdms

Comments Light Weight

Total sks = 784  
 CS2087 TR#8658 392 SKS  
 CS2089 TR#8678 392 SKS  
 Deflection: 16 - 20

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# HALLIBURTON

## Rockies, Grand Junction

### Lab Results- Tail

#### Job Information

<b>Request/Slurry</b>	2501592/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	17/SEP/2018
<b>Submitted By</b>	Aaron Katz	<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 0993-21-06E

#### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8394 ft	<b>BHST</b>	111°C / 231°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	9112 ft	<b>BHCT</b>	71°C / 159°F
<b>Pressure</b>	5176 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	1.737	ft3/sack
						Water Requirement	7.785	gal/sack
						Total Mix Fluid	7.785	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride		

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# **Operation Test Results Request ID 2501592/1**

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

**20/SEP/2018**

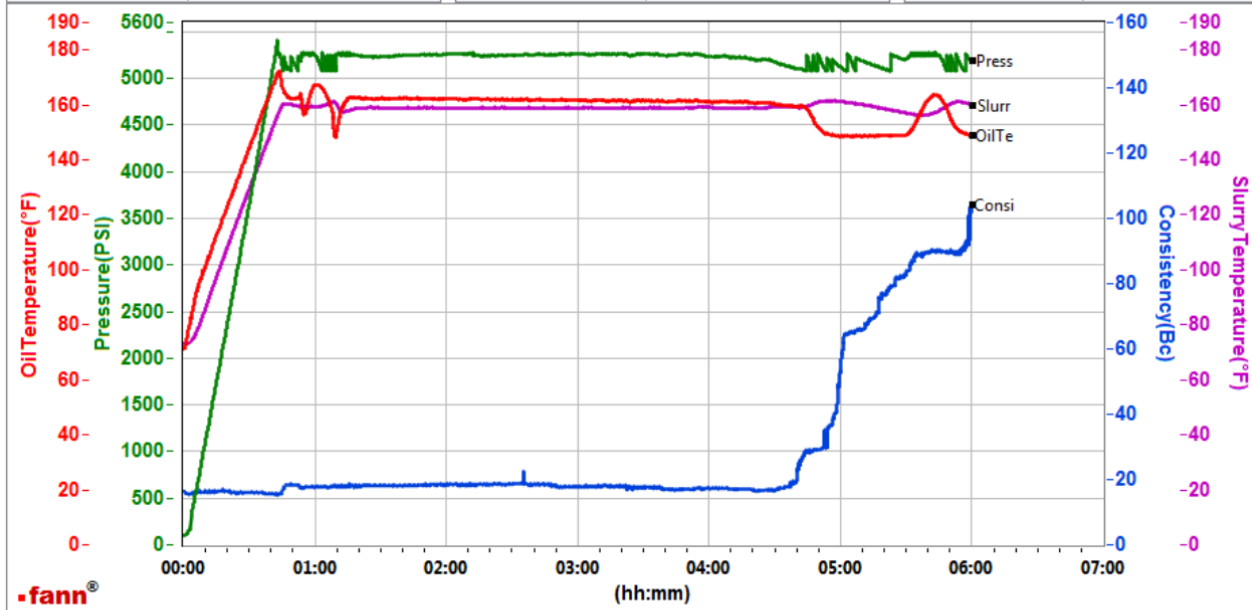
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
159	5176	43	4:52	4:59	5:17	5:59	15	53	15	18

### **GRAND JUNCTION**

Fields	Values
Project Name	2501592-1 Laramie Bulk
SW Version	1.0
Test ID	35825912- TT
Request ID	2501592-1
Tested by	DEBA
Customer	LARAMIE ENERGY
Well No	BCU 0993-21-06E

Fields	Values
Rig	H&P 522
Casing/Liner Size	4.5INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	9/19/2018 13:24:15.862
Temp. Units	degF

Events	Results
30 BC	4:52
50 BC	4:59
70 BC	5:17
100 BC	5:59



Data File \\Corp.Halliburton.com\NA\GJU\Public\Z Lab\HPHT 3\GJ2501592-1 LARAMIE PRODUCTION BULK TAIL.tdms

Comments Standard

Total sks = 496  
CS2088 TR#2878 396 SKS  
Deflection: 18 – 18

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# **Operation Test Results Request ID 2501592/2**

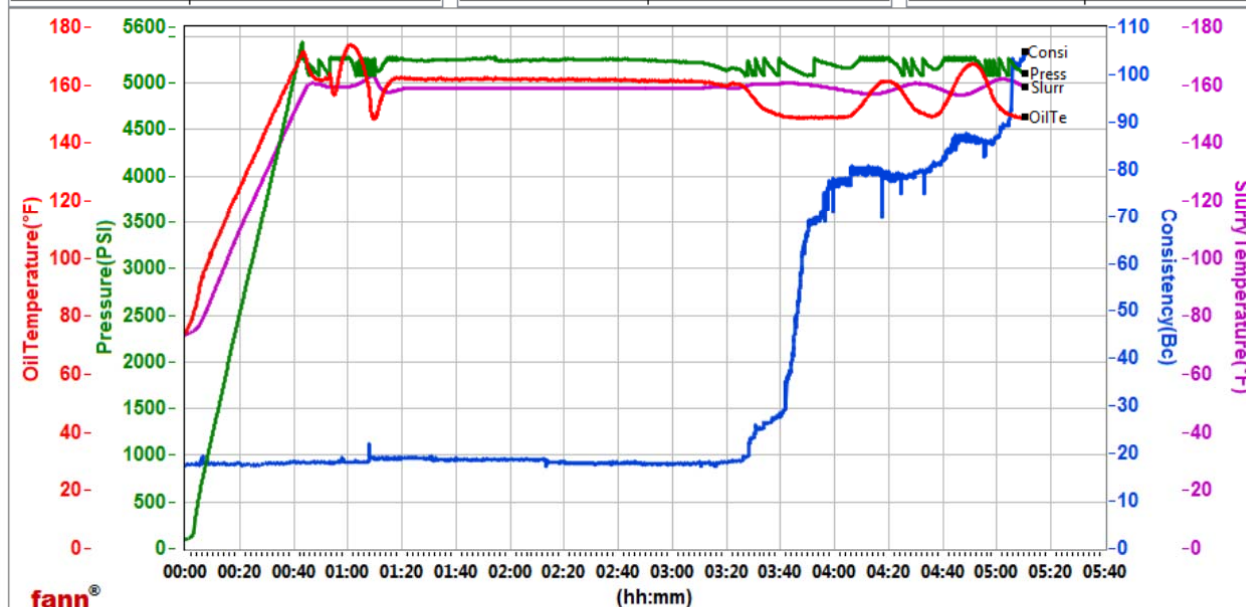
**Thickening Time - ON-OFF-ON**

**20/SEP/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)
159	5176	43	3:42	3:46	3:55	5:06	17	53	15	22

## **GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	TempTest	Rig	H&P 522		
SW Version	1.0	Casing/Liner Size	4.5INCH		
Test ID	35835921 - TT	Job Type	PRODUCTION CASING		
Request ID	2501592-2	Cement Weight	MOUNTAIN G		
Tested by	CT	Comments	Standard		
Customer	LARAMIE ENERGY	Date Time	9/20/2018 07:28:15.665		
Well No	BCU 0993-21-06E	Temp. Units	degF		



Data File C:\Users\hx25273\Desktop\new Graph M290\GJ2501592-2 LARAMIE PRODUCTION BULK TAIL.tdms

Comments Standard

Total sks = 496  
 CS2096, Trailer 7304, 100 sks  
 Deflected from 18Bc--- > 22Bc--- > 19BC within one minute  
 please see graph , the heat of hydration at 3:11.

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