

# HALLIBURTON

iCem<sup>®</sup> Service

**Laramie Energy LLC-EBUS**

United States of America, COLORADO

**For: Aaron Duncan**

Date: Saturday, October 06, 2018

**BCU 993-21-04E Surface PJR**

API # 05-077-10518-00

Sincerely,

**Grand Junction Cement Engineering**

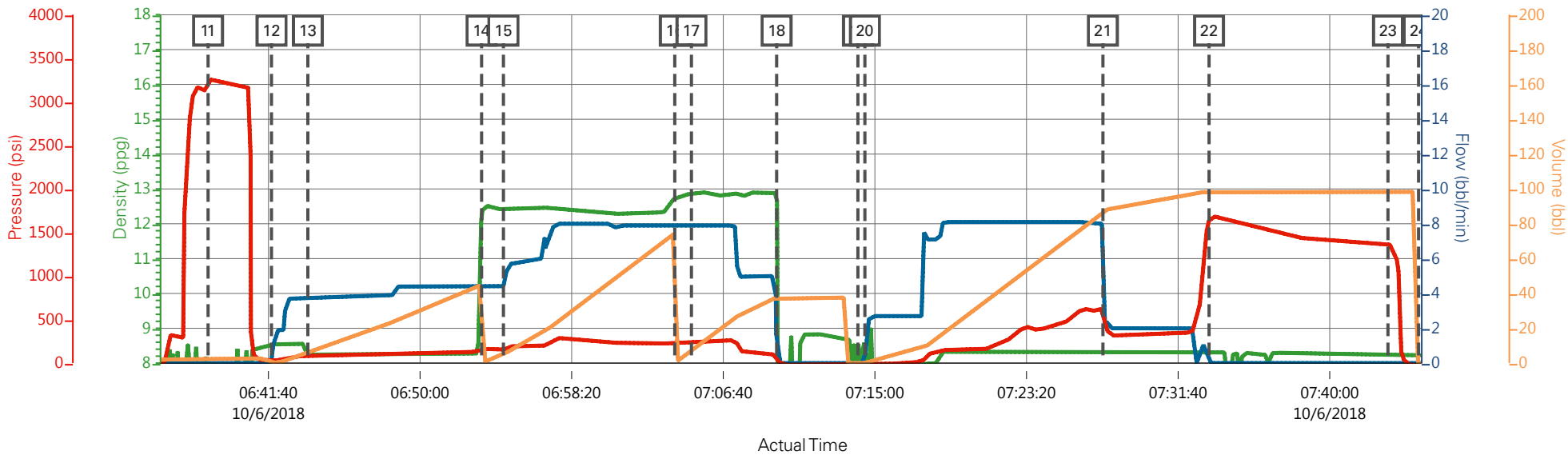
## 1.0 Real-Time Job Summary

## 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	10/6/2018	00:30:00	USER					REQUESTED ON LOCATION @ 5:30. CREW WAITING OUT IN FIELD
Event	2	Pre-Convoy Safety Meeting	10/6/2018	02:45:00	USER					ALL HES PRESENT
Event	3	Crew Leave For Location	10/6/2018	03:00:00	USER					RED TIGER 11528220, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	10/6/2018	04:00:00	USER					ARRIVED 1.5 HOURS EARLY TO LOCATION RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	10/6/2018	04:20:00	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 CHEMICLES USED BY HES.
Event	6	Spot Equipment	10/6/2018	05:00:00	USER					ONCE RED ZONE WAS SAFE SPOTTED 1 RED TIGER 11528220, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	7	Pre-Rig Up Safety Meeting	10/6/2018	05:20:00	USER					ALL HES PRESENT
Event	8	Pre-Job Safety Meeting	10/6/2018	06:15:00	USER					ALL HES AND RIG CREW PRESENT. RIG CIRCULATED AT 9.5 BPM WITH 160 PSI
Event	9	Start Job	10/6/2018	06:33:06	USER					PRESSURIZED MUD SCALES WERE CALIBRATED TO DRINKING WATER PRIOR TO JOB. TD 1599', TP 1589', FC 1542.08', OH 11'', CSG 8 5/8" 24 LB/FT J-55, MUD 9.3 PPG.
										FRESH WATER
Event	10	Prime Lines	10/6/2018	06:33:50	COM5	8.33	2.0	28	3	

Event	11	Test Lines	10/6/2018	06:38:21	COM5			3260		PRESSURE HELD
Event	12	Pump Spacer	10/6/2018	06:41:50	COM5	8.33	4.5	126	40	FRESH WATER
Event	13	Check Weight	10/6/2018	06:43:50	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	14	Pump Lead Cement	10/6/2018	06:53:23	COM5	12.3	8.0	280	75.4	172 SKS VARICEM CEMENT, 12.3 PPG, 2.46 FT3/SK, 14.17 GAL/SK.
Event	15	Check Weight	10/6/2018	06:54:35	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Tail Cement	10/6/2018	07:04:00	COM5	12.8	8.0	260	37	95 SKS VARICEM CEMENT, 12.8 PPG, 2.18 FT3/SK, 12.11 GAL/SK
Event	17	Check Weight	10/6/2018	07:04:55	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Shutdown	10/6/2018	07:09:36	USER					END OF CEMENT. WASHED UP ON TOP OF HES TOP PLUG
Event	19	Drop Top Plug	10/6/2018	07:14:04	USER					VERIFIED BY FLAG INDICATOR
Event	20	Pump Displacement	10/6/2018	07:14:27	COM5	8.33	8.0	680	84	FRESH WATER
Event	21	Slow Rate	10/6/2018	07:27:32	USER	8.33	2.0	350	10	SLOWED TO BUMP PLUG
Event	22	Bump Plug	10/6/2018	07:33:22	COM5	8.33	2.0	350	94	PLUG BUMPED TOOK TO 1600 PSI FOR A 10 MIN CASING TEST
Event	23	Check Floats	10/6/2018	07:43:12	USER			1400		FLOATS HELD 1 BBL FLOW BACK TO TRUCK
Event	24	End Job	10/6/2018	07:44:53	COM5					RETURNS THROUGHOUT JOB. 20 BBL CMT TO SURFACE USED 40 LBS SUGAR
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	10/6/2018	08:00:00	USER					ALL HES PRESENT
Event	26	Pre-Convoy Safety Meeting	10/6/2018	08:45:00	USER					ALL HES PRESENT
Event	27	Depart Location	10/6/2018	09:00:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW

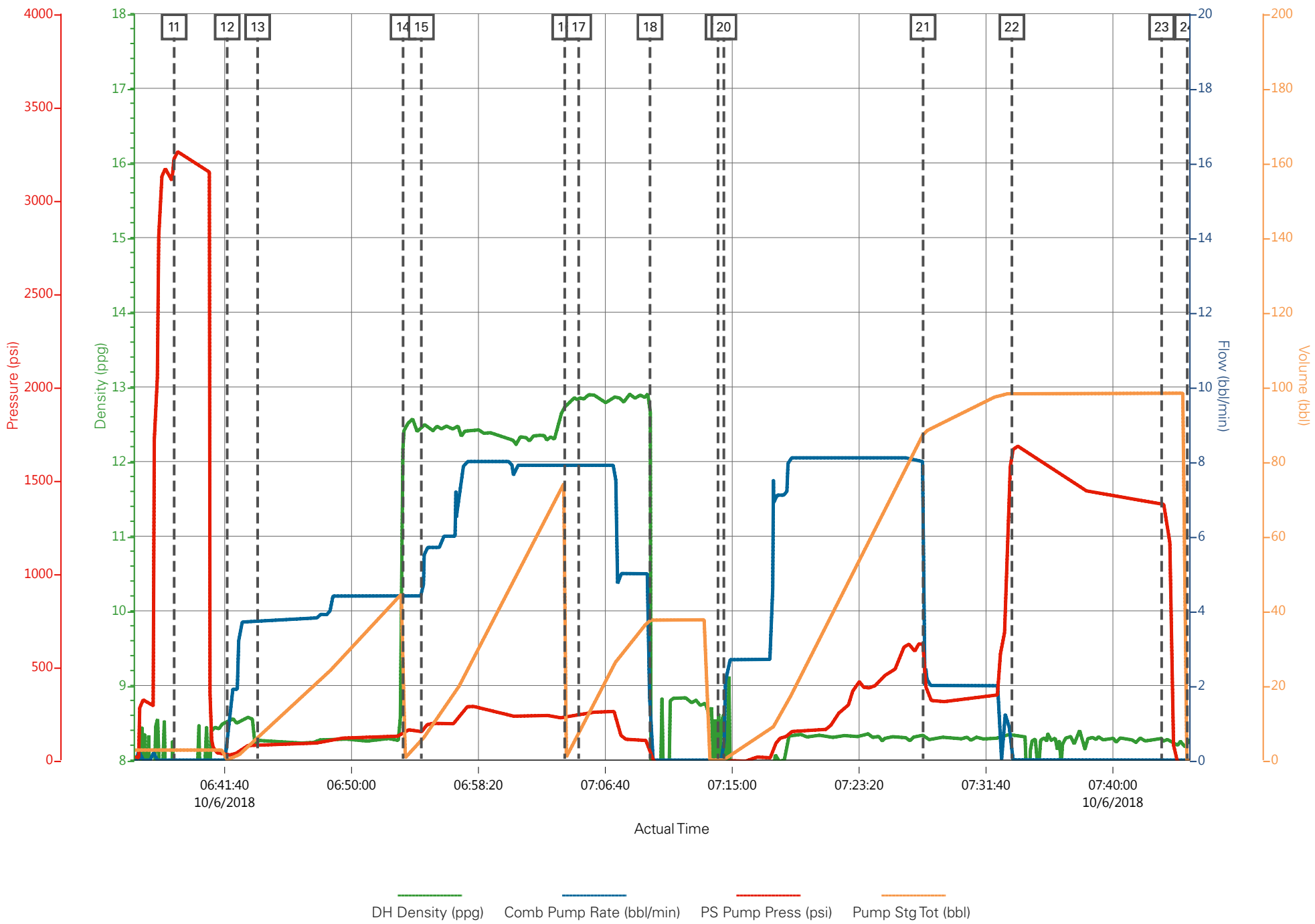
# LARAMIE - BCU 993-21-04E - 8 5/8" SURFACE



— 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)	
11 Test Lines	06:38:21	7.07	0.00	3229.00	2.70	
12 Pump Spacer	06:41:50	8.55	0.00	21.00	0.00	
13 Check Weight	06:43:50	8.28	3.70	80.00	5.90	
14 Pump Lead Cement	06:53:23	12.29	4.40	155.00	0.00	
15 Check Weight	06:54:35	12.43	4.40	151.00	5.30	
16 Pump Tail Cement	07:04:00	12.69	7.90	233.00	0.10	
17 Check Weight	07:04:55	12.87	7.90	246.00	7.30	
18 Shutdown	07:09:36	12.73	0.00	50.00	37.60	
19 Drop Top Plug	07:14:04	8.57	0.00	-26.00	0.00	
20 Pump Displacement	07:14:27	8.61	0.00	-26.00	0.00	
21 Slow Rate	07:27:32	8.33	8.00	623.00	87.30	
22 Bump Plug	07:33:22	8.33	0.00	1646.00	98.30	
23 Check Floats	07:43:12	8.21	0.00	1373.00	98.30	
24 End Job	07:44:53	8.17	0.00	-33.00	0.00	

LARAMIE - BCU 993-21-04E - 8 5/8" SURFACE



# HALLIBURTON

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**Laramie Energy LLC-EBUS**

United States of America, COLORADO

**For: Aaron Duncan**

Date: Tuesday, October 09, 2018

**BCU 0993-21-04E Production PJR**

API# 05-077-10518-00

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

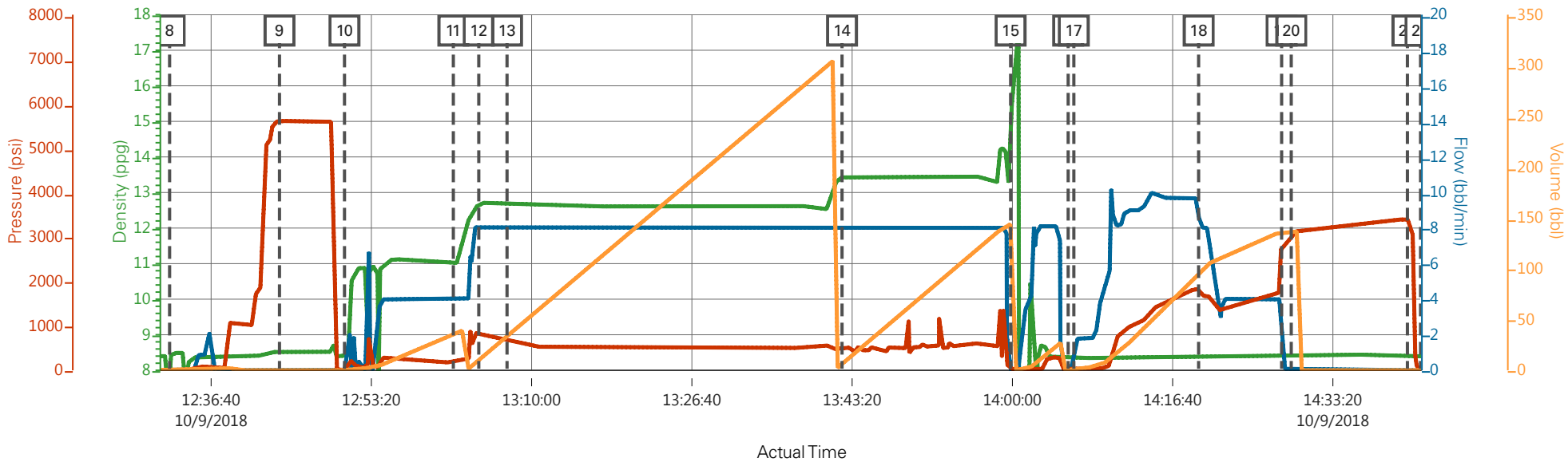
## 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	10/9/2018	04:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	10/9/2018	06:30:00	USER					JOURNEY MANAGEMENT COMPLETE, AS WELL AS JSA
Event	3	Crew Leave Yard	10/9/2018	07:00:00	USER					
Event	4	Arrive At Loc	10/9/2018	08:30:00	USER					JOURNEY MANAGEMENT CLOSED OUT, RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	10/9/2018	09:00:00	USER					
Event	6	Pre-Rig Up Safety Meeting	10/9/2018	09:10:00	USER					JSA COMPLETE
Event	7	Rig-Up Equipment	10/9/2018	09:30:00	USER					
										WATER TEST: PH-7, CL-0, TEMP-62
Event	8	Other	10/9/2018	09:45:00	USER					WELL INFO: 4.5 11.6# SET AT 8527, TD-8537, S.J.-85.79, HOLE- 7 7/8, MUD#- 9.4 , 8 5/8 32# SET @ 1550
Event	9	Other	10/9/2018	10:00:00	USER					MUD SCALES CHECKED WITH WATER PRIOR TO JOB.
Event	10	Pre-Job Safety Meeting	10/9/2018	12:00:00	USER					JSA COMPLETE
Event	11	Start Job	10/9/2018	12:32:21	COM5					
Event	12	Test Lines	10/9/2018	12:43:47	COM5	8.33	0.00	5609.00	0.00	5609 PSI, TESTED GOOD

Event	13	Pump Spacer	10/9/2018	12:50:32	USER	11.0	4.00	240.00	40.00	TUNED SPACER 11 PPG, 4.9 FT3/SK, 32 GAL/SK
Event	14	Drop Bottom Plug	10/9/2018	13:01:51	USER					DROPPED BETWEEN TUNED SPACER AND LEAD CMT, AWAY
Event	15	Pump Lead Cement	10/9/2018	13:04:30	COM5	12.50	8.00	525.00	276.80	801 SKS NEOCEM, 12.5 PPG, 1.94 FT3/SK, 9.59 GAL/SK
Event	16	Check Weight	10/9/2018	13:07:27	COM5	12.50				WEIGHT UP GOOD 12.5
Event	17	Pump Tail Cement	10/9/2018	13:42:17	COM5	13.30	8.00	560.00	113.40	366 SKS THERMACEM, 13.3 PPG, 1.74 FT3/SK, 7.8 GAL/SK
Event	18	Shutdown	10/9/2018	13:59:49	USER					TO WASH UP PUMPS AND LINES.
Event	19	Drop Top Plug	10/9/2018	14:05:48	COM5					AWAY
Event	20	Pump Displacement	10/9/2018	14:06:23	COM5	8.40	10.0	1740.00	130.8	FRESH WATER WITH 3 LBS BE-6, 5 GAL CLA-WEB, 1 GAL MMCR, 5 GAL CUSTOMER SUPPLIED BIOCID
Event	21	Comment	10/9/2018	14:19:22	USER					FULL RETURNS THROUGHOUT JOB, EXCEPT FOR THE LAST 30 BBLS OF DISPLACEMENT WE LOST RETURNS. STARTED TO SLOW RATES AROUND 80-90 GONE TO TRY AND STABILIZE, PUMPED LAST 30 BBLS OF DISPLACEMENT AT 4 BBLS/MIN
Event	22	Bump Plug	10/9/2018	14:28:00	COM5	8.40	4.00	1750.00	130.80	PLUG BUMPED ON CALULATED
Event	23	Other	10/9/2018	14:29:00	USER	8.40	0.00	3054.00		CASING TEST FOR 10 MINS @ 3000 PSI, PRESSURE ENDED AT 3400 PSI
Event	24	Check Floats	10/9/2018	14:41:05	USER	8.40	0.00	3400.00		FLOATS HELD, 1.5 BBLS BACK TO TRUCK
Event	25	End Job	10/9/2018	14:42:27	COM5					
Event	26	Post-Job Safety Meeting (Pre Rig-Down)	10/9/2018	14:45:00	USER					
Event	27	Crew Leave Location	10/9/2018	16:00:00	USER					THANKYOU FOR USING HALLIBURTON CEMENT, JAMES LEIST AND CREW



# LARAMIE ENERGY - BCU 993-21-04E - 4.5 PRODUCTION CASING



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)
8 Start Job	12:32:21	8.17	0.00	-1.00	0.00
9 Test Lines	12:43:47	8.52	0.00	5609.00	0.00
10 Pump Spacer	12:50:32	8.38	0.00	3.00	0.00
11 Drop Bottom Plug	13:01:51	11.06	4.00	175.00	35.40
12 Pump Lead Cement	13:04:30	12.67	8.00	825.00	9.00
13 Check Weight	13:07:27	12.66	8.00	658.00	32.60
14 Pump Tail Cement	13:42:17	13.43	8.00	485.00	6.20
15 Shutdown	13:59:49	14.75	0.00	31.00	143.70
16 Drop Top Plug	14:05:48	8.41	0.00	-1.00	0.00
17 Pump Displacement	14:06:23	8.39	1.70	24.00	0.10
18 Comment	14:19:22	8.37	8.80	1783.00	96.30
19 Bump Plug	14:28:00	8.40	0.00	2852.00	136.40
20 Other	14:29:00	8.42	0.00	3054.00	136.60
21 Check Floats	14:41:05	8.44	0.00	3405.00	0.00

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Created: 2018-10-09 06:06:10, (UTC-06:00), Version: 4.5.139

Edit

Customer : Laramie Energy LLC

Job Date : 10/9/2018

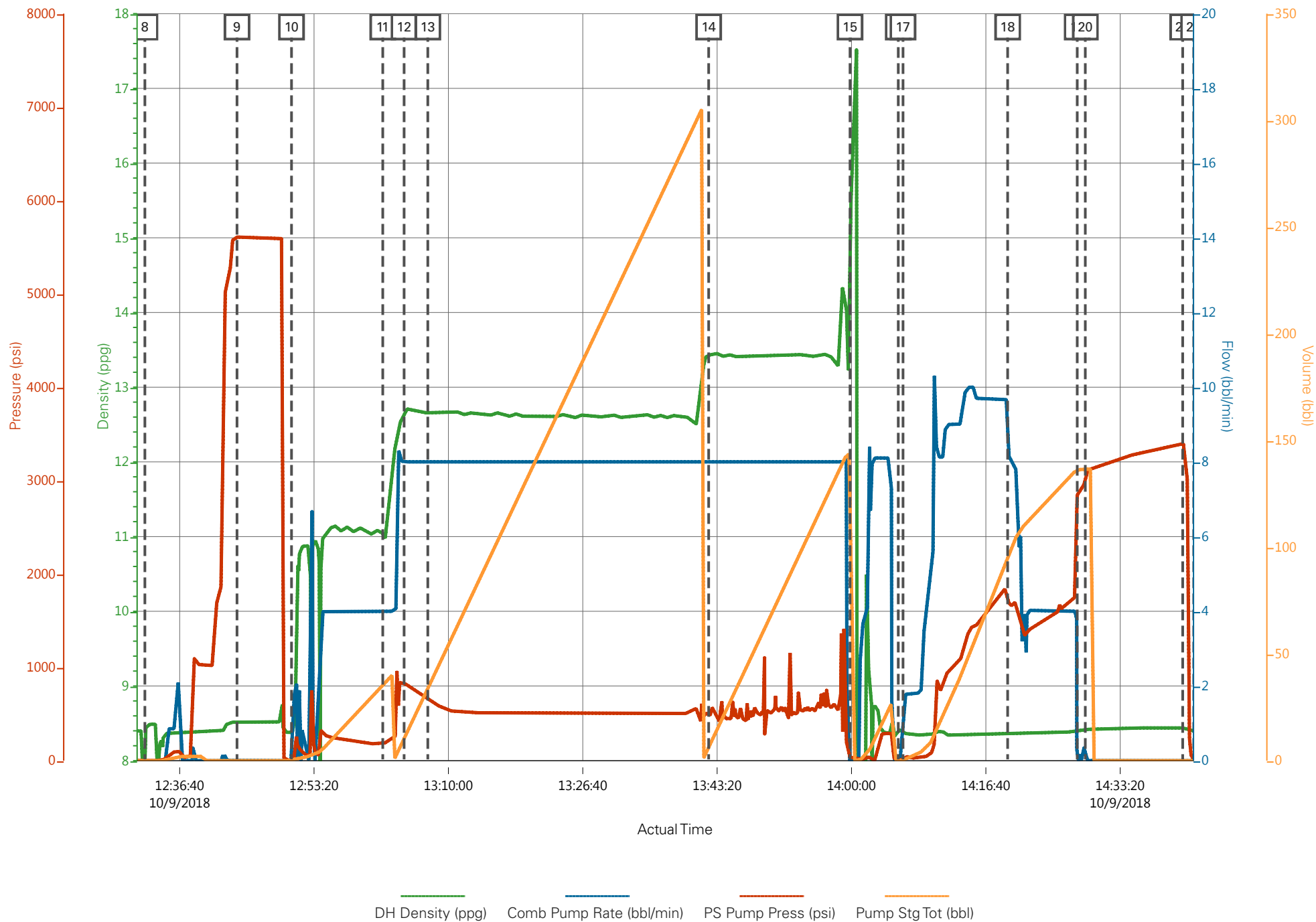
Well : BCU 993-21-04E

Representative : SHANE HEARD

Sales Order # : 905194509

ELITE 8 : GEORGE BAIER, J. LEIST

# LARAMIE ENERGY - BCU 993-21-04E - 4.5 PRODUCTION CASING



### Job Information

<b>Request/Slurry</b>	2506776/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	05/OCT/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>	BCU 0993-21-04E

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8583 ft	<b>BHST</b>	103°C / 218°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	7721 ft	<b>BHCT</b>	64°C / 147°F
<b>Pressure</b>	4705 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



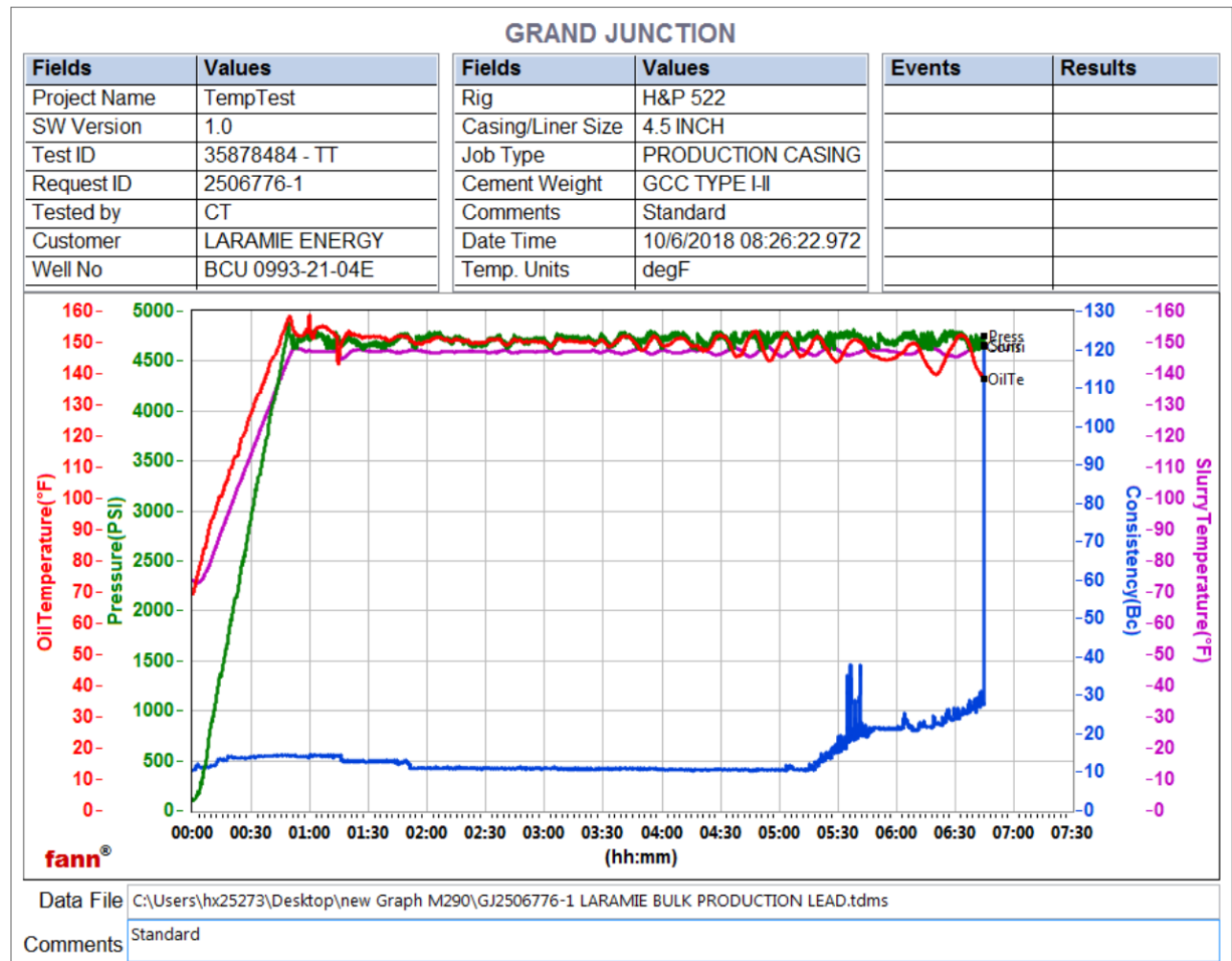
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem Lead				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.946	ft3/sack
						Water Requirement	9.615	gal/sack
						Total Mix Fluid	9.615	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride	N/A	

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Thickening Time - ON-OFF-ON

07/OCT/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)
147	4705	49	6:44	6:44	6:44	6:44	10	59	15



Total sks = 801  
 CS2233, Trailer 8677, 400.5 sks  
 CS2234, Trailer 2878, 400.5 sks  
 no deflection, 14Bc--- > 14Bc

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

<b>Request/Slurry</b>	2506777/1	<b>Rig Name</b>	H&P 522	<b>Date</b>	05/OCT/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>	BCU 0993-21-04E

### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	8583 ft	<b>BHST</b>	103°C / 218°F
<b>Hole Size</b>	7.875 in	<b>Depth TVD</b>	7721 ft	<b>BHCT</b>	64°C / 147°F
<b>Pressure</b>	4705 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



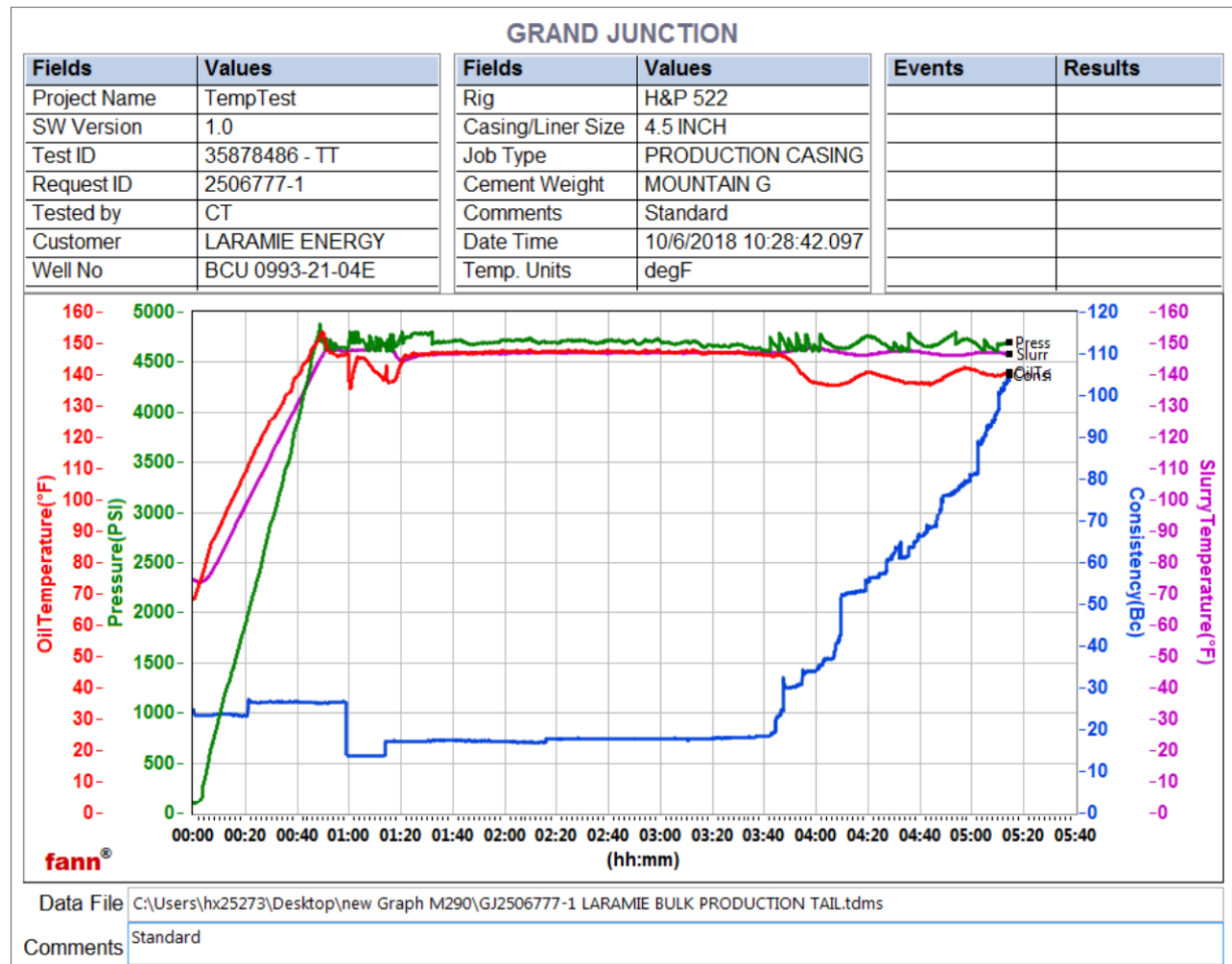
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		ThermaCem Tail				Slurry Density	13.3	lbm/gal
						Slurry Yield	1.738	ft3/sack
						Water Requirement	7.795	gal/sack
						Total Mix Fluid	7.795	gal/sack
						Water Source	Field (Fresh) Water	
						Water Chloride	N/A	

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Thickening Time - ON-OFF-ON

07/OCT/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)
147	4705	49	3:47	4:09	4:46	5:10	25	59	15	17



Total SKS = 366  
 CS2235, Trailer 1513, 366 sks  
 Deflection: 14 - 17  
 Heat of hydration at 3:43

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