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# **Laramie Energy**

## **End of Well Cement Report**

**Bruton 19-02W 05-077-10423**  
**S:19 T:9S R:93W Mesa CO**

CallSheet #: 1170 (Surface), 1185 (Production)  
Proposal #: 13742



**Attention:** Mr. Chuck Mallary | (303) 859-3634 | [cmallary@laramie-energy.com](mailto:cmallary@laramie-energy.com)  
Laramie Energy  
1401 17th St, Suite 1400 | Denver, CO 80202

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Dear Mr. Mallary,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,

**Zen Keith**

Technical Specialist-II | (307) 757-7178 | [Zen.Keith@bjservices.com](mailto:Zen.Keith@bjservices.com)

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## Surface Post Job Report

### 1 Job Details & Summary

#### 1.1 Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Thread	Top (ft)	Bottom (ft)	Excess (%)
Open Hole	Outer	n/a	11	n/a	n/a	60	1524	75
Casing	Inner	8.625	8.097	24	STC	0	1524	0
Casing	Outer	16	15.25	65	n/a	0	60	0

#### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Mileage
Bulk Trailer	512	Busheri, Hamza	130
Bulk Trailer	E491	McNeal, Lawrence	130
Cement Pump	PPC11250	Youngberg, Wendell	130
Cement Chemical	401	Richey, Steven	130
Light Duty Pickups	4	Gilliam, Glen	130
Plug Container	150517		

#### 1.3 Timing

Event	Date/Time
Call Out	8/14/2017 05:00
Depart Facility	8/14/2017 07:30
On Location	8/14/2017 09:30
Rig Up Iron	8/14/2017 12:00
Job Started	8/14/2017 13:30
Job Completed	8/14/2017 14:50
Rig Down Iron	8/14/2017 15:00
Depart Location	8/14/2017 16:00

#### 1.4 General Job Information

Metrics	Value
Well Fluid Density	9.3 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	400 bbls
Rig Circulation Time	1 hours
Calculated Displacement	96 bbls
Actual Displacement	96 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	24 bbls
Well Topped Out	No

#### 1.5 Job Details

Metrics	Value
Flare Prior to Job	No
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	9.3 lb/gal
Well Fluid Density Out of Well	9.3 lb/gal

#### 1.6 Job Details (cont.)

Metrics	Value
BHCT	82 °F
BHST	106 °F

#### 1.7 Circulation

Lost Circulation Experienced
No



### 1.8 Job Execution Information

Job	Fluid	Product	Function	Density (lb/gal)	Yield (ft <sup>3</sup> /sk)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Top (ft)
1	1	Water	Flush	8.33			42.00		40.00	0
1	2	S100-12	Lead	12.00	2.53	14.85		191.00	85.94	0
1	3	S100-12	Tail	12.50	2.22	12.58		124.00	49.10	1024
1	4	Water	DisplacementFinal	8.33			42.00		95.00	0

### 1.9 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Lead	S100-12	AC3-10	Cement	100.00	%
1	2	Lead	S100-12	ACL-10	Accelerator	2.00	lb/sk
1	2	Lead	S100-12	ACL-20	Accelerator	5.00	%BWOB
1	2	Lead	S100-12	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	2	Lead	S100-12	AXE-30	Extender	2.00	lb/sk
1	3	Tail	S100-12	AC3-10	Cement	100.00	%
1	3	Tail	S100-12	ACL-10	Accelerator	2.00	lb/sk
1	3	Tail	S100-12	ACL-20	Accelerator	5.00	%BWOB
1	3	Tail	S100-12	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	3	Tail	S100-12	AXE-30	Extender	2.00	lb/sk



## 2 Job Logs

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
1	BJ Crew called out	8/14/2017	05:00					BJ Crew called out to location
2	Crew arrives at facility	8/14/2017	06:00					BJ crew arrives at yard
3	Journey Management	8/14/2017	07:20					BJ crew brief on Journey Management
4	BJ Crew depart Yard	8/14/2017	07:30					BJ Crew departs yard
5	Crew arrives on location	8/14/2017	09:30					BJ Crew arrives at location
6	Pipe on Bottom	8/14/2017	10:00					Rig crew rigs up CRT tool
7	STEACS meeting	8/14/2017	12:00					STEACS briefing with BJ Crew
8	Rig up iron	8/14/2017	12:10					Crew rigs up iron
9	Safety meeting	8/14/2017	13:10					safety meeting with crew and rig
10	Stab Head	8/14/2017	13:20					Stab head
11	break circulation	8/14/2017	13:30					Break circulation from rig
12	Test Lines	8/14/2017	13:35					Test lines at 3000psi
13	spacer down hole	8/14/2017	13:40	8.34	4.5	35	40	35bbls of Fresh Water
14	Batch up lead cement	8/14/2017	13:45	12				Batch up lead at 12ppg
15	down hole lead	8/14/2017	13:50	12	4	1	70	down hole
16	lead 50 gone	8/14/2017	14:00	12	4	50	78	50 bbls lead gone
17	batch up tail cement	8/14/2017	14:05	12.5	4	0	80	batch up tail at 12.5ppg
18	tail down hole	8/14/2017	14:10	12.5	4.5	10	130	Tail down hole at 12.5ppg
19	shut down drop plug	8/14/2017	14:12	0				shut down drop top plug
20	Start displacement	8/14/2017	14:15	8.34	5	10	100	start displacement fresh water
21	50 bbls gone	8/14/2017	14:30	8.34	7	50	250	50 bbls displacement gone
22	bump plug	8/14/2017	14:40	8.34	2	95	375	bump plug F.C.P 375
23	take pressure to 2000 psi	8/14/2017	14:41	8.34	1	96	2000	casing test at 2000 psi hold 10 mins
24	bled pressure off	8/14/2017	14:50					bled pressure off, 1bbls back
25	rig down iron meeting	8/14/2017	14:55					rig down iron meeting with crew
26	rig down iron	8/14/2017	15:00					BJ crew rigs down iron
27	Journey Management	8/14/2017	15:30					Meeting with crew to leave location
28	Crew leaves location	8/14/2017	16:00					BJ Crew departs Location



### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	78 °F	50-80 °F
pH Level	6	5.5-8.5
Chlorides	0.009 mg/L	0-3000 mg/L
Total Alkalinity	240	0-1000
Total Hardness	4 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	450 mg/L	0-3000 mg/L
Iron	1 mg/L	0-300 mg/L

## 4 Pump Diagrams

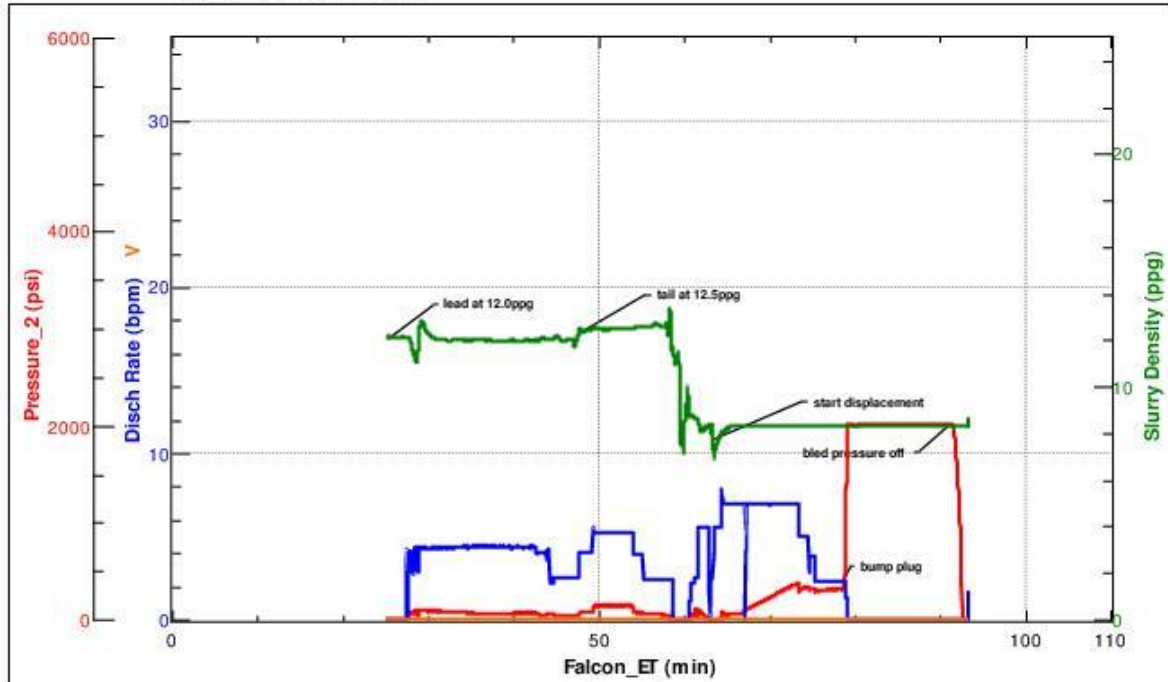


JobMaster Program Version 4.02

Job Number: 1170

Customer: Laramie

Well Name: Bruton 19-02W



BJ Services

Job Start: Monday, August 14, 2017



## Production Post Job Report

### 1 Job Details & Summary

#### 1.1 Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Thread	Top (ft)	Bottom (ft)	Excess (%)
Casing	Outer	8.625	8.097	24	STC	0	1524	0
Casing	Inner	4.5	4	11.6	LTC	0	8043	0
Open Hole	Outer	n/a	8.88	n/a	n/a	1524	8052	10

#### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Silo	6 (Silo)			
Silo	7 (silo)			
Cement Chemical	401	Johnson, Brandon		120
Bulk Trailer	E466	Gonzalez, Omar	Richey, Steven	120
Cement Pump	PCP11250	McClure, Christian		120
Light Duty Pickups	2	Helton, Shane	McNeal, Lawrence	240

#### 1.3 Timing

Event	Date/Time
Call Out	8/17/2017 13:00
Depart Facility	8/17/2017 14:15
On Location	8/17/2017 16:00
Rig Up Iron	8/17/2017 16:30
Job Started	8/19/2017 18:20
Job Completed	8/19/2017 20:53
Rig Down Iron	8/19/2017 21:00
Depart Location	8/19/2017 22:00

#### 1.4 General Job Information

Metrics	Value
Well Fluid Density	9.7 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	600 bbls
Rig Circulation Time	1 hours
Calculated Displacement	123.56 bbls
Actual Displacement	121 bbls
Total Spacer to Surface	30 bbls
Total CMT to Surface	0 bbls

#### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	28
Yield Point	24
10 sec. SGS	9
10 min. SGS	25
30 min. SGS	47
Filtrate	0.08
Flow Line Temp.	109

#### 1.6 Job Details

Metrics	Value
Flare Prior to Job	No
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	9.6 lb/gal
Well Fluid Density Out of Well	9.6 lb/gal

#### 1.7 Job Details (cont.)

Metrics	Value
BHCT	176 °F
BHST	237 °F

**1.8 Circulation**

Lost Circulation Experienced
No

**1.9 Job Execution Information**

Job	Fluid	Product	Function	Density (lb/gal)	Yield (ft <sup>3</sup> /sk)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Top (ft)
1	1	CD Spacer	Spacer	11.00			33.15		60.00	0
1	2	P100-X2	Lead	12.70	1.97	11.07		837.00	294.16	1024
1	3	P70-X1	Tail	13.50	1.90	9.55		402.00	136.00	5892
1	4	Water w/ ASF-50	DisplacementFinal	8.33			41.92		123.50	0

**1.10 Job Fluid Details**

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	1	Spacer	CD Spacer	ASR-20	StrengthRetrogression	179.73	lb/bbl
1	1	Spacer	CD Spacer	AR-10	Retarder	1.40	lb/bbl
1	1	Spacer	CD Spacer	ASF-20	Surfactant	0.50	gal/bbl
1	1	Spacer	CD Spacer	AVS-10	Viscosifier	0.80	lb/bbl
1	2	Lead	P100-X2	AC3-10	Cement	100.00	%
1	2	Lead	P100-X2	ABX-30	BondEnhancer	0.30	%BWOB
1	2	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	P100-X2	ADS-10	Dispersant	0.10	%BWOB
1	2	Lead	P100-X2	AR-10	Retarder	0.50	%BWOB
1	2	Lead	P100-X2	AVS-10	Viscosifier	0.10	%BWOB
1	3	Tail	P70-X1	ACG-10	Cement	70.00	%
1	3	Tail	P70-X1	AFA-10	Extender	20.00	%
1	3	Tail	P70-X1	AXE-20	Extender	10.00	%
1	3	Tail	P70-X1	ABX-30	BondEnhancer	0.20	%BWOB
1	3	Tail	P70-X1	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	P70-X1	AFL-10	FluidLoss	0.40	%BWOB
1	3	Tail	P70-X1	AR-10	Retarder	0.30	%BWOB
1	3	Tail	P70-X1	ASR-20	StrengthRetrogression	25.00	%BWOB
1	3	Tail	P70-X1	AVS-50	Viscosifier	6.00	%BWOB
1	4	DisplacementFinal	Water w/ ASF-50	ASF-50	ClayProtection	0.08	gal/bbl



## 2 Job Logs

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
1	Call Out	8/17/2017	23:00					Requested on Location
2	Yard Call	8/17/2017	13:00					Yard Call
3	Journey Mgmt	8/17/2017	14:00					Journey Management
4	Depart Facility	8/17/2017	14:15					Depart Facility
5	Arrive on Location	8/17/2017	16:00					Arrive on Location
6	Safety Meeting	8/17/2017	16:15					Safety Meeting
7	Rig Up Equipment	8/17/2017	16:30					Rig Up Equipment
8	WOR	8/17/2017	17:00					WOR
9	Crew Released	8/18/2017	06:00					Couldn't get casing to bottom
10	On Location	8/19/2017	16:00					Requested on Location
11	Arrive on Location	8/19/2017	13:00					Arrive on Location
12	WOR	8/19/2017	13:30					WOR
13	Casing on Bottom	8/19/2017	17:00					Casing On Bottom
14	STEACS Briefing	8/19/2017	18:00					STEACS Briefing
15	Rig up	8/19/2017	18:10					Rig up Cement Head
16	Load Lines	8/19/2017	18:17	8.34	3	4	400	Load Lines
17	Pressure Test Line	8/19/2017	18:20	8.34			4900	Pressure Test Line
18	Weighted Spacer	8/19/2017	18:38	11	4	60	408	Weighted Spacer
19	Lead Cement	8/19/2017	18:55	12.7				Batch up Lead Cement
20	Lead Cement	8/19/2017	18:58	12.7	5.8		374	Lead Cement
21	Lead Cement	8/19/2017	19:09	12.7	6	50	311	50 Bbls Lead Cement
22	Lead Cement	8/19/2017	19:15	12.7	6	100	301	100 Bbls Lead Cement
23	Lead Cement	8/19/2017	19:23	12.7	6	150	316	150 Bbls Lead Cement
24	Lead Cement	8/19/2017	19:30	12.7	6	200	309	200 Bbls Lead Cement
25	Lead Cement	8/19/2017	19:38	12.7	6	250	301	250 Bbls Lead Cement
26	Slow Rate	8/19/2017	19:42	12.7	4	270	275	270 Bbls Slow Rate
27	Lead Cement	8/19/2017	19:49	12.7		292		292 Bbls Lead Cement
28	Tail Cement	8/19/2017	19:50	13.5	4		230	Tail Cement
29	Tail Cement	8/19/2017	20:00	13.5	6	50	350	50 Bbls Tail Cement
30	Tail Cement	8/19/2017	20:09	13.5	5.8	100	411	100 Bbls Tail Cement
31	Slow Rate	8/19/2017	20:14	13.5	3.8	115	350	115 Bbls Tail Cement
32	Tail Cement	8/19/2017	20:18	13.5		132		Tail Cement
33	Wash Pumps & Line	8/19/2017	20:18					Wash Pumps & Line
34	Drop Plug	8/19/2017	20:24					Drop Plug
35	Displacement	8/19/2017	20:24	8.34	9.8		260	Displacement
36	Displacement	8/19/2017	20:30	8.34	9.9	50	1558	50 Bbls Displacement
37	Displacement	8/19/2017	20:35	8.34	9.9	100	2200	100 Bbls Displacement
38	Slow Rate	8/19/2017	20:38	8.34	7.5	115	1870	115 Bbls Displacement
39	Slow Rate	8/19/2017	20:40	8.34	2.9		1723	Slow Rate
40	Land Plug	8/19/2017	20:43				3047	Land Plug & Casing Test
41	Check Float	8/19/2017	20:53					Check Float Good



### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	67.4 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	300 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	125 mg/L	0-500 mg/L
Carbonates	12 mg/L	0-100 mg/L
Sulfates	200 mg/L	0-1500 mg/L
Potassium	800 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L



## 4 Pump Diagrams

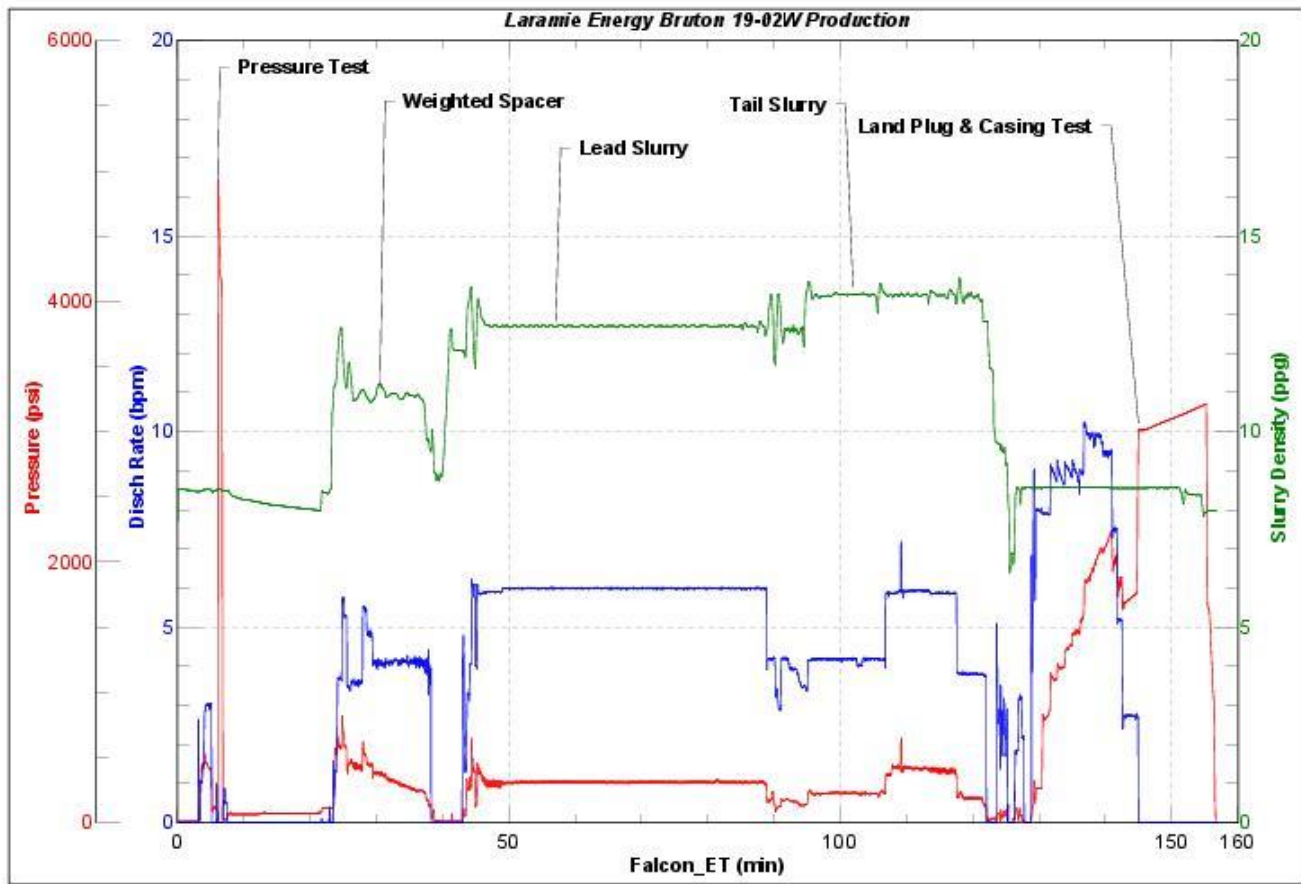


JobMaster Program Version 4.02C1

Job Number: 1185

Customer: Laramie Energy

Well Name: Bruton 19-02W



BJ Services

Job Start: Saturday, August 19, 2017