Laramie Energy
End of Well Cement Report

Bruton 19-17W 05-077-10379
S:30 T:9S R:93W Mesa CO

CallSheet #: 1012 (Surface), 1019 (Production)
Proposal #: 13499

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

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

Field Office	1716 East Allison Rd., Cheyenne WY, 82007 Phone: (307) 638-5585
Sales Office	475 17th St. Suite 460 Denver Co., 80202 Phone: (303) 296-1158

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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	1557	75
Casing	Inner	8.625	8.097	24	STC	0	1547	0
Casing	Outer	16	15.25	65	n/a	0	60	0

1.2 Equipment / People

Unit Type	Unit	Employee #1	Mileage
Bulk Trailer	E391	Gonzalez, Omar	110
Bulk Trailer	403	Turek, Chad	110
Cement Pump	PPC11250	Scott, Matthew	110
Light Duty Pickups	3	Helton, Shane	110

1.3 Timing

Event	Date/Time
Call Out	7/13/2017 12:30
Depart Facility	7/13/2017 13:15
On Location	7/13/2017 15:25
Rig Up Iron	7/13/2017 15:40
Job Started	7/13/2017 22:22
Job Completed	7/13/2017 23:37
Rig Down Iron	7/13/2017 23:45
Depart Location	7/14/2017 00:45

1.4 General Job Information

Metrics	Value
Well Fluid Density	8.34 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	250 bbls
Rig Circulation Time	2 hours
Calculated Displacement	95.65 bbls
Actual Displacement	93.5 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	15 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	8.4 lb/gal
Well Fluid Density Out of Well	8.4 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^3/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	ALTCem S100-12	Lead	12.00	2.53	14.85		191.00	85.94	0
1	3	ALTCem 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	ALTCem S100-12	AC3-10	Cement	100.00	%
1	2	Lead	ALTCem S100-12	ACL-10	Accelerator	2.00	lb/sk
1	2	Lead	ALTCem S100-12	ACL-20	Accelerator	5.00	%BWOB
1	2	Lead	ALTCem S100-12	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	ALTCem S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	2	Lead	ALTCem S100-12	AXE-30	Extender	2.00	lb/sk
1	3	Tail	ALTCem S100-12	AC3-10	Cement	100.00	%
1	3	Tail	ALTCem S100-12	ACL-10	Accelerator	2.00	lb/sk
1	3	Tail	ALTCem S100-12	ACL-20	Accelerator	5.00	%BWOB
1	3	Tail	ALTCem S100-12	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	ALTCem S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	3	Tail	ALTCem S100-12	AXE-30	Extender	2.00	lb/sk

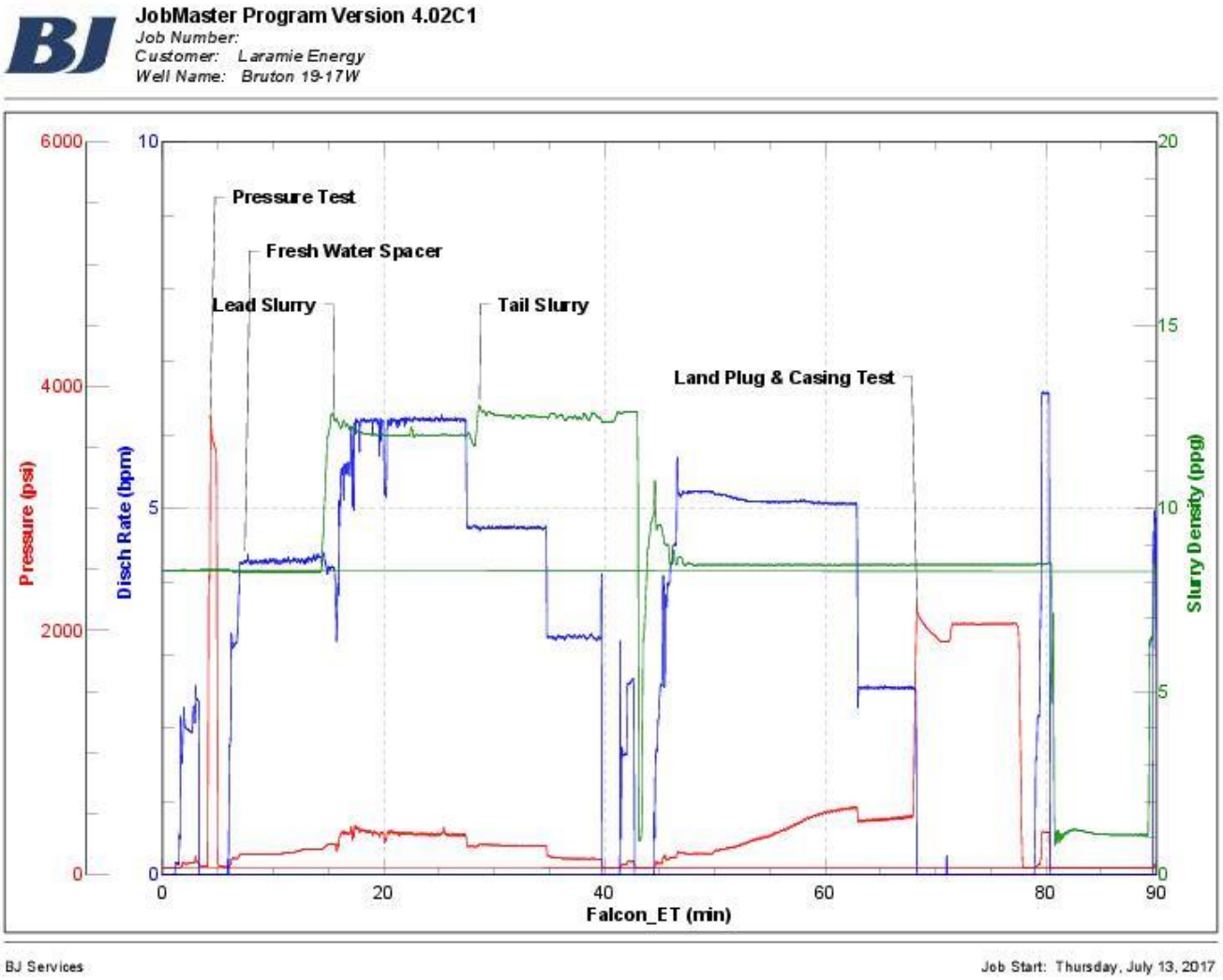
2 Job Logs

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
1	Yard Call	7/13/2017	12:30					Yard Call
2	Journey Management	7/13/2017	13:00					Safety Meeting Journey Management
3	Depart Facility	7/13/2017	13:15					Depart Facility
4	Arrive on Location	7/13/2017	15:25					Arrive on Location
5	Steacs Briefing	7/13/2017	15:35					Steacs Briefing over Rip up Procedures
6	Rig up Equipment	7/13/2017	15:45					Rig up Equipment
7	WOR	7/13/2017	16:00					Wait on Rig to run casing
8	Landed Casing	7/13/2017	21:40					Casing on Bottom
9	Rig Circulated well	7/13/2017	00:00					Circulated well
10	Pre job Safety Meeting	7/13/2017	22:18					Safety Meeting over Job procedures
11	Load Line	7/13/2017	22:22	8.34		3	96	Load line
12	Pressure test line	7/13/2017	22:25				3000	Pressure test line
13	Fresh Water Spacer	7/13/2017	22:27	8.34	4.2	37	166	Fresh Water Spacer
14	Start Lead Slurry	7/13/2017	22:35	12				Start Lead Slurry
15	Lead Slurry	7/13/2017	22:40	12	5.1	25	329	25 Bbls Lead Slurry
16	Lead Slurry	7/13/2017	22:45	12	6	50	324	50 Bbls Lead Slurry
17	Lead Slurry	7/13/2017	22:49	12	4.7	75	248	75 Bbls Lead Slurry
18	Lead Slurry	7/13/2017	22:52	12	4.7	83	254	Slow Rate
19	Start Tail Slurry	7/13/2017	22:52	12.5				Start Tail Slurry (Calculated top 1022')
20	Tail Slurry	7/13/2017	22:56	12.5	4.7	25	239	25 Bbls Tail Slurry
21	Tail Slurry	7/13/2017	23:00	12.5	3.5	48	200	Slow Rate
22	Shut Down	7/13/2017	23:05					Shut Down & Drop Plug
23	Displace	7/13/2017	23:08	8.34				Start Displacement
24	Displace	7/13/2017	23:10	8.34	5.2	20	200	20 Bbls Displacement
25	Displace	7/13/2017	23:13	8.34	5.2	40	308	40 Bbls Displacement
26	Displace	7/13/2017	23:17	8.34	5.1	60	475	60 Bbls Displacement
27	Displace	7/13/2017	23:21	8.34	5.1	80	575	80 Bbls Displacement
28	Displace	7/13/2017	23:23	8.34	2.5	93.5	433	Slow Rate
29	Land Plug	7/13/2017	23:27				2260	Land plug & bump up to 2000 psi
30	Casing Test	7/13/2017	23:27					Hold for 10 Minutes
31		7/13/2017	00:00					15 Bbls Cement to Surface
32	Check Float	7/13/2017	23:37					Check Float (Good). 0.5bbls to pump

3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	65 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	30 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	250 mg/L	0-500 mg/L
Carbonates	. mg/L	0-100 mg/L
Sulfates	200 mg/L	0-1500 mg/L
Potassium	1300 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

4 Pump Diagrams



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	1547	0
Casing	Inner	4.5	4	11.6	LTC	0	8514	0
Open Hole	Outer	n/a	8.88	n/a	n/a	1524	8520	10

1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Silo	6 (Silo)			128
Silo	7 (silo)			128
Bulk Trailer	E466	Brandon Johnson		128
Cement Pump	PPC11250	Scott, Matthew	Christian McClure	128
Cement Auxiliary Equipment	403	Turek, Chad	Gonzalez, Omar	128
Light Duty Pickups	3	Helton, Shane		128

1.3 Timing

Event	Date/Time
Call Out	7/17/2017 09:30
Depart Facility	7/17/2017 10:05
On Location	7/17/2017 12:55
Rig Up Iron	7/17/2017 13:25
Job Started	7/17/2017 16:36
Job Completed	7/17/2017 19:14
Rig Down Iron	7/17/2017 19:30
Depart Location	7/17/2017 20:30

1.4 General Job Information

Metrics	Value
Well Fluid Density	9.9 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	600 bbls
Rig Circulation Time	1 hours
Calculated Displacement	130.89 bbls
Actual Displacement	130.7 bbls
Total Spacer to Surface	0 bbls
Total CMT to Surface	0 bbls

1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	24
Yield Point	19
10 sec. SGS	3
10 min. SGS	14
30 min. SGS	36
Filtrate	7
Flow Line Temp.	95

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	9.9 lb/gal
Well Fluid Density Out of Well	9.9 lb/gal

1.7 Job Details (cont.)

Metrics	Value
BHCT	177 °F
BHST	238 °F

1.8 Circulation

Lost Circulation Experienced	Losses into Spacer	Losses into Cement	Losses into Displacement
Yes	0	0	130.8

Circulation Details:

While washing pumps and line, we drop plug and did not get returns during displacement.

1.9 Job Execution Information

Job	Fluid	Product	Function	Density (lb/gal)	Yield (ft^3/sk)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Top (ft)
1	1	CD Spacer	Spacer	11.00			33.15		40.00	115
1	2	ALTCem P100-X2	Lead	12.70	1.97	11.07		937.00	238.00	1024
1	3	ALTCem P70-X1	Tail	13.50	1.90	9.55		401.00	135.00	6427
1	4	Water w/ ASF-50	DisplacementFinal	8.33			41.92		130.89	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	ALTCem P100-X2	AC3-10	Cement	100.00	%
1	2	Lead	ALTCem P100-X2	ABX-30	BondEnhancer	0.30	%BWOB
1	2	Lead	ALTCem P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	ALTCem P100-X2	ADS-10	Dispersant	0.10	%BWOB
1	2	Lead	ALTCem P100-X2	AR-10	Retarder	0.50	%BWOB
1	2	Lead	ALTCem P100-X2	AVS-10	Viscosifier	0.10	%BWOB
1	3	Tail	ALTCem P70-X1	ACG-10	Cement	70.00	%
1	3	Tail	ALTCem P70-X1	AFA-10	Extender	20.00	%
1	3	Tail	ALTCem P70-X1	AXE-20	Extender	10.00	%
1	3	Tail	ALTCem P70-X1	ABX-30	BondEnhancer	0.20	%BWOB
1	3	Tail	ALTCem P70-X1	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	ALTCem P70-X1	AFL-10	FluidLoss	0.40	%BWOB
1	3	Tail	ALTCem P70-X1	AR-10	Retarder	0.30	%BWOB
1	3	Tail	ALTCem P70-X1	ASR-20	StrengthRetrogression	25.00	%BWOB
1	3	Tail	ALTCem 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	Yard Call	7/17/2017	09:30					Called to Facility
2	Journey Management	7/17/2017	10:05					Safety Meeting Journey Management
3	Depart Facility	7/17/2017	10:15					Depart Facility
4	Arrived On Location	7/17/2017	12:55					Arrived On Location
5	Steacs Briefing	7/17/2017	13:20					Rig up Safety Meeting
6	Rig Up	7/17/2017	13:25					Start rig up
7	Wait on Rig	7/17/2017	14:10					Wait On Rig to finish running pipe
8	Casing on Bottom	7/17/2017	15:28					Casing on Bottom
9	Rig Circulated	7/17/2017	15:29					Rig Circulated
10	Pre Job Safety Meeting	7/17/2017	15:45					Pre Job Safety Meeting
11	Rig Up Cement Head	7/17/2017	16:35					Rig Up Cement Head
12	Load Line	7/17/2017	16:36	8.34		3	200	Load Line Quick connect was leaking.
13	Pressure Test	7/17/2017	16:58				5000	Pressure Test 5000 psi
14	Start Spacer	7/17/2017	17:02	11	5.1	35	396	Weighted Spacer
15	Start Lead Cement	7/17/2017	17:15	12.7	6.2		465	Start Lead Cement
16	Lead Cement	7/17/2017	17:22	12.7	6.2	75	445	75Bbls Lead Cement
17	Lead Cement	7/17/2017	17:39	12.7	6.2	150	450	150 Bbls Lead Cement
18	Lead Cement	7/17/2017	18:03	12.7	4.7	295	443	225 Bbls Lead Cement
19	Lead Cement	7/17/2017	18:07	12.7	4.7	320	421	300 Bbls Lead Cement
20	Start Tail	7/17/2017	18:09	13.5	6.2		814	Start Tail Cement
21	Tail Cement	7/17/2017	18:18	13.5	6.2	50	1037	50 Bbls Tail Cement
22	Tail Cement	7/17/2017	18:33	13.5	3	130	275	130 Bbls Tail Cement
23	Wash Pump and Line	7/17/2017	18:35					Wash Pump and Line
24	Drop Plug	7/17/2017	18:40					Drop plug
25	Start Displacement	7/17/2017	18:41	8.34	7.2		111	Start Displacement. No returns
26	Displacement	7/17/2017	18:46	8.34	8.5	50	1090	50 Bbls displacement
27	Displacement	7/17/2017	19:00	8.34	2.3	120	1400	120 Bbls Slow Rate Displacement
28	Land Plug	7/17/2017	19:04				3014	Land Plug and start casing test 10 Min
29	Check Float	7/17/2017	19:14					.5Bbls back Float was good

3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	71.2 °F	50-80 °F
pH Level	6	5.5-8.5
Chlorides	100 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	425 mg/L	0-500 mg/L
Carbonates	N/A mg/L	0-100 mg/L
Sulfates	200 mg/L	0-1500 mg/L
Potassium	1000 mg/L	0-3000 mg/L
Iron	.0.0 mg/L	0-300 mg/L

4 Pump Diagrams