



# Great Western Operating Company, LLC

Tollway LC 24-376HN

API # 05-001-10424

Surface Cement

August 14, 2019

Quote #: QUO-35180

Execution #: EXC-20345



# Great Western Operating Company, LLC

Attention: Mr. Matt Mount | (720) 595-2173 | [mmount@gwogco.com](mailto:mmount@gwogco.com)

Great Western | 1001 17th Street, Suite 2000 | Denver, CO 80202

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Dear Mr. Mount,

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  
Field Engineer III | (307) 757-7178 | [Zen.Keith@BJServices.com](mailto:Zen.Keith@BJServices.com)

Field Office 28730 US-6, Rifle, CO 81650  
Phone: (970) 632-2412

Sales Office 999 18th St. Suite 1200 Denver, CO 80202  
Phone: (281) 408-2361

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# BJ Cementing Treatment Report

SERVICE SUPERVISOR	Paul Linn III	FORMATION	
CLIENT FIELD REPRESENTATIVE	Jw Cooper	RIG	Ikon 12
DISTRICT	Rifle, CO	COUNTY	ADAMS
SERVICE	Cementing	STATE / PROVINCE	CO

## WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Casing	8.92	9.63	36.00	1,797.00	1,797.00		J-55	LTC
Open Hole	13.50	0.00	0.00	1,797.00	1,797.00	30.00		

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,750.89
Top Plug Provided By	Non BJ	Pipe Movement	None
Top Plug Size	9.625	Job Pumped Through	Manifold
Centralizers Used	Yes	Top Connection Thread	8 RND
Centralizers Quantity	17.00	Top Connection Size	9.625
Centralizers Type	Bow		
Landing Collar Depth (ft)	1,750.89		

Client: Great Western Operating Company, LLC

Well: TOLLWAY LC #24-376HN

Well API: 05-001-10424

Start Date: 8/13/2019

End Date: 8/14/2019

Field Ticket #: FT-20345-N1V4X10202-97532



## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig
Circulation Prior to Job	Yes
Circulation Time (min)	30.00
Circulation Rate (bpm)	4.75
Circulation Volume (bbls)	142.50
Lost Circulation Prior to Cement Job	No
Mud Density In (ppg)	8.40
Mud Density Out (ppg)	8.40

Solids Present at End of Circulation	No
Flare Prior to / during the Cement Job	No
Gas Present	No

## TEMPERATURE

Ambient Temperature (°F)	63.00
Mix Water Temperature (°F)	66.80

Slurry Cement Temperature (°F)	79.40
Flow Line Temperature (°F)	

## FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H <sub>2</sub> O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer / Pre Flush / Flush	Water	8.3300			0.00				20.0000
Tail Slurry	BJCem S100.3.XC	14.5000	1.3902	6.81	0.00	1,750.00	815	1134.0000	201.8000
Displacement 1	Water	8.3300			0.00			0.0000	114.7000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Tail Slurry	BJCem S100.3.XC	CEMENT, ASTM TYPE III	100.0000	PCT

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
8/14/2019 2:21:00 AM	Water	4.00	20.00	86.00
8/14/2019 2:34:00 AM	BJCem S100.3.XC	5.00	201.80	203.00
8/14/2019 3:19:00 AM	Water	8.50	135.43	211.00

## MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	27.00	998.00	211.00
Rate (bpm)	2.00	8.50	5.00

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## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	35.00
Calculated Displacement Vol (bbls)	135.43	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	135.00	Amt of Spacer to Surface	20.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	1.00
Bump Plug Pressure (psi)	682.00	Total Volume Pumped (bbls)	358.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Yes	Lost Circulation During Cement Job	No

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# BJ Cementing Event Log

Surface - Rifle, CO - Paul Linn III

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	08/13/2019 19:00	Callout					Call out. On location time of 01:00 8/14/19
2	08/13/2019 20:30	Arrive on Location					Arrive on location. Rig was still drilling
3	08/13/2019 20:41	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ Services cement crew
4	08/13/2019 20:56	Rig Up					Rig up all equipment
5	08/13/2019 21:14	Client					Wait on rig to pull drill pipe, run casing, and circulate
6	08/14/2019 01:52	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
7	08/14/2019 02:05	Rig Up					Load plug in plug container, stab plug container, and hook up lines
8	08/14/2019 02:15	Prime Up	8.4000	2.00	5.00	27.00	Fill lines with 5 bbls of fresh water
9	08/14/2019 02:17	Pressure Test				3106.00	Pressure test to 3106 psi
10	08/14/2019 02:21	Pump Spacer	8.4000	4.00	20.00	86.00	Pump 20 bbls of Dye spacer
11	08/14/2019 02:32	Pump Tail Cement	14.5000	5.00	5.00	203.00	Pump Tail Cement 14.5 ppg 815 sks 1.39 cuft/sk 6.81 gals/sk for a total of 201.76 bbls of Tail cement requiring 132.15 bbls of mix water. Weight verified with mud scales
12	08/14/2019 02:43	Pump Tail Cement	14.5000	5.00	50.00	161.00	Pump Tail Cement
13	08/14/2019 02:53	Pump Tail Cement	14.5000	5.00	100.00	166.00	Pump Tail Cement
14	08/14/2019 03:05	Pump Tail Cement	14.5000	5.00	150.00	172.00	Pump Tail Cement
15	08/14/2019 03:15	Pump Tail Cement	14.5000	5.00	203.00	183.00	Finished pumping Tail Cement with 203 bbls away

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
16	08/14/2019 03:17	Drop Top Plug					Drop plug, verified by company man
17	08/14/2019 03:19	Pump Displacement	8.4000	8.50	10.00	211.00	Pump Fresh water displacement
18	08/14/2019 03:24	Pump Displacement	8.4000	8.50	50.00	636.00	Pump Fresh water displacement
19	08/14/2019 03:33	Cement Back-to-Surface					35 bbls of cement to surface
20	08/14/2019 03:33	Pump Displacement	8.4000	8.50	115.00	998.00	Pump Fresh water displacement
21	08/14/2019 03:34	Pump Displacement	8.4000	3.00	135.00	682.00	Pump Fresh water displacement
22	08/14/2019 03:39	Land Plug				1286.00	Landed the plug at 682 psi took to 1286 psi
23	08/14/2019 03:40	Other (See comment)				1552.00	15 min casing test: start 1554 psi, end 1581 psi
24	08/14/2019 03:55	Check Floats					Check floats. Floats held 1 bbl back
25	08/14/2019 03:58	Wash Pumps and Lines					Wash pumps and lines to cellar
26	08/14/2019 04:10	STEACS Briefing					Pre-Rig Down STEACS Briefing with all BJ Services cement crew
27	08/14/2019 04:22	Rig Down					Rig down equipment and move bulk truck out of the way
28	08/14/2019 05:00	Leave Location					Leave location. Thank you for using BJ Services, Andrew Linn, and crew

