



# Great Western Operating Company, LLC

Tollway LC 24-379HC

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API # 05-001-10446

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Surface Cement

August 16, 2019

Quote #: QUO-35185

Execution #: EXC-20352



# 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

<b>SERVICE SUPERVISOR</b>	Paul Linn III	<b>FORMATION</b>	
<b>CLIENT FIELD REPRESENTATIVE</b>	Kyle Hibbert	<b>RIG</b>	Ikon 12
<b>DISTRICT</b>	Rifle, CO	<b>COUNTY</b>	ADAMS
<b>SERVICE</b>	Cementing	<b>STATE / PROVINCE</b>	CO

## WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Open Hole	13.50	0.00	0.00	1,816.00	1,813.00	30.00		
Casing	8.92	9.63	36.00	1,816.00	1,813.00		J-55	LTC

## HARDWARE

<b>Bottom Plug Used?</b>	No	<b>Tool Type</b>	Float Collar
<b>Top Plug Used?</b>	Yes	<b>Tool Depth (ft)</b>	1,770.22
<b>Top Plug Provided By</b>	Non BJ	<b>Pipe Movement</b>	None
<b>Top Plug Size</b>	9.625	<b>Job Pumped Through</b>	Manifold
<b>Centralizers Used</b>	Yes	<b>Top Connection Thread</b>	8 RND
<b>Centralizers Quantity</b>	17.00	<b>Top Connection Size</b>	9.625
<b>Centralizers Type</b>	Bow		
<b>Landing Collar Depth (ft)</b>	1,770.22		

Client: Great Western Operating Company, LLC

Well: TOLLWAY LC #24-379HC

Well API: 05-001-10446

Start Date: 8/16/2019

End Date: 8/16/2019

Field Ticket #: FT-20352-S0W4X50202-90871



## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	Flare Prior to / during the Cement Job	No
Circulation Time (min)	30.00	Gas Present	No
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		

## TEMPERATURE

Ambient Temperature (°F)	76.00	Slurry Cement Temperature (°F)	86.60
Mix Water Temperature (°F)	74.60	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	830	1134.0000	205.0000
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)
8/16/2019 1:12:00 PM	Water	4.00	20.00	75.00
8/16/2019 1:16:00 PM	BJCem S100.3.XC	4.50	205.47	206.00
8/16/2019 2:08:00 PM	Water	9.75	135.74	344.00

## MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	38.00	1004.00	206.00
Rate (bpm)	2.00	9.75	4.50

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## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	18.00
Calculated Displacement Vol (bbls)	135.74	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	135.50	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	368.00
Bump Plug Pressure (psi)	694.00	Total Volume Pumped (bbls)	0.50
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	08/16/2019 06:00	Callout					Call out. On location time of 12:00 8/16/19
2	08/16/2019 09:50	Arrive on Location					Arrive on location. Rig was running casing
3	08/16/2019 09:56	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ Services cement crew
4	08/16/2019 10:08	Rig Up					rig up all equipment
5	08/16/2019 10:36	Client					Wait on rig to finish running casing and circulate
6	08/16/2019 12:47	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
7	08/16/2019 12:58	Rig Up					Load plug in plug container, stab plug container, and hook up lines
8	08/16/2019 13:08	Prime Up	8.4000	2.00	5.00	38.00	Fill lines
9	08/16/2019 13:10	Pressure Test				3232.00	Pressure test to 3232 psi
10	08/16/2019 13:12	Pump Spacer	8.4000	4.00	20.00	75.00	Pump Dye spacer
11	08/16/2019 13:16	Pump Tail Cement	14.5000	4.50	5.00	205.00	Pump 830 sx Tail Cement 14.5 ppg 1.39 cuft/sk 6.81 gals/sk for a total of 205.47 bbls of Tail cement requiring 134.58 bbls of mix water. Weight verified with mud scales
12	08/16/2019 13:31	Pump Tail Cement	14.5000	4.50	50.00	171.00	Pump Tail Cement
13	08/16/2019 13:39	Pump Tail Cement	14.5000	4.50	100.00	211.00	Pump Tail Cement
14	08/16/2019 13:50	Pump Tail Cement	14.5000	4.50	150.00	192.00	Pump Tail Cement
15	08/16/2019 14:05	Pump Tail Cement	14.5000	4.50	212.00	185.00	Finished pumping Tail Cement with 212 bbls away
16	08/16/2019 14:07	Drop Top Plug					Drop plug, verified by company man



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
17	08/16/2019 14:08	Pump Displacement	8.4000	9.75	10.00	344.00	Pump Fresh water displacement
18	08/16/2019 14:13	Pump Displacement	8.4000	9.75	50.00	525.00	Pump Fresh water displacement
19	08/16/2019 14:20	Cement Back-to-Surface					18 bbls of cement to surface
20	08/16/2019 14:20	Pump Displacement	8.4000	9.75	115.00	1004.00	Pump Fresh water displacement
21	08/16/2019 14:27	Pump Displacement	8.4000	3.00	135.50	694.00	Pump Fresh water displacement
22	08/16/2019 14:28	Land Plug				1252.00	Landed the plug at 694 psi took to 1252
23	08/16/2019 14:28	Other (See comment)				1254.00	15 min casing test: start 1252 psi, end 1266 psi.
24	08/16/2019 14:43	Check Floats					Check floats, floats held 1/2 bbl back
25	08/16/2019 14:50	Wash Pumps and Lines					Wash pumps and lines into cellar
26	08/16/2019 15:06	STEACS Briefing					Pre-Rig Down STEACS Briefing
27	08/16/2019 15:14	Rig Down					Rig down equipment
28	08/16/2019 15:47	Leave Location					Leave location. Thank you for using BJ Services, Andrew Linn, and crew

