



Great Western Operating Company, LLC

Tollway LC 24-378HNX

API # 05-001-10430

Surface Cement

August 15, 2019

Quote #: QUO-35184

Execution #: EXC-20350



Great Western Operating Company, LLC

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

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

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

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

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
Open Hole	13.50	0.00	0.00	1,809.00	1,798.00	30.00		
Casing	8.92	9.63	36.00	1,809.00	1,798.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,762.54
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)	1,762.54		

Client: Great Western Operating Company, LLC

Well: TOLLWAY LC #24-378HNX

Well API: 05-001-10430

Start Date: 8/15/2019

End Date: 8/15/2019

Field Ticket #: FT-20350-Z4B8W20202-89825



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)	96.00	Slurry Cement Temperature (°F)	89.60
Mix Water Temperature (°F)	76.40	Flow Line Temperature (°F)	

FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ 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	205.4000
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)
8/15/2019 6:30:00 PM	Water	4.50	20.00	73.00
8/15/2019 6:33:00 PM	BJCem S100.3.XC	4.50	205.47	149.00
8/15/2019 7:20:00 PM	Water	8.50	136.20	227.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	18.00	906.00	218.00
Rate (bpm)	2.50	8.50	5.00

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DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	30.00
Calculated Displacement Vol (bbls)	136.20	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	136.00	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)	681.00	Total Volume Pumped (bbls)	366.00
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	08/15/2019 11:00	Callout					Call out. On Location time of 17:00 8/15/19
2	08/15/2019 13:20	Arrive on Location					Arrive on location. Rig crew was pulling drill pipe
3	08/15/2019 13:30	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ Services cement crew
4	08/15/2019 13:41	Rig Up					Rig up all ground equipment
5	08/15/2019 14:18	Client					Wait on rig to finish pulling drill pipe, run casing, and circulate
6	08/15/2019 18:00	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
7	08/15/2019 18:12	Rig Up					Load plug in plug container, stab plug container, and hook up lines
8	08/15/2019 18:22	Prime Up	8.4000	2.00	5.00	18.00	Fill lines
9	08/15/2019 18:25	Pressure Test				3118.00	Pressure test to 3118 psi
10	08/15/2019 18:28	Pump Spacer	8.4000	4.50	20.00	73.00	Pump Dye spacer
11	08/15/2019 18:32	Pump Tail Cement	14.5000	4.50	5.00	149.00	Pump Tail Cement 14.5 ppg 830 sks 1.39 cuft/sk 6.81 gals/sk for a total of 205.47 bbl of Tail cement 134.58 bbls of mix water. Weight verified mud scales
12	08/15/2019 18:42	Pump Tail Cement	14.5000	4.50	50.00	167.00	Pump Tail Cement
13	08/15/2019 18:53	Pump Tail Cement	14.5000	4.50	100.00	195.00	Pump Tail Cement
14	08/15/2019 19:03	Pump Tail Cement	14.5000	5.00	150.00	218.00	Pump Tail Cement
15	08/15/2019 19:16	Pump Tail Cement	14.5000	5.00	210.00	216.00	Finished pumping Tail Cement with 210 bbls away
16	08/15/2019 19:18	Drop Top Plug					Drop plug, verified by company



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
17	08/15/2019 19:20	Pump Displacement	8.4000	8.50	10.00	227.00	Pump Fresh water displacement
18	08/15/2019 19:25	Pump Displacement	8.4000	8.50	50.00	393.00	Pump Fresh water displacement
19	08/15/2019 19:32	Pump Displacement	8.4000	8.50	115.00	906.00	Pump Fresh water displacement
20	08/15/2019 19:38	Cement Back-to-Surface					30 bbls of cement to surface
21	08/15/2019 19:38	Pump Displacement	8.4000	3.00	136.00	681.00	Pump Fresh water displacement
22	08/15/2019 19:39	Land Plug				1640.00	Land plug at 681 psi took to 1640
23	08/15/2019 19:40	Other (See comment)				1645.00	15 min casing test: start 1640 psi, end 1646 psi.
24	08/15/2019 19:54	Check Floats					Check floats. Floats held 1 bbl back
25	08/15/2019 20:00	Wash Pumps and Lines					wash pumps and lines into cellar
26	08/15/2019 20:09	STEACS Briefing					Pre-Rig Down STEACS Briefing with all BJ Services cement crew
27	08/15/2019 20:17	Rig Down					Rig down out of the rig way
28	08/15/2019 20:39	Leave Location					Leave location. Thank you for using BJ Services, Andrew Linn, and crew

