



Great Western Operating Company, LLC

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API # 05-001-%\$(**

Surface Cement

July 6, 2019

Quote #: QUO-33192

Execution #: EXC-19354



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	H. Zeke Busheri	FORMATION	
CLIENT FIELD REPRESENTATIVE	Kyle Hibbert	RIG	
DISTRICT	Rifle, CO	COUNTY	ADAMS
SERVICE	Cementing	STATE / PROVINCE	CO

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Open Hole	13.50	0.00	0.00	1,778.00	30.00		
Casing	8.92	9.63	36.00	1,778.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,731.18
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2800.00
Centralizers Used	No	Pipe Movement	None
Landing Collar Depth (ft)	1,731.18	Job Pumped Through	No Manifold
		Top Connection Thread	8rd
		Top Connection Size	9.625

Client: Great Western Operating
Company LLC

Well: RIO LC #12-368HN

Well API: 05-001-10466

Start Date: 7/5/2019

End Date: 7/6/2019

Field Ticket #: FT-19354-P4G2L70202-75844



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)	20.00	Gas Present	No
Circulation Rate (bpm)	8.00		
Circulation Volume (bbls)	150.00		
Lost Circulation Prior to Cement Job	No		
Mud Density Out (ppg)	8.40		

TEMPERATURE

Ambient Temperature (°F)	71.00	Slurry Cement Temperature (°F)	68.00
Mix Water Temperature (°F)	66.00	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	Water	8.3300			0.00				20.0000
Tail Slurry	BJCem S100.3.XC	14.5000	1.3902	6.81	0.00	1,725.00	800	1113.0000	198.1000
Displacement	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

TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)	ANNULUS PRESS (psi)	COMMENTS
7/6/2019 12:00:00 AM	Water	5.00	20.00	259.00		
7/6/2019 1:00:00 AM	BJCem S100.3.XC	5.00	198.10	492.00		
7/6/2019 2:00:00 AM	Water	5.00	133.00	615.00		

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	259.00	615.00	455.33
Rate (bpm)	5.00	5.00	5.00

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Start 7/5/2019
Date:

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Field Ticket FT-19354-P4G2L70202-
#: 75844



DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	58.00
Calculated Displacement Vol (bbls)	133.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	133.00	Amt of Spacer to Surface	30.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	No	Amt Bled Back After Job	0.50
Bump Plug Pressure (psi)	1200.00	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 – H. Zeke Busheri

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	07/05/2019 15:00	Arrive on Location					AOL @ 1530, RTS @ 1900
2	07/05/2019 15:30	STEACS Briefing					STEACS w/ Co Man
3	07/05/2019 15:40	Rig Up					Rig up All DH Equip to Buffer Zone
4	07/05/2019 16:30	Rig					Rig Running Casing
5	07/05/2019 23:30	STEACS Briefing					STEACS w/ CoMan, Rig Crew, 3rd Party, Rig Circulate 30 mins @ 8 BPM, 240 Bbls
6	07/05/2019 23:45	Rig Up					Rig up PLH and Lines to Floor
7	07/06/2019 00:12	Pump Spacer	8.3300	2.50	5.00	159.00	Fill Lines Break Circulation
8	07/06/2019 00:15	Pressure Test				3000.00	Pressure Test
9	07/06/2019 00:18	Pump Spacer	8.3300	5.00	20.00	430.00	20 Bbls FW + Dye, Swap to Cmt @ 14.5 PPG DH, 800 Sks, 1.39 Y, 6.81 MW, 198.1 Bbls
10	07/06/2019 00:24	Pumping Cement	14.5000	5.00	50.00	453.00	50 Bbls Cmt
11	07/06/2019 00:36	Pumping Cement	14.5000	3.00	100.00	416.00	100 Bbls Cmt
12	07/06/2019 00:52	Pumping Cement	14.5000	3.00	150.00	311.00	150 Bbls Cmt
13	07/06/2019 01:15	Pumping Cement	14.5000	3.00	198.10	298.00	198.1 Bbls Cmt, Shut Down
14	07/06/2019 01:38	Drop Top Plug	8.3300	5.00	50.00	293.00	Drop Top Plug, 50 Bbls FW Disp, Dye to Surf @ 45 Bbls Away
15	07/06/2019 01:52	Pump Displacement	8.3300	5.00	100.00	554.00	100 Bbls FW Disp, Cmt to Surf @ 75 Bbls Away, 58 Bbls Cmt to Surf
16	07/06/2019 02:03	Land Plug	8.3300	3.00	133.00	615.00	133 Bbls FW Disp, Land Plug @ 1200 PSI, 15 min csg test: start 1256 psi, end 1247 psi.
17	07/06/2019 02:20	Check Floats					Floats Held, 0.5 Bbls Returned to Truck
18	07/06/2019 02:35	Rig Down					STEACS, Rig Down DH Equip

