



# Great Western Operating Company, LLC

RIO LC 12-373HC

API # 05-001-10463

Surface

March 15, 2020

Quote #: QUO-43366-Z4F9P4

Execution #: EXC-25258-S1N0H802



# Great Western Operating Company, LLC

Great Western Operating Company, LLC | 1801 Broadway, Suite 500 | Denver, CO 80202

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Dear Great Western Operating Company, LLC,

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,  
Jason Creel  
Field Engineer I | (307) 256-0306 | [Jason.Creel@BJServices.com](mailto:Jason.Creel@BJServices.com)

Field Office  
1716 East Allison Rd., Cheyenne WY. 82007 | (307) 638-5585

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

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# BJ Cementing Treatment Report

SERVICE SUPERVISOR	Eric Dewit	RIG	White Mountain
DISTRICT	Cheyenne, WY	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	2,022.00	2,022.00		J-55	LTC
Open Hole	13.50	0.00	0.00	2,022.00	2,022.00	30.00		

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,977.22
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	2,720.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	1,500.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	20.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	LTC
Landing Collar Depth (ft)	1,977.22	Top Connection Size	9.625

## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Mud Density In (ppg)	8.40
Circulation Prior to Job	Yes	Mud Density Out (ppg)	8.40
Circulation Time (min)	30.00	Solids Present at End of Circulation	No
Circulation Rate (bpm)	5.00	Flare Prior to / during the Cement Job	No
Circulation Volume (bbls)	150.00	Gas Present	No
Lost Circulation Prior to Cement Job	No		

## TEMPERATURE

Ambient Temperature (°F)	43.00	Slurry Cement Temperature (°F)	556.00
Mix Water Temperature (°F)	55.00		

Client: Great Western Operating Company, LLC

Well: RIO LC #12-373HC

Well API: 05-001-10463

Start Date: 3/15/2020

End Date: 3/16/2020

Field Ticket #: FT-25258-S1N0H80201-12354110



## 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	2,000.00	930	1293.0000	230.3000
Displacement Final	Water	8.3300			0.00			0.0000	151.4000

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

## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	52.00
Calculated Displacement Vol (bbls)	152.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	152.00	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	0.50
Bump Plug Pressure (psi)	1,566.00	Total Volume Pumped (bbls)	406.00
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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Well: RIO LC #12-373HC

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Start Date: 3/15/2020

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Field Ticket #: FT-25258-S1N0H80201-12354110



# BJ Cementing Event Log

Surface - Cheyenne, WY - Eric Dewit

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	03/15/2020 14:30	Callout					Customer calls with an RTS of 20:30 on 3/15/20 Crew gets equipment and materials ready to travel to location
2	03/15/2020 17:30	Depart for Location					
3	03/15/2020 19:00	Arrive on Location					Arrive on location (rig still running casing) Pre-rig up safety meeting with
4	03/15/2020 19:10	Spot Units					
5	03/15/2020 19:15	Rig Up					
6	03/15/2020 20:00	Rig					Waiting on rig to finish running casing and circulate
7	03/15/2020 21:45	STEACS Briefing					Pre-job safety meeting with BJ Crew, Rig Crew, and Company Man
8	03/15/2020 22:07	Other (See comment)	8.3400	5.20	3.00	154.00	Load lines with 3 bbls of fresh water + Dye
9	03/15/2020 22:09	Pressure Test	8.3400	0.00	0.00	3200.00	
10	03/15/2020 22:12	Pump Spacer	8.3400	5.60	20.00	147.00	Pump 20 bbls of fresh water + Dye ahead of cement
11	03/15/2020 22:18	Pumping Cement	14.5000	4.00	230.00	125.00	Pump 930 sks of cement @14.5 ppg (had to shut down 2 times to clear lines and get density back up, shut downs were both less than 1 min each)
12	03/15/2020 23:22	Drop Top Plug					
13	03/15/2020 23:27	Pump Displacement	8.3400	6.60	0.00	120.00	Send plug start fresh water + Biocide (provided by the customer)
14	03/15/2020 23:37	Spacer Back-to-Surface	8.3400	6.60	70.00	450.00	
15	03/15/2020 23:42	Cement Back-to-Surface	8.3400	1.30	100.00	540.00	Start getting good cement to surface drop rate to 1.3 bbls/min for rig to swap hoses for cement returns
16	03/15/2020 23:48	Other (See comment)	8.3400	6.50	110.00	680.00	Pick rate back up
17	03/15/2020 23:51	Other (See comment)	8.3400	2.80	130.00	740.00	Drop rate to land the plug
18	03/15/2020 23:58	Land Plug	8.3400	2.80	152.00	1566.00	Final lift pressure was 792 (52 bbls of cement to surface)
19	03/16/2020 00:08	Other (See comment)	8.3400	0.00	0.00	1569.00	Pressure 10 min into casing test
20	03/16/2020 00:18	Other (See comment)	8.3400	0.00	0.00	1588.00	Pressure 20 min into casing test

Client: Great Western Operating Company, LLC

Well Name / API: RIO LC #12-373HC / 05-001-10463



Quote #: QUO-43366-Z4F9P4

Plan #: ORD-25258-S1N0H8

Execution #: EXC-25258-S1N0H802

21	03/16/2020 00:28	Check Floats	8.3400	0.00	0.00	1591.00	Final pressure 1,591 psi, floats held (.5 bbls back)
22	03/16/2020 00:29	STEACS Briefing					Pre-rig down safety meeting
23	03/16/2020 00:36	Rig Down					Rig everything down



JobMaster Program Version 5.00C1

Job Number:

Customer: Great Western

Well Name: Rio LC 12-373HC

