



# Great Western Operating Company, LLC

Rio LC 12-376HN

API # 05-001-10457

Surface

March 23, 2020

Quote #: QUO-43371-P5P4P6

Execution #: EXC-25431-LoP2B202



# 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
CLIENT FIELD REPRESENTATIVE	Ricky	COUNTY	ADAMS
DISTRICT	Cheyenne, WY	STATE / PROVINCE	CO
SERVICE	Cementing		

## WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Casing	8.92	9.63	36.00	2,018.00	2,018.00		J-55	LTC
Open Hole	13.50	0.00	0.00	2,018.00	2,018.00	30.00		

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,973.26
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	2,720.00
Top Plug Size	9.630	Max Casing Pressure - Operated (psi)	1,600.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	19.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	LTC
Landing Collar Depth (ft)	1,973.26	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)	56.00	Slurry Cement Temperature (°F)	58.00
Mix Water Temperature (°F)	57.00		

Client: Great Western Operating Company, LLC

Well: RIO LC #12-376HN

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Start Date: 3/23/2020

End Date: 3/23/2020

Field Ticket #:

## 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	42.00
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)	1,515.00	Total Volume Pumped (bbls)	408.00
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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Start Date: 3/23/2020

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# 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	03/23/2020 12:30	Callout					Customer calls with an OL time of 18:30 on 3/23/20 Crew gets equipment and materials ready to travel to location
2	03/23/2020 16:30	Arrive on Location					Arrive on location, Pre-rig up safety meeting with crew before spotting trucks
3	03/23/2020 16:40	Spot Units					
4	03/23/2020 16:50	Rig Up					
5	03/23/2020 18:00	Rig					Waiting on rig to finish running casing, and circulate
6	03/23/2020 20:00	STEACS Briefing					Pre-job safety meeting with BJ crew, rig crew, and customer
7	03/23/2020 20:20	Rig Up					Rig up cement head
8	03/23/2020 20:38	Other (See comment)	8.3400	5.20	5.00	306.00	Load pumps and lines
9	03/23/2020 20:42	Pressure Test	8.3400	0.00	0.00	2924.00	Test pumps and lines
10	03/23/2020 20:44	Pump Spacer	8.3400	5.30	25.00	222.00	Had to pump an extra 10 bbls of water ahead due to issue with bulk delivery when swapping to cement.
11	03/23/2020 20:53	Pumping Cement	14.5000	5.70	230.00	258.00	Pump 730 sks out of Silo 673, and 200 sks out of rear pod of CTF-202
12	03/23/2020 21:35	Drop Top Plug					Shut down, wash pump, and drop top plug
13	03/23/2020 21:36	Pump Displacement	8.3400	7.90	0.00	102.00	Send plug start fresh water displacement + Biocide (provided by customer)
14	03/23/2020 21:40	Pump Displacement	8.3400	7.90	30.00	371.00	Catch up to cement
15	03/23/2020 21:43	Pump Displacement	8.3400	7.90	50.00	490.00	50 bbls into displacement
16	03/23/2020 21:49	Pump Displacement	8.3400	7.90	100.00	820.00	100 bbls into displacement
17	03/23/2020 21:51	Cement Back-to-Surface	8.3400	7.90	110.00	887.00	42 bbls of cement to surface, had to drop rate for less than a bbl for rig to swap valves on the return line
18	03/23/2020 21:54	Pump Displacement	8.3400	2.80	135.00	686.00	Drop rate to land the plug
19	03/23/2020 22:01	Land Plug	8.3400	2.80	152.00	1515.00	Land plug (FCP was 787) Hold for a 30 min casing test
20	03/23/2020 22:11	Pressure Test	8.3400	0.00	0.00	1520.00	10 min. into casing test
21	03/23/2020 22:21	Pressure Test	8.3400	0.00	0.00	1530.00	20 min. into casing test

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Plan #: ORD-25431-L0P2B2

Execution #: EXC-25431-L0P2B202

22	03/23/2020 22:31	Check Floats	8.3400	0.00	0.00	1541.00	Final test pressure 1541, Floats held (.5 bbls back)
23	03/23/2020 22:33	STEACS Briefing					Pre-rig down safety meeting
24	03/23/2020 22:43	Rig Down					Rig everything down
25	03/23/2020 23:00	Leave Location					leave location, and travel back to yard



JobMaster Program Version 5.00C1

Job Number:

Customer: Great Western

Well Name: Rio LC 12-376HN

