



Great Western Operating Company, LLC

Rio LC 12-370HC

API # 05-001-10460

Surface

March 25, 2020

Quote #: QUO-43374-Z1V2D5

Execution #: EXC-25432-K1X8Q702



Great Western Operating Company, LLC

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

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

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

BJ Cementing Treatment Report

SERVICE SUPERVISOR	Eric Dewit	RIG	White Mountain
CLIENT FIELD REPRESENTATIVE	Shane	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
Open Hole	13.50	0.00	0.00	2,006.00	2,006.00	30.00		
Casing	8.92	9.63	36.00	2,006.00	2,006.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,961.26
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	2,720.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	1,600.00
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)	1,961.26	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)	90.00	Solids Present at End of Circulation	No
Circulation Rate (bpm)	8.00	Flare Prior to / during the Cement Job	No
Circulation Volume (bbls)	720.00	Gas Present	No
Lost Circulation Prior to Cement Job	No		

TEMPERATURE

Ambient Temperature (°F)	45.00	Slurry Cement Temperature (°F)	56.00
Mix Water Temperature (°F)	55.00		

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	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	32.00
Calculated Displacement Vol (bbls)	152.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	152.00	Amt of Spacer to Surface	10.00
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)	401.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Yes	Lost Circulation During Cement Job	No

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	03/24/2020 19:45	Callout					Customer calls with an OL time of 1:45 on 3/25/20
2	03/24/2020 21:00	Depart for Location					Crew leaves yard to travel to location
3	03/24/2020 23:00	Arrive on Location					Crew arrives on location (rig is running casing. Pre-rig up safety meeting before spotting trucks
4	03/24/2020 23:10	Spot Units					Spot trucks
5	03/24/2020 23:25	Rig Up					Rig everything up except the rig floor
6	03/25/2020 00:30	Rig					Waiting on rig to finish running casing, and circulate
7	03/25/2020 03:00	STEACS Briefing					Pre-rig up safety meeting with BJ crew, Rig crew, and company man
8	03/25/2020 03:15	Rig Up					Rig up cement head
9	03/25/2020 03:29	Other (See comment)	8.3400	1.30	1.50	1272.00	Started pumping to load pumps and lines, Pressure shot up to 1272 psi and pumps kicked out
10	03/25/2020 03:30	Other (See comment)					Talked with company man to see what he wanted to do, decided to bring it up to 1600 psi to see if it would break lose.
11	03/25/2020 03:33	Other (See comment)	8.3400	0.50	0.50	1600.00	Pressured up to 1600 psi, pumped kicked out, still unable to pump down the well
12	03/25/2020 03:35	Other (See comment)					Talked with company man, he wanted to try and pick up on the head a little bit, and attempt to pump on it again
13	03/25/2020 03:43	Other (See comment)	8.3400	0.30	0.30	513.00	Pump 500 psi on after they picked it up a bit, held pressure
14	03/25/2020 03:44	Other (See comment)	8.3400	0.30	0.10	800.00	Brought pressure up to 800 psi as they picked up a little bit more, still unable to pump on it
15	03/25/2020 03:45	Other (See comment)					At this point we released pressure, rigged down the cement head, and rig tied back onto to circulate.
16	03/25/2020 04:15	Rig Up					Rig broke circulation, rig cement head back up
17	03/25/2020 04:22	Other (See comment)	8.3400	4.20	1.30	20.00	Attempted to pump water, Crossover from the head to the casing was leaking badly, shut down
18	03/25/2020 04:23	Other (See comment)					Took the crossover out to inspect it, had no visual damage, attempted to thread it back in, was unable to thread it in. Tried to thread in a circulating swage, was unable to thread that in either
19	03/25/2020 05:03	Rig					At this point is was determined the casing threads

Client: Great Western Operating Company, LLC

Well Name / API: RIO LC #12-370HC / 05-001-10460



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Plan #: ORD-25432-K1X8Q7

Execution #: EXC-25432-K1X8Q702

								must have got damaged, rig had to pull that joint and replace with a different one. Waiting on rig to replace casing and circulate.
20	03/25/2020 06:47	STEACS Briefing						Pre-job safety meeting before starting job again
21	03/25/2020 06:53	Rig Up						Rigged up cement head, no issues with the crossover this time
22	03/25/2020 07:04	Other (See comment)	8.3400	4.20	5.00	95.00		Loaded lines with 5 bbls of fresh water (no leaks)
23	03/25/2020 07:07	Pressure Test	8.3400	0.00	0.00	3400.00		Test pumps and lines
24	03/25/2020 07:10	Pump Spacer	8.3400	4.10	5.00	104.00		Pump 5 more bbls of fresh water ahead
25	03/25/2020 07:12	Pumping Cement	14.5000	4.10	230.00	112.00		Pump 930 sks of cement @14.5 ppg
26	03/25/2020 08:09	Drop Top Plug						
27	03/25/2020 08:14	Pump Displacement	8.3400	8.00	0.00	91.00		Send plug start fresh water displacement + Biocide (provided by customer)
28	03/25/2020 08:19	Pump Displacement	8.3400	8.00	36.00	270.00		Catch up to cement
29	03/25/2020 08:21	Pump Displacement	8.3400	8.00	50.00	376.00		50 bbls into displacement
30	03/25/2020 08:28	Pump Displacement	8.3400	8.00	100.00	803.00		100 bbls into displacement
31	03/25/2020 08:31	Cement Back-to-Surface	8.3400	8.00	120.00	831.00		Getting good cement to surface (32 bbls back)
32	03/25/2020 08:33	Pump Displacement	8.3400	2.80	135.00	678.00		Drop rate to land the plug
33	03/25/2020 08:38	Land Plug	8.3400	2.80	152.00	1566.00		Land plug. 30 min csg test: start 1566 psi
34	03/25/2020 08:48	Pressure Test	8.3400	0.00	0.00	1584.00		10 min. into test - 1584 psi
35	03/25/2020 08:58	Pressure Test	8.3400	0.00	0.00	1587.00		20 min. into test - 1587 psi
36	03/25/2020 09:08	Check Floats	8.3400	0.00	0.00	1595.00		Final pressure - 1595 psi. Floats held (0.5 bbls back)
37	03/25/2020 09:10	STEACS Briefing						Pre-rig down safety meeting
38	03/25/2020 09:20	Rig Down						Rig everything down
39	03/25/2020 10:00	Leave Location						Crew leaves location to head back to the yard



JobMaster Program Version 5.00C1

Job Number:

Customer: Great Western

Well Name: Rio LC 12-370HC

