



Great Western Operating Company, LLC

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API # 05-001-10(' *

Surface Cement

August 12, 2019

Quote #: QUO-35172

Execution #: EXC-20341



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	Kyle Hibbert	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	1,775.00	1,775.00	30.00		
Casing	8.92	9.63	36.00	1,775.00	1,775.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	1,728.48
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	18.00	Top Connection Size	9.625
Centralizers Type	Bow		
Landing Collar Depth (ft)	1,728.48		

Client: Great Western Operating Company, LLC

Well: TOLLWAY LC #24-375HNX

Well API: 05-001-10436

Start Date: 8/12/2019

End Date: 8/12/2019

Field Ticket #: FT-20341-Q5V3F20202-69327



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)	82.00	Slurry Cement Temperature (°F)	86.40
Mix Water Temperature (°F)	71.30	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	815	1134.0000	201.8000
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)
8/12/2019 10:13:00 AM	Water	5.00	20.00	240.00
8/12/2019 10:28:00 AM	BJCem S100.3.XC	5.00	201.80	201.00
8/12/2019 11:19:00 AM	Water	6.00	133.65	102.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	11.00	906.00	201.00
Rate (bpm)	2.00	8.50	4.50

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DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	30.00
Calculated Displacement Vol (bbls)	133.65	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	133.50	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)	633.00	Total Volume Pumped (bbls)	355.00
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	08/12/2019 01:30	Callout					Call out on location time of 07:30 8/12/19
2	08/12/2019 04:38	Arrive on Location					Arrive on location. Rig was pulling drill pipe
3	08/12/2019 04:46	Spot Units					Spot in trucks
4	08/12/2019 04:54	STEACS Briefing					Pre-Rig up STEACS Briefing with all BJ Services cement crew
5	08/12/2019 05:06	Rig Up					Rig up all equipment
6	08/12/2019 05:39	Client					Wait on rig to run casing and circulate
7	08/12/2019 09:50	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services
8	08/12/2019 10:01	Rig Up					Load plug in plug container, stab plug container, and hook up lines
9	08/12/2019 10:13	Prime Up	8.4000	2.00	5.00	11.00	Fill lines with 5 bbls of fresh water
10	08/12/2019 10:16	Pressure Test				3281.00	Pressure tested to 3281 psi
11	08/12/2019 10:23	Pump Spacer	8.4000	5.00	20.00	240.00	Pump 20 bbls fresh water spacer with dye
12	08/12/2019 10:26	Pump Tail Cement	14.5000	4.50	5.00	201.00	Pump Tail Cement 14.5 ppg 815 sks 1.39 cuft/sk 6.81 gals/sk for a total of 201.76 bbls of Tail cement requiring 132.15 bbls of mix water. Weight verified with mud scales
13	08/12/2019 10:39	Pump Tail Cement	14.5000	5.00	50.00	138.00	Pump Tail Cement
14	08/12/2019 10:50	Pump Tail Cement	14.5000	4.00	100.00	100.00	Pump Tail Cement
15	08/12/2019 11:02	Pump Tail Cement	14.5000	4.00	150.00	68.00	Pump Tail Cement
16	08/12/2019 11:15	Pump Tail Cement	14.5000	4.50	202.00	81.00	Finished pump Tail Cement with 202 bbls away



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
17	08/12/2019 11:17	Drop Top Plug					
18	08/12/2019 11:19	Pump Displacement	8.4000	8.50	20.00	102.00	Pump Fresh water displacement
19	08/12/2019 11:24	Pump Displacement	8.4000	8.50	50.00	481.00	Pump Fresh water displacement
20	08/12/2019 11:30	Pump Displacement	8.4000	8.50	100.00	906.00	Pump Fresh water displacement
21	08/12/2019 11:39	Cement Back-to-Surface					30 bbls of cement to surface
22	08/12/2019 11:39	Pump Displacement	8.4000	3.00	133.00	633.00	Pump Fresh water displacement
23	08/12/2019 11:40	Land Plug				1215.00	Landed the plug at 633 psi took to 1215 psi
24	08/12/2019 11:41	Other (See comment)				1267.00	15 Min casing test: start 1290 psi, end 1320 psi
25	08/12/2019 11:55	Check Floats					Check floats, floats held 1/2 bbl back
26	08/12/2019 12:05	Wash Pumps and Lines					Wash pumps and lines into cellar
27	08/12/2019 12:11	STEACS Briefing					Pre-Rig down STEACS Briefing with all BJ Services cement crew
28	08/12/2019 12:26	Rig Down					Break off cement head and pull lines back, left iron on the ground
29	08/12/2019 13:00	Leave Location					Leave from location. Thank you for using BJ Services, Andrew Linn, and crew.

