



Caerus

Well Name: NPR 11A-2-596

API #: 05-045-23998

Job Type: Surface

Date Job Completed: 03/24/2019

Quote #: QUO-28864

Execution #: EXC-16635



Caerus

Attention: Mr. Steve Schmitz | (720) 880-6412 | sschmitz@caerusoilandgas.com

Caerus | 1001 17th Street, Suite 1600 | Denver, CO 80202

Dear Mr. Schmitz,

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,

Gage Putnam
Field Engineer II | (307) 365-8254 | Gage.Putnam@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	Kim Gritz	RIG	H&P 330
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00		
Open Hole	14.75	0.00	0.00	2,860.00		
Casing	8.92	9.63	36.00	2,840.30	J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,794.78
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3,520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2,800.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	5.00	Job Pumped Through	No Manifold
Centralizers Type	Bow	Top Connection Thread	8rd
Landing Collar Depth (ft)	2,795.00	Top Connection Size	9.625

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Field Ticket #: FT-16635-X4G2D20202-76721



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	14
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	40.00	10 sec SGS	7
Circulation Rate (bpm)	8.00	10 min SGS	18
Circulation Volume (bbls)	320.00	30 min SGS	42
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	9.15	Gas Present	No
PV Mud In	15		

TEMPERATURE

Ambient Temperature (°F)	32.00	Slurry Cement Temperature (°F)	59.00
Mix Water Temperature (°F)	54.00		

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
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	0.00	2,500.00	719	1,818.0000	323.7000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	2,500.00	500.00	161	358.0000	63.7000
Displacement Final	Displacement	8.3300			0.00			0.0000	228.8000
Top Out Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	0.00		605	1,347.0000	240.0000

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FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Lead Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Top Out Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Top Out Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Top Out Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Top Out Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Top Out Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Top Out Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
3/24/2019 11:00:00 AM	Water	4.00	20.00	135.00
3/24/2019 11:30:00 AM	BJCem S100.3.01D	5.00	323.70	264.00
3/24/2019 12:30:00 PM	BJCem S100.3.01D	5.00	63.70	115.00
3/24/2019 1:30:00 PM	Displacement	7.00	216.10	443.00
3/24/2019 2:00:00 PM	BJCem S100.3.01D	2.50	240.00	103.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	115.00	443.00	239.25
Rate (bpm)	4.00	7.00	5.25

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DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.50
Calculated Displacement Vol (bbls)	216.10	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	216.10	Amt of Spacer to Surface	0.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	0.25
Bump Plug Pressure (psi)	957.00	Total Volume Pumped (bbls)	900.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	Yes
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes

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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	03/24/2019 05:30	Callout					Yard Call 0500, STEACS, PreTrip, Leave Yard @ 0700
2	03/24/2019 07:00	Arrive on Location					JM, Convoy to Location, AOL @ 0830, RTS @ 1000
3	03/24/2019 08:30	STEACS Briefing					STEACS w/ CoMan
4	03/24/2019 08:35	Spot Units					Spot Units on Location
5	03/24/2019 08:45	Rig Up					STEACS, Rig up all DH Equip
6	03/24/2019 10:28	STEACS Briefing					STEACS w/ CoMan, Rig Crew, 3rd Party on Location, Rig Finished Circulating 1015, 320 Bbls @ 8.3 BPM, 97#s Max PSI
7	03/24/2019 10:38	Rig Up					Rig up PLH and Lines to Cellar
8	03/24/2019 11:00	Pump Spacer	8.4000	2.00	5.00	92.00	Fill Lines, Break Circulation
9	03/24/2019 11:03	Pressure Test				4500.00	Pressure Test Pump and Lines to Head
10	03/24/2019 11:08	Pump Spacer	8.4000	4.00	15.00	135.00	15 Bbls FW Spacer, Swap to Lead Cmt @ 12.0 PPG DH
11	03/24/2019 11:13	Pump Lead Cement	12.0000	5.00	50.00	264.00	50 Bbls Lead Cmt
12	03/24/2019 11:22	Pump Lead Cement	12.0000	5.00	100.00	219.00	100 Bbls Lead Cmt
13	03/24/2019 11:34	Pump Lead Cement	12.0000	5.00	150.00	241.00	150 Bbls Lead Cmt
14	03/24/2019 11:44	Pump Lead Cement	12.0000	5.00	200.00	214.00	200 Bbls Lead Cmt
15	03/24/2019 11:53	Pump Lead Cement	12.0000	5.00	250.00	220.00	250 Bbls Lead Cmt
16	03/24/2019 12:03	Pump Lead Cement	12.0000	5.00	300.00	234.00	300 Bbls Lead Cmt
17	03/24/2019 12:13	Pump Lead Cement	12.0000	3.50	323.00	218.00	323 Bbls Lead Cmt Pumped Total, Swap to Tail @ 12.5 PPG DH
18	03/24/2019 12:18	Pump Tail Cement	12.5000	5.00	50.00	115.00	50 Bbls Tail Cmt
19	03/24/2019 12:32	Pump Tail Cement	12.5000	3.50	63.70	109.00	63.7 Bbls Tail Cmt Pumped Total, Shut down
20	03/24/2019 12:36	Drop Top Plug					Drop Top Plug

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Well 05-045-23998
API:

Plan #: ORD-16635-X4G2D2

Execution #: EXC-16635-X4G2D202

Quote #: QUO-28864-Z8M3Y6



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
21	03/24/2019 12:40	Pump Displacement	8.4000	5.00	50.00	200.00	2 Bbls Cmt on top of Plug, 50 Bbls Disp
22	03/24/2019 12:49	Pump Displacement	8.4000	5.00	100.00	228.00	100 Bbls Disp
23	03/24/2019 12:55	Pump Displacement	8.4000	5.00	150.00	274.00	150 Bbls Disp
24	03/24/2019 13:05	Pump Displacement	8.4000	5.00	200.00	414.00	200 Bbls Disp
25	03/24/2019 13:15	Land Plug	8.4000	2.00	216.00	443.00	216.1 Bbls Disp Pumped Total, Land Plug @ 947 PSI, FCP @ 443 PSI
26	03/24/2019 13:22	Check Floats					Floats Held 0.25 Bbls Returned to Pump
27	03/24/2019 13:28	Other (See comment)	8.6000	2.50	10.00	435.00	10 Bbls Sugar Water Parasite Line, Break Over @ 435 PSI, 5.5 Bbls Away
28	03/24/2019 13:40	Run Top Out					Rig up Top Out Equip
29	03/24/2019 13:55	Top Out	12.5000	2.50	50.00	103.00	50 Bbls TopOut Cmt
30	03/24/2019 14:22	Top Out	12.5000	2.50	100.00	112.00	100 Bbls TopOut Cmt
31	03/24/2019 14:39	Top Out	12.5000	3.50	150.00	164.00	150 Bbls TopOut Cmt
32	03/24/2019 14:55	Top Out	12.5000	3.50	200.00	202.00	200 Bbls TopOut Cmt
33	03/24/2019 15:08	Cement to Surface	12.5000	3.50	240.00	211.00	240 Bbls TopOut Cmt Pumped Total + Previous Parasite Line
34	03/24/2019 15:30	Rig Down					STEACS, Rig Down all DH Equip
35	03/24/2019 17:00	Leave Location					JM, Convoy Back to Yard

-Lead 719 Sk, Y – 2.53, MW 14.86, 323.7 Bbls @ 12.0 PPG
Height of Lead 2667.3' – Top Of Lead @ Surf
-Tail 161 Sk, Y – 2.22, MW 12.59 , 63.7 Bbls @ 12.5 PPG
Height of Tail 497' – Top Of Tail 2343'
-Disp 216.1 Bbls, Bumped Plug @ 957 PSI, FCP @ 443 PSI
Floats Held, 0.25 Bbls Returned to Truck
-Parasite Line, 10 Bbls Sugar Water
Breakover @ 435 PSI, 5.5 Bbls Away
-Topout 240 Bbls / 605 Sk, Cmt to Surf



