



Caerus

Well Name: NPR 21D-3-596

API #: 05-045-23996

Job Type: Surface

Date Job Completed: 03/17/2019

Quote #: QUO-28255

Execution #: EXC-16488



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	Paul Linn III	FORMATION	
CLIENT FIELD REPRESENTATIVE	Kim Gritz	RIG	H&P 330
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

TYPE	OD (in)	ID (in)	WEIGHT (lb/ft)	MD (ft)	GRADE	THREAD
Previous Casing	20.00	19.50	52.73	130.00		
Casing	9.63	8.92	36.00	2,874.00	J-55	LTC
Open Hole	0.00	14.75	0.00	2,894.00		

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,827.96
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3,520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2,816.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	7.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	8 RND.
Landing Collar Depth (ft)	2,874	Top Connection Size	9.625

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	10 sec SGS	7
Lost Circulation Prior to Cement Job	Yes	10 min SGS	16
Mud Density In (ppg)	9.10	30 min SGS	21
PV Mud In	16	Flare Prior to / during the Cement Job	No
YP Mud In	15	Gas Present	No

TEMPERATURE

Ambient Temperature (°F)	28.00	Slurry Cement Temperature (°F)	72.30
Mix Water Temperature (°F)	61.00		

FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer / Pre Flush / Flush	Water	8.3300					20.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	719	1818.0000	323.7000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	161	358.0000	63.7000
Displacement Final	Displacement	8.3300				0.0000	228.8000
Top Out	BJCem S100.3.01D	12.5000	2.2256	12.59	550	1224.0000	218.0000



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

TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESSURE (psi)
3/17/2019 1:10:00 AM	Water	5.00	20.00	132.00
3/17/2019 1:24:00 AM	BJCem S100.3.01D	5.00	323.70	299.00
3/17/2019 2:30:00 AM	BJCem S100.3.01D	7.00	63.70	437.00
3/17/2019 2:40:00 AM	Displacement	7.50	218.00	290.00
3/17/2019 3:35:00 AM	BJCem S100.3.01D	2.00	218.00	72.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	52.00	625.00	304.00
Rate (bpm)	2.00	10.00	7.00



DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	218.60	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	216.00	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	0.50
Bump Plug Pressure (psi)	408.00	Total Volume Pumped (bbls)	826.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	Yes
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes

Client Name: Caerus Operating LLC

Well: NPR 21D-3-596

Well API: 05-045-23996

Start Date: 3/16/2019

End Date: 3/17/2019

Field Ticket #: FT-16488-L3P2F40202-31326



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	03/16/2019 16:00	Callout					Call out on location time of 22:00 3/16/19
2	03/16/2019 18:30	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
3	03/16/2019 19:00	Depart for Location					Depart from Rifle yard for H&P 330
4	03/16/2019 20:30	Arrive on Location					Arrive on location. Rig was running casing
5	03/16/2019 20:38	Spot Units					Conducted a site assessment, had a ROC drill, and spotted in all equipment
6	03/16/2019 20:50	STEACS Briefing					Pre-Rig Up STEACS Briefing
7	03/16/2019 21:00	Rig Up					Rig up all ground equipment and run lines into cellar.
8	03/16/2019 22:18	Client					Wait on rig to finish running casing and circulate
9	03/17/2019 00:40	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
10	03/17/2019 00:58	Rig Up					Stab plug container, load plug in plug container, and hook up lines
11	03/17/2019 01:10	Prime Up	8.3300	2.00	5.00	54.00	Fill lines with fresh water
12	03/17/2019 01:13	Pressure Test				4128.00	Pressure test to 4128 psi. Pressure held good
13	03/17/2019 01:18	Pump Spacer	8.3300	5.00	20.00	132.00	Pump Fresh water spacer
14	03/17/2019 01:23	Pump Lead Cement	12.0000	5.00	5.00	299.00	Pump Lead Cement 12 ppg 719 sks 2.53 cuft/sk 14.86 gals/sk for a total of 323.98 bbls of Lead Cement requiring 254.39 bbls of mix water. Weight verified with mud scales, calculated height of Lead is 2376.64 ft with a top of 0 ft.
15	03/17/2019 01:28	Pump Lead Cement	12.0000	6.50	30.00	318.00	Pump Lead Cement



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
16	03/17/2019 01:30	Pump Lead Cement	12.0000	6.50	50.00	335.00	Pump Lead Cement
17	03/17/2019 01:39	Pump Lead Cement	12.0000	6.50	100.00	339.00	Pump Lead Cement
18	03/17/2019 01:56	Pump Lead Cement	12.0000	7.00	150.00	433.00	Pump Lead Cement
19	03/17/2019 02:05	Pump Lead Cement	12.0000	6.50	200.00	304.00	Pump Lead Cement
20	03/17/2019 02:13	Pump Lead Cement	12.0000	5.00	250.00	191.00	Pump Lead Cement
21	03/17/2019 02:24	Pump Lead Cement	12.0000	3.50	300.00	95.00	Pump Lead Cement
22	03/17/2019 02:27	Pump Lead Cement	12.0000	3.50	315.00	98.00	Finished pumping Lead Cement with 315 bbls away
23	03/17/2019 02:30	Pump Tail Cement	12.5000	7.00	5.00	437.00	Pump Tail Cement 12.5 ppg 161 sks 2.23 cuft/sk 12.59 gals/sk for a total of 63.94 bbls of Tail Cement requiring 48.26 bbls of mix water. Weight verified with mud scales, calculated height of Tail Cement is 497.36 ft with a top of 2376.64 ft
24	03/17/2019 02:34	Pump Tail Cement	12.5000	7.50	50.00	547.00	Pump Tail Cement
25	03/17/2019 02:36	Pump Tail Cement	12.5000	4.00	57.00	208.00	Finished pumping Tail Cement with 57 bbls away
26	03/17/2019 02:38	Drop Top Plug					Drop plug verified by company man
27	03/17/2019 02:40	Pump Displacement	8.3300	5.00	10.00	85.00	Pump Fresh water Displacement
28	03/17/2019 02:41	Pump Displacement	8.3300	7.50	30.00	266.00	Pump Fresh water Displacement
29	03/17/2019 02:45	Pump Displacement	8.3300	10.00	50.00	422.00	Pump Fresh water Displacement
30	03/17/2019 02:50	Pump Displacement	8.3300	9.00	100.00	391.00	Pump Fresh water Displacement
31	03/17/2019 02:52	Pump Displacement	8.3300	7.50	120.00	302.00	Pump Fresh water Displacement
32	03/17/2019 02:56	Pump Displacement	8.3300	7.50	150.00	404.00	Pump Fresh water Displacement
33	03/17/2019 03:03	Pump Displacement	8.3300	7.50	200.00	612.00	Pump Fresh water Displacement
34	03/17/2019 03:04	Pump Displacement	8.3300	2.00	209.00	357.00	Pump Fresh water Displacement
35	03/17/2019 03:07	Pump Displacement	8.3300	2.00	218.00	408.00	Pump Fresh water Displacement
36	03/17/2019 03:08	Land Plug				930.00	Landed the plug at 408 psi and took to 930 psi
37	03/17/2019 03:11	Check Floats					Check floats, floats held 1/2 bbl back
38	03/17/2019 03:18	Other (See comment)	8.3300	2.00	10.00	491.00	Pumped 10 bbls of sugar water on parasite sting
39	03/17/2019 03:29	Pump Spacer					Pumped 200 lbs of calcium chloride in 2 bbls of water



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
40	03/17/2019 03:30	Pump Spacer					Pumped Sodium Silicate
41	03/17/2019 03:35	Top Out	12.5000	2.00	5.00	72.00	Pump Top Out Cement 12.5 ppg 550 sks 2.23 cuft/sk 12.59 gals/sk for a total of 218.44 bbls of Top out cement
42	03/17/2019 03:55	Top Out	12.5000	2.50	50.00	129.00	Pump Top Out Cement
43	03/17/2019 04:15	Top Out	12.5000	2.50	100.00	110.00	Pump Top Out Cement
44	03/17/2019 04:30	Other (See comment)					Rig in bulk truck to finish topping out
45	03/17/2019 05:09	Top Out	12.5000	2.50	150.00	106.00	Pump Top Out Cement
46	03/17/2019 05:26	Cement Back-to-Surface					Cement to surface
47	03/17/2019 05:30	Other (See comment)					Pumped 4 bbls of top out on last parasite sting
48	03/17/2019 05:40	Wash Pumps and Lines					Wash pumps and lines to 3-sided tank
49	03/17/2019 06:05	STEACS Briefing					Pre-Rig down STEACS Briefing
50	03/17/2019 06:18	Rig Down					Rig down all equipment
51	03/17/2019 07:11	STEACS Briefing					Pre-Convoy STEACS Briefing
52	03/17/2019 07:23	Leave Location					Depart from location for Rifle yard. Thank You for using BJ Services, Andrew Linn, and Crew

