



Caerus

Well Name: NPR 22A-3-596

API #: 05-045-23995

Job Type: Surface

Date Job Completed: 12/22/2018

Quote #: QUO-24381

Execution #: EXC-14182



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,

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	Wendell Youngberg	FORMATION	
CLIENT FIELD REPRESENTATIVE	Pat Blackmer	RIG	H&P 330
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

TYPE	OD (in)	ID (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	20.00	19.50	52.73	130.00			
Open Hole	0.00	14.75	0.00	3,018.00			
Casing	9.63	8.92	36.00	2,990.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,990.00
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2000.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	5.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	8 rd
Landing Collar Depth (ft)	2,990	Top Connection Size	9.625



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	19
Circulation Prior to Job	No	Solids Present at End of Circulation	No
Circulation Time (min)	140.00	10 sec SGS	12
Circulation Rate (bpm)	7.00	10 min SGS	35
Circulation Volume (bbls)	980.00	30 min SGS	45
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	8.90	Gas Present	No
PV Mud In	23	Gas Units	0

TEMPERATURE

Ambient Temperature (°F)	30.00	Slurry Cement Temperature (°F)	75.00
Mix Water Temperature (°F)	72.00	Flow Line Temperature (°F)	100.00

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 1	8.3300					20.0000
Spacer / Pre Flush / Flush	Sodium Silicate	10.0000					20.0000
Spacer / Pre Flush / Flush	Water 2	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 Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	245	546.0000	97.0000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer / Pre Flush / Flush	Sodium Silicate	SILICATE, SODIUM, A-3L	21.0000	GPB
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
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

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESSURE (psi)
12/22/2018 3:55:00 PM	Water 1	4.00	20.00	157.00
12/21/2018 3:59:00 PM	Sodium Silicate	4.00	20.00	129.00
12/21/2018 4:04:00 PM	Water 2	4.00	20.00	124.00
12/21/2018 4:08:00 PM	BJCem S100.3.01D	5.00	323.70	248.00
12/21/2018 5:13:00 PM	BJCem S100.3.01D	5.00	63.70	155.00
12/21/2018 5:33:00 PM	Displacement	6.50	228.80	420.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	124.00	420.00	205.50
Rate (bpm)	4.00	6.50	4.75

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	228.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	228.00	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)	320.00	Total Volume Pumped (bbls)	770.00
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 22A-3-596

Well API: 05-045-23995

Start Date: 12/21/2018

End Date: 12/22/2018

Field Ticket #: FT-14182-R1N3W80202-53626



BJ Cementing Event Log

Surface - Rifle, CO - Wendell Youngberg

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	12/21/2018 05:00	Callout					Call out Yard Time 05:00 and Ready to Service At 11:00
2	12/21/2018 07:00	Leave Location					Leave Rifle Yard
3	12/21/2018 08:30	Arrive on Location					Arrive at Location
4	12/21/2018 08:45	Rig					Rig Still Running Casing Can't Get on Location
5	12/21/2018 10:30	Spot Units					Spot Trucks
6	12/21/2018 10:45	STEACS Briefing					Rig Up STEACS
7	12/21/2018 10:50	Rig Up					Rig Up Iron, Bulk, Water
8	12/21/2018 11:30	Rig					Still Running Casing and Two Bottoms Up
9	12/21/2018 14:45	STEACS Briefing					STEACS Meeting with Rig
10	12/21/2018 15:10	Other (See comment)					Rig Finish Two Bottoms Up. Blow Down and Sting Out.
11	12/21/2018 15:30	Open Wellhead					Stab Head and Open
12	12/21/2018 15:45	Pump Spacer	8.3400	2.50	5.00	118.00	Pump Fresh Water Spacer to Fill Lines



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
13	12/21/2018 15:48	Pressure Test				3110.00	PSI Test Lines
14	12/21/2018 15:55	Pump Spacer	8.3400	4.00	15.00	157.00	Fresh Water Spacer
15	12/21/2018 15:59	Pump Spacer	8.3400	4.00	20.00	129.00	S.S. Water Spacer
16	12/21/2018 16:04	Pump Spacer	8.3400	4.00	20.00	129.00	Fresh Water Spacer
17	12/21/2018 16:08	Pump Lead Cement					Batch Up Lead Cement
18	12/21/2018 16:10	Pump Lead Cement	12.0000	5.00	323.00	194.00	Start Lead Cement
19	12/21/2018 16:21	Pump Lead Cement	12.0000	5.00		268.00	50 BBLs Pumped Lead Cement
20	12/21/2018 16:30	Pump Lead Cement	12.0000	5.00		262.00	100 BBLs Pumped Lead Cement
21	12/21/2018 16:39	Pump Lead Cement	12.0000	5.00		248.00	150 BBLs Pumped Lead Cement
22	12/21/2018 16:49	Pump Lead Cement	12.0000	5.00		244.00	200 BBLs Pumped Lead Cement
23	12/21/2018 16:58	Pump Lead Cement	12.0000	5.00		236.00	250 BBLs Pumped Lead Cement
24	12/21/2018 17:08	Pump Lead Cement	12.0000	5.00		107.00	300 BBLs Pumped Lead Cement
25	12/21/2018 17:12	Pump Lead Cement	12.0000	5.00		98.00	323 BBLs Pumped Lead Cement
26	12/21/2018 17:14	Pump Tail Cement	12.5000	5.00	63.00	155.00	Start Tail Cement
27	12/21/2018 17:17	Pump Tail Cement	12.5000	5.00		95.00	50 BBLs Pumped Tail Cement
28	12/21/2018 17:23	Pump Tail Cement	12.5000	2.50		98.00	63 BBLs Pumped Tail Cement
29	12/21/2018 17:27	Wash Pumps and Lines					Wash Lines
30	12/21/2018 17:33	Drop Top Plug					Drop Plug



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
31	12/21/2018 17:34	Pump Displacement	8.3400	6.50	227.90	244.00	Start Displacement
32	12/21/2018 17:43	Pump Displacement	8.3400	6.50		241.00	50 BBLs Pumped Displacement
33	12/21/2018 17:51	Pump Displacement	8.3400	6.50		264.00	100 BBLs Pumped Displacement
34	12/21/2018 17:58	Pump Displacement	8.3400	6.50		347.00	150 BBLs Pumped Displacement
35	12/21/2018 18:06	Pump Displacement	8.3400	6.50		468.00	200 BBLs Pumped Displacement
36	12/21/2018 18:12	Land Plug	8.3400	2.90		320.00	227.9 BBLs Pumped Displacement Landed Plug
37	12/21/2018 18:13	Pressure Test				814.00	Hold PSI For 5 Min.
38	12/21/2018 18:18	Check Floats				0.00	Check Floats, Got .5 BBL Back
39	12/21/2018 18:19	Rig Up	8.3400	2.50	10.00	420.00	Rig Up to Parasite Line Pump Sugar Water Down. 420 Brake Over
40	12/21/2018 18:25	Wash Pumps and Lines					Wash Pump and Lines
41	12/21/2018 18:45	Client					Standby for Top Out
42	12/22/2018 00:15	Prime Up					Prime Up
43	12/22/2018 00:50	Pump Spacer	8.3400	3.50	2.00	142.00	Pump Cal. Water Spacer
44	12/22/2018 00:53	Pump Spacer	8.3400	3.50	2.00	142.00	Pump Fresh Water Spacer
45	12/22/2018 00:55	Batch Mix Cement	12.5000				Batch Up Cement
46	12/22/2018 00:57	Pumping Cement	12.5000	4.00	80.00	299.00	Pump Top Out Cement
47	12/22/2018 01:00	Pumping Cement	12.5000	4.00		246.00	50 BBLs Pumped Top Out Cement
48	12/22/2018 01:08	Pumping Cement	12.5000	4.00		243.00	80 BBLs Pumped Top Out Cement



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
49	12/22/2018 01:17	Wash Pumps and Lines					Wash Up Pump and Lines
50	12/22/2018 02:00	Client					Standby For #2 Top Out Job
51	12/22/2018 04:00	Prime Up					Prime Up Pump for Top Out
52	12/22/2018 04:30	Pump Spacer	8.3400	2.50	2.00	248.00	Cal. Water
53	12/22/2018 04:35	Pump Spacer	8.3400	2.50	2.00	248.00	Fresh Water
54	12/22/2018 04:36	Batch Mix Cement					Batch Up Cement
55	12/22/2018 04:40	Pumping Cement	12.5000	4.00	17.00	259.00	Pumping Cement
56	12/22/2018 04:45	Wash Pumps and Lines					Wash Up Pump and Lines
57	12/22/2018 05:20	STEACS Briefing					Rig Down STEACS
58	12/22/2018 05:30	Rig Down					Rig Down
59	12/22/2018 06:30	STEACS Briefing					Travel STEACS
60	12/22/2018 06:45	Leave Location					Leave Location





Caerus NPR 22A-3 Surface Chart





