



Caerus

Well Name: NPR 22C-3

API #: 05-045-24004

Job Type: Surface

Date Job Completed: 12/29/2018

Quote #: QUO-24948

Execution #: EXC-14360



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	Paul Linn III	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	3,027.00			
Casing	9.63	8.92	36.00	2,979.50		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,936.80
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)	2,980	Top Connection Size	9.625



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	10
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	30.00	10 sec SGS	4
Circulation Rate (bpm)	7.00	10 min SGS	9
Circulation Volume (bbls)	214.00	30 min SGS	17
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	8.60	Gas Present	No
PV Mud In	12		

TEMPERATURE

Ambient Temperature (°F)	-8.00	Slurry Cement Temperature (°F)	65.50
Mix Water Temperature (°F)	54.90		

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	175	391.0000	69.5



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	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, ASTM TYPE III	100.0000	PCT
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
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
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	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESSURE (psi)
12/29/2018 9:58:00 AM	Water 1	2.50	20.00	112.00
12/29/2018 10:04:00 AM	Sodium Silicate	2.50	20.00	89.00
12/29/2018 10:14:00 AM	Water 2	2.50	20.00	131.00
12/29/2018 10:23:00 AM	BJCem S100.3.01D	4.00	323.70	138.00
12/29/2018 11:30:00 AM	BJCem S100.3.01D	4.00	63.70	131.00
12/29/2018 11:56:00 AM	Displacement	8.00	227.00	310.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	30.00	576.00	205.00
Rate (bpm)	1.50	8.00	5.54



DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	227.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	227.00	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	1.00
Bump Plug Pressure (psi)	248.00	Total Volume Pumped (bbls)	660.00
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 22C-3-596

Well API: 05-045-24004

Start Date: 12/29/2018

End Date: 12/29/2018

Field Ticket #: FT-14360-G0Q5P70202-06446



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	12/29/2018 01:14	Callout					Call out on location time of 07:00 12/29/18
2	12/29/2018 03:30	STEACS Briefing					Pre-convoy STEACS Briefing with all BJ Services cement crew
3	12/29/2018 04:00	Depart for Location					Depart from Rifle yard for H&P 330
4	12/29/2018 06:38	Arrive on Location					Arrive on location, rig was running casing
5	12/29/2018 06:42	Spot Units					Did a site assessment, conducted a ROC drill, and spotted in all equipment
6	12/29/2018 06:56	STEACS Briefing					Pre-rig up STEACS Briefing
7	12/29/2018 07:08	Rig Up					Rig up all ground equipment
8	12/29/2018 08:40	Water Test					Did a water test of the water for the cement job
9	12/29/2018 08:55	STEACS Briefing					Pre-job STEACS Briefing with rig crew, company man, and all BJ Services cement crew.
10	12/29/2018 09:12	Rig Up					Stab plug container, load plug container (verified by driller), and hook up lines
11	12/29/2018 09:42	Prime Up	8.3300	2.00	5.00	51.00	Fill lines with 5 bbls of fresh water
12	12/29/2018 09:45	Pressure Test				4130.00	Pressure test to 4130, pressure held
13	12/29/2018 09:58	Pump Spacer	8.3300	2.50	20.00	112.00	Pumped water spacer
14	12/29/2018 10:04	Pump Spacer	10.5000	2.50	20.00	98.00	Pumped Sodium Silicate spacer
15	12/29/2018 10:13	Pump Spacer	8.3300	2.00	20.00	89.00	Pumped water spacer
16	12/29/2018 10:23	Pump Lead Cement	12.0000	4.00	5.00	138.00	Pumped 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 Cement is 2479.99 ft with a top of 0 ft.

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Client: Caerus Operating LLC

Well: NPR 22C-3-596

Well API:05-045-24004

Plan #: ORD-14360-G0Q5P7

Execution #: EXC-14360-G0Q5P702

Quote #: QUO-24948-X6G7M1

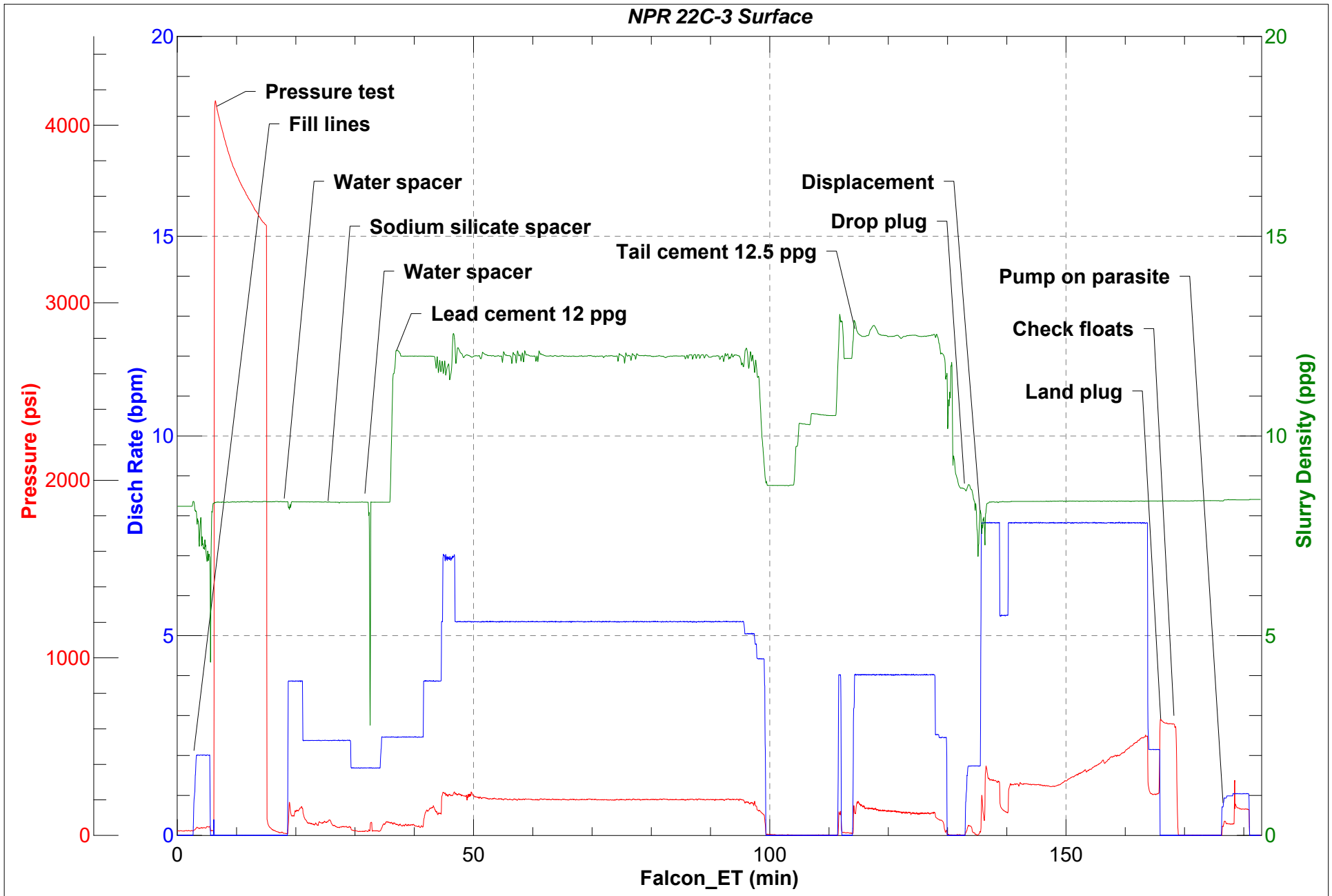


SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
17	12/29/2018 10:26	Pump Lead Cement	12.0000	5.50	20.00	233.00	Pumped Lead Cement
18	12/29/2018 10:32	Pump Lead Cement	12.0000	5.50	50.00	207.00	Pumped Lead Cement
19	12/29/2018 10:41	Pump Lead Cement	12.0000	5.50	100.00	203.00	Pumped Lead Cement
20	12/29/2018 10:50	Pump Lead Cement	12.0000	5.50	150.00	201.00	Pumped Lead Cement
21	12/29/2018 11:00	Pump Lead Cement	12.0000	5.50	200.00	203.00	Pumped Lead Cement
22	12/29/2018 11:09	Pump Lead Cement	12.0000	5.50	250.00	204.00	Pumped Lead Cement
23	12/29/2018 11:15	Pump Lead Cement	12.0000	5.00	280.00	188.00	Pumped Lead Cement
24	12/29/2018 11:19	Pump Lead Cement	12.0000	5.00	310.00	177.00	Finished pumping Lead Cement with 310 bbls away.
25	12/29/2018 11:20	Other (See comment)					Shutdown due to not getting cement after swapping to tail cement. Fix the problem and started pumping again.
26	12/29/2018 11:33	Pump Tail Cement	12.5000	4.00	5.00	131.00	Pumped 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 499.51 ft. with a top of Tail Cement 2479.99 ft.
27	12/29/2018 11:45	Pump Tail Cement	12.5000	4.00	50.00	120.00	Pumped Tail Cement
28	12/29/2018 11:49	Pump Tail Cement	12.5000	2.50	64.00	28.00	Finished pumping Tail Cement with 64 bbls away.
29	12/29/2018 11:52	Drop Top Plug					Drop plug verified by company man
30	12/29/2018 11:56	Pump Displacement	8.3300	8.00	10.00	310.00	Pumped fresh water displacement
31	12/29/2018 12:02	Pump Displacement	8.3300	8.00	50.00	292.00	Pumped fresh water displacement
32	12/29/2018 12:08	Pump Displacement	8.3300	8.00	100.00	291.00	Pumped fresh water displacement
33	12/29/2018 12:14	Pump Displacement	8.3300	8.00	150.00	403.00	Pumped fresh water displacement
34	12/29/2018 12:21	Pump Displacement	8.3300	8.00	200.00	528.00	Pumped fresh water displacement
35	12/29/2018 12:24	Pump Displacement	8.3300	2.00	227.00	248.00	Pumped fresh water displacement
36	12/29/2018 12:25	Land Plug				649.00	Land the plug at 248 psi took to 649 psi

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
37	12/29/2018 12:27	Check Floats					Check floats, Floats held, 1 bbl. back
38	12/29/2018 12:34	Other (See comment)	8.4000	1.00	10.00	310.00	Pump on parasite sting with sugar water
39	12/29/2018 12:44	Wash Pumps and Lines					Wash pumps and lines into cellar
40	12/29/2018 13:10	Client					Wait to Top Out
41	12/29/2018 16:30	STEACS Briefing					Pre Top Out STEACS Briefing with all BJ Services cement crew
42	12/29/2018 16:43	Pump Spacer	9.2000	1.00	5.00	68.00	Pump Calcium Chloride spacer
43	12/29/2018 16:51	Pump Spacer					Pumped Sodium Silicate spacer
44	12/29/2018 16:56	Pumping Cement	12.5000	1.00	62.50	102.00	Pumped Top Out cement 12.5 ppg 175 sks 2.23 cuft/sk 12.59 gals/sk for a total of 69.5 bbls of Top Out cement requiring 52.46 bbls of mix water.
45	12/29/2018 17:25	Cement Back-to-Surface					Cement to surface, Shutdown, Rigged up to pump on last parasite sting
46	12/29/2018 17:35	Pumping Cement	12.5000	1.00	7.00	168.00	Pumped 7 bbls of Top Out cement on last parasite sting
47	12/29/2018 17:44	Wash Pumps and Lines					Wash pumps and lines to open pit
48	12/29/2018 18:11	STEACS Briefing					Pre-rig down STEACS Briefing with all BJ Services cement crew
49	12/29/2018 18:26	Rig Down					Rig down all Equipment
50	12/29/2018 19:30	STEACS Briefing					Pre-convoy STEACS Briefing with all BJ Services cement crew
51	12/29/2018 19:41	Depart for Location					Depart from location for Rifle yard. Thank you for using BJ Services, Andrew Linn, and crew.



NPR 22C-3 Surface





NPR 22C-3 Surface Top Out

