



Caerus

Well Name: NPR 23C-3-596

API #: 05-045-23997

Job Type: Surface

Date Job Completed: 01/06/2019

Quote #: QUO-25123

Execution #: EXC-14586



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	George Urban	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	3,010.00			
Casing	9.63	8.92	36.00	2,986.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,943.00
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3,520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2,000.00
Centralizers Used	No	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	14
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	130.00	10 sec SGS	12
Circulation Rate (bpm)	7.00	10 min SGS	44
Circulation Volume (bbls)	910.00	30 min SGS	60
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	9.00	Gas Present	No
PV Mud In	18	Gas Units	0

TEMPERATURE

Ambient Temperature (°F)	27.00	Slurry Cement Temperature (°F)	84.00
Mix Water Temperature (°F)	81.00	Flow Line Temperature (°F)	0.00

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	227.0000
Top Out Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	200	505.9600	90.1000

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

TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESSURE (psi)	ANNULUS PRESSURE (psi)	COMMENTS
1/6/2019 10:25:00 AM	Water 1	5.00	20.00	209.00		
1/6/2019 10:29:00 AM	Sodium Silicate	5.00	20.00	173.00		
1/6/2019 10:33:00 AM	Water 2	5.00	20.00	156.00		
1/6/2019 10:48:00 AM	BJCem S100.3.01D	5.50	323.70	185.00		
1/6/2019 11:50:00 AM	BJCem S100.3.01D	5.50	63.70	189.00		
1/6/2019 12:08:00 PM	Displacement	5.50	228.80	683.00		
1/6/2019 06:00:00 PM	BJCem S100.3.01D	3.00	90.1	249.00		

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	156.00	683.00	265.83
Rate (bpm)	5.00	5.50	5.25

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)	683.00	Total Volume Pumped (bbls)	773.00
Were Returns Planned at Surface	No	Top Out Cement Spotted	Yes
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes



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	01/06/2019 01:00	Callout					Yard Time 01:00 and Ready to Service At 06:00
2	01/06/2019 03:00	Depart for Location					Leave Rifle Yard
3	01/06/2019 05:00	Arrive on Location					Arrive at Rig Spot Trucks
4	01/06/2019 05:15	STEACS Briefing					Rig Up STEACS
5	01/06/2019 05:25	Rig Up					Rig Up Iron, Bulk, Water
6	01/06/2019 06:00	Rig					Still Running Casing
7	01/06/2019 08:00	Rig					Start Circulation 1 Capacity
8	01/06/2019 09:30	STEACS Briefing					STEACS Meeting with Rig
9	01/06/2019 09:50	Other (See comment)					Rig End Circulation Sting Out
10	01/06/2019 10:00	Open Wellhead					Stab Head and Open
11	01/06/2019 10:18	Pump Spacer	8.3400	2.50	5.00	39.00	Fresh Water Spacer to Fill Lines
12	01/06/2019 10:21	Pressure Test				4200.00	PSI Test Lines
13	01/06/2019 10:25	Pump Spacer	8.3400	5.00	15.00	209.00	Fresh Water Spacer
14	01/06/2019 10:29	Pump Spacer	8.3400	5.00	20.00	173.00	S.S. Fresh Water Mix Spacer
15	01/06/2019 10:33	Pump Spacer	8.3400	5.00	20.00	156.00	Fresh Water Spacer
16	01/06/2019 10:40	Pump Lead Cement					Batch Up Lead Cement
17	01/06/2019 10:48	Pump Lead Cement	12.0000	2.00	323.00	101.00	Start Pumping Lead Cement

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
18	01/06/2019 11:04	Pump Lead Cement	12.0000	5.50		185.00	50 BBLs Pumped Lead Cement
19	01/06/2019 11:14	Pump Lead Cement	12.0000	5.50		183.00	100 BBLs Pumped Lead Cement
20	01/06/2019 11:23	Pump Lead Cement	12.0000	5.50		180.00	150 BBLs Pumped Lead Cement
21	01/06/2019 11:32	Pump Lead Cement	12.0000	5.50		178.00	200 BBLs Pumped Lead Cement
22	01/06/2019 11:41	Pump Lead Cement	12.0000	5.50		178.00	280 BBLs Pumped Lead Cement
23	01/06/2019 11:53	Pump Tail Cement	12.5000	5.50		191.00	Start Tail Cement
24	01/06/2019 12:00	Pump Tail Cement	12.5000	5.50		189.00	58 BBLs Pumped Tail Cement
25	01/06/2019 12:06	Pump Tail Cement	12.5000	4.00		189.00	63 BBLs Pumped Tail Cement
26	01/06/2019 12:08	Drop Top Plug					Drop Plug
27	01/06/2019 12:09	Pump Displacement	8.3400	5.50	227.00	218.00	Start Displacement
28	01/06/2019 12:16	Pump Displacement	8.3400	5.50		145.00	50 BBLs Pumped Displacement
29	01/06/2019 12:24	Pump Displacement	8.3400	5.50		149.00	100 BBLs Pumped Displacement
30	01/06/2019 12:37	Pump Displacement	8.3400	6.50		483.00	150 BBLs Pumped Displacement
31	01/06/2019 12:47	Pump Displacement	8.3400	6.50		683.00	200 BBLs Pumped Displacement
32	01/06/2019 12:54	Pump Displacement	8.3400	2.50		683.00	227 BBLs Pumped Displacement
33	01/06/2019 12:56	Land Plug				683.00	Land Plug
34	01/06/2019 12:57	Pressure Test				1209.00	Hold PSI
35	01/06/2019 13:02	Check Floats				0.00	Floats Good 1 BBL Back
36	01/06/2019 13:03	Pump Spacer	8.3400	2.50	10.00	241.00	Pump Sugar Water Down Parasite Line
37	01/06/2019 13:08	Wash Pumps and Lines					Wash Up Pump
38	01/06/2019 13:30	Client					Wait to Top Out
39	01/06/2019 18:00	Run Top Out	9.0000	3.00	4.00	118.00	Cal Water Ahead
40	01/06/2019 18:20	Run Top Out	12.0000				Batch Up Cement
41	01/06/2019 18:23	Run Top Out	12.0000	3.50	80.00	249.00	Pump Top Out Cement
42	01/06/2019 19:00	Run Top Out	12.0000	3.50		249.00	Pump more Top Out Cement

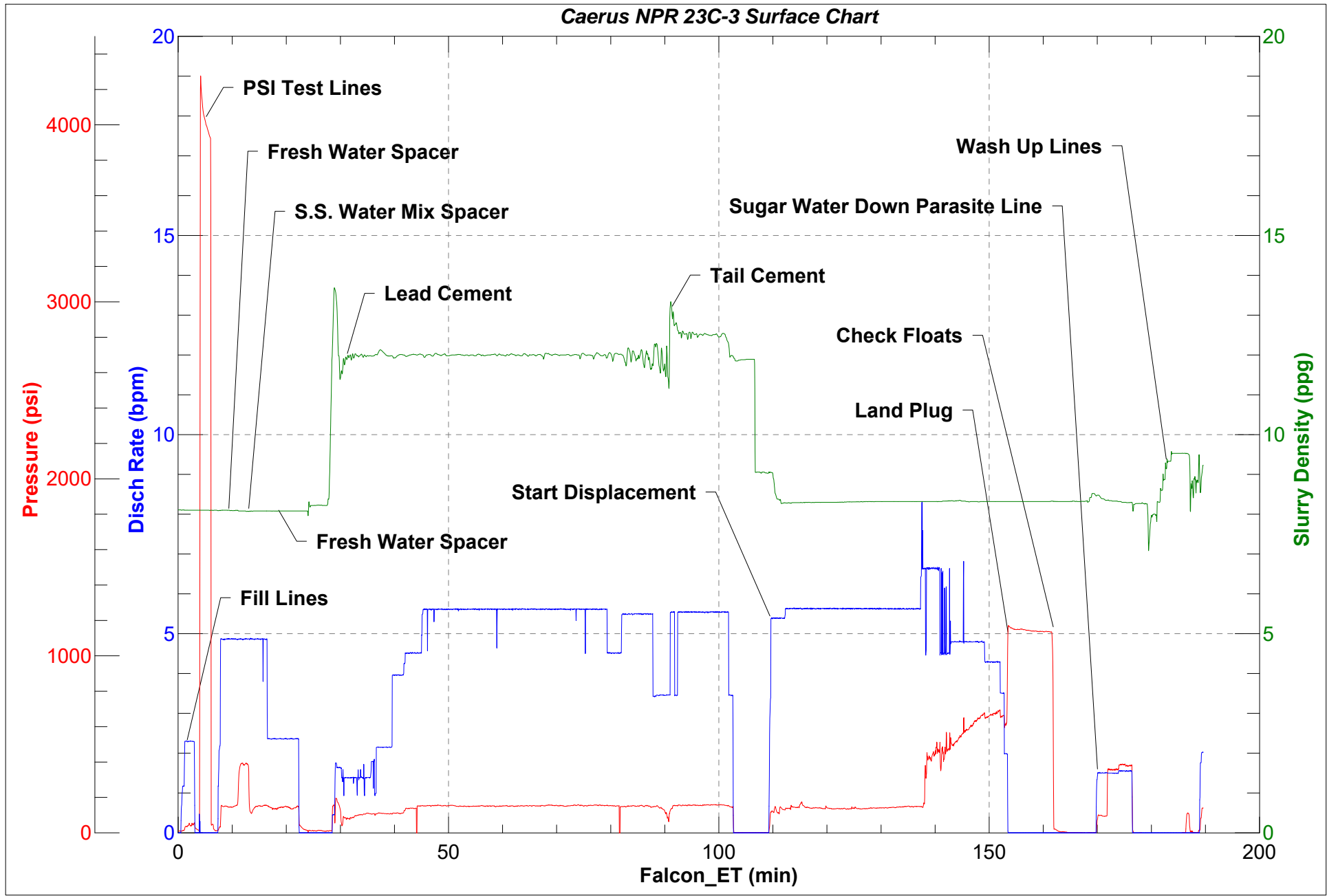


SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
43	01/06/2019 19:15	Run Top Out	8.3400	3.50	3.00	120.00	Cement Down Prev. Parasite Line
44	01/06/2019 19:30	STEACS Briefing					Rig Down STEACS
45	01/06/2019 19:40	Rig Down					Rig Down Iron, Bulk, Water
46	01/06/2019 21:00	STEACS Briefing					Travel STEACS
47	01/06/2019 21:15	Leave Location					Leave Rig Location





Caerus NPR 23C-3 Surface Chart





Caerus NPR 23C-3 Surface Top Out #1

