



Caerus

Well Name: NPR 23D-3

API #: 05-045-24001

Job Type: Surface

Date Job Completed: 02/17/2019

Quote #: QUO-27144

Execution #: EXC-15787



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	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)	EXCESS (%)	GRADE	THREAD
Previous Casing	20.00	19.50	52.73	130.00			
Open Hole		14.75		3,004.00			
Casing	9.63	8.92	36.00	2,984.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,940.92
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	Yes	Pipe Movement	None
Centralizers Quantity	5.00	Job Pumped Through	Manifold
Centralizers Type	Bow	Top Connection Thread	8 RD
Landing Collar Depth (ft)	2,960	Top Connection Size	9.625

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig
Circulation Prior to Job	Yes
Circulation Time (min)	85.00
Circulation Rate (bpm)	8.00
Circulation Volume (bbls)	860.00
Lost Circulation Prior to Cement Job	Yes
Mud Density In (ppg)	8.80
PV Mud In	9

YP Mud In	6
Solids Present at End of Circulation	No
10 sec SGS	2
10 min SGS	4
30 min SGS	9
Flare Prior to / during the Cement Job	No
Gas Present	No
Gas Units	0

TEMPERATURE

Ambient Temperature (°F)	34.00
Mix Water Temperature (°F)	84.00

Slurry Cement Temperature (°F)	87.00
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	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	227.8000
Top Out Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	560	1246.330	224.000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
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	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	IntegraSeal CELLO	0.1300	LBS/SK
Lead 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, 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	IntegraSeal CELLO	0.1300	LBS/SK
Tail 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)	ANNULUS PRESSURE (psi)	COMMENTS
2/17/2019 7:25:00 AM	Water	3.00	20.00	47.00		
2/17/2019 7:32:00 AM	BJCem S100.3.01D	5.50	323.70	223.00		
2/17/2019 8:35:00 AM	BJCem S100.3.01D	5.50	63.70	120.00		
2/17/2019 8:50:00 AM	Displacement	5.50	228.80	425.00		

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	47.00	425.00	203.75
Rate (bpm)	3.00	5.50	4.88

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ
Calculated Displacement Vol (bbls)	227.00
Actual Displacement Vol (bbls)	227.00
Did Float Hold?	Yes
Bump Plug	Yes
Bump Plug Pressure (psi)	425.00
Were Returns Planned at Surface	No
Cement Returns During Job	None

Amt of Cement Returned / Reversed	0.00
Method Used to Verify Returns	Visual
Amt of Spacer to Surface	0.00
Pressure Left on Casing (psi)	0.00
Amt Bled Back After Job	1.50
Total Volume Pumped (bbls)	867.00
Top Out Cement Spotted	Yes
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	02/16/2019 19:00	Callout					Yard Time 19:00 Ready to Service At 01:00
2	02/16/2019 21:00	Leave Location					Leave Rifle Yard
3	02/16/2019 23:00	Arrive on Location					Arrive at Rig Location
4	02/16/2019 23:05	Rig					Rig Still Running Casing Can't Get on Pad
5	02/17/2019 03:00	Spot Units					Spot Trucks on Pad
6	02/17/2019 03:10	STEACS Briefing					Rig Up STEACS
7	02/17/2019 03:20	Rig Up					Rig Up Iron, Bulk, Water
8	02/17/2019 04:20	Rig					Rig Running Casing
9	02/17/2019 05:20	Rig					Start Circulating Well
10	02/17/2019 06:30	STEACS Briefing					STEACS With Rig
11	02/17/2019 06:45	Other (See comment)	9.5000	8.00	680.00	240.00	Rig Ending Circulation, Blow Down Lines
12	02/17/2019 07:05	Open Wellhead					Stab Head and Open
13	02/17/2019 07:20	Pump Spacer	8.3400	3.00	5.00	47.00	Fresh Water Spacer Fill Lines
14	02/17/2019 07:22	Pressure Test				3800.00	PSI Test Lines
15	02/17/2019 07:25	Pump Spacer	8.3400	5.00	15.00	87.00	Fresh Water Spacer
16	02/17/2019 07:28	Pump Lead Cement					Batch Up Lead Cement
17	02/17/2019 07:32	Pump Lead Cement	12.0000	5.50	323.00	223.00	Start Pumping Lead Cement

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Client: Caerus Operating LLC

Well: NPR 23D-3-596

Well API:05-045-24001

Plan #: ORD-15787-W7V9G0

Execution #: EXC-15787-W7V9G002

Quote #: QUO-27144-S6V0M7



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
18	02/17/2019 07:42	Pump Lead Cement	12.0000	5.50		163.00	50 BBLS Pumped Lead Cement
19	02/17/2019 07:51	Pump Lead Cement	12.0000	5.50		150.00	100 BBLS Pumped Lead Cement
20	02/17/2019 08:00	Pump Lead Cement	12.0000	5.50		146.00	150 BBLS Pumped Lead Cement
21	02/17/2019 08:09	Pump Lead Cement	12.0000	5.50		144.00	200 BBLS Pumped Lead Cement
22	02/17/2019 08:19	Pump Lead Cement	12.0000	5.50		126.00	250 BBLS Pumped Lead Cement
23	02/17/2019 08:29	Pump Lead Cement	12.0000	5.50		119.00	300 BBLS Pumped Lead Cement
24	02/17/2019 08:35	Pump Tail Cement	12.5000	2.00		61.00	Start Tail Cement
25	02/17/2019 08:39	Pump Tail Cement	12.5000	2.00		80.00	63 BBLS Pumped Tail Cement
26	02/17/2019 08:45	Wash Pumps and Lines					Wash Gate Get Ready for Displacement
27	02/17/2019 08:50	Drop Top Plug					Drop Plug
28	02/17/2019 08:51	Pump Displacement	8.3400	5.50	227.00	259.00	2 BBLS Cement on Plug Displacement
29	02/17/2019 09:01	Pump Displacement	8.3400	5.50		230.00	50 BBLS Pumped Displacement
30	02/17/2019 09:07	Pump Displacement	8.3400	5.50		244.00	100 BBLS Pumped Displacement
31	02/17/2019 09:15	Pump Displacement	8.3400	5.50		283.00	150 BBLS Pumped Displacement
32	02/17/2019 09:24	Pump Displacement	8.3400	2.50		425.00	227 BBLS Pumped Displacement
33	02/17/2019 09:28	Land Plug				935.00	Hold PSI For 5 Min.
34	02/17/2019 09:29	Check Floats				0.00	Floats Good Got 1.5 Back
35	02/17/2019 09:34	Rig Up				0.00	Rig Line Up to Parasite
36	02/17/2019 09:37	Pump Spacer	8.3400	2.00	10.00	403.00	Sugar Water Down Parasite Line. Brake Over 403
37	02/17/2019 09:44	Rig Down					Rig Out Head Set Up for Top Out
38	02/17/2019 10:05	Top Out	12.5000	3.00	224.00	90.00	Start Pumping Top Out
39	02/17/2019 10:30	Top Out	12.5000	3.00		90.00	60 BBLS Pumped Pumping Top Out
40	02/17/2019 10:53	Top Out	12.5000	3.00		90.00	150 BBLS Pumped Pumping Top Out
41	02/17/2019 11:15	Top Out	12.5000	3.00		90.00	224 BBLS Pumped Pumping Top Out
42	02/17/2019 11:20	Top Out					Top Out Cement to Surface

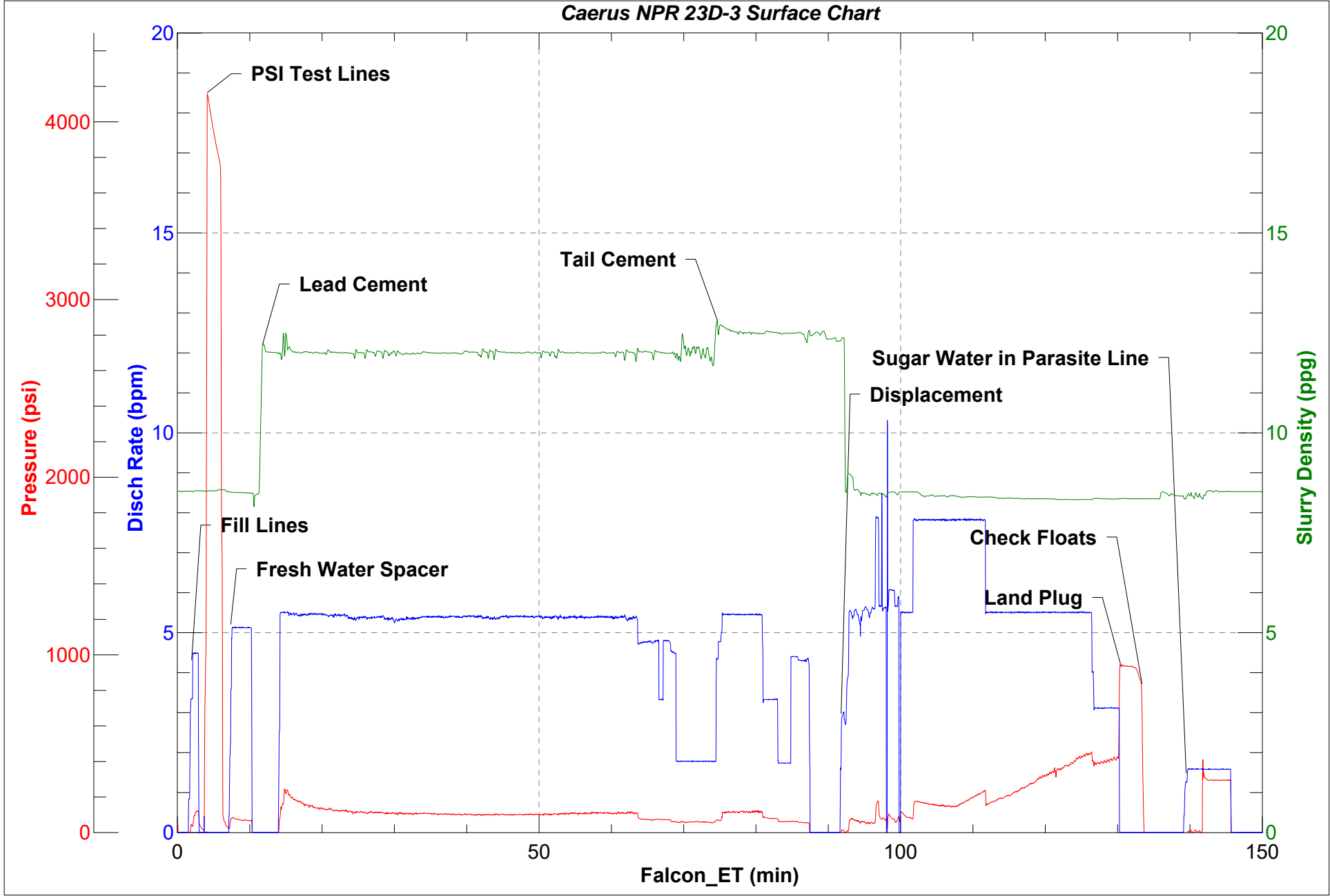
SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
43	02/17/2019 11:21	STEACS Briefing					Rig Down STEACS
44	02/17/2019 11:30	Rig Down					Wash Up and Rig Down Iron, Bulk, Water
45	02/17/2019 13:00	STEACS Briefing					Travel STEACS
46	02/17/2019 13:15	Leave Location					Leave Rig Location

Job Notes

20 BBLS Fresh Water Spacer
 323 BBLS Lead Cement 719 SKS. 12.0 PPG. 2.53 FT3/SK. 14.86 GAL./SK
 63 BBLS Tail Cement 161 SKS. 12.5 PPG. 2.23 FT3/SK. 12.59 GAL./SK.
 227 BBLS TOTAL DISPLACEMENT
 2 BBLS CEMENT ON PLUG
 LANDED PLUG
 FC PSI 425 TAKE PSI UP TO 935 AND HOLD
 CHECK FLOATS GOT 1.5 BBLS BACK
 10 BBLS SUGAR WATER DOWN PARASITE LINE BREAK OVER 403
 224 TOP OUT CEMENT 560 SKS 12.5#
 3 BBLS DOWN PREV. PARASITE LINE



Caerus NPR 23D-3 Surface Chart





Caerus NPR 23D-3 Top-Out Chart

