



Caerus

Well Name: SG 24A-27-496

API #: 05-045-21892

Job Type: Surface

Date Job Completed: 10/1/2019

Quote #: QUO-37087

Execution #: EXC-21554



Caerus

Attention: Mr. Cole Walton | (720) 880-6325 | cwalton@caerusoilandgas.com

Caerus | 1001 17th Street, Suite 1600 | Denver, CO 80202

Dear Mr. Walton,

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
Technical Engineer, Cement | (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

Stage 1 - Cementing Treatment Report

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

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00			
Open Hole	14.75			2,500.00	100.00		
Open Hole	14.75			3,015.00			
Casing	8.92	9.63	36.00	2,998.30		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,953.70
Top Plug Provided By	Non BJ	Pipe Movement	None
Top Plug Size	9.625	Job Pumped Through	Manifold
Centralizers Used	Yes	Top Connection Thread	8 RND
Centralizers Quantity	10.00	Top Connection Size	9.625
Centralizers Type	Bow		
Landing Collar Depth (ft)	2,998		

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	Flare Prior to / during the Cement Job	No
Circulation Time (min)	150.00	Gas Present	No
Circulation Rate (bpm)	10.00		
Circulation Volume (bbls)	1500.00		
Lost Circulation Prior to Cement Job	No		
Mud Density In (ppg)	9.20		

TEMPERATURE

Ambient Temperature (°F)	49.00	Slurry Cement Temperature (°F)	68.60
Mix Water Temperature (°F)	56.30	Flow Line Temperature (°F)	

FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer	Water	8.3300			1,071.00				40.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.4838	14.46	1,400.00	1,100.00	604	1498.0000	266.8000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2478	12.48	2,500.00	500.00	160	358.0000	63.7000
Displacement	Displacement	8.3300			0.00			0.0000	228.8000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Lead Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem S100.3.01D	IntegraSeal PHENO	3.0000	LBS/SK
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	0.2000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	BJCem S100.3.01D	IntegraSeal POLI	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	IntegraSeal POLI	0.1300	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
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	IntegraSeal PHENO	3.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
10/1/2019 2:53:00 AM	Water	5.00	40.00	242.00
10/1/2019 3:00:00 AM	BJCem S100.3.01D	6.50	266.80	426.00
10/1/2019 3:44:00 AM	BJCem S100.3.01D	5.50	63.70	163.00
10/1/2019 3:56:00 AM	Displacement	6.50	228.80	197.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	123.00	712.00	226.00
Rate (bpm)	2.00	7.00	6.00

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	80.00
Calculated Displacement Vol (bbls)	228.32	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	228.00	Amt of Spacer to Surface	10.00
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)	608.00	Total Volume Pumped (bbls)	612.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Partial	Lost Circulation During Cement Job	No

Stage 2 - Cementing Treatment Report

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

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00	130.00			
Open Hole	14.75	0.00	0.00	1,263.60	1,263.60	40.00		
Casing	8.92	9.63	36.00	1,400.00	1,400.00		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	DV Tool
Top Plug Used?	Yes	Tool Depth (ft)	1,293.60
Top Plug Provided By	Non BJ	Pipe Movement	None
Top Plug Size	9.625	Job Pumped Through	Manifold
Centralizers Used	Yes	Top Connection Thread	8 RND
Centralizers Quantity	10.00	Top Connection Size	9.625
Centralizers Type	Bow		
Landing Collar Depth (ft)	1,264		

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	Flare Prior to / during the Cement Job	No
Circulation Time (min)	60.00	Gas Present	No
Circulation Rate (bpm)	3.00		
Circulation Volume (bbls)	180.00		
Lost Circulation Prior to Cement Job	No		
Mud Density In (ppg)	9.20		

TEMPERATURE

Ambient Temperature (°F)	46.00	Slurry Cement Temperature (°F)	67.30
Mix Water Temperature (°F)	54.60	Flow Line Temperature (°F)	

FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer	Water	8.3300			1,236.00				40.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	0.00	1,400.00	560	1415.0000	251.9000
Displacement Final	Displacement	8.3300			0.00			0.0000	97.6800

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
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 POLI	0.1300	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
10/1/2019 6:56:00 AM	Water	5.00	40.00	172.00
10/1/2019 7:05:00 AM	BJCem S100.3.01D	6.00	251.90	270.00
10/1/2019 7:49:00 AM	Displacement	6.00	97.68	200.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	129.00	373.00	265.00
Rate (bpm)	4.00	6.50	6.50

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	110.00
Calculated Displacement Vol (bbls)	97.68	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	97.50	Amt of Spacer to Surface	40.00
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)	383.00	Total Volume Pumped (bbls)	400.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	Yes
Cement Returns During Job	Full	Lost Circulation During Cement Job	No



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	09/30/2019 15:00	Arrive on Location					Arrive on location from squeeze job. Rig was pulling drill pipe
2	09/30/2019 15:38	Spot Units					Did a site assessment and spotted in equipment
3	09/30/2019 15:49	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ services cement crew
4	09/30/2019 15:58	Rig Up					Rig up all equipment
5	09/30/2019 16:57	Callout					Call out on location time of 22:30 9/30/19
6	09/30/2019 17:00	Client					Wait on rig to finish running casing and circulate
7	10/01/2019 02:24	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
8	10/01/2019 02:35	Rig Up					Rig up plug container
9	10/01/2019 02:47	Prime Up	8.4000	2.00	5.00	123.00	Fill lines with 5 bbls of fresh water
10	10/01/2019 02:49	Pressure Test				3318.00	Pressure test to 3318 psi, pressure test held
11	10/01/2019 02:53	Pump Spacer	8.4000	5.00	40.00	242.00	Pump Fresh water spacer
12	10/01/2019 03:01	Pump Lead Cement	12.0000	6.50	5.00	426.00	Pump Lead Cement 12 ppg 604 sks 2.48 cuft/sk 14.46 gals/sk. For a total of 266.78 bbls of Lead cement requiring 207.95 bbls of mix water, weight verified with mud scales
13	10/01/2019 03:09	Pump Lead Cement	12.0000	6.50	50.00	297.00	Pump Lead Cement
14	10/01/2019 03:17	Pump Lead Cement	12.0000	6.50	100.00	301.00	Pump Lead Cement
15	10/01/2019 03:24	Pump Lead Cement	12.0000	6.50	150.00	281.00	Pump Lead Cement
16	10/01/2019 03:32	Pump Lead Cement	12.0000	6.50	200.00	294.00	Pump Lead Cement
17	10/01/2019 03:38	Pump Lead Cement	12.0000	5.00	240.00	164.00	Pump Lead Cement
18	10/01/2019 03:41	Pump Lead Cement	12.0000	4.50	250.00	152.00	Pump Lead Cement

Client: Caerus Operating LLC

Well Name / API: SG 24A-27-496 / 05-045-21892

Well MD: 3015

Quote #: QUO-37087-Q5P0R4

Plan #: ORD-21554-X9P3X8

Execution #: EXC-21554-X9P3X802



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
19	10/01/2019 03:43	Pump Lead Cement	12.0000	5.00	260.00	160.00	Finished pumping Lead Cement with 260 bbls away
20	10/01/2019 03:44	Pump Tail Cement	12.5000	5.50	5.00	165.00	Pump Tail Cement 12.5 ppg 160 sks 2.25 cuft/sk 12.48 gals/sk. For a total of 64.12 bbls of Tail cement requiring 47.54 bbls of mix water, weight verified with mud scales
21	10/01/2019 03:45	Pump Tail Cement	12.5000	6.50	17.00	256.00	Pump Tail Cement
22	10/01/2019 03:49	Pump Tail Cement	12.5000	5.00	40.00	168.00	Pump Tail Cement
23	10/01/2019 03:51	Pump Tail Cement	12.5000	4.00	54.00	153.00	Finished pumping Tail Cement with 54 bbls away
24	10/01/2019 03:54	Pump Tail Cement	12.5000				Pump Tail Cement down last parasite sting
25	10/01/2019 03:55	Drop Top Plug					Open up plug container and drop plug, verified by tool hand, and company man
26	10/01/2019 03:56	Pump Displacement	8.4000	6.50	10.00	197.00	Pump Fresh water displacement
27	10/01/2019 04:05	Pump Displacement	8.4000	7.00	50.00	224.00	Pump Fresh water displacement
28	10/01/2019 04:14	Pump Displacement	8.4000	3.50	100.00	202.00	Pump Fresh water displacement
29	10/01/2019 04:21	Pump Displacement	8.4000	7.00	150.00	512.00	Pump Fresh water displacement
30	10/01/2019 04:32	Other (See comment)					Lost returns with 150 bbls away and gained returns at 185 bbls away
31	10/01/2019 04:32	Pump Displacement	8.4000	5.50	200.00	684.00	Pump Fresh water displacement
32	10/01/2019 04:37	Pump Displacement	8.4000	3.00	228.00	685.00	Pump Fresh water displacement
33	10/01/2019 04:39	Land Plug				1084.00	Landed the plug @ 685 psi took to 1084 psi
34	10/01/2019 04:41	Check Floats					Check floats, floats held 1 bbl back
35	10/01/2019 04:46	Other (See comment)	8.4500	1.00	10.00	220.00	Pump 10 bbls of sugar water on parasite sting
36	10/01/2019 04:53	Drop Opening Plug					Opened plug container, dropped opening plug, and loaded closing plug. Verified by company man and tool hand
37	10/01/2019 05:09	Other (See comment)				1040.00	Open DV Tool with 1040 psi
38	10/01/2019 05:10	Circulate Well	8.4000	3.00	20.00	218.00	Circulated the well
39	10/01/2019 05:19	Cement Back-to-Surface					80 bbls of cement to surface
40	10/01/2019 05:20	Client					Rig circulated well
41	10/01/2019 06:38	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
42	10/01/2019 06:56	Pump Spacer	8.4000	5.00	40.00	172.00	Pump Fresh water spacer

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
43	10/01/2019 07:04	Pump Lead Cement	12.0000	6.00	5.00	270.00	Pump Lead Cement 12 ppg 560 sks 2.53 cuft/sk 14.86 gals/sk. For a total of 252.33 bbls of Lead cement requiring 198.13 bbls of mix water, weight verified by mud scales
44	10/01/2019 07:12	Pump Lead Cement	12.0000	6.50	50.00	279.00	Pump Lead Cement
45	10/01/2019 07:19	Pump Lead Cement	12.0000	6.50	100.00	265.00	Pump Lead Cement
46	10/01/2019 07:27	Pump Lead Cement	12.0000	6.50	150.00	273.00	Pump Lead Cement
47	10/01/2019 07:35	Pump Lead Cement	12.0000	6.50	200.00	295.00	Pump Lead Cement
48	10/01/2019 07:42	Cement Back-to-Surface					110 bbls of cement to surface
49	10/01/2019 07:42	Pump Lead Cement	12.0000	4.50	240.00	154.00	Pump Lead Cement
50	10/01/2019 07:44	Pump Lead Cement	12.0000	4.50	250.00	167.00	Pump Lead Cement
51	10/01/2019 07:47	Pump Lead Cement	12.0000	4.50	260.00	164.00	Finished pumping Lead Cement with 260 bbls away
52	10/01/2019 07:48	Drop Closing Plug					Dropped closing plug verified by tool hand, and company man
53	10/01/2019 07:49	Pump Displacement	8.4000	6.00	10.00	200.00	Pump Fresh water displacement
54	10/01/2019 07:56	Pump Displacement	8.4000	6.00	50.00	290.00	Pump Fresh water displacement
55	10/01/2019 08:02	Pump Displacement	8.4000	6.00	87.00	373.00	Pump Fresh water displacement
56	10/01/2019 08:04	Pump Displacement	8.4000	4.00	97.00	383.00	Pump Fresh water displacement
57	10/01/2019 08:04	Land Plug				1845.00	Landed the plug at 383 psi took to 1845 psi
58	10/01/2019 08:06	Check Floats					Check floats, floats held 1 bbl back
59	10/01/2019 08:10	Rig Down					Rig down plug container
60	10/01/2019 08:23	Top Out					15 bbls to top out well
61	10/01/2019 08:39	Wash Pumps and Lines					Wash pumps and lines to 3-sided tank
62	10/01/2019 08:54	STEACS Briefing					Pre-Rig Down STEACS Briefing with all BJ Services cement crew
63	10/01/2019 09:03	Rig Down					Rig down all equipment
64	10/01/2019 09:58	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
65	10/01/2019 10:10	Leave Location					Leave location for Rifle yard. Thank you for using BJ Services, Andrew Linn, and crew



