



Caerus

Well Name: Fed 11D-24-496

API #: 05-045-24176

Job Type: Surface

Date Job Completed: 12/2/2019

Quote #: QUO-39302

Execution #: EXC-22890



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	Jarvis Abbey	RIG	H&P 329
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	25.00		
Open Hole	14.75			3,175.00			
Casing	8.92	9.63	36.00	3,155.10		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	3,110.80
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 rd
Centralizers Quantity	10.00	Top Connection Size	9.625
Centralizers Type	Bow		
Landing Collar Depth (ft)	3,111		

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig
Circulation Prior to Job	Yes
Circulation Time (min)	90.00
Circulation Rate (bpm)	6.40
Circulation Volume (bbls)	576.00
Lost Circulation Prior to Cement Job	Yes
Mud Density In (ppg)	9.30

TEMPERATURE

Ambient Temperature (°F)	18.00	Slurry Cement Temperature (°F)	66.50
Mix Water Temperature (°F)	54.00	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	IntegraGuard STAR Spacer	8.6000			1,071.00				40.0000
Lead Slurry	Beaded Lead (14645-8)	10.0000	3.8188	17.43	1,400.00	1,100.00	246	937.0000	166.7000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2255	12.59	2,500.00	500.00	161	358.0000	63.7000
Displacement	Displacement	8.3300			0.00			0.0000	228.8000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer	IntegraGuard STAR Spacer	IntegraGuard STAR LT concentrate	10.0000	PPB
Spacer	IntegraGuard STAR Spacer	Fresh Water	100.0000	PCT
Spacer	IntegraGuard STAR Spacer	IntegraGuard STAR PLUS 3K	20.0000	PPB
Lead Slurry	Beaded Lead (14645-8)	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	Beaded Lead (14645-8)	EXTENDER, LW-5E	37.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	Cement Additive, Sodium Metasilicate A-2	1.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	IntegraCare A-12	0.4000	BWOB
Lead Slurry	Beaded Lead (14645-8)	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	Beaded Lead (14645-8)	BONDING AGENT, BA-90	5.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
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	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	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
2/2/2019 12:00:00 AM	IntegraGuard STAR Spacer	5.00	40.00	181.00
12/2/2019 12:10:00 AM	Beaded Lead (14645-8)	5.00	166.70	106.00
12/2/2019 12:41:00 AM	BJCem S100.3.01D	6.00	63.70	293.00
12/2/2019 12:57:00 AM	Displacement	7.00	228.80	225.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	62.00	561.00	230.00
Rate (bpm)	2.00	7.00	6.00

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	240.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	238.00	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)	473.00	Total Volume Pumped (bbls)	530.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Partial	Lost Circulation During Cement Job	Yes

Stage-2 BJ Cementing Treatment Report

SERVICE SUPERVISOR	Paul Linn III	FORMATION	
CLIENT FIELD REPRESENTATIVE	Jarvis Abbey	RIG	H&P 329
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			1,381.10	25.00		
Casing	8.92	9.63	36.00	1,381.10		J-55	LTC

HARDWARE

Bottom Plug Used?	No	Tool Type	DV Tool
Top Plug Used?	Yes	Tool Depth (ft)	1,381.10
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	Rigid		
Landing Collar Depth (ft)	1,381		

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig
Circulation Prior to Job	Yes
Circulation Time (min)	90.00
Circulation Rate (bpm)	3.00
Circulation Volume (bbls)	270.00
Lost Circulation Prior to Cement Job	No
Mud Density In (ppg)	9.6
Mud Density Out (ppg)	9.6

TEMPERATURE

Ambient Temperature (°F)	12.00	Slurry Cement Temperature (°F)	64.30
Mix Water Temperature (°F)	52.10	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	Beaded Lead	10.0000	3.8188	17.43	0.00	1,400.00	336	1284.0000	228.5000
Displacement	Displacement	8.3300			0.00			0.0000	108.2000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Lead Slurry	Beaded Lead (14645-8)	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	Beaded Lead (14645-8)	Cement Additive, Sodium Metasilicate A-2	1.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	BONDING AGENT, BA-90	5.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	EXTENDER, LW-5E	37.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	Beaded Lead (14645-8)	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	IntegraCare A-12	0.4000	BWOB

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
12/2/2019 3:36:00 AM	Water	5.00	40.00	151.00
12/2/2019 3:44:00 AM	Beaded Lead (14645-8)	5.00	228.50	210.00
12/2/2019 4:40:00 AM	Displacement	7.00	108.20	261.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	107.00	328.00	252.00
Rate (bpm)	4.00	7.00	6.50

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	140.00
Calculated Displacement Vol (bbls)	107.60	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	107.00	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)	107.00	Total Volume Pumped (bbls)	481.00
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	12/01/2019 14:00	Callout					Call out for job on location @ 2000 12/1/19
2	12/01/2019 16:40	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
3	12/01/2019 17:26	Depart for Location					Depart from Rifle yard for H&P 329
4	12/01/2019 19:50	Arrive on Location					Arrive on location, rig was running casing
5	12/01/2019 19:55	Spot Units					Did a site assessment and spotted in all equipment
6	12/01/2019 20:20	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ Services cement crew
7	12/01/2019 20:32	Rig Up					Rig up all ground equipment
8	12/01/2019 21:37	Client					Wait on rig to finish running casing and circulate
9	12/01/2019 23:15	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, tool hand, and all BJ Services cement crew
10	12/01/2019 23:38	Rig Up					Stab plug container, and hook up lines
11	12/01/2019 23:51	Prime Up	8.4000	2.00	5.00	107.00	Fill lines with 5 bbls of fresh water
12	12/01/2019 23:55	Pressure Test				3611.00	Pressure test to 3611 psi pressure held
13	12/02/2019 00:01	Pump Spacer	8.6000	5.00	40.00	181.00	Pump Weighted Spacer
14	12/02/2019 00:09	Pump Lead Cement	9.7000	5.00	5.00	106.00	Pump Lead Cement 10 ppg 246 sks 3.82 cuft/sk 17.43 gals/sk. For a total of 246 bbls of Lead cement, weight verified with mud scale
15	12/02/2019 00:12	Pump Lead Cement	9.7000	6.00	15.00	110.00	Pump Lead Cement
16	12/02/2019 00:18	Pump Lead Cement	9.7000	6.00	50.00	224.00	Pump Lead Cement
17	12/02/2019 00:26	Pump Lead Cement	9.7000	6.00	100.00	215.00	Pump Lead Cement
18	12/02/2019 00:34	Pump Lead Cement	9.7000	6.00	150.00	261.00	Pump Lead Cement
19	12/02/2019 00:40	Pump Lead Cement	9.7000	6.00	180.00	238.00	Finished pumping Lead Cement with 180 bbls away

Client: Caerus Operating LLC

Well Name / API: FED #11D-24-496 / 05-045-24176

Well MD: 3175

Quote #: QUO-39302-D2Y8F5

Plan #: ORD-22890-M5T2D7

Execution #: EXC-22890-M5T2D702



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
20	12/02/2019 00:41	Pump Tail Cement	12.5000	6.00	5.00	293.00	Pump Tail Cement 12.5 ppg 161 sks 2.23 cuft/sk 12.59 gals/sk. For a total of 63.7 bbls of Tail cement, weight verified with mud scale
21	12/02/2019 00:47	Pump Tail Cement	12.5000	6.00	50.00	254.00	Pump Tail Cement
22	12/02/2019 00:49	Pump Tail Cement	12.5000	5.00	60.00	208.00	Pump Tail Cement
23	12/02/2019 00:50	Pump Tail Cement	12.5000	5.00	65.00	184.00	Finished pumping Tail Cement with 65 bbls away
24	12/02/2019 00:52	Other (See comment)	12.5000	1.00	2.00	88.00	Pump 2 bbl of Tail Cement down last parasite
25	12/02/2019 00:55	Drop Top Plug					Drop top plug
26	12/02/2019 00:57	Pump Displacement	8.4000	7.00	10.00	225.00	Pump Displacement
27	12/02/2019 01:04	Pump Displacement	8.4000	7.00	50.00	238.00	Pump Displacement
28	12/02/2019 01:11	Pump Displacement	8.4000	3.50	100.00	112.00	Pump Displacement
29	12/02/2019 01:19	Pump Displacement	8.4000	7.00	150.00	263.00	Pump Displacement
30	12/02/2019 01:26	Pump Displacement	8.4000	7.00	200.00	455.00	Pump Displacement
31	12/02/2019 01:30	Pump Displacement	8.4000	7.00	225.00	561.00	Pump Displacement
32	12/02/2019 01:34	Pump Displacement	8.4000	3.50	238.00	473.00	Pump Displacement
33	12/02/2019 01:35	Land Plug				984.00	Land plug from 473 to 984 psi
34	12/02/2019 01:36	Check Floats					Check floats 1/2 bbl back
35	12/02/2019 01:39	Other (See comment)				194.00	Pump sugar water on parasite
36	12/02/2019 01:48	Drop Opening Plug					Drop opening plug and load closing plug
37	12/02/2019 01:58	Other (See comment)				981.00	Open Tool
38	12/02/2019 02:00	Circulate Well	8.4000	5.00	20.00	210.00	Circulate well
39	12/02/2019 02:10	Wash Pumps and Lines					Wash pumps and lines into cellar and pickled pump
40	12/02/2019 02:30	Client					Wait on rig to circulate
41	12/02/2019 03:36	Pump Spacer	8.4000	5.00	40.00	190.00	Fresh water spacer
42	12/02/2019 03:44	Pump Lead Cement	9.7000	5.00	5.00	210.00	Pump Lead Cement 10 ppg 336 sks 3.82 cuft/sk 17.43 gals/sk. For a total of 228.5 bbls of Lead cement, weight verified with mud scale
43	12/02/2019 03:46	Pump Lead Cement	9.7000	6.50	10.00	321.00	Pump Lead Cement
44	12/02/2019 03:51	Pump Lead Cement	9.7000	6.50	50.00	306.00	Pump Lead Cement
45	12/02/2019 03:58	Pump Lead Cement	9.7000	6.50	100.00	271.00	Pump Lead Cement



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
46	12/02/2019 04:07	Pump Lead Cement	9.7000	6.50	150.00	252.00	Pump Lead Cement
47	12/02/2019 04:14	Pump Lead Cement	9.7000	6.50	200.00	256.00	Pump Lead Cement
48	12/02/2019 04:22	Pump Lead Cement	9.7000	6.50	250.00	278.00	Pump Lead Cement
49	12/02/2019 04:30	Pump Lead Cement	9.7000	6.50	300.00	284.00	Pump Lead Cement
50	12/02/2019 04:35	Cement Back-to-Surface					140 bbls of cement to surface
51	12/02/2019 04:35	Pump Lead Cement	9.7000	5.00	334.00	263.00	Finished pumping Lead Cement with 334 bbls away
52	12/02/2019 04:37	Drop Closing Plug					Drop Closing plug verified by company man, and tool hand
53	12/02/2019 04:40	Pump Displacement	8.4000	7.00	10.00	261.00	Pump Fresh water Displacement
54	12/02/2019 04:46	Pump Displacement	8.4000	7.00	70.00	324.00	Pump Fresh water Displacement
55	12/02/2019 04:52	Pump Displacement	8.4000	5.50	95.00	277.00	Pump Fresh water Displacement
56	12/02/2019 04:56	Pump Displacement	8.4000	3.50	107.00	107.00	Pump Fresh water Displacement
57	12/02/2019 04:56	Land Plug				2436.00	Landed @ 107 psi took to 2436 psi
58	12/02/2019 05:01	Check Floats					Check floats, floats held 1 bbl back
59	12/02/2019 05:11	Wash Pumps and Lines					Wash pumps and lines into cellar and pickled pump
60	12/02/2019 05:26	Rig Down					Rig down plug container
61	12/02/2019 05:39	Client					Wait on rig to hook up BOP to then top out
62	12/02/2019 07:17	Prime Up	8.4000	1.00	1.00	67.00	Fill lines with 1 bbl of water
63	12/02/2019 07:20	Top Out	12.5000	1.00	11.00	89.00	Top Out Cement 12.5 ppg 28 sks 2.25 cuft/sk 12.59 gals/sk.
64	12/02/2019 07:42	Cement Back-to-Surface					Cement to surface and stayed
65	12/02/2019 07:47	Wash Pumps and Lines					Wash pumps and lines into cellar and pickled pump
66	12/02/2019 08:12	STEACS Briefing					Pre-Rig Down STEACS Briefing with all BJ Services cement crew
67	12/02/2019 08:26	Rig Down					Rig Down all equipment
68	12/02/2019 09:19	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
69	12/02/2019 09:30	Leave Location					Depart from location for Rifle Yard. Thank you for Using BJ Services, Andrew Linn, and crew





