



# Terra Energy Partners

**Well Name: FEDERAL PA 14-23**

**API #: 05-045-24301**

**Job Type: Production**

**Date Job Completed: 9/15/2020**

**Quote #:** QUO-47104

**Execution #:** EXC-26811



## Terra Energy Partners

Attention: Mr. Lynn Cass | (970) 263-2716 | [LCass@terraep.com](mailto:LCass@terraep.com)

Terra Energy Partners | 4828 Loop Central Dr., Suite 900 | Houston, TX 77081

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Dear Mr. Cass,

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 | (307) 757-7178 | [zen.keith@bjservices.com](mailto: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

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# BJ Cementing Treatment Report

SERVICE SUPERVISOR	Paul Linn III	FORMATION	
CLIENT FIELD REPRESENTATIVE	Garrett Wade	RIG	H&P 318
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	8.92	9.63	36.00	1,128.00		J-55	ST&C
Open Hole	8.75			9,180.00	45.00		
Casing	4.00	4.50	11.60	9,172.50		P-110	BTC

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	9,142.92
Top Plug Provided By	Non BJ	Pipe Movement	Reciprocation
Top Plug Size	4.500	Job Pumped Through	Manifold
Centralizers Used	Yes	Top Connection Thread	Buttress
Centralizers Quantity	30.00	Top Connection Size	4.5
Centralizers Type	Bow		
Landing Collar Depth (ft)	9,173		

## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig
Circulation Prior to Job	Yes
Circulation Time (min)	60.00
Circulation Rate (bpm)	10.75
Circulation Volume (bbls)	645.00
Lost Circulation Prior to Cement Job	No
Mud Density In (ppg)	12.80
Mud Density Out (ppg)	12.80

## TEMPERATURE

Ambient Temperature (°F)	85.00
Mix Water Temperature (°F)	63.80

Slurry Cement Temperature (°F)	77.90
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## FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H <sub>2</sub> O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer	Water	8.3000			4,246.00				10.0000
Spacer	Mud Flush	8.4000			4,112.00				20.0000
Spacer	Water	8.3000			6,244.00				10.0000
Tail Slurry	Primary Cement	14.2000	1.7227	8.08	4,477.00	4,854.00	1258	2166.0000	385.7000
Displacement	Displacement	8.3000			0.00			0.0000	144.3000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer	Mud Flush	SPACER SURFACTANT, SS-201	0.5000	GPB
Spacer	Mud Flush	MUD REMOVAL, SAPP	10.0000	PPB
Tail Slurry	Primary Cement	CEMENT, FLY ASH (POZZOLAN)	20.0000	PCT
Tail Slurry	Primary Cement	FLUID LOSS, FL-66	0.4000	BWOB
Tail Slurry	Primary Cement	IntegraGuard GW-86	0.1000	BWOB
Tail Slurry	Primary Cement	RETARDER, R-3	0.3000	BWOB
Tail Slurry	Primary Cement	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	Primary Cement	IntegraSeal POLI	0.2500	LBS/SK
Tail Slurry	Primary Cement	CEMENT, CLASS G	80.0000	PCT
Tail Slurry	Primary Cement	SAND, S-8, Silica Flour, 200 Mesh	27.0000	BWOB

## TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
9/15/2020 6:16:00 PM	Water	6.50	10.00	1310.00
9/15/2020 6:17:00 PM	Mud Flush	6.50	20.00	1399.00
9/15/2020 6:21:00 PM	Water	6.50	10.00	1433.00
9/15/2020 6:06:06 PM	Primary Cement	8.00	385.70	2436.00
9/15/2020 7:26:00 PM	Displacement	10.00	141.73	2080.00

## MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	804.00	4090.00	1684.00
Rate (bpm)	2.00	10.00	8.00

## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	141.72	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	141.50	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	1.50
Bump Plug Pressure (psi)	3164.00	Total Volume Pumped (bbls)	568.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Full	Lost Circulation During Cement Job	No

# BJ Cementing Event Log

Long String - Rifle, CO - Paul Linn III

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	09/15/2020 07:00	Callout					Callout, on location time of 13:30 9/15/2020
2	09/15/2020 11:57	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
3	09/15/2020 12:06	Depart for Location					Depart from Rifle yard for H&P 318
4	09/15/2020 12:57	Arrive on Location					Arrive on location, rig was running casing
5	09/15/2020 13:06	Spot Units					Did a site assessment and spotted in all equipment
6	09/15/2020 13:13	STEACS Briefing					Pre-Rig Up STEACS Briefing with all BJ Services cement crew
7	09/15/2020 13:21	Rig Up					Rig up all ground equipment
8	09/15/2020 14:09	Client					Wait on rig to finish running casing and circulate
9	09/15/2020 17:40	STEACS Briefing					Pre-Job STEACS Briefing with rig crew, company man, and all BJ Services cement crew
10	09/15/2020 17:52	Rig Up					Load plug in plug container (verified by company man), stab plug container, hook up lines
11	09/15/2020 18:06	Prime Up	8.4000	2.00	5.00	804.00	Fill lines with 5 bbls of fresh water
12	09/15/2020 18:11	Pressure Test				5371.00	Pressure test to 5371
13	09/15/2020 18:16	Pump Spacer	8.4000	6.50	10.00	1310.00	Pump Fresh Water Spacer
14	09/15/2020 18:18	Pump Spacer	8.5000	6.50	20.00	1399.00	Pump Mud Flush
15	09/15/2020 18:21	Pump Spacer	8.4000	6.50	10.00	1433.00	Pump Fresh Water Spacer
16	09/15/2020 18:22	Pump Tail Cement	14.2000	8.00	5.00	2436.00	Pump Tail Cement 1258 sks 14.2 ppg 1.72 cuft/sk 8.08 gals/sk. For a total of 385.37 bbls of Tail cement requiring 242.02 bbls of mix water, Weight verified with mud scales
17	09/15/2020 18:26	Pump Tail Cement	14.2000	8.00	50.00	2559.00	Pump Tail Cement
18	09/15/2020 18:34	Pump Tail Cement	14.2000	8.00	100.00	2492.00	Pump Tail Cement

Client: Terra Energy Partners, LLC

Well Name / API: FEDERAL #PA 14-23 / 05-045-24301

Well MD: 9180

Quote #: QUO-47104-R6T0S1

Plan #: ORD-26811-L4F8H9

Execution #: EXC-26811-L4F8H902



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
19	09/15/2020 18:42	Pump Tail Cement	14.2000	8.00	150.00	1576.00	Pump Tail Cement
020	09/15/2020 18:47	Pump Tail Cement	14.2000	8.00	200.00	1631.00	Pump Tail Cement
21	09/15/2020 18:53	Pump Tail Cement	14.2000	8.00	250.00	1655.00	Pump Tail Cement
22	09/15/2020 18:58	Pump Tail Cement	14.2000	8.00	300.00	1684.00	Pump Tail Cement
23	09/15/2020 19:05	Pump Tail Cement	14.2000	8.00	350.00	1654.00	Pump Tail Cement
24	09/15/2020 19:07	Pump Tail Cement	14.2000	6.00	355.00	999.00	Pump Tail Cement
25	09/15/2020 19:14	Pump Tail Cement	14.2000	6.00	400.00	977.00	Pump Tail Cement
26	09/15/2020 19:19	Pump Tail Cement	14.2000	6.00	420.00	998.00	Finished pumping Tail Cement with 420 bbls away
27	09/15/2020 19:20	Wash Pumps and Lines					Wash pumps & lines to pit
28	09/15/2020 19:24	Drop Top Plug					Drop plug verified by company man
29	09/15/2020 19:26	Pump Displacement	8.5000	10.00	10.00	2080.00	Pump KCL Water Displacement
30	09/15/2020 19:30	Pump Displacement	8.5000	10.00	50.00	2704.00	Pump KCL Water Displacement
31	09/15/2020 19:35	Pump Displacement	8.5000	10.00	100.00	3484.00	Pump KCL Water Displacement
32	09/15/2020 19:38	Pump Displacement	8.5000	10.00	131.00	4106.00	Pump KCL Water Displacement
33	09/15/2020 19:40	Pump Displacement	8.5000	4.00	141.50	3164.00	Pump KCL Water Displacement
34	09/15/2020 19:40	Land Plug				4230.00	Landed the plug @ 3164 psi took to 4230 psi
35	09/15/2020 19:43	Check Floats					Check floats, floats held 1 1/2 bbls back
36	09/15/2020 19:46	STEACS Briefing					Pre-Rig Down STEACS Briefing with rig crew
37	09/15/2020 19:51	Rig Down					Rig down rig floor
38	09/15/2020 20:00	Wash Pumps and Lines					Wash pumps & lines to pit
39	09/15/2020 20:07	STEACS Briefing					Pre-Rig Down STEACS Briefing with all BJ Services cement crew
40	09/15/2020 20:11	Rig Down					Rig Down all equipment
41	09/15/2020 20:54	STEACS Briefing					Pre-Convoy STEACS Briefing with all BJ Services cement crew
42	09/15/2020 21:06	Leave Location					Depart from location for Rifle yard. Thank you for using BJ Services, Andrew Linn, and crew

