



Terra Energy Partners

Well Name: STRAIT BOTTOM RANCH SG 312-22

API #: 05-045-24013

Job Type: Production

Date Job Completed: 3/19/2020

Quote #: QUO-43526

Execution #: EXC-25369



Terra Energy Partners

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

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

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,

Devon Hanson

Field Engineer | (701) 590-5946 | devon.hanson@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	Francisco Castillo	FORMATION	
CLIENT FIELD REPRESENTATIVE	Darrel Leatherman	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)	TVD (ft)	EXCESS (%)	GRADE	THREAD
Casing	4.00	4.50	11.60	6,305.00	5,860.00		P-110	
Previous Casing	9.00	9.63	32.30	1,003.00	951.00		H-40	
Open Hole	8.75	0.00	0.00	6,311.00	5,860.00	100.00		

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	6,273.50
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	10690.00
Top Plug Size	4.400	Max Casing Pressure - Operated (psi)	8552.00
Centralizers Used	No	Pipe Movement	Reciprocation
Centralizers Type	Bow	Job Pumped Through	Manifold
Landing Collar Depth (ft)	6,274	Top Connection Thread	8rd
Top Connection Size	4.5		

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	12
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	30.00	10 sec SGS	4
Circulation Rate (bpm)	10.70	10 min SGS	12
Circulation Volume (bbls)	321.00	30 min SGS	22
Lost Circulation Prior to Cement Job	No	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	9.60	Gas Present	No
PV Mud In	12		

TEMPERATURE

Ambient Temperature (°F)	37.00	Slurry Cement Temperature (°F)	85.00
Mix Water Temperature (°F)	81.00	Flow Line Temperature (°F)	100.00

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 / Pre Flush / Flush	Water	8.30			0.00				10.00
Spacer / Pre Flush / Flush	Mud Flush	8.40			0.00				20.00
Spacer / Pre Flush / Flush	Water	8.30			0.00				5.00
Spacer / Pre Flush / Flush	A-3L Flush	10.80			0.00				40.00
Spacer / Pre Flush / Flush	Water	8.30			0.00				20.00
Top-Out / Scavenger Slurry	Scavenger	11.00	3.0951	19.21		0.00	91	280.00	49.90
Tail Slurry	Tail Cement	12.50	2.1127	12.04	3,066.00	3,252.00	948	2002.00	356.50
Displacement Final	Displacement	8.30			0.00			0.00	97.50

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer / Pre Flush / Flush	Mud Flush	SPACER SURFACTANT, SS-201	0.5000	GPB
Spacer / Pre Flush / Flush	Mud Flush	MUD REMOVAL, SAPP	10.0000	PPB
Spacer / Pre Flush / Flush	A-3L Flush	SILICATE, SODIUM, A-3L	31.5000	GPB
Top-Out / Scavenger Slurry	Scavenger	EXTENDER, BENTONITE	8.0000	BWOB
Top-Out / Scavenger Slurry	Scavenger	CEMENT, FLY ASH (POZZOLAN)	35.0000	PCT
Top-Out / Scavenger Slurry	Scavenger	FOAM PREVENTER, FP-25	0.3000	BWOB
Top-Out / Scavenger Slurry	Scavenger	CEMENT, ASTM TYPE III	65.0000	PCT
Top-Out / Scavenger Slurry	Scavenger	Cement Additive, Sodium Metasilicate A-2	0.2000	BWOB
Tail Slurry	Tail Cement	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	Tail Cement	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	Tail Cement	CEMENT EXTENDER, GYPSUM, A-10	2.0000	BWOB
Tail Slurry	Tail Cement	FLUID LOSS, FL-66	0.7000	BWOB
Tail Slurry	Tail Cement	Cement Additive, Sodium Metasilicate A-2	0.3000	BWOB

TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)
3/19/2020 9:39:00 PM	Water	5.50	10.00	1157.00
3/19/2020 9:41:00 PM	Mud Flush	5.50	20.00	1041.00
3/19/2020 9:47:00 PM	Water	5.00	5.00	957.00
3/19/2020 9:49:00 PM	A-3L Flush	5.00	40.00	709.00
3/19/2020 10:09:00 PM	Water	5.00	20.00	557.00
3/19/2020 10:14:00 PM	Scavenger	5.50	49.90	593.00
3/19/2020 10:22:00 PM	Tail Cement	7.00	356.50	1181.00
3/19/2020 11:27:00 PM	Displacement	9.50	97.50	909.00

MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	557.00	1181.00	888.00
Rate (bpm)	5.00	9.50	6.00

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	97.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	97.00	Pressure Left on Casing (psi)	30.00
Did Float Hold?	Yes	Amt Bled Back After Job	0.50
Bump Plug	Yes	Total Volume Pumped (bbls)	601.00
Bump Plug Pressure (psi)	2381.00	Top Out Cement Spotted	No
Were Returns Planned at Surface	No	Lost Circulation During Cement Job	No
Cement Returns During Job	None		

BJ Cementing Event Log

Long String - Rifle, CO - Francisco Castillo

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	03/19/2020 11:00	Callout					ON LOCATION AT 17:00 HRS
2	03/19/2020 13:45	Depart for Location					LEAVE THE YARD
3	03/19/2020 15:10	Arrive on Location					ARRIVE ON LOCATION, RIG RUNNING CASING
4	03/19/2020 17:00	Rig Up					RIG UP MEETING, RIG UP
5	03/19/2020 20:00	Other (See comment)					RIG LAND CASING, CIRCULATE WELL
6	03/19/2020 20:30	STEACS Briefing					PRE-JOB SAFETY MEETING
7	03/19/2020 21:37	Pressure Test				5200.00	PRESSURE TEST LINES
8	03/19/2020 21:39	Pump Spacer	8.3400	5.50	10.00	1157.00	WATER SPACER
9	03/19/2020 21:41	Pump Spacer	8.4000	5.50	20.00	1041.00	MUD FLUSH SPACER
10	03/19/2020 21:47	Pump Spacer	8.3400	5.00	5.00	957.00	WATER SPACER
11	03/19/2020 21:49	Pump Spacer	9.0000	5.00	40.00	709.00	SODIUM SILICATE SPACER
12	03/19/2020 22:09	Pump Spacer	8.3400	5.00	20.00	557.00	WATER SPACER
13	03/19/2020 22:14	Pumping Cement	11.0000	5.50	50.00	593.00	SCAVENGER 11 PPG
14	03/19/2020 22:22	Pump Tail Cement	12.5000	6.00	50.00	909.00	TAIL 948 SKS/356 BBLS AT 12.5PPG, 2.11YLD, 12.04GPS
15	03/19/2020 22:31	Pump Tail Cement	12.5000	6.50	50.00	1027.00	100 BBLS CEMENT PUMPED
16	03/19/2020 22:40	Pump Tail Cement	12.5000	7.00	50.00	1181.00	150 BBLS CEMENT PUMPED
17	03/19/2020 22:47	Pump Tail Cement	12.5000	7.00	50.00	1117.00	200 BBLS CEMENT PUMPED
18	03/19/2020 22:54	Pump Tail Cement	12.5000	7.00	50.00	1147.00	250 BBLS CEMENT PUMPED
19	03/19/2020 23:01	Pump Tail Cement	12.5000	7.00	50.00	1103.00	300 BBLS CEMENT PUMPED

Client: Terra Energy Partners

Well Name / API: STRAIT BOTTOM RANCH SG 312-22 / 05-045-24013

Well MD: 6311

Quote #: QUO-43526-K3P6M2

Plan #: ORD-25369-H0W4N6

Execution #: EXC-25369-H0W4N602



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
20	03/19/2020 23:08	Pump Tail Cement	12.5000	7.00	56.00	1135.00	356 BBLS CEMENT PUMPED
21	03/19/2020 23:16	End Pumping					SHUTDOWN, WASH LINES AND PUMP
22	03/19/2020 23:27	Pump Displacement	8.4000	9.50	87.00	2457.00	DISPLACEMENT KCL WATER
23	03/19/2020 23:36	Pump Displacement	8.4000	4.00	10.00	1345.00	SLOW RATE
24	03/19/2020 23:39	Land Plug				2381.00	LAND PLUG, FULL RETURNS, NO CEMENT TO SURFACE
25	03/19/2020 23:41	Check Floats					FLOATS HELD, 0.5 BBL FLOW BACK
26	03/19/2020 23:50	Rig Down					RIG DOWN MEETING, RIG DOWN
27	03/20/2020 01:30	Leave Location					AAR, JM, LEAVE LOCATION



TERRA 4 1/2 PRODUCTION

