



Terra Energy Partners, LLC TWO-STAGE/MULTI-STAGE CEMENT POST JOB REPORT

RG 442-18-297 05-103-12468
S:18 T:2S R:97W Rio Blanco CO

CallSheet #: 76195
Proposal #: 51797



TWO-STAGE/MULTI-STAGE CEMENT Post Job Report

Attention: Mr. Lynn Cass | (970) 263-2716 | lcass@terraep.com
Terra Energy Partners, LLC
4828 Loop Central Dr., Suite 900 | Houston, TX 77081

Dear Mr. Lynn Cass,

Thank you for the opportunity to provide cementing services on this well. American Cementing strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact American Cementing at any time.

Sincerely,

Zen Keith

Field Engineer | (307) 757-7178 | zen.keith@americancementing.com

Field Office 28730 US-6, Rifle, CO 81650
Phone: (970) 657-1187

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1 Job Details & Summary

Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Thread	Top (ft)	Bottom (ft)	Excess (%)
Open Hole	Outer	n/a	14.75	n/a	n/a	0	1524	70
Open Hole	Outer	n/a	14.75	n/a	n/a	1524	3265	40
Casing	Inner	9.625	8.921	36	STC	0	3265	0

Equipment / People

Unit Type	Unit	Power Unit	Employee #1	Employee #2	Mileage
Silo	Silo #25				
Silo	CTS-471				
Bulk Trailer	CTF-340	TRB-421	Toole, Brittain	Doyle, Sheldon	106
Bulk Trailer	CTF-407				106
Cement Pump	CPF-011	TRH-957	Gonzales, Ivan		106
Light Duty Pickups	LDV-062		Linn, Paul		106

Timing

Event	Date/Time
Call Out	2/21/2021 21:10
Depart Facility	2/22/2021 00:21
On Location	2/22/2021 01:58
Rig Up Iron	2/22/2021 02:26
Job Started	2/22/2021 08:32
Job Completed	2/22/2021 14:12
Rig Down Iron	2/22/2021 14:46
Depart Location	2/22/2021 16:08

General Job Information

Metrics	Value
Well Fluid Density	9.6 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	1200 bbls
Rig Circulation Time	2 hours
Calculated Displacement	247.4 bbls
Actual Displacement	247 bbls
Total Spacer to Surface	75 bbls
Total CMT to Surface	215 bbls
Well Topped Out	No

Job Details

Metrics	Value
Flare Prior to Job	No
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	9.6 lb/gal
Well Fluid Density Out of Well	9.6 lb/gal

Job Details (cont.)

Metrics	Value
BHCT	87 °F
BHST	118 °F

Circulation

Lost Circulation Experienced
No

Job Execution Information

Stage	Fluid	Product	Function	Density (lb/gal)	Yield (ft ³ /sk)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Top (ft)
1	1	Water	Flush	8.34			42.00		5.00	1187
1	2	Calcium Chloride Brine	Flush	8.46			41.39		10.00	1211
1	3	Water	Flush	8.34			42.00		10.00	1259
1	4	Reactive Spacer	Flush	10.01			21.00		20.00	1307
1	5	Water	Flush	8.34			42.00		10.00	1404
1	6	Calcium Chloride Brine	Flush	8.46			41.39		10.00	1452
1	7	Water	Flush	8.34			42.00		5.00	1500
1	8	Stage-1 Lead	Lead	12.30	2.33	13.20		508.00	211.06	1524
1	9	Stage-1 Tail	Tail	12.80	2.10	11.34		237.00	88.52	2765
1	10	Stage-1 Displacement	DisplacementFinal	8.34			42.00		250.00	0
2	1	Stage-2 Water	Flush	8.34			42.00		40.00	0
2	2	Stage-2 Cement	Primary	12.30	2.34	13.42		516.00	215.00	0
2	3	Stage-2 Displacement	DisplacementFinal	8.34			42.00		118.00	0

Job Fluid Details

Stage	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Flush	Calcium Chloride Brine	A-7P	Accelerator	10.00	lb/bbl
1	4	Flush	Reactive Spacer	A-3L	Accelerator	21.00	gal/bbl
1	6	Flush	Calcium Chloride Brine	A-7P	Accelerator	10.00	lb/bbl
1	8	Lead	Stage-1 Lead	ASTM TYPE III	Cement	100.00	%
1	8	Lead	Stage-1 Lead	A-10	Accelerator	5.00	%BWOB
1	8	Lead	Stage-1 Lead	A-2	Accelerator	2.00	lb/sk
1	8	Lead	Stage-1 Lead	FP-24	Defoamer	0.30	%BWOB
1	8	Lead	Stage-1 Lead	IntegraSeal PHENO	LostCirculation	3.00	lb/sk
1	8	Lead	Stage-1 Lead	IntegraSeal POLI	LostCirculation	0.25	lb/sk
1	8	Lead	Stage-1 Lead	R-7C	Retarder	0.30	%BWOB
1	9	Tail	Stage-1 Tail	ASTM TYPE III	Cement	100.00	%
1	9	Tail	Stage-1 Tail	A-10	Accelerator	5.00	%BWOB
1	9	Tail	Stage-1 Tail	A-2	Accelerator	2.00	lb/sk
1	9	Tail	Stage-1 Tail	A-7P	Accelerator	2.00	lb/sk
1	9	Tail	Stage-1 Tail	FP-24	Defoamer	0.30	%BWOB
1	9	Tail	Stage-1 Tail	IntegraSeal PHENO	LostCirculation	3.00	lb/sk
1	9	Tail	Stage-1 Tail	IntegraSeal POLI	LostCirculation	0.25	lb/sk
1	2	Primary	Stage-2 Cement	ASTM TYPE III	Cement	100.00	%
1	2	Primary	Stage-2 Cement	A-10	Accelerator	5.00	%BWOB
1	2	Primary	Stage-2 Cement	A-2	Accelerator	2.00	lb/sk
1	2	Primary	Stage-2 Cement	A-7P	Accelerator	2.00	lb/sk
1	2	Primary	Stage-2 Cement	FP-24	Defoamer	0.30	%BWOB
1	2	Primary	Stage-2 Cement	IntegraSeal POLI	LostCirculation	0.25	lb/sk

2 Job Logs

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
1	Callout	2/21/2021	21:10					Callout, on location time of 04:00 2/22/2021
2	Safety Meeting	2/21/2021	23:44					Pre-Convoy Safety meeting
3	Depart Location	2/22/2021	00:21					Depart from Rifle yard for H&P 329
4	Arrive On Location	2/22/2021	01:58					Arrive on location, rig was running casing
5	Safety Meeting	2/22/2021	02:18					Pre-Rig Up Safety meeting
6	Rig Up Iron	2/22/2021	02:26					Rig up all ground equipment
7	Safety Meeting	2/22/2021	08:00					Pre-Job Safety Meeting with rig crew, company man, and American Cementing crew
8	Rig Up Iron	2/22/2021	08:18					Stab swage and hook up lines
9	Fill Lines	2/22/2021	08:32	8.4	2	5	180	Fill lines with 5 bbls of Fresh water
10	Pressure Test Lines	2/22/2021	08:37				3282	Pressure test to 3282 psi
11	Pump Spacer	2/22/2021	08:41	8.6	3.5	10	206	Pump Calcium Spacer
12	Pump Spacer	2/22/2021	08:43	8.4	3.5	10	204	Pump Fresh water spacer
13	Pump Spacer	2/22/2021	08:45	9.6	3.5	20	366	Pump Sodium silicate spacer
14	Pump Spacer	2/22/2021	08:52	8.4	3.5	10	191	Pump Fresh water spacer
15	Pump Spacer	2/22/2021	08:55	8.6	3.5	10	208	Pump Calcium Spacer
16	Pump Spacer	2/22/2021	08:58	8.4	3.5	10	205	Pump Fresh water spacer
17	Pump Lead Cement	2/22/2021	09:01	12.3	4.5	5	368	Pump Lead Cement @ 12.3 with Fiber
18	Pump Lead Cement	2/22/2021	09:11	12.3	4.5	50	222	Pump Lead Cement With Fiber
19	Pump Lead Cement	2/22/2021	09:23	12.3	4.5	100	241	Pump Lead Cement With Fiber
20	Pump Lead Cement	2/22/2021	09:32	12.3	4.5	150	254	Pump Lead Cement With Fiber
21	Pump Lead Cement	2/22/2021	09:45	12.3	4.5	200	249	Pump Lead Cement
22	Pump Lead Cement	2/22/2021	09:46	12.3	4.5	208	254	Pump Lead Cement
23	Pump Tail Cement	2/22/2021	09:46	12.8	4.5	5	262	Pump Tail Cement @ 12.8
24	Pump Tail Cement	2/22/2021	09:57	12.8	4.5	50	286	Pump Tail Cement
25	Pump Tail Cement	2/22/2021	10:04	12.8	4.5	88	296	Pump Tail Cement
26	Shutdown	2/22/2021	10:04					Shutdown with 88 bbl of Tail Cement away
27	Drop Top Plug	2/22/2021	10:06					Drop Plug verified by company man
28	Pump Displacement	2/22/2021	10:07	8.4	4.5	10	151	Pump Fresh water displacement
29	Pump Displacement	2/22/2021	10:11	8.4	6.5	20	298	Pump Fresh water displacement
30	Pump Displacement	2/22/2021	10:16	8.4	8.5	50	559	Pump Fresh water displacement
31	Pump Displacement	2/22/2021	10:24	8.4	3.5	100	223	Pump Fresh water displacement
32	Pump Displacement	2/22/2021	10:29	8.4	7.5	130	791	Pump Fresh water displacement
33	Spacer Back to Surface	2/22/2021	10:40					180 bbls of Displacement away started seeing spacer to surface
34	Pump Displacement	2/22/2021	10:33	8.4	4	150	550	Pump Fresh water displacement
35	Pump Displacement	2/22/2021	10:50	8.4	2	200	724	Pump Fresh water displacement
36		2/22/2021	11:17	8.4	2	247	986	Pump Fresh water displacement
37	Land Plug	2/22/2021	11:17				1552	Landed the plug @ 986 psi took to 1552 psi
38	Check Floats	2/22/2021	11:22					Check floats, floats held 1 bbl back
39	Drop Opening Plug	2/22/2021	11:25					Drop opening plug verified by company man
40	Other	2/22/2021	11:35				996	Open DV Tool with 996 psi
41	Circulate Well	2/22/2021	11:36	9.6	4	300	387	Circulate well
42	Cement Back to Surface	2/22/2021	11:36					Circulated 100 bbl of Cement to surface
43	Pump Spacer	2/22/2021	12:52	8.4	4	40	84	Pump Water Spacer
44	Pump Cement	2/22/2021	13:02	12.3	5.5	5	404	Pump Primary Cement @ 12.3 ppg

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
45	Pump Cement	2/22/2021	13:11	12.3	5.5	50	370	Pump Primary Cement
46	Pump Cement	2/22/2021	13:19	12.3	5.5	100	353	Pump Primary Cement
47	Pump Cement	2/22/2021	13:28	12.3	5.5	150	362	Pump Primary Cement
48	Pump Cement	2/22/2021	13:37	12.3	5.5	200	406	Pump Primary Cement
49	Cement Back to Surface	2/22/2021	13:37					Cement to surface. 115 bbls of cement to surface.
50	Pump Cement	2/22/2021	13:41	12.3	5.5	215	412	Pump Primary Cement
51	Shutdown	2/22/2021	13:41					Shutdown with 215 bbls of Cement away
52	Drop Closing Plug	2/22/2021	13:42					Drop closing plug verified by company man
53	Pump Displacement	2/22/2021	13:46	8.4	5.5	10	296	Pump Fresh water displacement
54	Pump Displacement	2/22/2021	13:55	8.4	5.5	50	451	Pump Fresh water displacement
55	Pump Displacement	2/22/2021	14:00	8.4	3	70	372	Pump Fresh water displacement
56	Pump Displacement	2/22/2021	14:08	8.4	3	95	459	Pump Fresh water displacement
57	Land Plug	2/22/2021	14:08				2108	Land plug @ 459 psi took to 2108 psi
58	Check Floats	2/22/2021	14:12					Check floats, floats held 3/4 bbl back
59	Clean Pumps and Lines	2/22/2021	14:16					Wash pumps & lines to cellar
60	Safety Meeting	2/22/2021	14:33					Pre-Rig Down Safety meeting
61	Rig Down Iron	2/22/2021	14:46					Rig Down all equipment
62	Safety Meeting	2/22/2021	15:56					Pre-Convoy Safety meeting
63	Depart Location	2/22/2021	16:08					Depart from location for Rifle yard. Thank you for using American Cementing, Andrew Linn, and crew

3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	63.8 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	480 mg/L	0-3000 mg/L
Total Alkalinity	220	0-1000
Total Hardness	0 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	120 mg/L	0-1500 mg/L
Potassium	380 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

4 Pump Diagrams

Stage-1

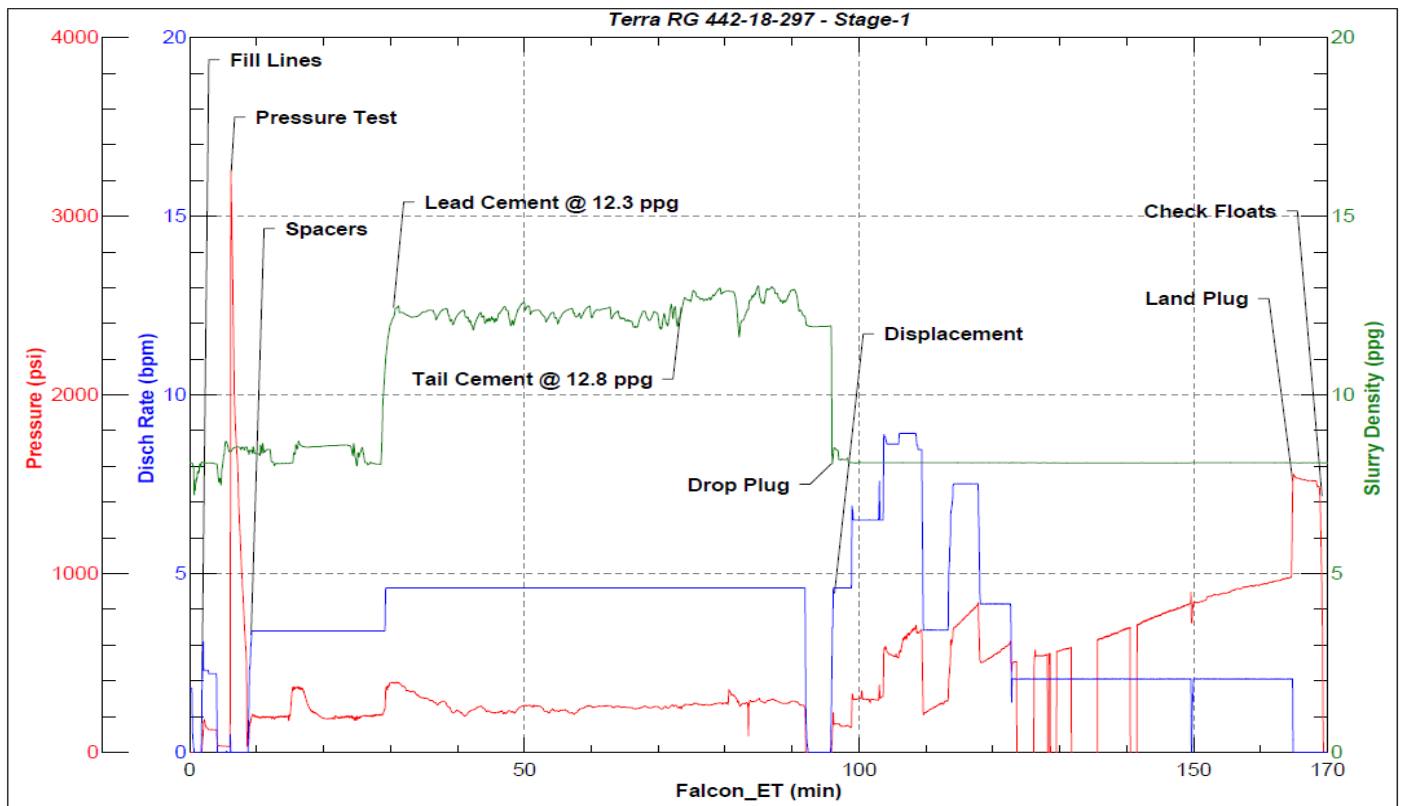


JobMaster Program Version 5.01C1

Job Number:

Customer: Terra

Well Name: RG 442-18-297



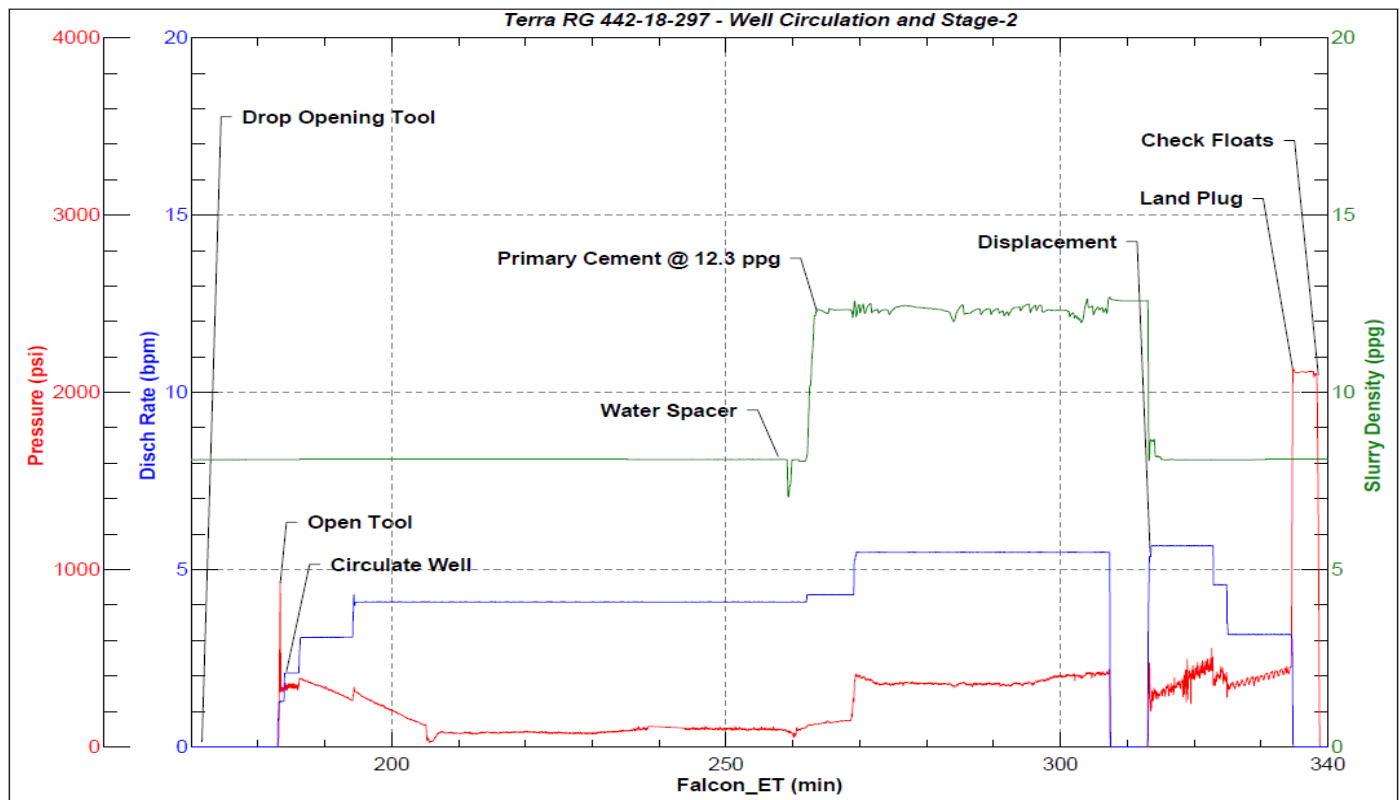
BJ Services

Job Start: Monday, February 22, 2021

Well Circulation and Stage-2



JobMaster Program Version 5.01C1
Job Number:
Customer: Terra
Well Name: RG 442-18-297



BJ Services

Job Start: Monday, February 22, 2021