



Terra Energy Partners, LLC

TWO-STAGE/MULTI-STAGE CEMENT POST JOB

REPORT

RG 43-7-297 05-103-12475
S:18 T:2S R:97W Rio Blanco CO

CallSheet #: 76054
Proposal #: 51593



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		14.75			0	1613	70
Open Hole	Outer		14.75			1613	3474	40
Casing	Inner	9.625	8.921	36	STC	0	3474	0

Equipment / People

Unit Type	Unit	Power Unit	Employee #1	Mileage
Bulk Trailer	CTF-263			106
Bulk Trailer	CTF-340	TRB-112	Kirchenwitz, Jacob	106
Field Storage Silo	CTS-470			106
Field Storage Silo	CTS-438			106
Cement Pump	CPF-011	TRH-957	Gonzales, Ivan	106
Light Duty Pickups	LDV-062		Linn, Paul	106

Timing

Event	Date/Time
Call Out	2/11/2021 18:00
Depart Facility	2/11/2021 23:02
On Location	2/12/2021 01:16
Rig Up Iron	2/12/2021 01:44
Job Started	2/12/2021 05:59
Job Completed	2/12/2021 18:10
Rig Down Iron	2/12/2021 18:55
Depart Location	2/12/2021 20:00

General Job Information

Metrics	Value
Well Fluid Density	8.6 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	300 bbls
Rig Circulation Time	1 hours
Calculated Displacement	263.73 bbls
Actual Displacement	263 bbls
Total Spacer to Surface	0 bbls
Total CMT to Surface	0 bbls
Well Topped Out	Yes
Top Out Volume	50 bbls

Job Details

Metrics	Value
Flare Prior to Job	No
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	No
Well Fluid Density Into Well	8.6 lb/gal
Well Fluid Density Out of Well	0 lb/gal

Job Details (cont.)

Metrics	Value
BHCT	87 °F
BHST	118 °F

Circulation

Lost Circulation Experienced	Losses into Spacer	Losses into Cement	Losses into Displacement
Yes	0	0	0

Circulation Details:

No returns before start of the job.

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	Stage-1 Water	Flush	8.34			42.00		5.00	1228
1	2	Water	Flush	8.34			42.00		10.00	1252
1	3	Calcium Chloride Brine	Flush	8.46			41.39		10.00	1300
1	4	Water	Flush	8.34			42.00		20.00	1348
1	5	Reactive Spacer	Flush	10.01			21.00		10.00	1445
1	6	Water	Flush	8.34			42.00		10.00	1493
1	7	Calcium Chloride Brine	Flush	8.46			41.39		10.00	1541
1	8	Water	Flush	8.34			42.00		5.00	1589
1	9	Stage-1 Lead	Lead	12.30	2.33	13.20		557.00	231.42	1613
1	10	Stage-1 Tail	Tail	12.80	2.10	11.34		237.00	88.52	2974
1	11	Stage-1 Displacement	DisplacementFinal	8.34			42.00		266.00	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		799.00	332.80	0
2	3	Stage-2 Displacement	DisplacementFinal	8.34			42.00		125.00	0
1	4	Top Out Cement	Topout	12.50	2.23	12.58		100.00	39.65	0

Job Fluid Details

Stage	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	3	Flush	Calcium Chloride Brine	A-7P	Accelerator	10.00	lb/bbl
1	5	Flush	Reactive Spacer	A-3L	Accelerator	21.00	gal/bbl
1	7	Flush	Calcium Chloride Brine	A-7P	Accelerator	10.00	lb/bbl
1	9	Lead	Stage-1 Lead	ASTM TYPE III	Cement	100.00	%
1	9	Lead	Stage-1 Lead	A-10	Accelerator	5.00	%BWOB
1	9	Lead	Stage-1 Lead	A-2	Accelerator	2.00	lb/sk
1	9	Lead	Stage-1 Lead	FP-24	Defoamer	0.30	%BWOB
1	9	Lead	Stage-1 Lead	IntegraSeal PHENO	LostCirculation	3.00	lb/sk
1	9	Lead	Stage-1 Lead	IntegraSeal POLI	LostCirculation	0.25	lb/sk
1	9	Lead	Stage-1 Lead	R-7C	Retarder	0.30	%BWOB
1	10	Tail	Stage-1 Tail	ASTM TYPE III	Cement	100.00	%
1	10	Tail	Stage-1 Tail	A-10	Accelerator	5.00	%BWOB
1	10	Tail	Stage-1 Tail	A-2	Accelerator	2.00	lb/sk
1	10	Tail	Stage-1 Tail	A-7P	Accelerator	2.00	lb/sk
1	10	Tail	Stage-1 Tail	FP-24	Defoamer	0.30	%BWOB
1	10	Tail	Stage-1 Tail	IntegraSeal PHENO	LostCirculation	3.00	lb/sk
1	10	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
1	4	Topout	Top Out Cement	ASTM TYPE III	Cement	100.00	%
1	4	Topout	Top Out Cement	A-10	Accelerator	5.00	%BWOB
1	4	Topout	Top Out Cement	A-2	Accelerator	2.00	lb/sk
1	4	Topout	Top Out Cement	A-7P	Accelerator	2.00	lb/sk
1	4	Topout	Top Out Cement	FP-24	Defoamer	0.30	%BWOB
1	4	Topout	Top Out 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	2/11/2021	18:00					Callout, on location time of 04:00 2/12/21
2	Safety Meeting	2/11/2021	22:40					Pre-Convoy Safety meeting
3	Depart Location	2/11/2021	23:02					Depart from Rifle yard for H&P 329
4	Arrive On Location	2/12/2021	01:16					Arrive on location, rig was running casing
5	Safety Meeting	2/12/2021	01:28					Pre-Rig Up Safety meeting
6	Rig Up Iron	2/12/2021	01:44					Rig up all ground equipment
7	Safety Meeting	2/12/2021	05:30					Pre-Job Safety meeting with rig crew, company man, and American Cementing
8	Rig Up Iron	2/12/2021	05:47					Stab swedge, and hook up lines
9	Fill Lines	2/12/2021	05:59	8.4	2.5	5	52	Fill lines with 5 bbls of fresh water
10	Pressure Test Lines	2/12/2021	06:02				5532	Pressure test to 5532 psi
11	Pump Spacer	2/12/2021	06:10	8.7	4	10	171	Calcium Chloride spacer
12	Pump Spacer	2/12/2021	06:17	8.4	4	10	120	Fresh water spacer
13	Pump Spacer	2/12/2021	06:21	9.6	4	20	536	Sodium Silicate spacer
14	Pump Spacer	2/12/2021	06:24	8.4	4	10	108	Fresh water spacer
15	Pump Spacer	2/12/2021	06:26	8.7	4	10	142	Calcium Chloride spacer
16	Pump Spacer	2/12/2021	06:28	8.4	4	10	106	Fresh water spacer
17	Pump Lead Cement	2/12/2021	06:31	12.3	4	5	158	Pump Lead Cement @ 12.3 ppg
18	Pump Lead Cement	2/12/2021	06:40	12.3	4	50	131	Pump Lead Cement
19	Pump Lead Cement	2/12/2021	06:46	12.3	5.5	75	313	Pump Lead Cement
20	Pump Lead Cement	2/12/2021	06:50	12.3	6	100	347	Pump Lead Cement
21	Pump Lead Cement	2/12/2021	06:59	12.3	6	150	352	Pump Lead Cement
22	Pump Lead Cement	2/12/2021	07:07	12.3	6	200	330	Pump Lead Cement
23	Pump Lead Cement	2/12/2021	07:12	12.3	6	228	300	Pump Lead Cement
24	Pump Tail Cement	2/12/2021	07:13	12.8	6	5	363	Pump Tail Cement @ 12.8 ppg
25	Pump Tail Cement	2/12/2021	07:21	12.8	6	50	386	Pump Tail Cement
26	Pump Tail Cement	2/12/2021	07:25	12.8	6	70	394	Pump Tail Cement
27	Pump Tail Cement	2/12/2021	07:30	12.8	4	92	139	Pump Tail Cement
28	Shutdown	2/12/2021	07:30					Shutdown with 82 bbls of Tail away
29	Drop Top Plug	2/12/2021	07:32					Drop plug, verified by company man
30	Pump Displacement	2/12/2021	07:34	8.4	8	10	425	Pump Fresh Water Displacement
31	Pump Displacement	2/12/2021	07:40	8.4	8	50	422	Pump Fresh Water Displacement
32	Pump Displacement	2/12/2021	07:47	8.4	4	100	73	Pump Fresh Water Displacement
33	Pump Displacement	2/12/2021	07:54	8.4	8	150	430	Pump Fresh Water Displacement
34	Pump Displacement	2/12/2021	08:00	8.4	8	200	615	Pump Fresh Water Displacement
35	Pump Displacement	2/12/2021	08:05	8.4	8	240	811	Pump Fresh Water Displacement
36	Pump Displacement	2/12/2021	08:13	8.4	2.5	263	386	Pump Fresh Water Displacement
37	Pump Displacement	2/12/2021	08:13				993	Land the plug @ 386 psi took to 993 psi
38	Check Floats	2/12/2021	08:15					Check floats, floats held 1 bbl back
39	Drop Opening Plug	2/12/2021	08:23					Drop opening plug, verified by company man
40	Other	2/12/2021	08:34				986	Open DV Tool
41	Circulate Well	2/12/2021	08:37	8.6	4	10	37	Circulate well
42	Circulate Well	2/12/2021	11:21	8.6	5	528	47	Circulate well
43	Pump Spacer	2/12/2021	11:25	8.4	5	40	88	Pump Water Spacer
44	Pump Cement	2/12/2021	11:34	12.3	5	5	243	Pump Primary Cement @ 12.3 ppg
45	Pump Cement	2/12/2021	11:35	12.3	7	10	522	Pump Primary Cement
46	Pump Cement	2/12/2021	11:40	12.3	8	50	655	Pump Primary Cement
47	Pump Cement	2/12/2021	11:47	12.3	8	100	646	Pump Primary Cement
48	Pump Cement	2/12/2021	11:53	12.3	8	150	661	Pump Primary Cement

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
49	Pump Cement	2/12/2021	12:00	12.3	8	200	658	Pump Primary Cement
50	Pump Cement	2/12/2021	12:05	12.3	8	250	642	Pump Primary Cement
51	Pump Cement	2/12/2021	12:11	12.3	8	300	647	Pump Primary Cement
52	Pump Cement	2/12/2021	12:13	12.3	4.5	308	617	Pump Primary Cement
53	Pump Cement	2/12/2021	12:16	12.3	4.5	330	195	Pump Primary Cement
54	Shutdown	2/12/2021	12:16					Shutdown with 330 bbls of Cement away
55	Drop Closing Plug	2/12/2021	12:19					Drop Closing plug, verified by company man
56	Pump Displacement	2/12/2021	12:21	8.4	9.5	10	530	Pump Fresh Water Displacement
57	Pump Displacement	2/12/2021	12:27	8.4	11	50	695	Pump Fresh Water Displacement
58	Pump Displacement	2/12/2021	12:31	8.4	11	85	702	Pump Fresh Water Displacement
59	Pump Displacement	2/12/2021	12:33	8.4	3.5	99	38	Pump Fresh Water Displacement
60	Land Plug	2/12/2021	12:33				1045	Land plug @ 38 psi took to 1045 psi
61	Check Floats	2/12/2021	12:35					Check floats, floats held 1/2 bbl back
62	Other	2/12/2021	12:40					Wait for rig to skid off of well and run tubing
63	Fill Lines	2/12/2021	16:52	8.4	2	2	35	Fill lines with Fresh water
64	Pump Spacer	2/12/2021	16:54	10.5	2	15	93	Pump Sodium silicate spacer
65	Pump Spacer	2/12/2021	17:00	8.4	2	5	12	Pump Water Spacer
66	Pump Cement	2/12/2021	17:05	12.8	2	17	102	Pump Top out Cement
67	Cement Back to Surface	2/12/2021	17:14					Cement to Surface
68	Pump Cement	2/12/2021	17:19	12.8	2	3	88	Pump Top out Cement
69	Cement Back to Surface	2/12/2021	17:21					Cement to Surface
70	Pump Cement	2/12/2021	17:28	12.8	2	5	100	Pump Top out Cement
71	Cement Back to Surface	2/12/2021	17:30					Cement to Surface
72	Pump Cement	2/12/2021	17:35	12.8	2	4	76	Pump Top out Cement
73	Cement Back to Surface	2/12/2021	17:37					Cement to Surface
74	Pump Cement	2/12/2021	17:42	12.8	1	6	93	Pump Top out Cement
75	Cement Back to Surface	2/12/2021	17:44					Cement to Surface
76	Pump Cement	2/12/2021	17:49	12.8	1	6	88	Pump Top out Cement
77	Cement Back to Surface	2/12/2021	17:50					Cement to Surface
78	Pump Cement	2/12/2021	17:58	12.8	1	8	96	Pump Top out Cement
79	Cement Back to Surface	2/12/2021	18:00					Cement to Surface
80	Pump Cement	2/12/2021	18:10	12.8	1	5	88	Pump Top out Cement
81	Cement Back to Surface	2/12/2021	18:15					Cement to Surface
82	Clean Pumps and Lines	2/12/2021	18:25					Clean pumps & lines to cellar
83	Safety Meeting	2/12/2021	18:35					Pre-Rig Down Safety meeting
84	Rig Down Iron	2/12/2021	18:55					Rig down all equipment
85	Safety Meeting	2/12/2021	19:40					Pre-Convoy Safety meeting
86	Depart Location	2/12/2021	20:00					Depart from location for Rifle yard. Thank you for using American Cementing, Andrew Linn, and crew

3 Water Analysis

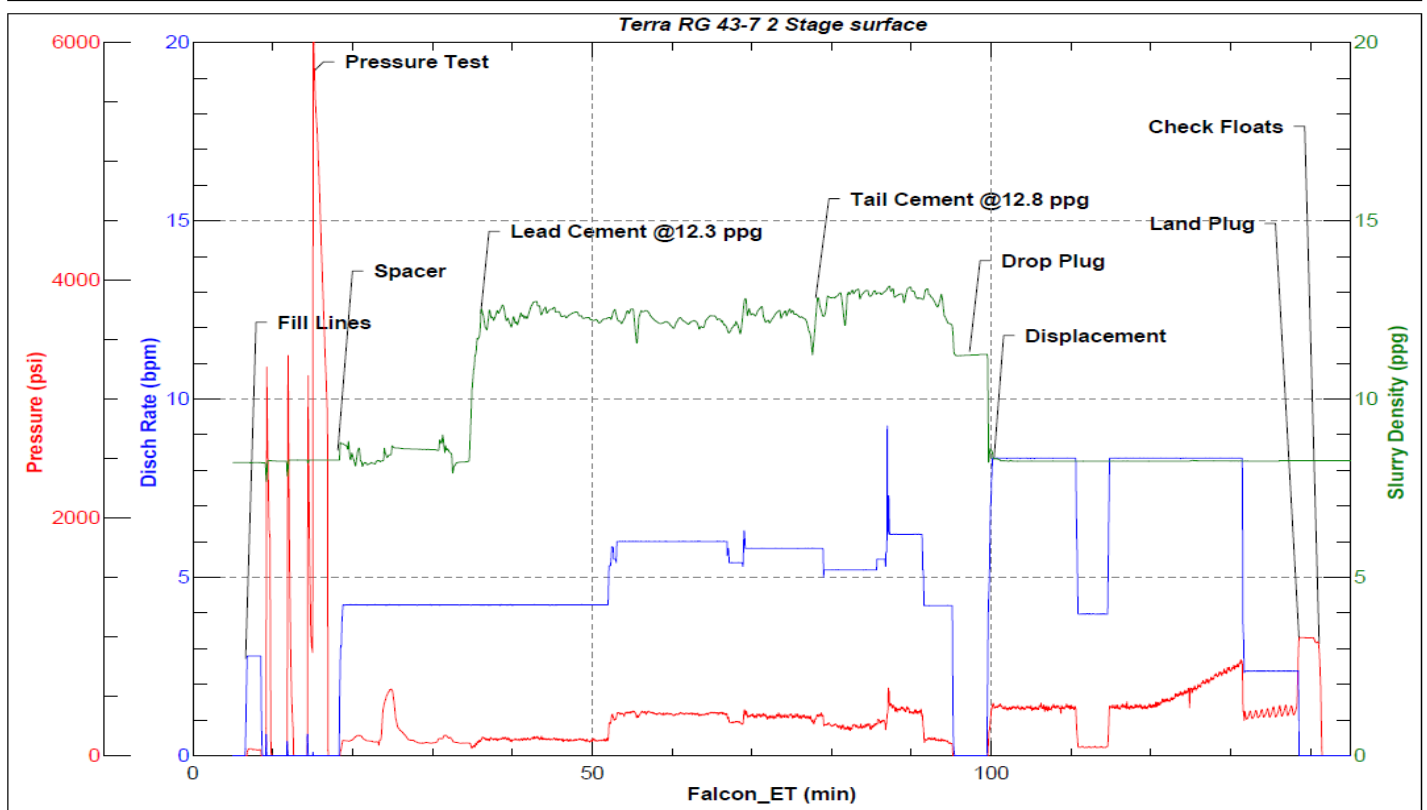
Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	58.6 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	280 mg/L	0-3000 mg/L
Total Alkalinity	0	0-1000
Total Hardness	>220 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	420 mg/L	0-1500 mg/L
Potassium	200 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

4 Pump Diagrams

Stage-1



JobMaster Program Version 5.01C1
Job Number:
Customer: Terra
Well Name: RG 43-7



BJ Services

Job Start: Friday, February 12, 2021

Circulation Between Stages and Stage-2

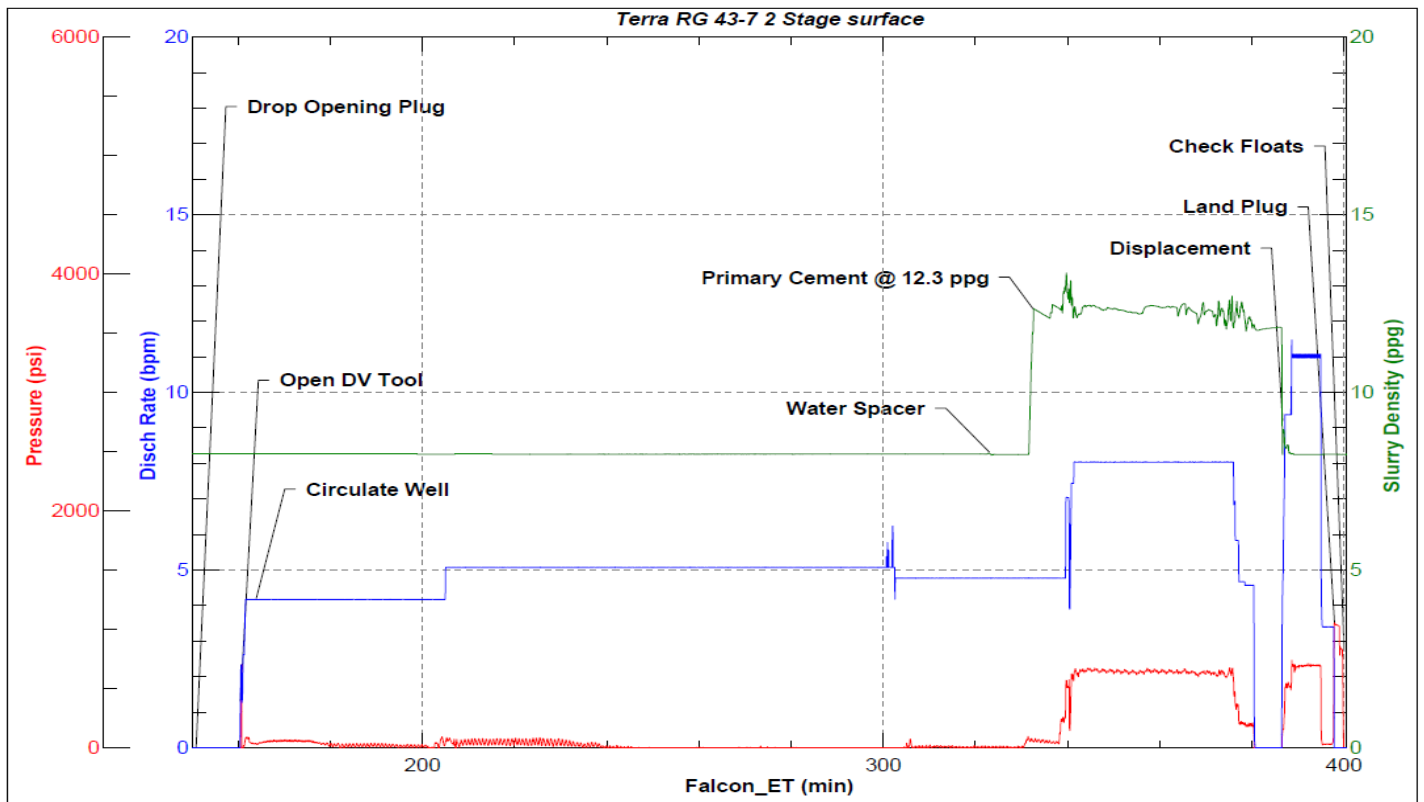


JobMaster Program Version 5.01C1

Job Number:

Customer: Terra

Well Name: RG 43-7



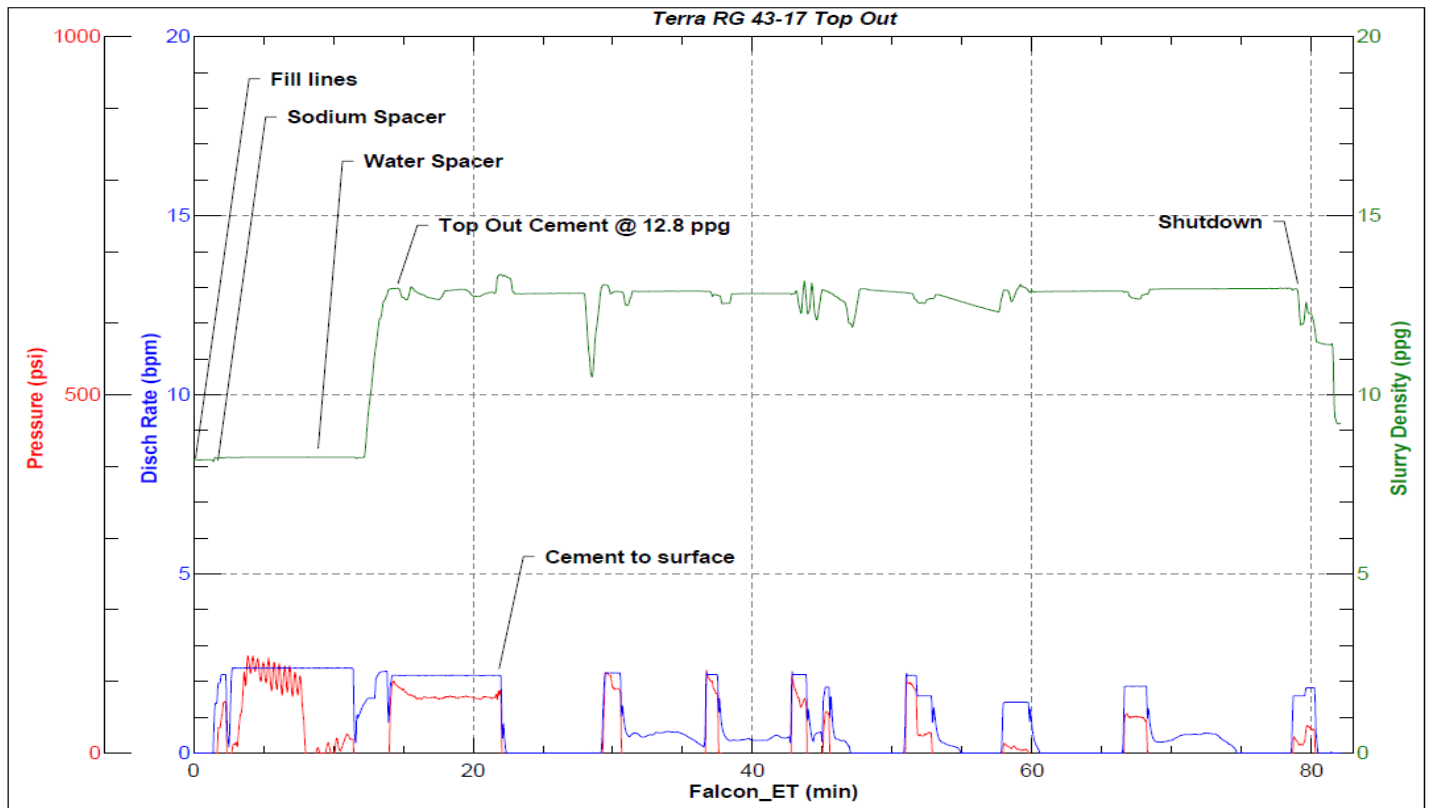
BJ Services

Job Start: Friday, February 12, 2021

Top Out



JobMaster Program Version 5.01C1
Job Number:
Customer:
Well Name:



BJ Services

Job Start: Friday, February 12, 2021