Great Western Operating Company, LLC
SURFACE POST JOB REPORT
JOB PURPOSE: PRIMARY

Tower LD 19-219HN 05-001-10298
S:21 T:1S R:67W Adams CO

CallSheet #: 75382
Proposal #: 50630

Attention: Great Western Operating Company LLC,
Great Western Operating Company, LLC
1001 17TH STREET, SUITE 2000 | DENVER, CO 80202

Dear Great Western Operating Company LLC,

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,

Jason Creel
Field Engineer | (307) 256-0306 | Jason.creel@americancementing.com

Field Office 1716 E Allison Rd, Cheyenne, WY 82007
Phone: (307) 638-5585

Table of Contents

1 Job Details & Summary

1.1 Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Top (ft)	Bottom (ft)	Excess (%)
Open Hole	Outer	n/a	13.5	n/a	0	2016	40
Casing	Inner	9.625	8.921	36	0	2016	0

1.2 Equipment / People

Unit Type	Unit
Pneumatic Trailer	FUF-308
Field Storage Silo	CTS-449
Field Storage Silo	CTS-442
Pneumatic Trailer	CTF-018

1.3 Timing

Event	Date/Time
Call Out	11/7/2020 17:40
Depart Facility	11/7/2020 19:00
On Location	11/7/2020 20:30
Rig Up Iron	11/7/2020 20:50
Job Started	11/8/2020 12:07
Job Completed	11/8/2020 14:29
Rig Down Iron	11/8/2020 14:40
Depart Location	11/8/2020 15:30

1.4 Casing Equipment

Type	Description	Qty	MD	TVD
Bow Spring Centralizers	9.625”	19		
Landing/Float Collar	9.625”	1	1972	1970
Float Shoe	9.625”	1	2016	2015

- ### 1.4.1 Casing Equipment-Centralizer Depths

Surface Centralizers, 38.67, 78.68, 158.69, 281.04, 407.4, 533.22, 658.65, 785.04, 911.38, 1037.79, 1164.17, 1283.71, 1408.16, 1529.98, 1649.69, 1770.18, 1890.19, 1930.21, 1999.8

1.5 General Job Information

Metrics	Value
Well Fluid Density	8.4 lb/gal
Well Fluid Type	Water
Rig Circulation Vol	300 bbls
Rig Circulation Time	0.5 hours
Calculated Displacement	152 bbls
Actual Displacement	152 bbls
Total Spacer to Surface	20 bbls
Total CMT to Surface	37 bbls
Well Topped Out	No
Top Out Volume	0 bbls

1.6 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	8.4 lb/gal
Well Fluid Density Out of Well	8.4 lb/gal

1.7 Job Details (cont.)

Metrics	Value
BHCT	86 °F
BHST	110 °F
Ambient Temperature	55 °F

1.8 Circulation

Lost Circulation Experienced
No

1.9 Job Execution Information

Job	Fluid	Product	Function	Density (lb/gal)	Yield ($ft^{3/sk}$)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Volume (cu.ft)	Top (ft)
1	1	Fresh Water	Spacer	8.34			42.00		20.00		0
1	2	ACem S100.3.XC	Primary	14.50	1.39	6.81		1000.00	248.00	1390	0
1	3	Fresh Water	Displacement Final	8.34			42.00		152.00		0

1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Primary	ACem S100.3.XC	ASTM TYPE III	Cement	100.00	%
1	2	Primary	ACem S100.3.XC	STATIC FREE	Other	0.01	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	Arrive On Location	11/7/2020	20:30					Crew Arrived on Location/ Checked and verified mix water and cement.
2	Safety Meeting	11/7/2020	20:40					Pre Rig Up Safety Meeting with Crew
3	Rig Up	11/7/2020	20:50					Crew Rigged up Treating equipment and lines.
4	Waiting	11/7/2020	21:00					Waiting on Rig Crew To Run Casing
5	Safety Meeting	11/8/2020	12:00					Safety Meeting with Rig Crew, and Company Representative
6	Prime Up	11/8/2020	12:07	8.34	4	5	113	Prime up Pump and Lines
7		11/8/2020	12:16	8.34	0.5	0.5	2500	Pressure Test Lines to 2500 psi
8		11/8/2020	12:19	8.34	4	20	113	Pump 20 bbls of Fresh Water with Blue Dye/ Full Returns
9		11/8/2020	12:24	14.5	4	248	250	Pump 248 bbls Primary Cement @ 14.5 ppg/ 1000 sks (1.39 Yield, 6.8 gps, 162 Mix Water.)/Full Returns.
10	Rate Change	11/8/2020	12:27	14.5	5	12	420	Changed Rate to 5bpm
11	Pump Cement	11/8/2020	12:35	14.5	5	50	440	Pumped 50 bbls of Cement Away/ Wet Sample Taken and Verified/ Full Returns
12	Pump Cement	11/8/2020	12:45	14.5	5	100	460	Pumped 100 bbls of Cement Away/ Wet Sample Taken and Verified/ Full Returns
13	Silo Change	11/8/2020	12:50	14.5	5	129	450	Changed From Silo 26 to Silo 6
14	Pump Cement	11/8/2020	12:55	14.5	5	150	480	Pumped 150 bbls of Cement Away/ Full Returns
15	Pump Cement	11/8/2020	01:05	14.5	5	200	420	Pumped 200 bbls of Cement Away/ Full Returns
16	Shutdown	11/8/2020	01:15					Shutdown to Drop Top Plug/ Wash Pump and Lines on Top of Plug
17	Pump Displacement	11/8/2020	01:17	8.34	4	10	120	Pump First 10 bbls of Fresh water Displacement
18	Rate Change	11/8/2020	01:20	8.34	5	20	150	Changed Rate to 5bpm
19	Pump Displacement	11/8/2020	01:28	8.34	5	50	250	Pumped 50 bbls of Displacement/ Chemicals Through out / Full Returns
20	Spacer to Surface	11/8/2020	01:36	8.34	5	90	610	Blue Dyed Spacer Back to Surface at 90 bbls Away /Full Returns
21	Pump Displacement	11/8/2020	01:38	8.34	5	100	650	Pumped 100 bbls of Displacement/ Chemicals Through out / Full Returns
22	Cement to Surface	11/8/2020	01:41	8.34	5	115	816	Cement Back to Surface at 115 bbls Away/ 37 bbls of cement to Surfce / Full Returns
23	Rate Change	11/8/2020	01:42	8.34	4	120	700	Changed Rate to 4 bpm to Reduce Pressure
24	Rate Change	11/8/2020	01:47	8.34	3	140	600	Changed Rate to 3 bpm to Land the Plug
25	Pump Displacement	11/8/2020	01:50	8.34	3	150	940	Pumped 150 bbls of Displacement/ Chemicals Through out / Full Returns
26	Land Plug	11/8/2020	01:51	8.34	3	152	950	Land Plug at 152 bbls Away/ FCP 900 psi and took to 1638 psi
27	Casing Test	11/8/2020	01:52				1638	Start of 30 min Casing Test/ Start Test at 1638 psi / the Pumping Crossover was Leaking at the Threads at beginning but sealed off
28	Casing Test	11/8/2020	02:02				1586	10 min Point of Casing Test/ Pressure was 1586 psi
29	Casing Test	11/8/2020	02:12				1580	20 Min Point of Casing Test/ Pressure was 1580 psi
30	Casing Test	11/8/2020	02:22				1586	30 min Point of Casing Test / Pressure was 1586 psi

Line	Event	Date (MM/DD/YY)	Time (HH:MM)	Density (lb/gal)	Pump Rate (bpm)	Pump Volume (bbls)	Pipe Pressure (psi)	Comment
31	Check Floats	11/8/2020	02:29					Check Floats/ .75 bbls back / Floats were Holding
32	Safety Meeting	11/8/2020	02:35					Pre Rig Down Safety Meeting with Crew
33	Rig Down	11/8/2020	02:40					Crew Rigged Down Treating Equipment
34	Depart Location	11/8/2020	03:30					Crew Departed Location

3 Water Analysis

Metrics	Value	Recommended
Water Source	None	
Temperature	60 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	0 mg/L	0-3000 mg/L
Total Alkalinity	180	0-1000
Total Hardness	120 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	0 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

4 Pump Diagrams