

## 1 Job Details & Summary

### 1.1 Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Thread	Top (ft)	Bottom (ft)	Excess (%)
Casing	Outer	9.625	8.921	36	n/a	0	1541	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1541	12018	18
Casing	Inner	5.5	4.892	17	n/a	0	12008	0

### 1.2 Equipment / People

Unit Type	Unit	Power Unit	Employee #1	Employee #2	Mileage
Silo	657				140
Silo	658				140
Bulk Trailer	504		Garcia, Anthony		140
Cement Pump	103		Cook, John	Seghetti, Joshua	140
Light Duty Pickups	4		Hyde, Andrew		140

### 1.3 Timing

Event	Date/Time
Call Out	6/13/2017 23:00
Depart Facility	6/14/2017 00:30
On Location	6/14/2017 02:30
Rig Up Iron	6/14/2017 03:00
Job Started	6/14/2017 04:35
Job Completed	6/14/2017 07:53
Rig Down Iron	6/14/2017 08:10
Depart Location	6/14/2017 09:30

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.2 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	350 bbls
Rig Circulation Time	1.5 hours
Calculated Displacement	278 bbls
Actual Displacement	280 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	30 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	10.2 lb/gal
Well Fluid Density Out of Well	10.2 lb/gal

### 1.7 Job Details (cont.)

Metrics	Value
BHCT	220 °F
BHST	220 °F



### 1.8 Circulation

Lost Circulation Experienced
No

### 1.9 Job Execution Information

Job	Fluid	Product	Function	Density (lb/gal)	Yield (ft <sup>3</sup> /sk)	Water Rq. (gal/sk)	Water Rq. (gal/bbl)	Volume (sks)	Volume (bbl)	Top (ft)
1	1	Water	Flush	8.33			42.00		40.00	0
1	2	CD Spacer	Spacer	11.00			33.78		40.00	0
1	3	ALTCem P100-X2	Lead	12.50	2.06	11.77		200.00	73.49	0
1	4	ALTCem P100-X2	Lead	12.50	2.07	11.81		680.00	250.74	1534
1	5	ALTCem P50-X1	Tail	13.50	1.47	7.43		965.00	253.44	6750
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11597
1	7	Water w/ Clay Protection and Biocide	DisplacementFinal	8.33			41.91		270.00	0



### 1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Spacer	CD Spacer	ASR-20	StrengthRetrogression	179.59	lb/bbl
1	2	Spacer	CD Spacer	AVS-10	Viscosifier	1.00	lb/bbl
1	3	Lead	ALTCem P100-X2	AC3-10	Cement	100.00	%
1	3	Lead	ALTCem P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	3	Lead	ALTCem P100-X2	AFL-10	FluidLoss	0.30	%BWOB
1	3	Lead	ALTCem P100-X2	AR-31	Retarder	0.20	%BWOB
1	3	Lead	ALTCem P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	4	Lead	ALTCem P100-X2	AC3-10	Cement	100.00	%
1	4	Lead	ALTCem P100-X2	ABX-30	BondEnhancer	0.40	%BWOB
1	4	Lead	ALTCem P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	4	Lead	ALTCem P100-X2	AFL-10	FluidLoss	0.30	%BWOB
1	4	Lead	ALTCem P100-X2	AR-31	Retarder	0.20	%BWOB
1	4	Lead	ALTCem P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	5	Tail	ALTCem P50-X1	ACG-10	Cement	50.00	%
1	5	Tail	ALTCem P50-X1	AFA-10	Extender	50.00	%
1	5	Tail	ALTCem P50-X1	ADF-11	Defoamer	0.30	%BWOB
1	5	Tail	ALTCem P50-X1	AFL-50	FluidLoss	0.20	%BWOB
1	5	Tail	ALTCem P50-X1	AR-20	Retarder	0.10	%BWOB
1	5	Tail	ALTCem P50-X1	AVS-10	Viscosifier	0.10	%BWOB
1	5	Tail	ALTCem P50-X1	AVS-50	Viscosifier	2.00	%BWOB
1	6	Displacement	Water & MMCR	AR-61	Retarder	0.10	gal/bbl
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	ASF-50	ClayProtection	0.08	gal/bbl
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	Biocide	Other	0.01	gal/bbl

## 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	Call Out	6/12/2017	23:00					Bj crew gets called out and requested on location at 5:00
2	Safety Meeting	6/13/2017	00:15					BJ crew talks about the hazards of driving to location
3	Depart Yard	6/13/2017	00:30					BJ crew leaves yard
4	Arrive On Location	6/14/2017	02:30					Bj crew arrives on location
5	Safety Meeting	6/14/2017	02:45					BJ crew talks about the hazards of spotting in equipment and rigging up
6	Rig Up	6/14/2017	03:00					Rig up
7	Safety Meeting	6/14/2017	04:00					BJ and rig crew talk about the hazards of pumping the job
8	Fill Lines	6/14/2017	04:35	8.33	2	3	290	Pump 3 bbls of water to fill lines
9	Pressure Test	6/14/2017	04:38					Pressure test pumps and lines to 5000 psi
10	Pump Water	6/14/2017	04:42	8.33	5	40	230	Pump 40 bbls of water
11	Pump Spacer	6/14/2017	04:57	11	5	40	650	Pump 40 bbls of CD spacer at 11 ppg
12	Pump Lead Cement	6/14/2017	05:03	12.5	6	73.5	690	Mix up and pump 200 sks of ALTCem P100-X2 Lead cement @ 12.5 ppg, yield 2.06, 11.77 gal/sk, 73.5 bbls
13	Pump Lead Cement	6/14/2017	05:15	12.5	6	250	680	Mix up and pump 680 sks of ALTCem P100-X2 Lead cement @ 12.5 ppg, yield 2.07, 11.81 gal/sk, 250.7 bbls
14	Pump Tail Cement	6/14/2017	06:05	13.5	6	253	390	Mix up and pump 965 sks of ALTCem P50-X1 Tail cement @ 13.5 ppg, yield 1.47, 7.43 gal/sk, 253 bbls
15	Shutdown	6/14/2017	06:49					Shutdown to line out manifold to wash pumps and lines
16	Wash Pumps Lines	6/14/2017	06:52					Wash pumps and lines to 3 sided tank
17	Drop Bottom Plug	6/14/2017	07:00					Company man witness bottom plug leave manifold
18	Pump Water	6/14/2017	07:02	8.33	5	10	250	Pump 10 bbls of water with 1 gal AR-61
19	Drop Top Plug	6/14/2017	07:04					Company man witness top plug leave manifold
20	Pump Displacement	6/14/2017	07:05	8.33	8	258	1450	Pump 278 bbls of water with clay protection and bioside
21	Slow Rate	6/14/2017	07:44	8.33	2.5	20	1780	Slow rate the last 20 bbls to land plug



22	Bump Plug	6/14/2017	07:50					Bump plug at 1850 psi, took it up to 2500 psi
23	Check Floats	6/14/2017	07:53					Got 2.5 bbls back to the truck
24	Safety Meeting	6/14/2017	07:55					BJ crew talks about the hazards of rigging down
25	Rig Down	6/14/2017	08:00					Rig down
26	Depart Location	6/14/2017	09:30					Depart location
27	Other	6/14/2017	09:31					Estimated top of tail at 5808 ft, 40 bbls cement to surface

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	60 °F	50-80 °F
pH Level	6	5.5-8.5
Chlorides	72 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	300 mg/L	0-500 mg/L
Carbonates	140 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	300 mg/L	0-3000 mg/L
Iron	7 mg/L	0-300 mg/L

### 4 Pump Diagrams

Customer: Cub Creek  
Well Number: 4 05-123  
Lease Info: Litzenberger



Print Date/Time

6/14/2017 8:17:02 AM

