

## 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	1550	11984	18
Casing	Inner	5.5	4.892	17	n/a	0	11974	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Bulk Trailer	504	Seghetti, Joshua	Rinehart, Anthony	155
Silo	657			155
Silo	658			155
Light Duty Pickups	4	Hyde, Andrew		155
Cement Pump	103	Cook, John		155

### 1.3 Timing

Event	Date/Time
Call Out	6/19/2017 17:00
Depart Facility	6/19/2017 18:00
On Location	6/19/2017 21:30
Rig Up Iron	6/19/2017 22:00
Job Started	6/20/2017 00:47
Job Completed	6/20/2017 03:45
Rig Down Iron	6/20/2017 04:10
Depart Location	6/20/2017 05:30

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.3 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	N/A bbls
Rig Circulation Time	2 hours
Calculated Displacement	277 bbls
Actual Displacement	280 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	25 bbls

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	33
Yield Point	5
10 sec. SGS	8
10 min. SGS	20
30 min. SGS	28
Filtrate	10
Flow Line Temp.	160

### 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	10.3 lb/gal
Well Fluid Density Out of Well	10.3 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		675.00	248.90	1521
1	5	ALTCem P50-X1	Tail	13.50	1.47	7.43		965.00	253.44	6691
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11538
1	7	Water w/ Clay Protection and Biocide	DisplacementFinal	8.33			41.91		269.00	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	6/19/2017	17:00					BJ crew gets called out and requested on location at 23:00
2	Safety Meeting	6/19/2017	18:00					BJ crew talks about the hazards of driving to location
3	Depart Yard	6/19/2017	18:30					Depart yard
4	Arrive On Location	6/19/2017	21:30					Arrive on location
5	Safety Meeting	6/19/2017	21:45					BJ crew talks about the hazards of spotting in equipment and rigging up
6	Rig Up	6/19/2017	22:00					Rig up
7	Safety Meeting	6/19/2017	00:00					BJ and rig crew talk about the hazards of pumping the job
8	Fill lines	6/20/2017	00:47	8.33	2	3	50	Pump 3 bbls of water ahead
9	Pressure Test	6/20/2017	00:50					Pressure test pumps and lines to 4500 psi
10	Pump Water	6/20/2017	00:53	8.33	5	40	258	Pump 40 bbls of water
11	Pump Spacer	6/20/2017	01:05	11	5	40	300	Pump 40 bbls of CD spacer at 11 ppg
12	Pump Lead Cement	6/20/2017	01:12	12.5	6	73.5	690	Mix up and pump 200 sks of ALTCem P100-X2 lead cement at 12.5 ppg, yield 2.06, 11.77 gal/sk, 73.5 bbls
13	Pump Lead Cement	6/20/2017	01:24	12.5	6	248.9	380	Mix up and pump 675 sks of ALTCem P100-X2 lead cement at 12.5 ppg, yield 2.06, 11.77 gal/sk, 248.9 bbls
14	Pump Tail Cement	6/20/2017	02:04	13.5	6	253.7	399	Mix up and pump 965 sks of ALTCem P50-X1 tail cement at 13.5 ppg, yield 1.47, 7.43 gal/sk, 253.7 bbls
15	Shutdown	6/20/2017	02:49					Shutdown to line out manifold to wash pumps and lines to the pit
16	Wash Pumps Lines	6/20/2017	02:51					Wash pumps and lines
17	Drop Bottom Plug	6/20/2017	02:59					Company man witness plug leave manifold
18	Pump Water	6/20/2017	03:00	8.33	5	10	250	Pump 10 bbls of water With 1 gal of AR-61
19	Drop Top Plug	6/20/2017	03:02					Company man witness plug leave manifold
20	Pump Displacement	6/20/2017	03:03	8.33	8	257	2250	Pump 277 bbls of water with Clay protection and biocide
21	Slow Rate	6/20/2017	03:36	8.33	3	20	1900	Slow rate the last 20 bbls to 3 bpm to bump plug



22	Bump Plug	6/20/2017	03:42					Bump plug at 1900 psi, took it up to 2600 psi
23	Check Floats	6/20/2017	03:45					Got bbls 2.5 back to the truck
24	Safety Meeting	6/20/2017	04:00					BJ crew talks about the hazards of rigging down
25	Rig Down	6/20/2017	04:10					Rig down
26	Depart Location	6/20/2017	05:30					Depart location
27	Other	6/20/2017	05:31					Estimated top of tail at 5789 ft, got 25 bbls cement to surface

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	65 °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

