

## 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	1548	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1555	17716	8
Casing	Inner	5.5	4.778	20	Buttress	0	17701	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Mileage
Bulk Trailer	502	Cook, John	120
Bulk Trailer	509	Garcia, Anthony	120
Silo	654		120
Silo	661		120
Silo	656		120
Cement Pump	103	Seghetti, Joshua	120
Light Duty Pickups	8	Hyde, Andrew	120

### 1.3 Timing

Event	Date/Time
Call Out	9/11/2017 07:00
Depart Facility	9/11/2017 08:30
On Location	9/11/2017 11:00
Rig Up Iron	9/11/2017 11:30
Job Started	9/11/2017 14:37
Job Completed	9/11/2017 18:57
Rig Down Iron	9/11/2017 19:15
Depart Location	9/11/2017 20:15

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10 lb/gal
Well Fluid Type	OBM
Rig Circulation Vol	500 bbls
Rig Circulation Time	2.5 hours
Calculated Displacement	392 bbls
Actual Displacement	392 bbls
Total Spacer to Surface	80 bbls
Total CMT to Surface	52 bbls

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	19
Yield Point	11
10 sec. SGS	8
10 min. SGS	10
30 min. SGS	11
Filtrate	13.1
Flow Line Temp.	158

### 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 lb/gal
Well Fluid Density Out of Well	10 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 (sk)	Volume (bbl)	Top (ft)
1	1	CD Spacer	Spacer	11.00			32.76		80.00	0
1	2	P100-X2	Lead	13.20	1.82	9.89		905.00	294.13	0
1	3	P50-X1	Tail	13.50	1.47	7.43		1885.00	495.17	6516
1	4	Water w/ Clay Protection and Biocide	DisplacementFinal	8.33			41.91		393.00	0

## 1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	1	Spacer	CD Spacer	ASR-20	StrengthRetrogression	180.06	lb/bbl
1	1	Spacer	CD Spacer	ASF-20	Surfactant	0.50	gal/bbl
1	1	Spacer	CD Spacer	ASF-80	Surfactant	0.50	gal/bbl
1	1	Spacer	CD Spacer	AVS-10	Viscosifier	1.00	lb/bbl
1	2	Lead	P100-X2	AC3-10	Cement	100.00	%
1	2	Lead	P100-X2	ABX-20	BondEnhancer	3.00	%BWOB
1	2	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	P100-X2	AFL-50	FluidLoss	0.50	%BWOB
1	2	Lead	P100-X2	AR-31	Retarder	0.17	%BWOB
1	2	Lead	P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	3	Tail	P50-X1	ACG-10	Cement	50.00	%
1	3	Tail	P50-X1	AFA-10	Extender	50.00	%
1	3	Tail	P50-X1	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	P50-X1	AFL-50	FluidLoss	0.20	%BWOB
1	3	Tail	P50-X1	AR-20	Retarder	0.15	%BWOB
1	3	Tail	P50-X1	AVS-10	Viscosifier	0.10	%BWOB
1	3	Tail	P50-X1	AVS-50	Viscosifier	2.00	%BWOB
1	4	DisplacementFinal	Water w/ Clay Protection and Biocide	ASF-50	ClayProtection	0.08	gal/bbl
1	4	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	9/11/2017	07:00					BJ crew gets called out and requested on location at 13:00
2	Safety Meeting	9/11/2017	08:00					BJ crew talks about the hazards of driving to location
3	Depart Yard	9/11/2017	08:30					Depart Location
4	Arrive On Location	9/11/2017	11:00					Arrive on location
5	Safety Meeting	9/11/2017	11:05					BJ crew talks about the hazards of spotting in equipment and rigging up
6	Rig Up	9/11/2017	11:30					Rig up
7	Waiting	9/11/2017	13:00					Wait for the rig to pump a bottoms up
8	Safety Meeting	9/11/2017	13:50					BJ and rig crew talk about the hazards of pumping the job
9	Fill Lines	9/11/2017	14:37	8.33	2	3	200	Pump 3 bbls to fill lines
10	Pressure Test	9/11/2017	14:40					Pressure test pumps and lines to 5500 psi
11	Pump Spacer	9/11/2017	14:47	11	4	80	300	Pump 40 bbls of CD spacer at 11 ppg, with 40 gals of ASF-20, 40 gals of ASF-80
12	Pump Lead Cement	9/11/2017	15:07	13.2	6	294	400	Mix up and pump 905 sks of P100-X2 lead cement at 13.2 ppg, yield 1.82, 9.89 gal/sk, 294 bbls
13	Pump Tail Cement	9/11/2017	15:57	13.5	6	495	243	Mix up and pump 1885 sks of P50-X1 tail cement at 13.5 ppg, yield 1.47, 7.43 gal/sk, 495 bbls
14	Shutdown	9/11/2017	17:25					Shutdown to line out manifold to wash pumps and lines
15	Wash Pumps And Lines	9/11/2017	17:27					Wash pumps and lines to the pit
16	Drop bottom Plug	9/11/2017	17:30					Company man witness plug leave manifold
17	Drop Top Plug	9/11/2017	17:31					Company man witness plug leave manifold
18	Pump Displacement	9/11/2017	17:32	8.33	8	372	2300	Pump bbls of displacement wit 4 gals of biocide, 32 gals of ASF-50
19	Shutdown	9/11/2017	17:57					Had to shut down and slow rate stopped getting water
20	Slow Rate	9/11/2017	18:47	8.33	3	20	2400	Slow rate the last 20 bbls to 3 bpm
21	Bump Plug	9/11/2017	18:52					Bump plug at 2400 psi, took it up to 3100 psi
22	Check Floats	9/11/2017	18:57					Got 4 bbls back to the truck



23	Safety Meeting	9/11/2017	19:00					BJ crew talked about the hazards of rigging down
24	Rig Down	9/11/2017	19:15					Rig down
25	Depart Location	9/11/2017	20:15					Depart location
26	Other	9/11/2017	20:16					Estimated top of tail at 5597 ft, got 52 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	56 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	>250 mg/L	0-500 mg/L
Carbonates	140 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	250 mg/L	0-3000 mg/L
Iron	6 mg/L	0-300 mg/L

### 4 Pump Diagrams

