

## 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	1543	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1552	11920	18
Casing	Inner	5.5	4.892	17	n/a	0	11906	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Bulk Trailer	PPC41311	Gabel, Dustin		150
Silo	657			150
Silo	658			150
Cement Pump	103	Martinez, Michael		150
Light Duty Pickups	6	Hyde, Zack	Bell, Wesley	150

### 1.3 Timing

Event	Date/Time
Call Out	8/6/2017 11:00
Depart Facility	8/6/2017 13:00
On Location	8/6/2017 15:00
Rig Up Iron	8/6/2017 15:30
Job Started	8/6/2017 19:00
Job Completed	8/6/2017 22:26
Rig Down Iron	8/6/2017 22:30
Depart Location	8/6/2017 23:00

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.5 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	800 bbls
Rig Circulation Time	3 hours
Calculated Displacement	275.5 bbls
Actual Displacement	275.5 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	55 bbls

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	16
Yield Point	11
10 sec. SGS	6
10 min. SGS	17
30 min. SGS	20
Filtrate	4.9
Flow Line Temp.	160

### 1.6 Job Details

Metrics	Value
Flare Prior to Job	Yes
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	10.5 lb/gal
Well Fluid Density Out of Well	10.5 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	P100-X2	Lead	12.50	2.06	11.77		200.00	73.48	0
1	4	P100-X2	Lead	12.50	2.07	11.81		670.00	247.03	670
1	5	P50-X1	Tail	13.50	1.47	7.43		970.00	254.00	6627
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11498
1	7	Water w/ Clay Protection and Biocide	Displacement Final	8.33			41.91		275.00	0

## 1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Spacer	CD Spacer	ASR-20	Strength Retrogression	179.59	lb/bbl
1	2	Spacer	CD Spacer	AVS-10	Viscosifier	1.00	lb/bbl
1	3	Lead	P100-X2	AC3-10	Cement	100.00	%
1	3	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	3	Lead	P100-X2	AFL-10	Fluid Loss	0.30	%BWOB
1	3	Lead	P100-X2	AR-31	Retarder	0.18	%BWOB
1	3	Lead	P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	4	Lead	P100-X2	AC3-10	Cement	100.00	%
1	4	Lead	P100-X2	ABX-30	Bond Enhancer	0.40	%BWOB
1	4	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	4	Lead	P100-X2	AFL-10	Fluid Loss	0.30	%BWOB
1	4	Lead	P100-X2	AR-31	Retarder	0.18	%BWOB
1	4	Lead	P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	4	Lead	P100-X2	ADF-20	Defoamer	0.00	
1	5	Tail	P50-X1	ACG-10	Cement	50.00	%
1	5	Tail	P50-X1	AFA-10	Extender	50.00	%
1	5	Tail	P50-X1	ADF-11	Defoamer	0.30	%BWOB
1	5	Tail	P50-X1	AFL-50	Fluid Loss	0.20	%BWOB
1	5	Tail	P50-X1	AR-20	Retarder	0.10	%BWOB
1	5	Tail	P50-X1	AVS-10	Viscosifier	0.10	%BWOB
1	5	Tail	P50-X1	AVS-50	Viscosifier	2.00	%BWOB
1	5	Tail	P50-X1	ADF-20	Defoamer	0.00	
1	6	Displacement	Water & MMCR	AR-61	Retarder	0.10	gal/bbl
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	ASF-50	Clay Protection	0.08	gal/bbl



1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	Biocide	Other	0.01	gal/bbl
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## 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	8/6/2017	11:00					Crew gets called out on location time was 1800
2	Depart Facility	8/6/2017	13:00					Crew leaves yard
3	Arrive On Location	8/6/2017	15:00					Crew arrives on location, talked with customer about numbers and job
4	Rig Up	8/6/2017	15:30					Crew rigs up iron and hoses
5	Wait	8/6/2017	16:30					Crew waits for rig to finish circulating
6	Safety Meeting	8/6/2017	19:00					
7	Fill Lines	8/6/2017	19:34	8.33	2	2	0	Fill lines
8	Pressure Test	8/6/2017	19:36					Pressure test 5000psi
9	Water Spacer	8/6/2017	19:39	8.33	5	40	500	40bbls of water spacer 5bpm
10	CD Spacer	8/6/2017	19:47	11	5	40	450	40bbls of CD spacer at 11ppg
11	Lead 1	8/6/2017	20:00	12.5	6	73.5	300	74 bbls of lead 1 at 12.5ppg 6bpm(200sks,2.06yld,11.77gal/sk)
12	Lead 2	8/6/2017	20:09	12.5	6	247	431	247bbls of lead 2 at 12.5ppg 6bpm(670sks,2.07yld,11.81gal/sk)
13	Tail	8/6/2017	20:50	13.5	6	254	395	254 bbls of Tail at 13.5ppg 6bpm(970sks,1.47yld,7.43gal/sk)
14	Shutdown	8/6/2017	21:33					Shutdown
15	Drop Bottom Plug	8/6/2017	21:44					Dropped bottom plug, Customer didn't want to drop top plug due to issues running casing
16	Displacement	8/6/2017	21:45	8.33	6	10		First 10bbls 6bpm to drop plug
17	Displacement	8/6/2017	21:50	8.33	8	40	750	50bbls away 8bpm 700psi
18	Displacement	8/6/2017	21:57	8.33	8	50	1200	100bbls away 8bpm 1200psi
19	Displacement	8/6/2017	22:03	8.33	8	50	1700	150bbls away 8bpm 1700psi
20	Displacement	8/6/2017	22:15	8.33	3	20	2000	At 170 away slowed rate to 3bpm for bottom plug to burst
21	Displacement	8/6/2017	22:18	8.33	8	30	2350	200bbls away 8bpm 2350psi, got CD spacer to surface at 190bbls away
22	Displacement	8/6/2017	22:21	8.33	8	50	2400	250bbls away 8bpm 2400psi, got Cement to surface at 230bbls away
23	Displacement	8/6/2017	22:23	8.33	8	20	2300	270 bbls away slowed rate to 3bpm, Calculated displacement was 275.5 but customer wanted to pump 10bbls past for wet shoe



24	Displacement	8/6/2017	22:25	8.33	3	15	1900	285bbls away 3bpm 1900psi, Shutdown right at 285 because customer didn't want to run top plug
25	Check Floats	8/6/2017	22:26					Checked floats, floats held got 1.5bbls back
26	Job Complete	8/6/2017	22:26					Job complete
27	Rig Down	8/6/2017	22:30					Rig down iron and hoses
28	Depart Location	8/6/2017	23:00					Leave location

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	None	
Temperature	70 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	0 mg/L	0-3000 mg/L
Total Alkalinity	160	0-1000
Total Hardness	0 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	100 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

### 4 Pump Diagrams

