

# 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	1520	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1532	12287	18
Casing	Inner	5.5	4.892	17	n/a	0	12277	0

## 1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Silo	657			180
Silo	658			180
Bulk Trailer	PPC41311	Gabel, Dustin		180
Cement Pump	102	Beal, Scott		180
Light Duty Pickups	7	Hyde, Zack	Bell, Wesley	180

## 1.3 Timing

Event	Date/Time
Call Out	7/31/2017 05:30
Depart Facility	7/31/2017 05:31
On Location	7/31/2017 09:00
Rig Up Iron	7/31/2017 09:30
Job Started	7/31/2017 12:25
Job Completed	7/31/2017 15:26
Rig Down Iron	7/31/2017 16:00
Depart Location	7/31/2017 17:00

## 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.5 lb/gal
Well Fluid Type	OBM
Rig Circulation Vol	800 bbls
Rig Circulation Time	3 hours
Calculated Displacement	284.5 bbls
Actual Displacement	284.5 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	50 bbls
Well Topped Out	No

## 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	15
Yield Point	15
10 sec. SGS	5
10 min. SGS	28
30 min. SGS	48
Filtrate	4.4
Flow Line Temp.	158

## 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	ALTCem P100-X2	Lead	12.50	2.06	11.77		200.00	73.48	0
1	4	ALTCem P100-X2	Lead	12.50	2.07	11.81		717.00	264.36	1526
1	5	ALTCem P50-X1	Tail	13.50	1.47	7.43		970.00	254.76	7025
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11882
1	7	Water w/ Clay Protection and Biocide	DisplacementFinal	8.33			41.91		284.00	0

### 1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom	Start (gal)	End (gal)	Used (gal)
1	2	Spacer	CD Spacer	ASR-20	StrengthRetgression	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	0.18	%BWOB			
1	3	Lead	ALTCem P100-X2	AVS-20	Viscosifier	0.10	%BWOB			
1	3	Lead	ALTCem P100-X2	ADF-20	Defoamer	0.00		5	3	2
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	0.18	%BWOB			
1	4	Lead	ALTCem P100-X2	AVS-20	Viscosifier	0.10	%BWOB			
1	4	Lead	ALTCem P100-X2	ADF-20	Defoamer	0.00		3	0	3
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	0	1
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	ASF-50	ClayProtection	0.08	gal/bbl	20	0	20
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	Biocide	Other	0.01	gal/bbl	5	0	5



## 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	Callout	7/31/2017	05:30					Crew gets called out, requested time 11:30
2	Arrive on location	7/31/2017	10:00					Arrived on location at 1000, talked with customer about the job and numbers
3	Rig up	7/31/2017	10:30					Crew rigs up iron and hoses
4	Saftey Meeting	7/31/2017	11:45					Crew has saftey meeting with rig crew and customer discussing the job
5	Fill lines	7/31/2017	12:25	8.33	2	2	100	Fill lines 2bbls
6	Pressure test	7/31/2017	12:28					Pressure tested lines to 4500psi
7	Water Spacer	7/31/2017	12:29	8.33	5	40	500	Pumped 40 bbls of water spacer 5bpm with 500psi
8	CD Spacer	7/31/2017	12:38	11	6	40	500	Pumped 40 bbls od CD Spacer at 11ppg 6bpm with 500psi
9	Lead 1	7/31/2017	12:44	12.5	6	73.5	750	Pumped 73.5bbls of Lead 1 at 12.5ppg 6bpm with 750psi(200sks,2.06yld,11.81gal/sk)
10	Lead 2	7/31/2017	12:55	12.5	6	264.5	300	Pumped 264.5bbls of lead 2 at 12.5ppg 6bpm with 300psi(717sks,2.07yld,11.81gal/sk)
11	Tail	7/31/2017	13:40	13.5	6	20	300	Pumped 20bbls of tail at 13.5ppg 6 bpm with 300psi(970sks,1.47yld,7.43gal/sk)
12	Tail	7/31/2017	10:33	13.5	5	234	300	Pumped 234 bbls of tail at 13.5ppg at 5bpm due to delivery issues with 300psi(970sks,1.47,7.43gal/sk)
13	Shutdown	7/31/2017	14:29	8.33	4	10	0	Wash pumps and lines
14	Drop Bottom Plug	7/31/2017	14:34	8.33	4	10	0	Pumped 10bbls at 4bpm for 10bbl wet shoe
15	Displacement	7/31/2017	14:50	8.33	8	50	450	Pumped 50 bbls of fresh water at 8 bpm with 450psi
16	Displacement	7/31/2017	14:56	8.33	8	50	1000	Pumped 100bbls away of fresh water at 8 bpm with 1000psi
17	Displacement	7/31/2017	15:04	8.33	8	50	1400	Pumped 150bbls away of fresh water at 8bpm with 1400psi
18	Displacement	7/31/2017	15:08	8.33	8	50	1700	Pumped 200bbls away of fresh water at 8bpm with 1700 psi. Started to get spacer back to surface right at 200 away
19	Displacement	7/31/2017	15:12	8.33	8	50	2400	Pumped 250bbls away of fresh water at 8bpm with 2400psi. Started getting Cement to surface at 240 away



20	Displacement	7/31/2017	15:17	8.33	8	10	2400	Pumped 260 bbls of fresh wate rate 8bpm with 2400psi
21	Slow rate	7/31/2017	15:17	8.33	3	24	1900	Pumped 284 bbls away of fresh water at 3 bpm with 2400 psi
22	Burst Bottom Plug	7/31/2017	15:24	8.33	3	10	1900	Landed bottom plug at 270 away with 1900 psi then bursted at 2400psi for 10 bbl wet shoe with 1 gal of AR-61
23	Land Top Plug	7/31/2017	15:26				1900	Landed top plug at 1750psi went 500psi over 2200psi
24	Check Floats	7/31/2017	15:29					Floats held, 2.5bbls back
25	Job Complete	7/31/2017	15:30					Job Complete
26	Rig Down	7/31/2017	15:45					Crew rigs down iron and hoses
27	Depart Location	7/31/2017	17:00					Leave location

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	70 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	0 mg/L	0-3000 mg/L
Total Alkalinity	120	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	5 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

### 4 Pump Diagrams

