

## 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	1539	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1548	12064	15
Casing	Inner	5.5	4.892	17	n/a	0	12054	0

### 1.2 Equipment / People

Unit Type	Unit	Power Unit	Employee #1	Employee #2	Mileage
Silo	657				
Silo	658				
Bulk Trailer	504		Beal, Scott	Dorlean, Jean	144
Light Duty Pickups	7		Bell, Wesley		144
Cement Pump	103	203	Hyde, Zack		144

### 1.3 Timing

Event	Date/Time
Call Out	5/30/2017 10:20
Depart Facility	5/30/2017 11:30
On Location	5/30/2017 13:00
Rig Up Iron	5/30/2017 13:10
Job Started	5/30/2017 16:38
Job Completed	5/30/2017 19:36
Rig Down Iron	5/30/2017 19:40
Depart Location	5/30/2017 21:00

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.2 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	na bbls
Rig Circulation Time	2.5 hours
Calculated Displacement	279 bbls
Actual Displacement	281 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	0 bbls

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	13
Yield Point	9
10 sec. SGS	4
10 min. SGS	27
30 min. SGS	42
Filtrate	6
Flow Line Temp.	130

### 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			33.75		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		670.00	247.05	1528
1	5	ALTCem P50-X1	Tail	13.50	1.47	7.43		940.00	246.88	6793
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11635
1	7	Water w/ Clay Protection and Biocide	DisplacementFinal	8.33			41.91		279.00	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	StrengthRetrogression	179.29	lb/bbl			
1	2	Spacer	CD Spacer	AR-31	Retarder	0.51	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	3	Lead	ALTCem P100-X2	ADF-20	Defoamer	0.00		5	4	1
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	4	Lead	ALTCem P100-X2	ADF-20	Defoamer	0.00		4	2	2
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	5	Tail	ALTCem P50-X1	ADF-20	Defoamer	0.00		2	0	2
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	22	22	0
1	7	DisplacementFinal	Water w/ Clay Protection and Biocide	Biocide	Other	0.01	gal/bbl	3	3	0

## 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	Arrive on location	5/30/2017	13:00					Requested time 15:00
2	Rig In	5/30/2017	13:10					Spot and rig in bulk truck and pump truck. Rig in water and bulk lines. Rig in iron to floor
3	Waiting	5/30/2017	15:10					Wait for rig to finish circulating well
4	Safety Meeting	5/30/2017	16:00					Hold pre-job meeting with rig crew and pump crew. Review job hazards and pump procedure
5	Pump	5/30/2017	16:38	8.34	2	2	150	Fill lines with 2bbls of fresh water
6	Pressure Test	5/30/2017	16:40	8.34			5300	Pressure test lines, no leaks
7	Pump	5/30/2017	16:42	8.34	5	40	300	Pump 40bbls of fresh water ahead
8	Pump Spacer	5/30/2017	16:49	11	5	40	400	Pump 40bbls of Spacer at 11ppg
9	Pump Lead 1	5/30/2017	16:56	12.5	6	73.5	350	Mix and Pump 73.5bbls of Lead 1, Y:2.06, WR:11.77, 200sks
10	Pump Lead 2	5/30/2017	17:14	12.5	6	247.1	350	Mix and pump 247.1bbls Lead 2, Y:2.07, WR: 11.81, 670sks
11	Pump Tail	5/30/2017	17:55	13.5	6	247	430	Mix and pump 247bbls of Tail Cement at 13.5ppg, Y:1.47, WR: 7.43, 940sks
12	Shut down/pump lines	5/30/2017	18:34					Shut down, clean pumps and lines to pit
13	Drop Plug 1	5/30/2017	18:41	8.34	5	10	150	Drop bottom burst plug
14	Drop Plug 2	5/30/2017	18:44	8.34				Drop top rubber plug
15	Displace	5/30/2017	18:44	8.34				Begin displacement with fresh water, .01gal/bbl Biocide, .08gal/bbl ASF-50
16	Pump	5/30/2017	18:53	8.34	8	50	700	50bbls of displacement away
17	Pump	5/30/2017	18:59	8.34	8	50	1200	100bbls of displacement away
18	Pump	5/30/2017	19:05	8.34	8	50	2000	150bbls of displacement away
19	Pump	5/30/2017	19:12	8.34	8	50	2000	200bbls of displacement away
20	Pump	5/30/2017	19:18	8.34	8	50	2000	250bbls of displacement away, Water to surface at 210bbls away, Spacer at surface at 237bbls away
21	Pump	5/30/2017	19:20	8.34	5	10	1600	260bbls of displacement away, slow rate to 5bpm
22	Pump	5/30/2017	19:25	8.34	2	11	2000	271bbls of displacement away first plug landed, burst at 2800psi.
23	Pump	5/30/2017	19:30	8.34	2	10	2000	281bbls of displacement away second plug landed, bumped up to 2500psi
24	Check Floats	5/30/2017	19:36	8.34				Floats held, 2.5bbls back



25	Job Complete	5/30/2017	19:36					
26	Rig out	5/30/2017	19:40					
27	Leave location	5/30/2017	21:00					

### 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	100 mg/L	0-3000 mg/L
Total Alkalinity	100	0-1000
Total Hardness	250 mg/L	0-500 mg/L
Carbonates	100 mg/L	0-100 mg/L
Sulfates	300 mg/L	0-1500 mg/L
Potassium	250 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

### 4 Pump Diagrams

Customer: Cub Creek  
Well Number: 11  
Lease Info: Litzenberger



Print Date/Time

5/30/2017 8:06:04 PM

