

## 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	1542	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1552	11950	18
Casing	Inner	5.5	4.892	17	n/a	0	11926	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Silo	657			
Silo	658			
Bulk Trailer	505	Borst, David		150
Cement Pump	102	Groneman, Josh		150
Light Duty Pickups	7	Casciato, Luke	Hyde, Tyson	150
Light Duty Pickups		Soto, Rueben		150

### 1.3 Timing

Event	Date/Time
Call Out	8/12/2017 12:30
Depart Facility	8/12/2017 14:30
On Location	8/12/2017 16:00
Rig Up Iron	8/12/2017 17:00
Job Started	8/12/2017 20:06
Job Completed	8/12/2017 23:06
Rig Down Iron	8/12/2017 23:30
Depart Location	8/13/2017 00:30

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	10.6 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	800 bbls
Rig Circulation Time	1.5 hours
Calculated Displacement	276 bbls
Actual Displacement	276 bbls
Total Spacer to Surface	40 bbls
Total CMT to Surface	40 bbls

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	12
Yield Point	10
10 sec. SGS	6
10 min. SGS	17
30 min. SGS	22
Filtrate	4.9
Flow Line Temp.	130

### 1.6 Job Details

Metrics	Value
Flare Prior to Job	Yes
Flare Prior to Job	2000 units
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	10.6 lb/gal
Well Fluid Density Out of Well	10.6 lb/gal

### 1.7 Job Details (cont.)

Metrics	Value
BHCT	220 °F
BHST	220 °F



## 1.8 Circulation

Lost Circulation Experienced
No

Circulation Details:

## 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	73.47	0
1	4	P100-X2	Lead	12.50	2.07	11.81		675.00	248.85	1458
1	5	P50-X1	Tail	13.50	1.47	7.43		965.00	253.44	6627
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11540
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	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	FluidLoss	0.30	%BWOB
1	3	Lead	P100-X2	AR-31	Retarder	0.16	%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	BondEnhancer	0.40	%BWOB
1	4	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	4	Lead	P100-X2	AFL-10	FluidLoss	0.30	%BWOB
1	4	Lead	P100-X2	AR-31	Retarder	0.16	%BWOB
1	4	Lead	P100-X2	AVS-20	Viscosifier	0.10	%BWOB
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	FluidLoss	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	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	8/12/2017	12:30					CREW WAS CALLED OUT TO CUB CREEK LITZENBERGER 15. REQUESTED ON LOCATION AT 1830.
2	STEACS	8/12/2017	14:00					CREW CONDUCTED STEACS JOURNEY MANAGEMENT PRIOR TO LEAVING YARD
3	DEPART CAMP	8/12/2017	14:30					CREW DEPARTS CAMP HEADS TO LOCATION.
4	ARRIVE ON LOCATION	8/12/2017	16:00					CREW ARRIVES ON LOCATION.
5	ASSESS LOCATION	8/12/2017	16:10					CREW CONDUCTS WALK AROUND IN ORDER TO ASSESS LOCATION AND UNDERSTAND HOW TO SPOT IN EQUIPMENT.
6	STEACS	8/12/2017	16:20					CREW CONDUCTS STEACS PRIOR TO SPOTTING IN EQUIPMENT.
7	SPOT EQUIPMENT	8/12/2017	16:30					CREW SPOTS ALL EQUIPMENT NECESARY FOR CEMENT JOB.
8	STEACS	8/12/2017	16:45					CREW CONDUCTS STEACS PRIOR TO RIG UP
9	RIG UP	8/12/2017	17:00					CREW RIGS UP ALL IRON AND FITTING FOR CEMENT JOB.
10	OTHER	8/12/2017	19:00					RIG LANDED 5.5" 17# CASING AT 19:00, TOTAL CASING RAN 11928'. CIRCULATED FOR 1.5HOURS AT9BPM FOR 800BBL. 650PSI.
11	STEACS	8/12/2017	19:30					BJ CREW, RIG CREW, AND COSTUMER REPRESENTATIVE CONDUCT STEACS BRIEFING PRIOR TO JOB.
12	BEGIN JOB	8/12/2017	20:06					CREW BEGINS JOB
13	FILL LINES	8/12/2017	20:07	8.33	2	2	400	PUMPED 2BBL OF H2O TO FILL LINES FOR PRESSURE TEST.
14	PRESSURE TEST	8/12/2017	20:08				4000	PRESSURE TESTED ALL LINES TO 4000PSI. NO LEAKS PRESSURE HELD.
15	PUMP SPACER	8/12/2017	20:09	8.33	6	40	400	PUMPED 40BBL OF H2O SPACER AT 6BPM, 400PSI. FULL RETURNS.
16	PUMP CD SPACER	8/12/2017	20:20	11	6	40	750	MIXED AND PUMPED 40BBL OF CD SPACER AT 11PPG. 6BPM 750PSI. FULL RETURNS.
17	PUMP LEAD	8/12/2017	20:28	12.5	6	321	500	MIXED AND PUMPED 321BBL OF LEAD CMT (875SKS, 2.06YLD,



								11.77GL/SK) AT 12.5PPG. 6BPM 750PSI. FULL RETURNS
18	PUMP TAIL	8/12/2017	21:22	13.5	6	253	500	MIXED AND PUMPED 243BBL OF TAIL CMT @13.5PPG, (965SKS, 1.47YLD, 7.43GL/SK) AT 6BPM, 500PSI. FULL RETURNS.
19	SHUTDOWN	8/12/2017	22:07					SHUT DOWN TO WASH PUMPS AND LINES
20	WASH PUMPS AND LINES	8/12/2017	22:10	8.33	2	10	50	PUMPED 10BBL OF H2O TO WASH PUMPS AND LINES
21	DROP BOTTOM PLUG	8/12/2017	22:14					DROP BOTTOM PLUG
22	PUMP DISPLACEMENT	8/12/2017	22:17	8.33	6	10	300	PUMPED 10BBL OF H2O AND 1GL MMCR.
23	SHUTDOWN	8/12/2017	22:20					SHUT DOWN TO DROP TOP PLUG.
24	DROP TOP PLUG	8/12/2017	22:21					DROPPED TOP PLUG.
25	PUMP DISPLACEMENT	8/12/2017	22:22	8.33	8	256		PUMPED 256BBL OF H2O WITH BIOCIDE AND ASF-50 AT 8BPM, FULL RETURNS.
26	SLOW RATE	8/12/2017	22:55	8.33	3	20		SLOWED RATE TO LAND BOTTOM PLUG.
27	LAND PLUG	8/12/2017	22:58				3200	LANDED BOTTOM PLUG AT 266BBL OF DISPLACEMENT, BURSTED PLUG AT 3200PSI
28	LAND PLUG	8/12/2017	23:02				2650	LANDED TOP PLUG AT CALCULATED DISPLACEMENT. 276BBL AWAY, LANDED AT 2150PSI. BUMPED TO 2650, HELD FOR 3 MIN. RECEIVED 40BBL CD SPACER TO SURFACE, 40BBL OF CMT TO SURFACE.
29	SHUTDOWN	8/12/2017	23:02					SHUTDOWN AFTER LANDING PLUG.
30	CHECK FLOATS	8/12/2017	23:05					FLOATS HELD, 2.5BBL IN RETURN.
31	STEACS	8/12/2017	23:15					CREW CONDUCTS STEACS BRIEFING PRIOR TO RIG DOWN
32	RIG DOWN	8/12/2017	23:30					CREW RIGGED DOWN ALL IRON AND FITTINGS.
33	STEACS	8/13/2017	00:00					CREW CONDUCTS JOURNEY MANAGEMENT.
34	DEPART LOCATION	8/13/2017	00:30					CREW DEPARTS LOCATION, HEADS TO CAMP.

### 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	108 mg/L	0-3000 mg/L
Total Alkalinity	180	0-1000
Total Hardness	>375 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	0 mg/L	0-300 mg/L

### 4 Pump Diagrams

