

## 1 Job Details & Summary

### 1.1 Geometry

Type	Function	OD (in)	ID (in)	Weight (lb/ft)	Thread	Top (ft)	Bottom (ft)	Excess (%)
Open Hole	Outer	n/a	13.5	n/a	n/a	0	1535	25
Casing	Inner	9.625	8.921	36	LTC	0	1524	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Mileage
Bulk Trailer	502	Vasquez, Mike	150
Bulk Trailer	E435	Groneman, Josh	150
Cement Pump	101	Dent, Jerod	150
Cement Chemical	402	Casciato, Luke	150

### 1.3 Timing

Event	Date/Time
Call Out	5/20/2017 10:30
Depart Facility	5/20/2017 13:30
On Location	5/20/2017 14:00
Rig Up Iron	5/20/2017 15:30
Job Started	5/20/2017 18:03
Job Completed	5/20/2017 19:10
Rig Down Iron	5/20/2017 19:20
Depart Location	5/20/2017 20:30

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	8.6 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	250 bbls
Rig Circulation Time	0.75 hours
Calculated Displacement	114 bbls
Actual Displacement	113 bbls
Total Spacer to Surface	20 bbls
Total CMT to Surface	30 bbls
Well Topped Out	No

### 1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	1
Yield Point	4
10 sec. SGS	1
10 min. SGS	2
30 min. SGS	3
Filtrate	0.4
Flow Line Temp.	70

### 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	8.6 lb/gal
Well Fluid Density Out of Well	8.6 lb/gal

### 1.7 Job Details (cont.)

Metrics	Value
BHCT	88 °F
BHST	110 °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		20.00	0
1	2	ALTCem S100-12	Lead	12.00	2.53	14.85		240.00	116.99	0
1	3	ALTCem S100-12	Tail	12.50	2.22	12.58		146.00	57.82	1045
1	4	Water	DisplacementFinal	8.33			42.00		114.00	0

### 1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Lead	ALTCem S100-12	AC3-10	Cement	100.00	%
1	2	Lead	ALTCem S100-12	ACL-10	Accelerator	2.00	lb/sk
1	2	Lead	ALTCem S100-12	ACL-20	Accelerator	5.00	%BWOB
1	2	Lead	ALTCem S100-12	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	ALTCem S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	2	Lead	ALTCem S100-12	AXE-30	Extender	2.00	lb/sk
1	3	Tail	ALTCem S100-12	AC3-10	Cement	100.00	%
1	3	Tail	ALTCem S100-12	ACL-10	Accelerator	2.00	lb/sk
1	3	Tail	ALTCem S100-12	ACL-20	Accelerator	5.00	%BWOB
1	3	Tail	ALTCem S100-12	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	ALTCem S100-12	ALC-10	LostCirculation	0.13	lb/sk
1	3	Tail	ALTCem S100-12	AXE-30	Extender	2.00	lb/sk

## 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	5/20/2017	10:30					BJ Crew was called out to Cub Creek Litzenberger 9 surface job
2	Pre-Convoy Safety Meeting	5/20/2017	13:00					BJ Crew discussed route, as well as all hazards associated with driving such as, road conditions, heavy traffic areas, wildlife.
3	Depart Facility	5/20/2017	13:30					BJ Crew departs facility, heads to Cub Creek location
4	Arrive on Location	5/20/2017	14:00					BJ Crew arrives on location
5	Assess Location	5/20/2017	14:15					BJ Crew conducts walk around location to discuss how to spot in equipment safely
6	Spot in Equipment	5/20/2017	15:00					BJ Crew spots in equipment
7	Pre-Rig up Safety Meeting	5/20/2017	15:15					BJ Crew discussed hazards of rig up such as, slips trips and falls, hammer swings, pinch points
8	Rig up	5/20/2017	15:30					BJ Crew rigs up all iron and ground fittings.
9	Other	5/20/2017	17:00					Rig landed 9.625, J55 36# casing at 17:00, circulated surface to surface for a total of 250 BBL of WBM. Total circulating time 52 min. 300psi
10	Safety Meeting	5/20/2017	17:30					BJ Crew, Rig Crew, and customer representative discussed job procedures and all hazards associated such as, overhead loads, muster areas, hazard zones.
11	Start Job	5/20/2017	18:03					BJ Crew begins job
12	Fill Lines	5/20/2017	18:04	8.33	2	2	40	Pumped 2 BBL of H2O to fill lines
13	Pressure Test	5/20/2017	18:05	8.33			3000	Pressure tested all lines to 3000psi, held pressure. Bled pressure back to truck.
14	Pump Spacer	5/20/2017	18:08	8.33	2	10	40	Pumped 10 BBL of spacer at 2BPM in order to mix tub of cement.
15	Increase Rate	5/20/2017	18:12	8.33	6	10	60	Pumped 10 BBL of spacer with dye at 6 BPM, full returns
16	Pump Lead	5/20/2017	18:15	12	6	108	200	Mixed and pumped 108 BBL of lead cmt at 12ppg. Full returns
17	Pump Tail	5/20/2017	18:31	12.5	6	56	220	Mixed and pumped 56 BBL of tail cmt at 12.5ppg, 6 BPM, 220psi. Full returns
18	Shutdown	5/20/2017	18:43					Shutdown to drop top plug



19	Drop Top Plug	5/20/2017	18:46	12.5	1	1	0	Pumped remaining 1 BBL of Tail cmt at 12.5 ppg on top of plug, as per customer representatives request.
20	Displacement	5/20/2017	18:47	8.33	8	104	300	Pumped 104 BBL of H2O displacement at 8 BPM, 300psi, Full returns
21	Slow Rate	5/20/2017	19:03	8.33	2	9	400	Slowed rate at 104 BBL of displacement to land top plug
22	Land Plug	5/20/2017	19:05	8.33	2		950	Landed plug, final circulating pressure was 400psi, landed at 450psi, bumped up to 950psi, held for 3 min. total displacement 113 BBL.
23	Check Floats	5/20/2017	19:08	8.33				Floats held, .5 BBL in return
24	End Job	5/20/2017	19:10					BJ Crew ends job
25	Pre-Rig Down Safety Meeting	5/20/2017	19:15					BJ Crew discussed hazards of rig down such as, hammer swings, pinch points etc..
26	Rig Down	5/20/2017	19:20					BJ Crew rigs down all iron and fittings
27	Pre-Convoy Safety Meeting	5/20/2017	20:00					BJ Crew discussed route, as well as all hazards associated with driving such as, road conditions, heavy traffic areas, wildlife.
28	Depart Location	5/20/2017	20:30					BJ Crew departs location, heads to facility.

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	60 °F	50-80 °F
pH Level	7	5.5-8.5
Chlorides	1500 mg/L	0-3000 mg/L
Total Alkalinity	180	0-1000
Total Hardness	>375 mg/L	0-500 mg/L
Carbonates	0 mg/L	0-100 mg/L
Sulfates	>200 mg/L	0-1500 mg/L
Potassium	1500 mg/L	0-3000 mg/L
Iron	0.5 mg/L	0-300 mg/L

### 4 Pump Diagrams

