

## 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	1551	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1555	17645	10
Casing	Inner	5.5	4.778	20	Buttress	0	17632	0

### 1.2 Equipment / People

Unit Type	Unit	Employee #1	Mileage
Bulk Trailer	502	Garcia, Anthony	108
Bulk Trailer	509	Martinez, Michael	108
Silo	656		
Silo	661		
Silo	660		
Cement Pump	101	Vasquez, Mike	108
Light Duty Pickups	6	Chambers, Andrew	108

### 1.3 Timing

Event	Date/Time
Call Out	8/30/2017 03:30
Depart Facility	8/30/2017 05:00
On Location	8/30/2017 07:30
Rig Up Iron	8/30/2017 08:00
Job Started	8/30/2017 15:45
Job Completed	8/30/2017 20:23
Rig Down Iron	8/30/2017 21:00
Depart Location	8/30/2017 22:45

### 1.4 General Job Information

Metrics	Value
Well Fluid Density	12 lb/gal
Well Fluid Type	OBM
Rig Circulation Vol	712 bbls
Rig Circulation Time	1.5 hours
Calculated Displacement	390.38 bbls
Actual Displacement	388 bbls
Total Spacer to Surface	50 bbls
Total CMT to Surface	90 bbls

### 1.5 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	12 lb/gal
Well Fluid Density Out of Well	12 lb/gal

### 1.6 Job Details (cont.)

Metrics	Value
BHCT	220 °F
BHST	220 °F



### 1.7 Circulation

Lost Circulation Experienced
No

### 1.8 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	CD Spacer	Spacer	12.20			29.09		80.00	0
1	2	P100-X2	Lead	13.20	1.82	9.89		925.00	300.63	0
1	3	P50-X1	Tail	13.50	1.48	7.43		1900.00	499.25	6560
1	4	Water w/ Clay Protection and Biocide	Displacement Final	8.33			41.91		388.00	0

### 1.9 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	1	Spacer	CD Spacer	ASR-20	Strength Retrogression	261.01	lb/bbl
1	1	Spacer	CD Spacer	ASF-20	Surfactant	0.50	gal/bbl
1	1	Spacer	CD Spacer	ASF-80	Surfactant	0.50	gal/bbl
1	1	Spacer	CD Spacer	AVS-10	Viscosifier	1.00	lb/bbl
1	2	Lead	P100-X2	AC3-10	Cement	100.00	%
1	2	Lead	P100-X2	ABX-20	Bond Enhancer	3.00	%BWOB
1	2	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	2	Lead	P100-X2	AFL-50	Fluid Loss	0.50	%BWOB
1	2	Lead	P100-X2	AR-31	Retarder	0.17	%BWOB
1	2	Lead	P100-X2	AVS-20	Viscosifier	0.10	%BWOB
1	3	Tail	P50-X1	ACG-10	Cement	50.00	%
1	3	Tail	P50-X1	AFA-10	Extender	50.00	%
1	3	Tail	P50-X1	ADF-11	Defoamer	0.30	%BWOB
1	3	Tail	P50-X1	AFL-50	Fluid Loss	0.20	%BWOB
1	3	Tail	P50-X1	AR-20	Retarder	0.20	%BWOB
1	3	Tail	P50-X1	AVS-10	Viscosifier	0.10	%BWOB
1	3	Tail	P50-X1	AVS-50	Viscosifier	2.00	%BWOB
1	4	Displacement Final	Water w/ Clay Protection and Biocide	ASF-50	Clay Protection	0.08	gal/bbl
1	4	Displacement Final	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	8/30/2017	03:30					BJ CREW CALLED OUT ON LOCATION AT 9:30
2	PRE CONVOY	8/30/2017	03:45					DISCUSSED HAZARDS OF DRIVING
3	DEPART SHOP	8/30/2017	05:00					BJ CREW LEFT SHOP FOR LOCATION
4	ASSESSMENT OF LOCATION	8/30/2017	07:30					MET WITH CUSTOMER REP WENT OVER JOB DETAILS AND WHERE TO SPOT EQUIPMENT
5	PRE RIG UP	8/30/2017	08:30					DISCUSSED HAZARDS OF RIGGING UP IRON
6	RIG UP	8/30/2017	08:45					BJ CREW RIGGED UP IRON
7	RIG UP COMPLETE	8/30/2017	09:30					RIG UP COMPLETED SAFELY
8	PRE JOB	8/30/2017	15:00					CONDUCTED STEACS BRIEFING WITH CREW AND SAFETY MEETING WITH RIG CREW
9	FILL LINES	8/30/2017	15:45	8.33	2	2	85	FILLED LINES WITH 2BBL FRESH WATER
10	PRESSURE TEST	8/30/2017	15:48	8.33	2	2	4500	TESTED LINES TO 4500
11		8/30/2017	00:00					
12	SPACER	8/30/2017	15:57	12.4	5	80	400	PUMPED 80 BBL OF 12.4/LB SPACER PUMPED AT 12.4 PER CUSTOMER
13	LEAD CEMENT	8/30/2017	16:26	13.2	5	300.6	500	PUMPED 925/SKS, 300.6 BBL, 1.82 YLD, 9.89 GAL/SK OF LEAD CEMENT
14	TAIL CEMENT	8/30/2017	17:17	13.5	5	499.2	600	PUMPED 1900/SKS, 500 BBL, 1.48 YLD, 7.43 GAL/SK OF TAIL CEMENT
15	SHUT DOWN	8/30/2017	18:55					ALL CEMENT PUMPING COMPLETE
16	WASH PUMPS AND LINES	8/30/2017	18:57					WASHED PUMPS AND LINES
17	DROP PLUG	8/30/2017	19:05					TOP PLUG LEFT CEMENTING HEAD BOTH PLUGS LEFT CEMENTING HEAD
18	DISPLACEMENT	8/30/2017	19:08	8.33	5	390.38		DISPLACED 390.3 BBL OF FRESH WATER WITH ASF-50 AND BIOCIDES
19	SHUT DOWN	8/30/2017	19:26	8.33		150		SHUT DOWN BECAUSE OF MISCOMMUNICATION WITH CUSTOMER
20	BACK ONLINE	8/30/2017	19:28			150		CONTINUED WITH DISPLACEMENT
21	SHUT DOWN	8/30/2017	19:40	8.33		238		SHUT DOWN TO SWAP TO TANKS FOR CEMENT
22	SPACER	8/30/2017	19:41	12.4		238		SPACER TO SURFACE CEMENT TO SURFACE AT 298 SO 50 BBL SPACER TO SURFACE AND 90 BBL OF CEMENT TO SURFACE
23	SHUT DOWN	8/30/2017	20:01	8.33		350		Ran OUT OF WATER AT 350 DISPLACED
24	BACK ONLINE	8/30/2017	20:11					CONTINUED DISPLACEMENT



25	SLOW RATE	8/30/2017	20:18			376		SLOWED RATE TO 2BBL/MIN AT 376 DISPLACED TO BUMP PLUD
26	BUMP PLUG	8/30/2017	20:23			388	2900	BUMPED PLUG AT 288 DISPLACED FCP WAS 2300 TO 2900 PSI
27	CHECK FLOATS	8/30/2017	20:28					FLOATS HELD 4BBL BACK TO SURFACE
28	PRE RIG DOWN	8/30/2017	20:45					DISCUSSED HAZARDS OF RIGGING DOWN IRON
29	RIG DOWN	8/30/2017	21:00					BJ CREW RIGGED DOWN
30	RIG DOWN COMPLETE	8/30/2017	22:00					RIG DOWN COMPLETED SAFELY
31	PRE CONVOY	8/30/2017	22:30					DISCUSSED HAZARDS OF DRIVING
32	DEPART LOCATION	8/30/2017	22:45					BJ CREW DEPARTS LOCATION

### 3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	82 °F	50-80 °F
pH Level	6	5.5-8.5
Chlorides	0 mg/L	0-3000 mg/L
Total Alkalinity	0	0-1000
Total Hardness	<3 mg/L	0-500 mg/L
Carbonates	4 mg/L	0-100 mg/L
Sulfates	<400 mg/L	0-1500 mg/L
Potassium	450 mg/L	0-3000 mg/L
Iron	0 mg/L	0-300 mg/L

### 4 Pump Diagrams

