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	1543	0
Open Hole	Outer	n/a	8.5	n/a	n/a	1552	12014	18
Casing	Inner	5.5	4.892	17	n/a	0	12001	0

1.2 Equipment / People

Unit Type	Unit	Employee #1	Employee #2	Mileage
Bulk Trailer	505	Rubio, Ralph	Spigner, Isaiah	75
Silo	657			75
Silo	658			75
Cement Pump	102	Cook, John	Seghetti, Joshua	75
Light Duty Pickups	7	Hyde, Andrew		75

1.3 Timing

Event	Date/Time
Call Out	8/18/2017 07:00
Depart Facility	8/18/2017 08:35
On Location	8/18/2017 10:30
Rig Up Iron	8/18/2017 10:45
Job Started	8/18/2017 13:49
Job Completed	8/18/2017 17:35
Rig Down Iron	8/18/2017 18:05
Depart Location	8/18/2017 19:30

1.4 General Job Information

Metrics	Value
Well Fluid Density	10.4 lb/gal
Well Fluid Type	WBM
Rig Circulation Vol	400 bbls
Rig Circulation Time	2 hours
Calculated Displacement	278 bbls
Actual Displacement	278 bbls
Total Spacer to Surface	50 bbls
Total CMT to Surface	50 bbls

1.5 Well Fluid Details

Metrics	Value
Plastic Viscosity	12
Yield Point	8
10 sec. SGS	4
10 min. SGS	27
30 min. SGS	34
Flow Line Temp.	120

1.6 Job Details

Metrics	Value
Flare Prior to Job	Yes
Flare Prior to Job	1800 units
Flare During Job	No
Flare at End of Job	No
Well Full Prior to Job	Yes
Well Fluid Density Into Well	10.4 lb/gal
Well Fluid Density Out of Well	10.4 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^3/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	17
1	4	P100-X2	Lead	12.50	2.07	11.81		680.00	250.69	1550
1	5	P50-X1	Tail	13.50	1.47	7.43		960.00	252.13	6779
1	6	Water & MMCR	Displacement	8.33			41.90		10.00	11618
1	7	Water w/ Clay Protection and Biocide	Displacement Final	8.33			41.91		271.00	0

1.10 Job Fluid Details

Job	Fluid	Type	Fluid	Product	Function	Conc.	Uom
1	2	Spacer	CD Spacer	ASR-20	Strength Retrogression	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	Fluid Loss	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	Bond Enhancer	0.40	%BWOB
1	4	Lead	P100-X2	ADF-11	Defoamer	0.30	%BWOB
1	4	Lead	P100-X2	AFL-10	Fluid Loss	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	Fluid Loss	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	Displacement Final	Water w/ Clay Protection and Biocide	ASF-50	Clay Protection	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	Callout	8/18/2017	07:00					Bj crew gets called out for job.
2	Safety meeting	8/18/2017	08:30					Bj crew talks about the hazards of driving to locations.
3	Depart yard	8/18/2017	08:35					Depart yard.
4	Safety meeting	8/18/2017	10:30					Bj crew talks about the hazards of spotting in equipment and rigging up.
5	Rig Up	8/18/2017	10:45					Rig up.
6	Other	8/18/2017	11:30					Waiting for casing crew to finish running casing.
7	Safety Meeting	8/18/2017	13:00					Bj and rig crew talks about the hazards of the job.
8	Fill Lines	8/18/2017	13:49	8.33	2	3	150	Fill pumps and lines with 3bbls of water.
9	Pressure Test	8/18/2017	13:51					Pressure test to 5000psi.
10	Pump Water	8/18/2017	13:57	8.33	3	40	200	Pump 40 bbls of water.
11	Pump Spacer	8/18/2017	14:09	11	4	40	200	Pump 40 bbls of cd spacer at 11.00ppg.
12	Pump Lead Cement	8/18/2017	14:17	12.5	6	73.5	450	Pump 200sks/73.5 bbls of P100-X2 lead cement at 12.5ppg, 2.06yld, 11.77wtr.
13	Pump Lead Cement	8/18/2017	14:32	12.5	6	250.7	500	Pump 680sks/ 250.7bbls of P100-X2 lead cement at 12.5ppg, 2.07yld, 11.81wtr.
14	Pump Tail Cement	8/18/2017	15:24	13.5	6	252.1	500	Pump 960sks/ 252.1bbls of P50-X1 tail cement at 13.5ppg, 1.47,yld, 7.43wtr.
15	Shutdown	8/18/2017	16:13					Shutdown.
16	Wash Pumps And Lines	8/18/2017	16:15					Wash pumps and lines.
17	Drop Bottom Plug	8/18/2017	16:25					Company man witnesses bottom plug leave manifold.
18	Pump Water	8/18/2017	16:25	8.33	5	10	150	Pump 10 bbls of water.
19	Drop Top Plug	8/18/2017	16:30					Company man witnesses top plug leave manifold.
20	Pump Displacement	8/18/2017	16:30	8.33	8	258	2200	Pump bbls of water displacement.
21	Slow Rate	8/18/2017	17:15	8.33	3	20	1800	Slow rate the last 20bbls to 3bbls a minute.
22	Bump Plug	8/18/2017	17:31					Bump plug at psi 1800 and take it to 2400 psi.
23	Check Floats	8/18/2017	17:35					Got 2.5 bbls back to truck.
24	Safety Meeting	8/18/2017	17:40					Bj crew talks about the hazards of rigging down.

25	Rig Down	8/18/2017	18:05					Rig down.
26	Safety Meeting	8/18/2017	18:45					Bj crew talks about the hazards of driving back from location.
27	Depart Location	8/18/2017	19:30					Depart location.
28	Other	8/18/2017	19:30					Est. top of tail 5841. 50bbls of cement to surface.

3 Water Analysis

Metrics	Value	Recommended
Water Source	Upright Rig Tank	
Temperature	65 °F	50-80 °F
pH Level	6	5.5-8.5
Chlorides	72 mg/L	0-3000 mg/L
Total Alkalinity	120	0-1000
Total Hardness	300 mg/L	0-500 mg/L
Carbonates	140 mg/L	0-100 mg/L
Sulfates	<200 mg/L	0-1500 mg/L
Potassium	300 mg/L	0-3000 mg/L
Iron	7 mg/L	0-300 mg/L

4 Pump Diagrams