

BJ Cementing Treatment Report

SERVICE SUPERVISOR	Travis Tolman	FORMATION	NIOBRARA
DISTRICT	Cheyenne, WY	RIG	True 33
SERVICE	Cementing	COUNTY	WELD
		STATE / PROVINCE	CO

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)
Open Hole	8.50	0.00	0.00	15,889.00	7,255.00	0.00
Casing	4.78	5.50	20.00	15,879.00	7,255.00	
Previous Casing	8.92	9.63	36.00	1,568.00	1,568.00	

HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	15,853.00
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	12640.00
Top Plug Size	5.500	Max Casing Pressure - Operated (psi)	3100.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	275.00	Job Pumped Through	Manifold
Centralizers Type	Rigid	Top Connection Thread	BUTT
Landing Collar Depth (ft)	15,853	Top Connection Size	5.5

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	8
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	150.00	10 sec SGS	10
Circulation Rate (bpm)	12.00	10 min SGS	15
Lost Circulation Prior to Cement Job	No	30 min SGS	21
Mud Density In (ppg)	9.70	Flare Prior to / during the Cement Job	No
PV Mud In	22	Gas Present	No

TEMPERATURE

Ambient Temperature (°F)	32.00	Slurry Cement Temperature (°F)	76.00
Mix Water Temperature (°F)	70.00	Flow Line Temperature (°F)	75.00

Client Name: Petro Operating Company Well: FLASCHENRIEM #2 Well API: 05-123-49817

Start Date: 4/29/2019 End Date: 4/29/2019



FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H ₂ O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	12.0000			0.00				26.0000
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	11.5000			0.00				28.0000
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	11.0000			0.00				26.0000
Lead Slurry	BJCem P100.3.01C	12.5000	2.1556	12.22	0.00	7,725.00	850	1833.0000	325.4000
Tail Slurry	BJCem P50.6.02C	13.5000	1.7507	8.71	7,725.00	8,146.00	1065	1872.0000	331.9000
Displacement 2	Retarded Water	8.3337			13,244.00	0.00	0	0.0000	20.0000
Displacement Final	Displacement Final (Water)	8.3308			0.00			0.0000	331.5000

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FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	RETARDER, R-7C	2.0000	PPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	WEIGHTING ADDITIVE, W-11	243.3100	PPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	SPACER SURFACTANT, SS-267	1.0000	GPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	IntegraGuard GW-86	1.2000	PPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	RETARDER, R-31	0.5000	PPB
Lead Slurry	BJCem P100.3.01C	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	BJCem P100.3.01C	IntegraGuard GW-86	0.2000	BWOB
Lead Slurry	BJCem P100.3.01C	RETARDER, SR-20	0.6000	BWOB
Lead Slurry	BJCem P100.3.01C	BONDING AGENT, BA-60	0.4000	BWOB
Lead Slurry	BJCem P100.3.01C	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem P100.3.01C	FLUID LOSS, FL-24	0.3000	BWOB
Lead Slurry	BJCem P100.3.01C	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem P100.3.01C	EXTENDER, BENTONITE	4.0000	BWOB
Tail Slurry	BJCem P50.6.02C	SAND, S-8, Silica Flour, 200 Mesh	20.0000	BWOB
Tail Slurry	BJCem P50.6.02C	CEMENT, CLASS G	50.0000	PCT
Tail Slurry	BJCem P50.6.02C	Flyash (Rockies)	50.0000	PCT
Tail Slurry	BJCem P50.6.02C	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem P50.6.02C	EXTENDER, BENTONITE	2.0000	BWOB
Tail Slurry	BJCem P50.6.02C	IntegraGuard GW-86	0.1000	BWOB
Tail Slurry	BJCem P50.6.02C	FLUID LOSS, FL-66	0.4000	BWOB
Tail Slurry	BJCem P50.6.02C	RETARDER, SR-20	0.0700	BWOB
Displacement 2	Retarded Water	BIOCIDE, BIOC11139W	0.0100	GPB
Displacement 2	Retarded Water	ResCare CS-2	0.0800	GPB
Displacement 2	Retarded Water	RETARDER, SR-61L	0.1000	GPB
Displacement Final	Displacement Final (Water)	ResCare CS-2	0.0800	GPB
Displacement Final	Displacement Final (Water)	BIOCIDE, BIOC11139W	0.0100	GPB

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	351.50	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	342.00	Amt of Spacer to Surface	80.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	3.50
Bump Plug Pressure (psi)	3100.00	Total Volume Pumped (bbls)	1081.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	Full	Lost Circulation During Cement Job	No

Client Name: Petro Operating Company

Well: FLASCHENRIEM #2

Well API: 05-123-49817

Start Date: 4/29/2019

End Date: 4/29/2019



BJ Cementing Event Log

Long String - Cheyenne, WY - Travis Tolman

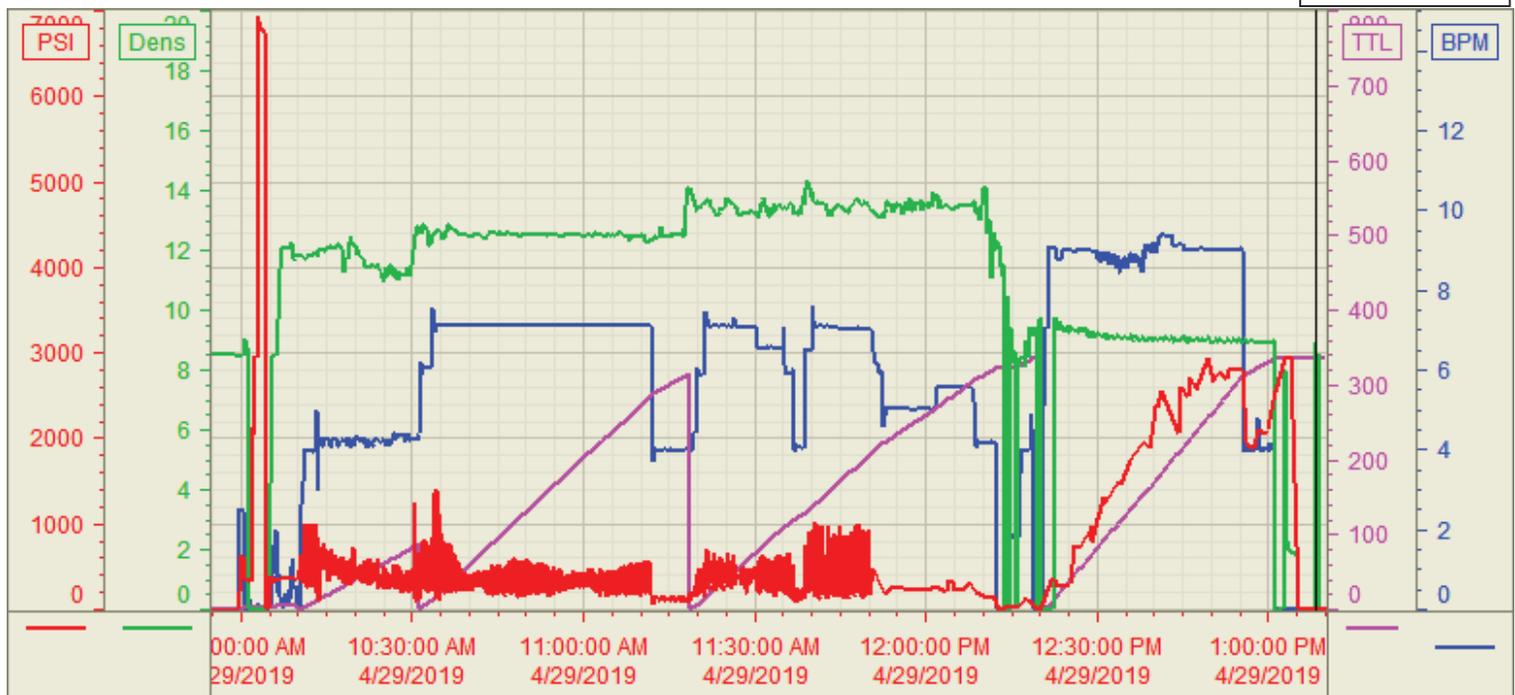
SEQ	START DATE / TIME	EVENT	DENSITY (PPG)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	04/29/2019 02:30	Callout					Crew called out for on location of 0730, pre-trip equipment for job
2	04/29/2019 04:36	Depart for Location					Crew ready to depart for location
3	04/29/2019 06:10	Arrive on Location					Arrived on location, rigging casers down, met with company man to get numbers, discuss job and safety issues
4	04/29/2019 06:30	Spot Units					Spot equipment
5	04/29/2019 06:40	STEACS Briefing					Held safety meeting with crew to discuss rig up, job tasks and safety
6	04/29/2019 06:50	Rig Up					Rig up from equipment to rig floor
7	04/29/2019 09:00	STEACS Briefing					Held safety meeting with company man, rig hands and crew to discuss job and safety
8	04/29/2019 10:00	Pump Spacer	8.3000	2.50	3.00	450.00	Load pump and lines with fresh water
9	04/29/2019 10:02	Pressure Test	8.3000			6275.00	Pressure test pump and lines with fresh water
10	04/29/2019 10:10	Pump Spacer	12.0000	4.00	26.00	800.00	Pump 26bbls of spacer at 12#, with chemicals
11	04/29/2019 10:19	Pump Spacer	11.5000	4.00	28.00	620.00	Pump 28bbls of spacer at 11.5#, with chemicals
12	04/29/2019 10:25	Pump Spacer	11.0000	4.00	26.00	400.00	Pump 26bbls of spacer at 11#, with chemicals
13	04/29/2019 10:31	Pump Lead Cement	12.5000	7.00	325.00	900.00	Pump 850sks/325.4bbls of cement at 12.5#-2.15Y-12.22gps, calculated top of lead at 46'
14	04/29/2019 11:20	Pump Tail Cement	13.5000	7.00	331.00		Pump 1065sks/331.9bbls of cement at 13.5#-1.75Y-8.71gps, calculated top of tail at 7757'
15	04/29/2019 12:13	End Pumping					Shut down, wash up pump and lines
16	04/29/2019 12:20	Drop Top Plug					Drop top plug witnessed by company man and BJ rep
17	04/29/2019 12:21	Pump Displacement	8.3000	9.00	330.00	3100.00	Pump fresh water displacement, 1st 20bbls with SR-61, rest with Rescare and Biocide, calculated displacement 351.5bbls
18	04/29/2019 12:57	Other (See comment)	8.3000	4.00	12.00	2400.00	Slowed rate to land plug
19	04/29/2019 13:02	Land Plug				3000.00	Land plug, actual displacement 342bbls, 80bbls of spacer to surface
20	04/29/2019 13:05	Check Floats				3000.00	Check float, got 3.5bbls back
21	04/29/2019 13:15	STEACS Briefing					Held safety meeting with crew to discuss rig down and safety
22	04/29/2019 13:30	Rig Down					Rigged down from rig floor to equipment
23	04/29/2019 14:30	Leave Location					Crew ready to depart location



Customer: Petro Operating
 Well Number: 2
 Lease Info: Flaschenriem



Print Date/Time
 4/29/2019 1:39:08 PM



	Name	Y value	X value/time stamp	Tag name Y
1	DS - Press (PSI)	0.0 i.	4/29/2019 1:08:11 PM i.	Cementer\DS_DISCHARGE_PRESS_DIAL
2	Den - Density (PPG)	5.92 i.	4/29/2019 1:08:11 PM i.	Cementer\DENSITY_ACTUAL_RATE
3	Down Hole Total (BBLs)	334.6	4/29/2019 1:08:12 PM	Cementer\DOWNHOLE_FLOW_TOTAL
4	Flow Rate (BBLs)	0.00	4/29/2019 1:08:12 PM	Cementer\Flow_Combined
5				

Source: Control1 1:39:03 PM