

# 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	15,741.00	7,263.00	0.00
Previous Casing	8.92	9.63	36.00	1,562.00	1,562.00	
Casing	4.78	5.50	20.00	15,730.00	7,263.00	

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	15,698.00
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	12640.00
Top Plug Size	5.500	Max Casing Pressure - Operated (psi)	3200.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity	264.00	Job Pumped Through	Manifold
Centralizers Type	Rigid	Top Connection Thread	BUTT
Landing Collar Depth (ft)	15,698	Top Connection Size	5.5

## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	5
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	180.00	10 sec SGS	4
Circulation Rate (bpm)	10.00	10 min SGS	13
Lost Circulation Prior to Cement Job	No	30 min SGS	15
Mud Density In (ppg)	9.70	Flare Prior to / during the Cement Job	No
PV Mud In	16	Gas Present	No

## TEMPERATURE

Ambient Temperature (°F)	50.00	Slurry Cement Temperature (°F)	52.00
Mix Water Temperature (°F)	45.00	Flow Line Temperature (°F)	82.00

Client Name: Petro Operating Company

Well: FLASCHENRIEM #4

Well API: 05-123-49818

Start Date: 5/10/2019

End Date: 5/10/2019



## FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H <sub>2</sub> 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				28.0000
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	11.5000			0.00				26.0000
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	7,475.00	825	1775.0000	316.1000
Tail Slurry	BJCem P50.6.02C	13.5000	1.7507	8.71	7,475.00	8,272.00	1080	1901.0000	336.6000
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	328.1000

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FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
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
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer II	RETARDER, R-7C	2.0000	PPB
Lead Slurry	BJCem P100.3.01C	IntegraGuard GW-86	0.2000	BWOB
Lead Slurry	BJCem P100.3.01C	BONDING AGENT, BA-60	0.4000	BWOB
Lead Slurry	BJCem P100.3.01C	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	BJCem P100.3.01C	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem P100.3.01C	EXTENDER, BENTONITE	4.0000	BWOB
Lead Slurry	BJCem P100.3.01C	RETARDER, SR-20	0.6000	BWOB
Lead Slurry	BJCem P100.3.01C	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem P100.3.01C	FLUID LOSS, FL-24	0.3000	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	FOAM PREVENTER, FP-25	0.3000	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	EXTENDER, BENTONITE	2.0000	BWOB
Tail Slurry	BJCem P50.6.02C	RETARDER, SR-20	0.0700	BWOB
Tail Slurry	BJCem P50.6.02C	SAND, S-8, Silica Flour, 200 Mesh	20.0000	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

<b>Displaced By</b>	BJ	<b>Amt of Cement Returned / Reversed</b>	12.00
<b>Calculated Displacement Vol (bbls)</b>	348.10	<b>Method Used to Verify Returns</b>	Visual
<b>Actual Displacement Vol (bbls)</b>	337.00	<b>Amt of Spacer to Surface</b>	80.00
<b>Did Float Hold?</b>	Yes	<b>Pressure Left on Casing (psi)</b>	0.00
<b>Bump Plug</b>	Yes	<b>Amt Bled Back After Job</b>	4.00
<b>Bump Plug Pressure (psi)</b>	3200.00	<b>Total Volume Pumped (bbls)</b>	1072.00
<b>Were Returns Planned at Surface</b>	Yes	<b>Top Out Cement Spotted</b>	No
<b>Cement Returns During Job</b>	Full	<b>Lost Circulation During Cement Job</b>	No

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# BJ Cementing Event Log

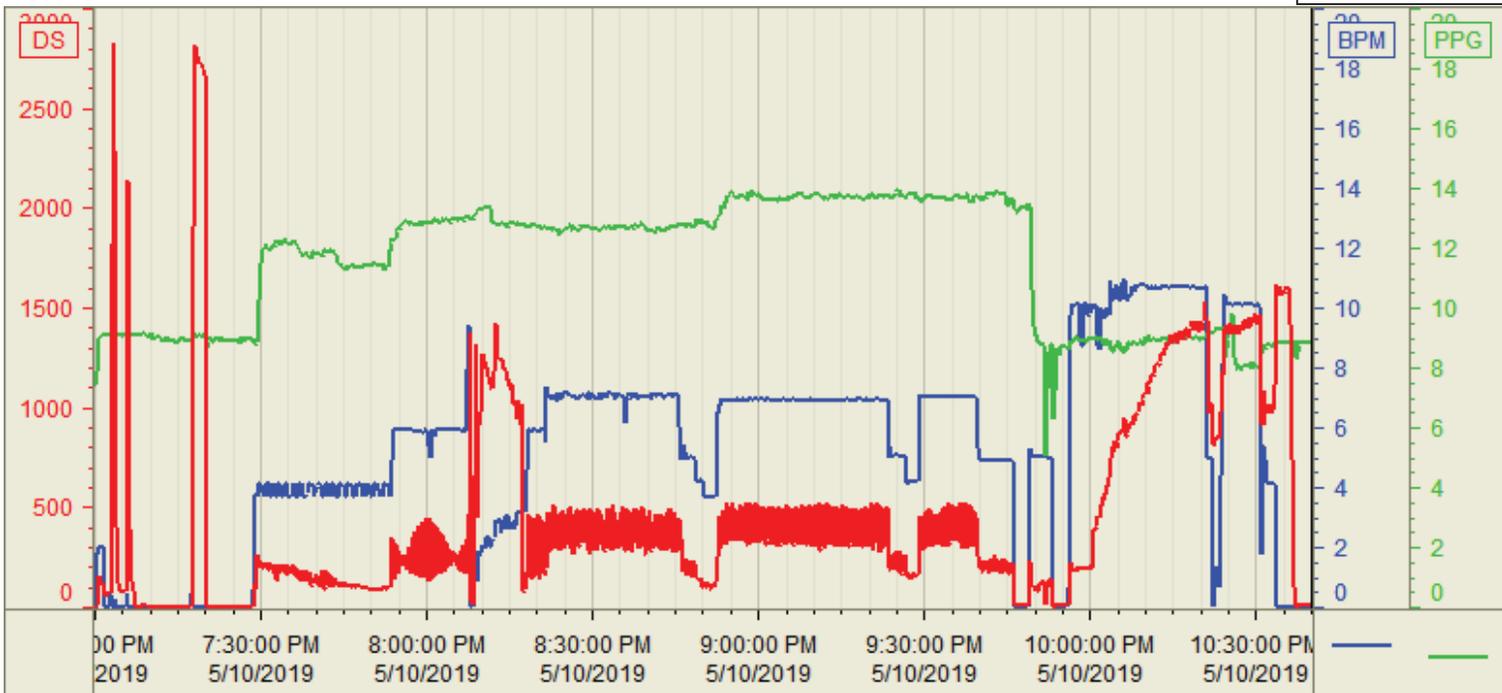
Long String - Cheyenne, WY

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	05/10/2019 12:00	Callout					Crew called out for on location of 1700, crew pre-trip equipment for job
2	05/10/2019 13:45	Depart for Location					Crew ready to depart for location
3	05/10/2019 15:30	Arrive on Location					Arrived on location, circulating on well, met with company man to get numbers, discuss job and safety
4	05/10/2019 15:35	Spot Units					Spot equipment
5	05/10/2019 15:45	STEACS Briefing					Held safety meeting with crew to discuss rig up, job tasks and safety
6	05/10/2019 16:00	Rig Up					Rigged up from equipment to rig floor
7	05/10/2019 18:20	STEACS Briefing					Held safety meeting with company man, rig hands and crew to discuss job and safety
8	05/10/2019 19:10	Pump Spacer	8.3000	2.00	3.00	150.00	Load pump and lines with fresh water
9	05/10/2019 19:13	Pressure Test					Pressure test pump and lines. Did not hold, had to put valve in below manifold to hold pressure
10	05/10/2019 19:28	Pressure Test				5500.00	Pressure test pump and lines held
11	05/10/2019 19:39	Pump Spacer	12.0000	3.80	28.00	500.00	Pump 28bbls of spacer at 12# with chemicals
12	05/10/2019 19:46	Pump Spacer	11.5000	4.00	26.00	300.00	Pump 26bbls of spacer at 11.5# with chemicals
13	05/10/2019 19:52	Pump Spacer	11.0000	3.80	26.00	300.00	Pump 26bbls of spacer at 11# with chemicals
14	05/10/2019 20:03	Pump Lead Cement	12.5000	7.00	316.00	1000.00	Pump 825sks/ 316bbls of lead cement at 12.5#-2.15Y-12.22gps, top of lead calculated at 22'
15	05/10/2019 21:02	Pump Tail Cement	13.5000	7.00	336.00	900.00	Pump 1080sks/336bbls of tail cement at 13.5#-1.75Y-8.71gps, top of tail calculated at 7497'
16	05/10/2019 21:52	End Pumping					Shut down, wash up pump and lines
17	05/10/2019 22:03	Drop Top Plug					Drop top plug witnessed by company man and BJ rep
18	05/10/2019 22:06	Pump Displacement	8.3000	10.00	325.00	3100.00	Pump displacement with fresh water, 1st 20bbls with SR-61, rest with ResCare and Biocide, calculated displacement 348.1bbls
19	05/10/2019 22:41	Other (See comment)	8.3000	4.00	12.00	2300.00	Slow rate to land plug
20	05/10/2019 22:44	Land Plug				3200.00	Land plug, calculated displacement 348.1bbls, actual displacement 337bbls, got 12bbls of cement to surface and 80bbls of spacer
21	05/10/2019 22:47	Check Floats					Check float, held, got 4bbls back
22	05/10/2019 22:50	STEACS Briefing					Held safety meeting with crew to discuss rig down and safety
23	05/10/2019 23:00	Rig Down					Rigged down from rig floor to equipment
24	05/11/2019 00:00	Leave Location					Crew ready to depart location

Customer: Petro  
 Well Number: #4  
 Lease Info: Flaschenriem



Print Date/Time  
 5/10/2019 11:47:06 PM



	Name	Y value	X value/time stamp	Tag name Y
1	PS - Press (PSI)	17 i.	5/10/2019 10:40:00 PM i.	Cementer\PS_DISCHARGE_PRESS_DIAL
2	Den2 - Discharge Density (PPG)	8.82	5/10/2019 10:40:02 PM	Cementer\DENSITY2_ACTUAL_RATE
3	Combined Rate (BPM)	0.00	5/10/2019 10:40:02 PM	Cementer\Flow_Combined
4				
5				

Source: Control1 11:47:01 PM