



Great Western Operating Company, LLC

Production Post-Job Report

Marcus LD 11-376HNX (API: 05-123-45385)

S:34 T:1N R:67W Weld, CO



Great Western Operating Company, LLC

Great Western Operating Company, LLC | 1801 Broadway, Suite 500 | Denver, CO 80202

Dear Great Western Operating Company,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,
Karl Griesser
Field Engineer I | (307) 222-0329 | karl.griesser@bjservices.com

Field Office 1716 East Allison Rd., Cheyenne WY, 82007
Phone: (307) 638-5585

Sales Office 999 18th St. Suite 1200 Denver, CO 80202
Phone: (281) 408-2361

Cementing Treatment



Start Date	11/9/2017	Well	Marcus LD 11-376HNX
End Date	11/10/2017	County	WELD
Client	GREAT WESTERN OPERATING COMPANY, LLC	State/Province	CO
Client Field Rep	Dusty	API	05-123-45385
Service Supervisor	Wesley Bell	Type of Job	Long String
District	Cheyenne, WY		

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)
Previous Casing	8.92	9.63	36.00	1,737.00	1,737.00	
Open Hole	8.50			7,000.00	7,000.00	10.00
Open Hole	8.50			16,107.00	7,404.00	5.00
Casing	4.89	5.50	17.00	16,107.00	7,404.00	

Shoe Length (ft): 6

HARDWARE

Bottom Plug Used?	No	Max Casing Pressure - Rated (psi)	10640
Top Plug Used?	Yes	Pipe Movement	No
Top Plug Provided By	Customer	Job Pumped Through	Casing
Top Plug Size	5.5"	Top Connection Thread	Buttress
Centralizers Used	Yes	Top Connection Size	5.5"
Centralizers Quantity	n/a		
Landing Collar Depth (ft)	16,098		

Cementing Treatment



CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	10 sec SGS	7
Circulation Time (min)	120min	10 min SGS	8
Circulation Rate (bpm)	10.7bpm	30 min SGS	9
Circulation Volume (bbls)	1284	Flare Prior to/during the Cement Job	Yes
Lost Circulation Prior to Cement Job	No	Gas Present	Yes
Mud Density In (ppg)	10	Gas Units	3300
Mud Density Out (ppg)	10		
PV Mud In	27		
PV Mud Out	27		
YP Mud In	9		
YP Mud Out	9		

TEMPERATURE

Ambient Temperature (°F)	43	Slurry Cement Temperature (°F)	45
Mix Water Temperature (°F)	45		

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	CD Spacer	11.5000					50.0000
Lead Slurry	P100-X2	14.0000	1.5272	7.74	1,175	1,794.0000	319.4000
Tail Slurry	P50-X1	14.0000	1.3344	6.42	1,648	2,200.0000	391.7000
Displacement 1	MMCR Water	8.3337				0.0000	20.0000
Displacement 2	3% KCL Water	8.3300				0.0000	343.0000
Displacement Final	Water	8.3300				0.0000	10.000

Cementing Treatment



Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	CD Sapcer	SAND, S-8, Silica Flour, 200 Mesh	213.49	PPB
Spacer / Pre Flush / Flush	CD Sapcer	AVS-10	0.90	PPB
Spacer / Pre Flush / Flush	CD Sapcer	AR-31	0.58	PPB
Spacer / Pre Flush / Flush	CD Sapcer	ASF-20	0.50	GPB
Spacer / Pre Flush / Flush	CD Sapcer	ASF-80	0.50	GPB
Lead Slurry	P100-X2	CEMENT, ASTM TYPE III	100.00	PCT
Lead Slurry	P100-X2	SPECIAL ADDITIVE, MPA-300	0.10	BWOB
Lead Slurry	P100-X2	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB
Lead Slurry	P100-X2	RETARDER, HIGH TEMP, R-31 (BJS Only)	0.17	BWOB
Lead Slurry	P100-X2	FLUID LOSS, FL-66	0.50	BWOB
Lead Slurry	P100-X2	BONDING AGENT, BA-59	0.40	BWOB
Tail Slurry	P50-X1	EXTENDER, BENTONITE	1.00	BWOB
Tail Slurry	P50-X1	AR-20	0.12	BWOB
Tail Slurry	P50-X1	Flyash (Rockies)	50.00	PCT
Tail Slurry	P50-X1	FLUID LOSS, FL-66	0.20	BWOB
Tail Slurry	P50-X1	FP-25, Dry Foam Preventer (BJS Only)	0.30	BWOB
Tail Slurry	P50-X1	GELLANT WATER, GW-86	0.10	BWOB
Tail Slurry	P50-X1	CEMENT, CLASS G	50.00	PCT
Displacement 1	MMCR Water	AR-61	0.10	GPB

TREATMENT SUMMARY

Fluid	Rate (bpm)	Fluid Vol. (bbls)
CD Sapcer	5.00	50.00
P100-X2	6.50	319.40
P50-X1	6.50	391.70
MMCR Water	8.00	20.00
3% KCL Water	8.00	343.00
Water	8.00	10.0

Cementing Treatment



		Min	Max	Avg
Pressure (psi)	0	3900	1950	
Rate (bpm)	0	8	4	

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ Services	Amount of Cement Returned/Reversed	34
Calculated Displacement Volume (bbls)	373	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	368	Amount of Spacer to Surface	50
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0
Bump Plug	Yes	Amount Bled Back After Job	5bbls
Bump Plug Pressure (psi)	3900	Total Volume Pumped (bbls)	1130
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement returns During Job	34	Lost Circulation During Cement Job	No

CEMENT PLUG

Bottom of Cement Plug?	No	Wiper Balls Used?	No
Plug Catcher	No		

Customer Name Great Western
 Well Name Marcus LD 11-376HNX
 Job Type Long String

District Cheyenne
 Supervisor Wesley Bell
 Engineer _____



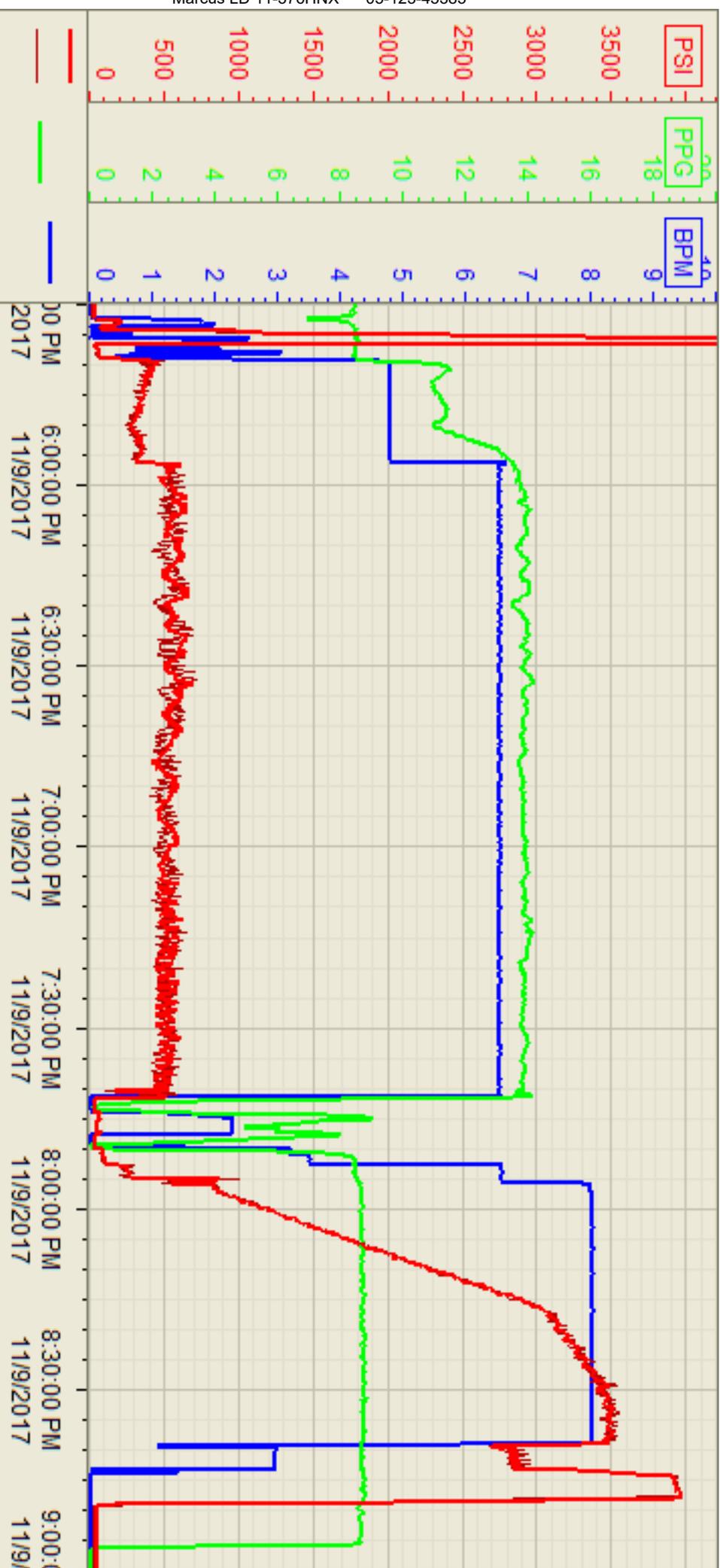
Start Date/Time	Category	Event	Event ID	Density (lb/gal)	Pump Rate (bpm)	Pump Vol (bbls)	Pipe Pressure (psi)	Comments
11/9/2017 7:00	Mobilization	Callout	1					Rig Call out crew
11/9/2017 13:00	Mobilization	Arrive on Location	48					All equipment and crew on location, requested time was 14:00
11/9/2017 13:10	Operational	Rig Up	50					Spot all units and rig up as far as rig floor
11/9/2017 14:10	StandBy	Customer	85					Wait for rig to finish running casing
11/9/2017 17:15	Operational	Safety Meeting	53					Bj crew and rig crew talk about the dangers of the job.
11/9/2017 17:45	Operational	Fill Lines		8.33	2	3	180	Pump 3 bbls of water ahead.
11/9/2017 17:47	Operational	Pressure Test					5100	Pressure test to 5000
11/9/2017 17:50	Operational	Pump Spacer	56	11.5	5	50	320	Pump 50 bbls of CD spacer at 11.5 ppg
11/9/2017 18:03	Operational	Pump Lead		14	6.5	320	550	Pump 320 bbls (1175 sks) of lead cement at 14ppg, 1.53 yld, 7.72 wtr. Took weights at 18:05, 18:13, 18:20, 18:35 and 18:46. Weights matched mixing equipment.
11/9/2017 19:07	Operational	Pump Tail		14	6.5	390	600	Pump 390 bbls (1649 sks) at 14 ppg, 1.33yld, 6.4 wtr. Took weights at 18:55, 19:05, 19:18, 19:29 and 19:40. Weights matched mixing equipment. Est Top of tail 6558.
11/9/2017 19:58	Operational	Shutdown						Shutdown/ wash pumps and lines.
11/9/2017 20:02	Operational	Drop Plug						Company man witnessed plug leave head.
11/9/2017 20:03	Operational	Displacement		8.4	8	368	1950	Displace 368 bbls of KCL.
11/9/2017 20:51	Operational	Slow Rate						Slow rate to 3bpm
11/9/2017 20:56	Operational	Bump Plug						Bumped plug at 2800 psi and brought it up to 3900. Got 34 bbls cmt to surface.
11/9/2017 21:00	Operational	Check Floats	68					Got 5 bbls back to truck. Floats held.
11/9/2017 21:15	Operational	Safety Meeting	53					Bj crew talks about the dangers of rigging down.
11/9/2017 21:25	Operational	Rig Down	73					Rig Down
11/9/2017 23:00	Mobilization	Depart Location						Bj crew departs location.

Customer: Great Western
 Well Number: 11-376HNX
 Lease Info: Marcus



Print Date/Time

11/9/2017 9:35:22 PM



Name	Y value	X value/time stamp	Tag name Y
1 DS - Press (PSI)	37.8	11/9/2017 8:59:59 PM	CementenrDS_DISCHARGE_PRESS_DIAL
2 PS - Press (PSI)	25.5 i.	11/9/2017 9:00:00 PM i.	CementenrPS_DISCHARGE_PRESS_DIAL
3 DH - Density (PPG)	0.04	11/9/2017 9:00:03 PM	CementenrDENSITY2_ACTUAL_RATE
4 Combined Rate	0.00	11/9/2017 9:00:03 PM	CementenrFlow_Combined
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