



Great Western Operating Company, LLC

Schneider HD 11-022HC

API # 05-123-46411

Production

October 05, 2019

Quote #: QUO-37176-Y4G3N1

Execution #: EXC-21600-Q9L7Y202



Great Western Operating Company, LLC

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

Dear Great Western Operating Company, LLC,

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,
Jason Creel
Field Engineer I | (307) 256-0306 | Jason.Creel@BJServices.com

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

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

BJ Cementing Treatment Report

SERVICE SUPERVISOR	Zachary Hyde	RIG	PD 460
CLIENT FIELD REPRESENTATIVE	Dusty	COUNTY	WELD
DISTRICT	Cheyenne, WY	STATE / PROVINCE	CO
SERVICE	Cementing		

WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	TVD (ft)	EXCESS (%)
Open Hole	8.50	0.00	0.00	18,234.00	7,214.00	5.00
Casing	4.89	5.50	17.00	18,234.00	7,214.00	
Previous Casing	8.92	9.63	36.00	1,611.00	1,611.00	

HARDWARE

Bottom Plug Used?	No	Centralizers Type	Rigid
Top Plug Used?	Yes	Landing Collar Depth (ft)	18,223.20
Top Plug Provided By	Non BJ	Pipe Movement	None
Top Plug Size	5.500	Job Pumped Through	No Manifold
Centralizers Used	Yes	Top Connection Thread	BTC
Centralizers Quantity	135.00	Top Connection Size	5.5

CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	PV Mud Out	27
Circulation Prior to Job	Yes	YP Mud In	6
Circulation Time (min)	180.00	YP Mud Out	6
Circulation Rate (bpm)	10.00	Solids Present at End of Circulation	No
Circulation Volume (bbls)	1800.00	10 sec SGS	5
Lost Circulation Prior to Cement Job	No	10 min SGS	6
Mud Density In (ppg)	10.80	30 min SGS	8
Mud Density Out (ppg)	10.80	Flare Prior to / during the Cement Job	No
PV Mud In	27	Gas Present	No

TEMPERATURE

Ambient Temperature (°F)	40.00	Slurry Cement Temperature (°F)	60.00
Mix Water Temperature (°F)	60.00	Flow Line Temperature (°F)	162.00

Client: Great Western Operating Company, LLC

Well: SCHNEIDER HD 11-022HC

Well API: 05-123-46411

Start Date: 10/5/2019

End Date: 10/5/2019

Field Ticket #:



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	12.5000			1.00				135.0000
Tail Slurry	BJCem P50.6.02C	14.5000	1.4454	6.43	3,000.00	1,200.00	200	289.0000	51.4000
Tail Slurry	BJCem P50.6.02C	14.5000	1.4457	6.45	4,200.00	14,144.00	2357	3408.0000	606.9000
Displacement 1	Retarded Water	8.3337			17,442.00			0.0000	20.0000
Displacement Final	3% KCl	8.3300			0.00	0.00		0.0000	402.0000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer	SAND, S-8, Silica Flour, 200 Mesh	282.3400	PPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer	IntegraSeal FIBER	0.5000	PPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer	SPACER SURFACTANT, SS-267	0.7000	GPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer	SPACER SURFACTANT, SS-247	0.7000	GPB
Spacer / Pre Flush / Flush	IntegraGuard EZ Spacer	IntegraGuard GW-86	0.6000	PPB
Tail Slurry	BJCem P50.6.02C	Flyash (Rockies)	50.0000	PCT
Tail Slurry	BJCem P50.6.02C	IntegraSeal FIBER	0.1300	LBS/SK
Tail Slurry	BJCem P50.6.02C	IntegraGuard GW-86	0.0500	BWOB
Tail Slurry	BJCem P50.6.02C	CEMENT, CLASS G	50.0000	PCT
Tail Slurry	BJCem P50.6.02C	SAND, S-8, Silica Flour, 200 Mesh	20.0000	BWOB
Tail Slurry	BJCem P50.6.02C	FLUID LOSS, FL-24	0.5000	BWOB
Tail Slurry	BJCem P50.6.02C	RETARDER, SR-20	0.7000	BWOB
Tail Slurry	BJCem P50.6.02C	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem P50.6.02C	FLUID LOSS, FL-24	0.5000	BWOB
Tail Slurry	BJCem P50.6.02C	SAND, S-8, Silica Flour, 200 Mesh	20.0000	BWOB
Tail Slurry	BJCem P50.6.02C	IntegraGuard GW-86	0.0500	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	RETARDER, SR-20	0.7000	BWOB

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	422.00	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	422.00	Amt of Spacer to Surface	40.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	3.00
Bump Plug Pressure (psi)	2500.00	Total Volume Pumped (bbls)	1214.00
Were Returns Planned at Surface	No	Top Out Cement Spotted	No
Cement Returns During Job	No	Lost Circulation During Cement Job	No

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	10/04/2019 14:21	Callout					Crew gets called out requested time 1930.
2	10/04/2019 14:30	Depart for Location					Crew departs for location
3	10/04/2019 18:00	Arrive on Location					Crew arrives on location
4	10/04/2019 18:00	Spot Units					Crew spots units
5	10/04/2019 18:35	Rig Up					Crew rigs up iron and hoses needed for job
6	10/04/2019 20:00	Rig					Crew waits for rig to finish running casing and to circulate the well
7	10/05/2019 01:00	STEACS Briefing					Crew has a briefing with company man and rig crew discussing the job
8	10/05/2019 01:35	Prime Up	12.5000	3.00	3.00	300.00	Filled lines 3 bbls of spacer
9	10/05/2019 01:37	Pressure Test					Pressure tested to 5500 psi
10	10/05/2019 01:39	Pump Spacer	12.5000	8.00	135.00	700.00	Pumped 135 bbls of Spacer at 12.5 ppg with surfactant
11	10/05/2019 01:56	Pump Tail Cement	14.5000	8.00	51.00	600.00	Pumped 51 bbls of Tail cement at 14.5ppg (200sk,1.44yld, 6.43gal/sk)
12	10/05/2019 02:06	Pump Tail Cement	14.5000	9.00	606.00	900.00	Pumped 606 bbls of Tail cement at 14.5ppg(2357sk,1.44yld,6.45gal/sk)
13	10/05/2019 03:37	End Pumping					Shutdown
14	10/05/2019 03:37	Wash Pumps and Lines					Wash pump and lines to pit
15	10/05/2019 03:47	Drop Top Plug					Dropped top plug
16	10/05/2019 03:47	Pump Displacement	8.3300	8.00	200.00	3300.00	Pumped the first 200 bbls of Displacement with KCL. The first 20 bbls wash fresh water and retarder.
17	10/05/2019 04:14	Pump Displacement	8.4000	5.00	202.00	2700.00	Slowed rate at 200 bbls away to 5 bpm.
18	10/05/2019 04:54	Spacer Back-to-Surface					At 370 bbls away got spacer to surface. Got 40 bbls back to surface
19	10/05/2019 04:54	Pump Displacement	8.3300	3.00	20.00	2500.00	Slowed rate last 20 bbls to 3 bpm and switched back to fresh water
20	10/05/2019 05:00	Land Plug					Landed plug went 500 psi over FCP. FCP was 2500 psi brought it up to 3000 psi
21	10/05/2019 05:02	Check Floats					Checked floats got 3 bbls back. Top of cement 2131
22	10/05/2019 05:05	Rig Down					Crew rigs down

Client: Great Western Operating Company, LLC

Well Name / API: SCHNEIDER HD 11-022HC / 05-123-46411

Well MD: 18344



Quote #: QUO-37176-Y4G3N1

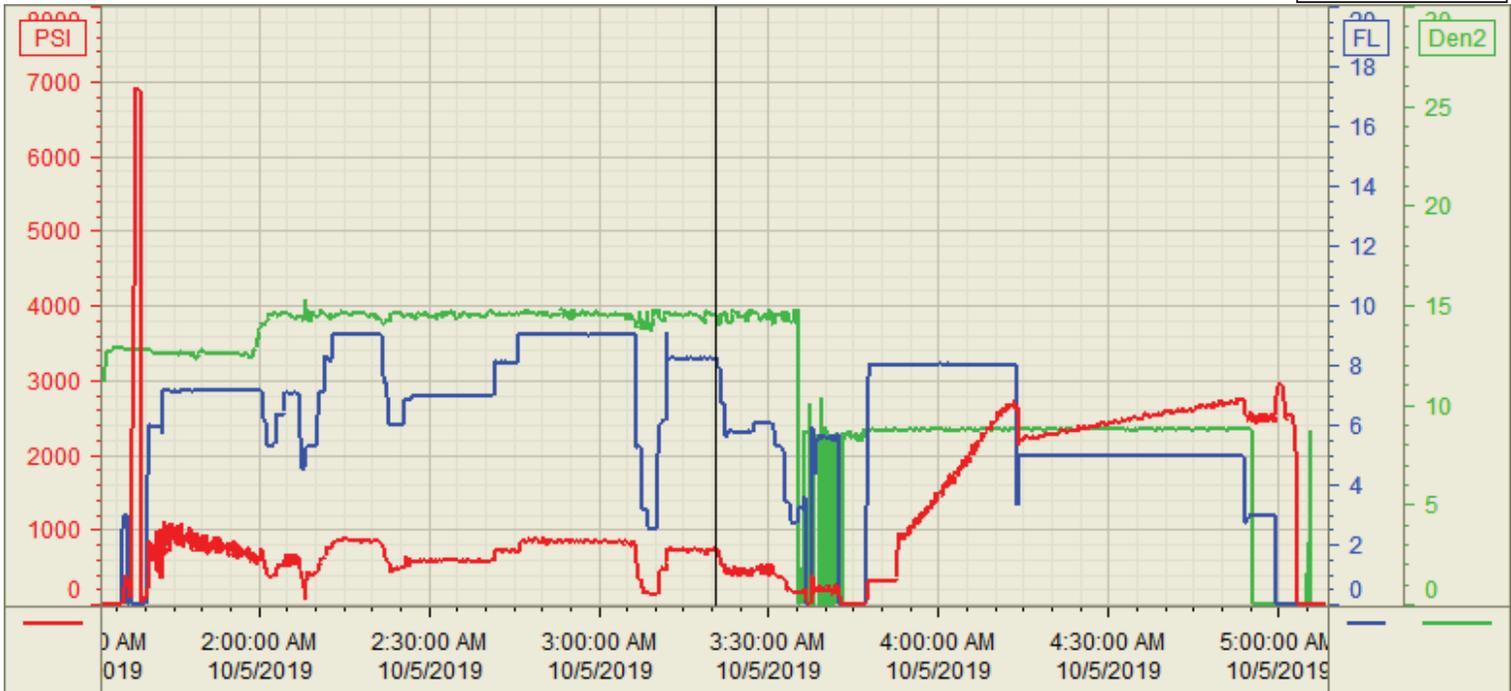
Plan #: ORD-21600-Q9L7Y2

Execution #: EXC-21600-Q9L7Y202

Customer: Great Western
 Well Number: 11-022HC
 Lease Info: Schneider HD



Print Date/Time
 10/5/2019 5:19:48 AM



	Name	Y value	X value/time stamp	Tag name Y
1	DS - Press (PSI)	747.1	10/5/2019 3:20:32 AM	Cementer\DS_DISCHARGE_PRESS_DIAL
2	Combined pump rate	8.22	10/5/2019 3:20:28 AM	Cementer\Flow_Combined
3	re circdensity	14.59	10/5/2019 3:20:38 AM	Cementer\DENSITY_ACTUAL_RATE
4				
5				

Source: Control1 5:19:47 AM