



Caerus

Well Name: NPR 15B-11-596

API # 05-045-23853

Job Type: Surface

Date Job Completed: 09/30/18

Quote #: QUO-20369

Execution #: EXC-11660



Caerus

Attention: Mr. Steve Schmitz | (720) 880-6412 | sschmitz@caerusoilandgas.com

Caerus | 1001 17th Street, Suite 1600 | Denver, CO 80202

Dear Mr. Schmitz,

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,

Zen Keith
Field Engineer III | (307) 757-7178 | Zen.Keith@BJServices.com

Field Office 28730 US-6, Rifle, CO 81650
Phone: (970) 632-2412

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

Cementing Treatment



Start Date 9/30/2018 **Field Ticket#**
End Date 9/30/2018 **Well** NPR 15B-11-596
Client CAERUS OPERATING, LLC **API#** 05-045-23853
Client Field Rep. Pat Blackmer **Well Classification**
Service Sup. Hamza Busheri **County** GARFIELD
District Rifle, CO **State/Province** CO
Type of Job Surface **Formation**
Execution ID EXC-11660-N1Y7V002 **Rig** H&P 330
Project ID PRJ1011326

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	Excess(%)	Grade	Thread
Previous Casing	15.50	16.00	42.05	100.00			
Open Hole	14.75			2,440.00			
Casing	8.92	9.63	36.00	2,360.00		J-55	LTC

Shoe Length (ft): 40

HARDWARE

Bottom Plug Used? No **Tool Type** Float Collar
Top Plug Used? Yes **Tool Depth (ft)** 2,316.00
Top Plug Provided By Non BJ **Max Casing Pressure - Rated (psi)** 3,520.00
Top Plug Size 9.625 **Max Casing Pressure - Operated (psi)** 2,700.00
Centralizers Used Yes **Pipe Movement** None
Centralizers Quantity 5.00 **Job Pumped Through** No Manifold
Centralizers Type Bow **Top Connection Thread** 8rd
Landing Collar Depth (ft) 2,360 **Top Connection Size** 9.625

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	8.00
Circulation Time (min)	60.00	10 min SGS	17.00
Circulation Rate (bpm)	4.00	30 min SGS	45.00
Circulation Volume (bbls)	185.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	Yes	Gas Present	No
Mud Density In (ppg)	9.65	Gas Units	0
PV Mud In	21		
YP Mud In	14		

TEMPERATURE

Ambient Temperature (°F)	63.00	Slurry Cement Temperature (°F)	65.00
Mix Water Temperature (°F)	61.00	Flow Line Temperature (°F)	113.00

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Planned Top of Fluid (Ft)	Length (Ft)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer	Water 1	8.3300			0.00				20.0000
Spacer	Sodium Silicate	10.0000			0.00				20.0000
Spacer	Water 2	8.3300			0.00				20.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	0.00	1,900.00	517	1,306.0000	232.6000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	1,900.00	500.00	161	358.0000	63.7000
Displacement Final	Displacement	8.3300			0.00			0.0000	182.5000
Top-Out Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59			52		

Cementing Treatment



Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	Sodium Silicate	SILICATE, SODIUM, A-3L	21.0000	GPB
Lead Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB
Top-Out Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Top-Out Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Top-Out Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Top-Out Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK

TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Comments
9/30/2018 8:10 AM	Water 1	5.00	20.00	186.00	
9/30/2018 8:10 AM	Sodium Silicate	5.00	20.00	257.00	
9/30/2018 8:15 AM	Water 2	5.00	20.00	192.00	
9/30/2018 9:00 AM	BJCem S100.3.01D	5.00	232.60	233.00	
9/30/2018 9:20 AM	BJCem S100.3.01D	4.00	63.70	164.00	
9/30/2018 10:00 AM	Displacement	5.50	182.50	687.00	
9/30/2018 2:00 PM	BJCem S100.3.01D	3.00	23.00	97.00	Topout + Parasite

Cementing Treatment



	Min	Max	Avg
Pressure (psi)	97.00	687.00	259.43
Rate (bpm)	3.00	5.50	4.64

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	2.00
Calculated Displacement Volume (bbls)	179.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	179.00	Amount of Spacer to Surface	30.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	1.00
Bump Plug Pressure (psi)	1,345.00	Total Volume Pumped (bbls)	536.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	Yes
Cement returns During Job	Partial	Lost Circulation During Cement Job	Yes

EVENT LOG



Customer Name: CAERUS OPERATING, LLC

Well Name: NPR 15B-11-596

Job Type: Surface

Quote ID: QUO-20369-M2H2V6

Plan ID: ORD-11660-N1Y7V0

Execution ID: EXC-11660-N1Y7V002

District: Rifle, CO

BJ Supervisor: Hamza Busheri

Seq.	Start Dt./Time	Event	Density (ppg)	Pump Rate (bpm)	Pump Vol(bbls)	Pipe Pressure(psi)	Comments
1	09/30/2018 03:00	Callout					Yard Call @ 0300, Pre-Trip, JM, Leave Location @ 0412
2	09/30/2018 04:12	Arrive on Location					Convoy to Location, AOL @ 0523, RTS 0700
3	09/30/2018 05:23	Spot Units					Meet w/ Co-Man, STEACS, Spot Equipment on location
4	09/30/2018 05:30	Rig Up					STEACS, Rig up all DH equip and lines to Buffer zone, Load SS onto pump, confirm Cmt MTS, Calculate Job, Prime up pump
5	09/30/2018 07:04	Safety Meeting					Safety meeting with Co-Man, Rig Crew, 3rd Party.
6	09/30/2018 07:31	Rig Up					Rig up PLH and lines to Head in Cellar
7	09/30/2018 07:55	Prime Up	8.3400	4.00		104.00	Fill lines to head, Break Circulation
8	09/30/2018 08:01	Pressure Test			0.00	4,600.00	PSI Test 4600 PSI
9	09/30/2018 08:07	Pump Spacer	8.3400	5.00	15.00	186.00	15 Bbls FW Spacer
10	09/30/2018 08:10	Pump Spacer	10.0000	5.00	20.00	257.00	20 Bbls Sodium Silicate Spacer
11	09/30/2018 08:15	Pump Spacer	8.3400	5.00	20.00	192.00	20 Bbls FW Spacer
12	09/30/2018 08:20	Start Pumping					Shutdown, Batch up Lead Cmt @ 12.0 PPG, Begin DH
13	09/30/2018 08:24	Pump Lead Cement	12.0000	5.00	50.00	215.00	50 Bbls Lead Cmt Pumped
14	09/30/2018 08:33	Pump Lead Cement	12.0000	5.00	100.00	152.00	Mud Returns to Surface @ 60 Bbls Lead Pumped, 100 Bbls Lead Cmt Pumped

EVENT LOG



Seq.	Start Dt./Time	Event	Density (ppg)	Pump Rate (bpm)	Pump Vol(bbls)	Pipe Pressure(psi)	Comments
15	09/30/2018 08:44	Pump Lead Cement	12.0000	5.00	150.00	233.00	150 Bbls Lead Cmt Pumped
16	09/30/2018 08:56	Pump Lead Cement	12.0000	5.00	200.00	148.00	200 Bbls Lead Cmt Pumped
17	09/30/2018 09:05	Pump Lead Cement	12.0000	4.00	232.00	162.00	232 Bbls Lead Cmt Pumped Total
18	09/30/2018 09:10	Start Pumping	12.5000	4.00		164.00	Swap to Tail Cmt @ 12.5 PPG
19	09/30/2018 09:10	Pump Tail Cement	12.5000	35.00	50.00	126.00	50 Bbls Tail Pumped
20	09/30/2018 09:20	Pump Tail Cement	12.5000	3.50	60.00	109.00	60 Bbls Tail Pumped Total
21	09/30/2018 09:24	Drop Top Plug					Shutdown, Wash up knife gate, Begin Disp
22	09/30/2018 09:27	Pump Displacement	8.3400		50.00	134.00	50 Bbls Disp Pumped
23	09/30/2018 09:37	Pump Displacement	8.3400		100.00	320.00	100 Bbls Disp Pumped
24	09/30/2018 09:47	Pump Displacement	8.3400		150.00	540.00	150 BBls Disp Pumped
25	09/30/2018 09:57	Land Plug	8.3400		179.00	687.00	179 Bbls Disp Pumped total, Landed Plug @ 1345PSI, FCP @ 687 PSI, No Cement To surface, Mud Returns
26	09/30/2018 10:05	Check Floats				1,345.00	Hold 5 mins, Floats Held, 1 Bbls FW Returned to truck
27	09/30/2018 10:09	Other (See comment)					Wait on welder to hook up crossover to parasite line, Tie-on/ Pump 10 Bbls Sugar Water, Break Over @ 224 PSI
28	09/30/2018 10:52	Other (See comment)					Shutdown, Top out Procedure
29	09/30/2018 13:05	Start Pumping	8.7000	2.50	5.00	58.00	Stab into Offside, Batch and Pump 100#s CaCl DH, Batch Topout Cement
30	09/30/2018 13:20	Pumping Cement	12.0000	2.50	23.00	62.00	Pumped 8 Bbls Topout Cmt, Cmt to Surface, Pumped 5 Bbls Cmt each Down Parasite Lines of previous 3 wells
31	09/30/2018 13:55	Pumping Cement	12.0000	2.50	23.00	62.00	Pumped 8 Bbls Topout Cmt, Cmt to Surface, Pumped 5 Bbls Cmt each Down Parasite Lines of previous 3 wells
32	09/30/2018 13:55	Rig Down					STEACS, Rig Down all DH Equipment
33	09/30/2018 15:00	Leave Location					JM, Convoy Back to Yard



