



# Caerus

**Well Name: NPR 24A-15-596**

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**API #: 05-045-23857**

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**Job Type: Surface**

Date Job Completed: 10/18/18

**Quote #:** QUO-20906

**Execution #:** EXC-12166



# Caerus

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

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

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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](mailto: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

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# Cementing Treatment



<b>Start Date</b>	10/17/2018	<b>Field Ticket#</b>	FT-12166-Q0Y2B00202-45059
<b>End Date</b>	10/18/2018	<b>Well</b>	NPR 24A-15-596
<b>Client</b>	Caerus Operating LLC	<b>API#</b>	05-045-23857
<b>Client Field Rep.</b>	Kim Gritz	<b>Well Classification</b>	
<b>Service Sup.</b>	Paul Linn III	<b>County</b>	GARFIELD
<b>District</b>	Rifle, CO	<b>State/Province</b>	CO
<b>Type of Job</b>	Surface	<b>Formation</b>	
<b>Execution ID</b>	EXC-12166-Q0Y2B002	<b>Rig</b>	H&P 273
<b>Project ID</b>	PRJ1011800		

## 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	0.00	0.00	2,406.00			
Casing	8.92	9.63	36.00	2,391.00		J-55	LTC

**Shoe Length (ft):** 44.67

## HARDWARE

<b>Bottom Plug Used?</b>	No	<b>Tool Type</b>	Float Collar
<b>Top Plug Used?</b>	Yes	<b>Tool Depth (ft)</b>	2,346.30
<b>Top Plug Provided By</b>	Non BJ	<b>Max Casing Pressure - Rated (psi)</b>	3,520.00
<b>Top Plug Size</b>	9.625	<b>Max Casing Pressure - Operated (psi)</b>	2,816.00
<b>Centralizers Used</b>	Yes	<b>Pipe Movement</b>	None
<b>Centralizers Quantity</b>	11.00	<b>Job Pumped Through</b>	Manifold
<b>Centralizers Type</b>	Bow	<b>Top Connection Thread</b>	8 RND.
<b>Landing Collar Depth (ft)</b>	2,391	<b>Top Connection Size</b>	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)	45.00	10 min SGS	31.00
Circulation Rate (bpm)	12.00	30 min SGS	58.00
Circulation Volume (bbls)	540.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	10.00	Gas Units	0
Mud Density Out (ppg)	10.00		
PV Mud In	17		
PV Mud Out	17		
YP Mud In	16		
YP Mud Out	16		

## TEMPERATURE

Ambient Temperature (°F)	37.00	Slurry Cement Temperature (°F)	58.50
Mix Water Temperature (°F)	49.60	Flow Line Temperature (°F)	0.00

## 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 / Pre Flush / Flush	Water 1	8.3300			0.00				20.0000
Spacer / Pre Flush / Flush	Sodium Silicate	10.0000			0.00				20.0000
Spacer / Pre Flush / Flush	Water 2	8.3300			0.00				20.0000
Lead Slurry	BJCem S100.3.01D	12.0000	2.5298	14.86	0.00	1900	517	1,306.0000	232.6000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2256	12.59	1,900.00	500	161	358.0000	63.7000
Displacement Final	Displacement	8.3300			0.00			0.0000	182.5000

# 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	IntegraSeal CELLO	0.1300	LBS/SK
Lead Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Lead Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead 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	FOAM PREVENTER, FP-25	0.3000	BWOB
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	IntegraSeal CELLO	0.1300	LBS/SK

## TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)
10/18/2018 5:00:00 AM	Water 1	5.00	20.00	270.00
10/18/2018 5:04:00 AM	Sodium Silicate	5.00	20.00	445.00
10/18/2018 5:08:00 AM	Water 2	5.00	20.00	231.00
10/18/2018 5:11:00 AM	BJCem S100.3.01D	5.00	232.96	360.00
10/18/2018 6:00:00 AM	BJCem S100.3.01D	4.00	63.94	112.00
10/18/2018 6:21:00 AM	Displacement	8.00	181.37	333.00

  

	Min	Max	Avg
Pressure (psi)	108.00	816.00	238.00
Rate (bpm)	2.00	8.00	5.00

# Cementing Treatment



## DISPLACEMENT AND END OF JOB SUMMARY

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<b>Displaced By</b>	BJ	<b>Amount of Cement Returned/Reversed</b>	81.00
<b>Calculated Displacement Volume (bbls)</b>	181.37	<b>Method Used to Verify Returns</b>	Visual
<b>Actual Displacement Volume (bbls)</b>	181.00	<b>Amount of Spacer to Surface</b>	60.00
<b>Did Float Hold?</b>	Yes	<b>Pressure Left on Casing (psi)</b>	0.00
<b>Bump Plug</b>	Yes	<b>Amount Bled Back After Job</b>	1.50
<b>Bump Plug Pressure (psi)</b>	724.00	<b>Total Volume Pumped (bbls)</b>	537.00
<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

# EVENT LOG



**Customer Name:** Caerus Operating LLC  
**Well Name:** NPR 24A-15-596  
**Job Type:** Surface  
**Quote ID:** QUO-20906-V2W3K0  
**Plan ID:** ORD-12166-Q0Y2B0  
**Execution ID:** EXC-12166-Q0Y2B002

**District:** Rifle, CO  
**BJ Supervisor:** Paul Linn III

Seq.	Start Dt./Time	Event	Density (ppg)	Pump Rate (bpm)	Pump Vol(bbls)	Pipe Pressure(psi)	Comments
1	10/17/2018 19:30	Callout					CALL OUT ON LOCATION TIME OF 04:00 10/18/18
2	10/17/2018 21:30	Safety Meeting					PRE-CONVOY SAFETY MEETING WITH ALL BJ SERVICES CEMENT CREW, DEPART FROM RIFLE YARD FOR H&P 329
3	10/17/2018 23:30	Arrive on Location					ARRIVE ON LOCATION, RIG RUNNING CASING
4	10/17/2018 23:38	Spot Units					DID A SITE SSESMENT, CONDUCTED A ROC DRILL AND SPOTTED IN ALL EQUIPMENT
5	10/17/2018 23:50	Safety Meeting					PRE-RIG UP SAFETY MEETING WITH ALL BJ SERVICES CEMENT CREW
6	10/18/2018 00:00	Rig Up					RIG UP ALL GROUND EQUIPMENT
7	10/18/2018 01:30	Customer					WAIT ON RIG TO FINISH RUNNING CASING AND CIRCULATE
8	10/18/2018 04:30	Safety Meeting					PRE-JOB SAFETY MEETING WITH RIG CREW, COMPANY MAN, AND ALL BJ SERVICES CEMENT CREW

## EVENT LOG



Seq.	Start Dt./Time	Event	Density (ppg)	Pump Rate (bpm)	Pump Vol(bbls)	Pipe Pressure(psi)	Comments
9	10/18/2018 04:40	Rig Up					STAB PLUG CONTAINER, LOADED PLUG IN PLUG CONTAINER VERIFIED BY DRILLER, AND HOOKED UP LINES
10	10/18/2018 04:51	Prime Up	8.3300	2.00	5.00	158.00	FILLED LINES WITH 5 BBLS OF FRESH WATER
11	10/18/2018 04:54	Pressure Test				5,208.00	PRESSURE TESTED TO 5208 PSI, PRESSURE HELD
12	10/18/2018 05:00	Pump Spacer	8.3300	5.00	20.00	270.00	PUMPED FRESH WATER SPACER
13	10/18/2018 05:03	Pump Spacer	10.5000	5.00	20.00	445.00	PUMPED 50/50 SODIUM SILICATE SPACER
14	10/18/2018 05:08	Pump Spacer	8.3300	5.00	20.00	289.00	PUMPED FRESH WATER SPACER
15	10/18/2018 05:11	Pump Lead Cement	12.0000	5.00	5.00	360.00	PUMPED LEAD CEMENT 12 PPG 517 SKS 2.53 CUFT/SK 14.86 GALS/SK FOR A TOTAL OF 232.96 BBLS OF LEAD CEMENT REQUIRING 182.92 BBLS OF MIX WATER. WEIGHT VERIFIED WITH MUD SCALE, CALCULATED HEIGHT OF LEAD IS 1892.73 FT WITH A TOP OF 0 FT.
16	10/18/2018 05:20	Pump Lead Cement	12.0000	5.00	50.00	238.00	PUMPED LEAD CEMENT
17	10/18/2018 05:33	Pump Lead Cement	12.0000	4.00	100.00	109.00	PUMPED LEAD CEMENT
18	10/18/2018 05:44	Pump Lead Cement	12.0000	5.00	150.00	217.00	PUMPED LEAD CEMENT
19	10/18/2018 05:54	Pump Lead Cement	12.0000	5.00	200.00	212.00	PUMPED LEAD CEMENT
20	10/18/2018 06:00	Pump Lead Cement	12.0000	4.00	230.00	126.00	FINISHED PUMPING LEAD CEMENT WITH 230 BBLS AWAY
21	10/18/2018 06:02	Pump Tail Cement	12.5000	4.00	5.00	112.00	PUMPED TAIL CEMENT 12.5 PPG 161 SKS 2.23 CUFT/SK 12.59 GALS/SK FOR A TOTAL OF 63.94 BBLS OF TAIL CEMENT REQUIRING 48.26 BBLS OF MIX WATER. WEIGHT VERIFIED WITH MUD SCALE, CALCULATED HEIGHT OF TAIL CEMENT IS 498.27 FT WITH A TOP OF 1892.73 FT.
22	10/18/2018 06:11	Pump Tail Cement	12.5000	5.00	50.00	218.00	PUMPED TAIL CEMENT

## EVENT LOG



Seq.	Start Dt./Time	Event	Density (ppg)	Pump Rate (bpm)	Pump Vol(bbls)	Pipe Pressure(psi)	Comments
23	10/18/2018 06:16	Pump Tail Cement	12.5000	4.00	67.00	108.00	FINISHED PUMPING TAIL CEMENT WITH 67 BBLS AWAY
24	10/18/2018 06:18	Drop Top Plug					DROP PLUG, VERIFIED BY COMPANY MAN
25	10/18/2018 06:21	Pump Displacement	8.3300	6.00	50.00	358.00	PUMP FRESH WATER DISPLACEMENT
26	10/18/2018 06:28	Pump Displacement	8.3300	6.00	100.00	568.00	PUMP FRESH WATER DISPLACEMENT
27	10/18/2018 06:36	Cement Back to Surface					81 BBLS OF CEMENT TO SURFACE
28	10/18/2018 06:36	Pump Displacement	8.3300	7.50	150.00	884.00	PUMP FRESH WATER DISPLACEMENT
29	10/18/2018 06:44	Pump Displacement	8.3300	2.00	181.00	724.00	PUMP FRESH WATER DISPLACEMENT
30	10/18/2018 06:55	Land Plug				1,270.00	LANDED THE PLUG AT 724 PSI TOOK TO 1270 PSI
31	10/18/2018 06:57	Check Floats					CHECK FLOATS, FLOATS HELD 1 1/2 BBLS BACK
32	10/18/2018 07:07	Other (See comment)	8.3300	1.00	10.00	3,621.00	PUMPED 10 BBLS OF SUGAR WATER DOWN PARASITE STING TOOK 3621 PSI TO BREAK IT OVER
33	10/18/2018 07:18	Clean Pumps and Lines					WASH PUMPS AND LINES TO CELLAR
34	10/18/2018 07:30	Safety Meeting					PRE-RIG DOWN SAFETY MEETING WITH RIG CREW AND ALL BJ SERVICES CEMENT CREW
35	10/18/2018 07:41	Rig Down					RIG DOWN ALL EQUIPMENT
36	10/18/2018 08:20	Safety Meeting					PRE-CONVOY SAFEY MEETING WITH ALL BJ SERVICES CEMENT CREW
37	10/18/2018 08:30	Leave Location					DEPART FROM LOCATION FOR RIFLE YARD. THANK YOU FOR USING BJ SERVICES, ANDREW LINN, AND CREW.

