

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-15-02904 County CLAY District UNION
Quad ELKHURST 7.5' Pad Name KING Field/Pool Name _____
Farm name ROBERT TAYLOR Well Number KING 18H
Operator (as registered with the OOG) CUNNINGHAM ENERGY, LLC
Address 3230 PENNSYLVANIA AVE City CHARLESTON State WV Zip 25302

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing _____ Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 1291' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

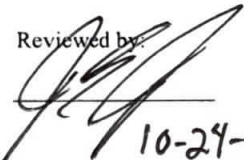
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
CLAY STABILIZER; EZ MUD

Date permit issued 11/19/2014 Date drilling commenced 9/25/2017 Date drilling ceased 10/5/2017
Date completion activities began 4/2/2018 Date completion activities ceased 4/5/2018
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 200' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1475'-1525' Void(s) encountered (Y/N) depths N
Coal depth(s) ft NONE OF RECORD Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by 
10-24-17

API 47-15 - 02904 Farm name ROBERT TAYLOR Well number KING 18H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	14 1/4"	13 3/8"	30'	NEW	LS - 43.6LBS	NONE	YES
Surface	12 1/4"	9 5/8"	425'	NEW	LS-26LBS	NONE	YES
Coal							
Intermediate 1	8 3/4"	7"	2,651'	NEW	AT50-20LBS	NONE	YES
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	5,112'	NEW	N-80 - 11.6LBS	NONE	YES
Tubing							
Packer type and depth set							

Comment Details MISTAKE ON INTERIM WR-35 - 5,112' OF 4 1/2" CASING IS CORRECT CASING RUN.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS I	10-RIG	-	-	-	GROUND LEVEL	8
Surface	CLASS I	25	15.6	1.18	29.5	SURFACE	8
Coal							
Intermediate 1	CLASS I	304	15.6	1.19	361.76	SURFACE	12
Intermediate 2							
Intermediate 3							
Production	CLASS I	406	14.3	1.27	515.62	SURFACE	12
Tubing							

Drillers TD (ft) 5,151' Loggers TD (ft) 5,151'
 Deepest formation penetrated BIG INJUN Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 1,383

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	4/2/2018	5032'	5112'	30	BIG INJUN
2	4/3/2018	4900'	5002'	30	BIG INJUN
3	4/3/2018	4805'	4865'	30	BIG INJUN
4	4/3/2018	4710'	4780'	30	BIG INJUN
5	4/3/2018	4610'	4680'	30	BIG INJUN
6	4/3/2018	4510'	4580'	30	BIG INJUN
7	4/3/2018	4410'	4480'	30	BIG INJUN
8	4/3/2018	4310'	4380'	30	BIG INJUN
9	4/3/2018	4210'	4285'	30	BIG INJUN
10	4/3/2018	4110'	4180'	30	BIG INJUN
11	4/4/2018	4010'	4080'	30	BIG INJUN
12	4/4/2018	3910'	3980'	30	BIG INJUN
13	4/4/2018	3810'	3880'	30	BIG INJUN
14	4/4/2018	3710'	3780'	30	BIG INJUN
15	4/4/2018	3610'	3680'	30	BIG INJUN
16	4/4/2018	3510'	3850'	30	BIG INJUN

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/2/2018	54	2898	N/A	1229	10440	113	250 GAL/ACID
2	4/3/2018	54	2859	3161	1290	30,000	248	250 GAL/ACID
3	4/3/2018	57	2890	3116	1381	30,000	237	250 GAL/ACID
4	4/3/2018	57	3136	4425	1407	30,000	252	250 GAL/ACID
5	4/3/2018	57	3026	2348	1513	30,000	245	250 GAL/ACID
6	4/3/2018	48	3416	4548	1574	30,000	321	250 GAL/ACID
7	4/3/2018	54	2764	4295	1410	30,000	218	250 GAL/ACID
8	4/3/2018	54	2959	3904	1570	30,000	220	250 GAL/ACID
9	4/3/2018	54	3409	4120	1847	30,000	233	250 GAL/ACID
10	4/3/2018	54	3516	2959	1979	30,000	393	250 GAL/ACID
11	4/3/2018	54	3309	4522	1312	30,000	286	250 GAL/ACID
12	4/3/2018	56	2883	4005	1575	30,000	218	250 GAL/ACID
13	4/3/2018	54	3371	3883	1730	30,000	258	250 GAL/ACID
14	4/3/2018	54	3374	4157	1625	30,000	222	250 GAL/ACID
15	4/4/2018	54	2826	3971	1617	30,000	225	250 GAL/ACID
16	4/4/2018	54	2829	4550	1631	30,000	222	250 GAL/ACID

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/4/2018	3410'	3480'	30	BIG INJUN
18	4/4/2018	3310'	3380'	30	BIG INJUN
19	4/4/2018	3210'	3280'	30	BIG INJUN
20	4/4/2018	3110'	3180'	30	BIG INJUN
21	4/5/2018	3010'	3080'	30	BIG INJUN
22	4/5/2018	2910'	2980'	30	BIG INJUN
23	4/5/2018	2810'	2880'	30	BIG INJUN
24	4/5/2018	2710'	2780'	30	BIG INJUN
25	4/5/2018	2615'	2685'	30	BIG INJUN
26	4/5/2018	2515'	2585'	30	BIG INJUN
27	4/5/2018	2430'	2490'	30	BIG INJUN

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	4/4/2018	54	3078	3749	1556	30,000	231	250 GAL/ACID
18	4/4/2018	55	3022	3825	1634	30,000	218	250 GAL/ACID
19	4/4/2018	55	2800	3839	1633	30,000	218	250 GAL/ACID
20	4/4/2018	55	2998	4045	1693	30,000	219	250 GAL/ACID
21	4/5/2018	56	2831	3709	1708	30,000	231	250 GAL/ACID
22	4/5/2018	55	3234	3918	1793	30,000	218	250 GAL/ACID
23	4/5/2018	54	2896	3840	1510	30,000	208	250 GAL/ACID
24	4/5/2018	55	3083	4246	1558	30,000	231	250 GAL/ACID
25	4/5/2018	54	2817	4905	1646	30,000	197	250 GAL/ACID
26	4/5/2018	54	2957	3703	1569	30,000	183	250 GAL/ACID
27	4/5/2018	54	3000	4119	1652	30,000	177	250 GAL/ACID

Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>
<u>BIG INJUN</u>	<u>2490' - 5112'</u> MD
_____	_____
_____	_____
_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 100 psi Bottom Hole _____ psi DURATION OF TEST 12 hrs

OPEN FLOW Gas _____ mcfpd Oil 110 bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
SAND/SHALE	0	416'	0		
SAND	416'	533'			
SAND/SHALE	533'	1383'			
SALT SANDS			1383'	1754'	
SAND/SHALE			1754'	1925'	
LITTLE LIME			1925'	1935'	
PENCIL CAVE			1935'	2010'	
BIG LIME			2010'	2180'	
BIG INJUN			2180'	5150'	

Please insert additional pages as applicable.

Drilling Contractor CUNNINGHAM ENERGY, LLC
Address 3230 PENNSYLVANIA AVENUE City CHARLESTON State WV Zip 25302

Logging Company PRECISE WELL ANALYSIS, LLC
Address 276 BF GOODRICH RD. City MARIETTA State OH Zip 45750

Cementing Company C & J ENERGY SERVICES
Address 580 HAWTHORN DRIVE City NORTON State VA Zip 24273

Stimulating Company PRODUCERS SERVICE CORP.
Address 109 SOUTH GRAHAM STREET City ZANESVILLE State OH Zip 43701

Please insert additional pages as applicable.

Completed by DANIELLE BOGGS Telephone 304-344-9291
Signature *Dan N. Boggs* Title OPERATIONS MGR. Date 9/5/19

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry