

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

API 47-15-02905 County CLAY District UNION  
Quad ELKHURST 7.5' Pad Name KING Field/Pool Name \_\_\_\_\_  
Farm name ROBERT TAYLOR Well Number KING 19H  
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 10/5/2016 Date drilling ceased 11/22/2016  
Date completion activities began 3/28/2018 Date completion activities ceased 4/2/2018  
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

Reviewed by:   
10-24-19

API 47- 15 - 02905 Farm name ROBERT TAYLOR Well number KING 19H

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"	2,065'	NEW	AT50-20LBS	NONE	YES
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	5,581'	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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	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	263	15.6	1.18	310.34	SURFACE	12
Intermediate 2							
Intermediate 3							
Production	CLASS I	453	14.3	1.27	573.31	SURFACE	12
Tubing							

Drillers TD (ft) 5,581' Loggers TD (ft) 5,581'

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 \_\_\_\_\_

API 47- 15 - 02905

Farm name **ROBERT TAYLOR**

Well number **KING 19H**

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	3/28/2018	--	--	--	BIG INJUN/NO PERFS - TRACTOR
2	3/28/2018	5445'	5510'	30	BIG INJUN
3	3/28/2018	5315'	5415'	30	BIG INJUN
4	3/29/2018	5185'	5285'	30	BIG INJUN
5	3/29/2018	5125'	5155'	30	BIG INJUN
6	3/29/2018	4995'	5095'	30	BIG INJUN
7	3/29/2018	4865'	4965'	30	BIG INJUN
8	3/29/2018	4735'	4835'	30	BIG INJUN
9	3/29/2018	4605'	4705'	30	BIG INJUN
10	3/29/2018	4475'	4575'	30	BIG INJUN
11	3/30/2018	4345'	4445'	30	BIG INJUN
12	3/30/2018	4215'	4315'	30	BIG INJUN
13	3/30/2018	4085'	4185'	30	BIG INJUN
14	3/30/2018	3955'	4055'	30	BIG INJUN
15	3/30/2018	3925'	3925'	30	BIG INJUN
16	3/30/2018	3695'	3795'	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	3/28/18	47	2421	3324	1143	5,000	51	250 GAL/ACID
2	3/28/18	54	2498	2933	1203	30,000	407	250 GAL/ACID
3	3/28/18	56	2739	3026	1280	30,000	375	250 GAL/ACID
4	3/29/18	55	3253	3643	2016	30,000	345	250 GAL/ACID
5	3/29/18	54	2853	3040	1544	30,000	236	250 GAL/ACID
6	3/29/18	54	2828	3179	1425	30,000	232	250 GAL/ACID
7	3/29/18	54	2626	3054	1509	30,000	221	250 GAL/ACID
8	3/29/18	56	2670	3150	1522	30,000	237	250 GAL/ACID
9	3/29/18	57	2718	2978	1820	30,000	234	250 GAL/ACID
10	3/29/18	57	2788	3295	1491	30,000	224	250 GAL/ACID
11	3/30/18	57	2614	2899	1734	30,000	226	250 GAL/ACID
12	3/30/18	57	2994	3262	1893	30,000	252	250 GAL/ACID
13	3/30/18	57	2715	2959	1501	30,000	207	250 GAL/ACID
14	3/30/18	58	2712	3263	1469	30,000	241	250 GAL/ACID
15	3/30/18	55	2949	3503	1570	30,000	275	250 GAL/ACID
16	3/30/18	54	2795	3192	2047	30,000	252	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	3/30/2018	3565'	3665'	30	BIG INJUN
18	3/30/2018	3435'	3535'	30	BIG INJUN
19	3/30/2018	3305'	3405'	30	BIG INJUN
20	3/30/2018	3175'	3275'	30	BIG INJUN
21	4/2/2018	3045'	3145'	30	BIG INJUN
22	4/2/2018	2745'	2815'	30	BIG INJUN
23	4/2/2018	2592'	2692'	30	BIG INJUN
24	4/2/2018	2350'	2430'	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	3/30/18	57	2834	3261	1488	30,000	230	250 GAL/ACID
18	3/30/18	58	2447	2919	1522	35,000	222	250 GAL/ACID
19	3/30/18	57	2938	3289	1772	30,000	213	250 GAL/ACID
20	3/30/18	56	2543	2888	1655	30,000	205	250 GAL/ACID
21	4/2/2018	57	3359	3744	1821	30,000	267	250 GAL/ACID
22	4/2/2018	57	3127	4089	1670	22,000	215	250 GAL/ACID
23	4/2/2018	57	3068	3633	1809	26,000	228	250 GAL/ACID
24	4/2/2018	57	2515	2795	1704	30,000	192	250 GAL/ACID

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS
<u>BIG INJUN</u>	<u>2350' - 5510'</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 100 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 <sub>2</sub> S, ETC)
SAND/SHALE	0	416'	0		
SAND	416'	533'			
SAND/SHALE	533'	1550'			
SALT SANDS			1550'	1953'	
LITTLE LIME			1953'	2010'	
PENCIL CAVE			2010'	2040'	
BIG LIME			2040'	2240'	
BIG INJUN			2240'	5581'	

Please insert additional pages as applicable.

Drilling Contractor MITCHELL DRILLING, INC.  
Address SYCAMORE ROAD City CLARKSBURG State WV Zip 26301

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 *Danielle Boggs* Title OPERATIONS MGR. Date 9/5/19

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