

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

API 47-051-00322 County Marshall District Liberty
Quad Cameron, WV Pad Name _____ Field/Pool Name Victory B Storage
Farm name Gray, Jason Well Number 2345
Operator (as registered with the OOG) Columbia Gas Transmission, LLC
Address PO Box 1723 City Charleston State WV Zip 25314

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4401124.5 Easting 532741.88
Landing Point of Curve Northing N/A Easting N/A
Bottom Hole Northing Not measured (vertical wellbore) Easting Not measured (vertical wellbore)

Elevation (ft) 798.3 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)
Water

Date permit issued 8/24/2018 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 10/3/2018 Date completion activities ceased 10/19/2018
Verbal plugging (Y/N) N/A Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft None observed during rework Open mine(s) (Y/N) depths None observed during rework
Salt water depth(s) ft None observed during rework Void(s) encountered (Y/N) depths None observed during rework
Coal depth(s) ft None observed during rework Cavern(s) encountered (Y/N) depths None observed during rework
Is coal being mined in area (Y/N) _____

Reviewed

Reviewed by: JAL 2/21/19

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API 47-051 - 00322 Farm name Gray, Jason Well number 2345

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							
Surface		10-3/4"	249	Used	32		Y
Coal		8-5/8"	955	Used	??		Y
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		5-1/2"	1600	Used/New	17		Y
Tubing							
Packer type and depth set							

Comment Details Top joint on 5-1/2" production string was changed out. A 5' short pin x LT&C 17# J-55 pup joint and full joint of 17# N80 LT&C was installed.

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							
Surface		160	15.2				
Coal		200	15.2				
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		400	15.5				
Tubing							

Drillers TD (ft) ¹⁸⁶¹ _____ Loggers TD (ft) ¹⁸⁶¹ _____
 Deepest formation penetrated Big Injun Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) _____

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 _____

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS Open hole from 1600'-1861'.

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

API 47- 051 - 00322 Farm name Gray, Jason Well number 2345

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	1962	1474	1507	4 SPF	Maxton

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)

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Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Maxton	1472' TVD	1472' MD
Big Injun	1598'	1598'

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 781 psi Bottom Hole 800 psi DURATION OF TEST 0.75 hrs

OPEN FLOW Gas 3698 mcfpd Oil bpd NGL bpd Water bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Hagen Well Service
Address 2285 Eagle Pass City Wooster State OH Zip 44691

Logging Company Baker Atlas Logging
Address 106 Island Avenue City Buckhannon State WV Zip 26201

Cementing Company _____
Address _____ City _____ State _____ Zip _____

Stimulating Company _____
Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

Completed by Brad Nelson Telephone 724-223-2753
Signature *Brad Nelson* Title Storage Engineer Date 11/12/18

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





west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, August 24, 2018
WELL WORK PERMIT
Vertical / Re-Work

COLUMBIA GAS TRANSMISSION, LLC
1700 MACCORKLE AVENUE SE

CHARLESTON, WV 25314

Re: Permit approval for 2345
47-051-00322-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: 2345
Farm Name: GRAY, JASON
U.S. WELL NUMBER: 47-051-00322-00-00
Vertical Re-Work
Date Issued: 8/24/2018

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1700 MacCorkle Ave SE
P.O. Box 1273
Charleston, WV 25325

November 20, 2018

WV DEP – Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304-2345

Enclosed are completed WR-35 Well Operator's Report of Well Work and WR-34 Discharge Monitoring Reports for the following permitted wells.

Victory B well 2345 API 051-00322 Rework

If you have questions, feel free to call.

Regards,

A handwritten signature in blue ink that reads "Brad Nelson".

Brad Nelson
Storage Engineer
Columbia Gas Transmission, LLC
brad_nelson@transcanada.com
off: 724-223-2753
cell: 724-250-0610

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Reviewed