

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

API 47-910-01249 County Taylor District BOOTH'S CREEK
Quad ROSEMONT 7.5' Pad Name RSM112 Field/Pool Name
Farm name WOODELL, SPENCER C. & TINA Well Number 514300
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4351956.3 Easting 571458.4
Landing Point of Curve Northing 4351904.3 Easting 571704.6
Bottom Hole Northing 4350782.3 Easting 572093.2

Elevation (ft) 1590 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 base Mud 12.3 ppg barium sulfate, sodium chloride, xanthan gum, polyacrylic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 4/5/2012 Date drilling commenced 10/28/2013 Date drilling ceased 2/17/2014
Date completion activities began 4/29/2014 Date completion activities ceased 5/4/2014
Verbal plugging (Y/N) NA Date permission granted NA Granted by NA

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

Freshwater depth(s) ft 430', 1022' Open mine(s) (Y/N) depths
Salt water depth(s) ft 1950' Void(s) encountered (Y/N) depths
Coal depth(s) ft 706', 781', 942', 998', 1032' Cavern(s) encountered (Y/N) depths
Is coal being mined in area (Y/N) N

RECEIVED
Office of Oil and Gas
JUL 29 2014
Reviewed by:
WV Department of
Environmental Protection

API 47- 910 - 1249 Farm name WOODELL, SPENCER C. & TINA Well number 514300

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	24"	20"	70'	New	94lb/ft	N/A	Y
Surface	17-1/2"	13-3/8"	1,102'	New	54.5lb/ft	232', 394'	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,685'	New	40lb/ft	1,264', 1940'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	12,628'	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

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 A	67	15.6	1.18	79	0	8
Surface	Class A	950	15.6	1.19	1131	0	8
Coal							
Intermediate 1	Class A	495/435	15.6	1.19/1.20	1111	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	700/610	14.2/15.2	1.26/1.97	2084	4550	72
Tubing							

Drillers TD (ft) 12,628' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6050

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 Conductor- N/A
 Surface-Bowspring centralizer at 1121, 916, 596, 313'
 Intermediate-Bowspring centralizer at 2843, 2096, 1589, 1040, (702-Basket), 238'
 Production- Composit bodied centralizers on every joint from TD up to 4,830'

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- 910 - 1249 Farm name WOODELL, SPENCER C. & TINA Well number 514300

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					See Attachment

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)
								See Attachment

Please insert additional pages as applicable.

API 47- 910 - 1249 Farm name WODELL, SPENCER C. & TINA Well number _____

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>7,579</u> TVD	<u>7,907</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
SHUT-IN PRESSURE Surface 490 psi Bottom Hole NA psi DURATION OF TEST 116.5 hrs
OPEN FLOW Gas 2,400 mcfpd Oil 0 bpd NGL 0 bpd Water 384 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	
	<u>0</u>		<u>0</u>		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397-5682

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by James E. Helmick Jr Telephone 412-395-5518
Signature [Signature] Title Vice President - Completions Operations Date 7/28/2014

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

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
Fresh Water Zone	0	0	1,022.00	1,022.00
Sand / Shale	0	0	706	706
Coal	706	706	712	712
Sand / Shale	712	712	781	781
Coal	781	781	786	786
Sand / Shale	786	786	942	942
Coal	942	942	947	947
Sand / Shale	947	947	998	998
Coal	998	998	1,001.00	1,001.00
Sand / Shale	1,001.00	1,001.00	1,032.00	1,032.00
Coal	1,032.00	1,032.00	1,038.00	1,038.00
Sand / Shale	1,038.00	1,038.00	1,143.00	1,143.00
Maxton	1,143.00	1,143.00	1,554.00	1,553.90
Big Lime	1,554.00	1,553.90	1,838.00	1,837.90
Weir	1,838.00	1,837.90	2,065.00	2,064.80
Gantz	2,065.00	2,064.80	2,139.00	2,138.80
Fifty foot	2,139.00	2,138.80	2,246.00	2,245.70
Thirty foot	2,246.00	2,245.70	2,324.00	2,323.70
Gordon	2,324.00	2,323.70	2,470.00	2,469.70
Forth Sand	2,470.00	2,469.70	2,613.00	2,612.60
Bayard	2,613.00	2,612.60	3,037.00	3,036.50
B-5	3,037.00	3,036.50	3,255.00	3,254.40
Speechley	3,255.00	3,254.40	3,631.00	3,630.40
Bradford	3,631.00	3,630.40	3,775.00	3,774.30
Balltown B	3,775.00	3,774.30	3,986.00	3,985.30
Riley	3,986.00	3,985.30	4,610.00	4,609.10
Benson	4,610.00	4,609.10	4,964.00	4,963.10
Elk	4,964.00	4,963.10	6,992.00	6,830.10
Sonyea	6,992.00	6,830.10	7,350.00	7,129.20
Middlesex	7,350.00	7,129.20	7,468.00	7,233.60
Genesee	7,468.00	7,233.60	7,606.00	7,353.30
Geneseo	7,606.00	7,353.30	7,651.00	7,391.40
Tully	7,651.00	7,391.40	7,715.00	7,443.50
Hamilton	7,715.00	7,443.50	7,907.00	7,579.30
Marcellus	7,907.00	7,579.30	12,628.00	7,819.30

Stimulation Notes:
Re-perforated Stage 11 (11.1)

514300 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	4/29/2014	12,601.00	12,604.00	10	MARCELLUS
1	4/29/2014	11,664.00	11,906.00	40	MARCELLUS
2	4/29/2014	11,364.00	11,606.00	40	MARCELLUS
3	4/30/2014	11,064.00	11,306.00	40	MARCELLUS
4	5/1/2014	10,764.00	11,006.00	40	MARCELLUS
5	5/1/2014	10,464.00	10,706.00	40	MARCELLUS
6	5/2/2014	10,164.00	10,406.00	40	MARCELLUS
7	5/2/2014	9,864.00	10,106.00	40	MARCELLUS
8	5/2/2014	9,564.00	9,806.00	40	MARCELLUS
9	5/3/2014	9,264.00	9,506.00	40	MARCELLUS
10	5/3/2014	8,964.00	9,206.00	40	MARCELLUS
11	5/4/2014	8,660.00	8,906.00	40	MARCELLUS
11.1 (Re-Perf)	5/4/2014	8,564.00	8,906.00	40	MARCELLUS
12	5/4/2014	8,364.00	8,606.00	40	MARCELLUS

514300 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	4/29/2014	13.00	8,390.00	NA	NA	NA	1,232	0
1	4/29/2014	88.00	8,632.00	6,885.00	4,946	501,510	11,974	0
2	4/29/2014	95.50	8,655.00	6,881.00	6,069	498,300	13,134	0
3	4/30/2014	94.90	8,566.00	6,459.00	5,985	499,660	13,985	0
4	5/1/2014	89.40	8,718.00	6,523.00	6,026	498,440	12,746	0
5	5/2/2014	99.20	8,463.00	6,391.00	6,019	498,220	12,039	0
6	5/2/2014	93.00	8,588.00	7,035.00	5,897	500,930	11,147	0
7	5/2/2014	98.80	8,693.00	7,675.00	5,994	500,810	12,113	0
8	5/3/2014	99.10	8,712.00	7,489.00	6,001	501,930	12,028	0
9	5/3/2014	96.60	8,710.00	6,623.00	5,987	501,230	12,113	0
10	5/3/2014	97.90	8,709.00	7,410.00	5,972	500,430	12,108	0
11	5/4/2014	93.00	8,573.00	7,796.00	5,647	233,100	7,994	0
11.1 (Re-Perf)	5/4/2014	99.00	7,891.00	7,796.00	5,862	262,480	5,331	0
12	5/4/2014	94.00	8,136.00	6,992.00	5,811	499,500	12,371	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/29/2014
Job End Date:	5/4/2014
State:	West Virginia
County:	Taylor
API Number:	47-091-01249-00-00
Operator Name:	EQT Production
Well Name and Number:	RSM112 - 514300
Longitude:	-80.17129000
Latitude:	39.31396700
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,820
Total Base Water Volume (gal):	6,426,924
Total Base Non Water Volume:	295,672



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	USWS	Carrier	Water	7732-18-5	100.00000	89.57335	
Sand	USWS	Proppant	Crystalline Silica	14808-60-7	100.00000	10.03301	
MX-5	Halliburton	Biocide	Sodium Nitrate	7631-99-4	60.00000	0.05780	
WFRA-405e	USWS	Friction Reducer	Sodium Chloride	7647-14-5	20.00000	0.01793	
			Distillates, Petroleum, Hydrotreated Light	64742-47-8	20.00000	0.01793	
15% HCl	USWS	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02424	
SI-110	USWS	Scale Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.01099	
MX-8	Halliburton	Biocide	Bacteria Culture	000-00-0	100.00000	0.00981	
LGC-15	USWS	Increases Viscosity	Petroleum Distillates	64742-47-8	60.00000	0.00498	
AI-301	USWS	Corrosion Inhibitor	DIETHYLENE GLYCOL	111-46-6	30.00000	0.00011	

			METHENAMINE	100-97-0	20.00000	0.00007
			POLYETHYLENEPOLYAMINE	58603-67-8	10.00000	0.00004
			HYDROGEN CHLORIDE	7647-01-0	10.00000	0.00004
			COCO AMINE	51791-14-8	5.00000	0.00002
AP-One	USWS	Gel Breaker				
			Ammonium Persulfate	7727-54-0	100.00000	0.00010

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

- Total Water Volume sources may include fresh water, produced water, and/or recycled water
- ** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

EQT PRODUCTION CO. WELL NO. WV 514300 CORDER LEASE

LANDING POINT
WELL NO. WV 514300
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)

LATITUDE 39°20'00"

N. 297,260.8
E. 1,810,792.8

LAT=(N) 39.314223
LONG=(W) 80.168724

WELL NO. WV 514300
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)

N. 297,172.8
E. 1,810,066.1

LAT=(N) 39.313967
LONG=(W) 80.171290

UTM (NAD'83)
N. 4,351,956.3
E. 571,458.4

UTM (NAD'83)
N. 4,351,986.8
E. 571,679.3

LEGEND

AS DRILLED —

PROPOSED ---



AS DRILLED INFORMATION

WELL NO. WV 514300 STATE PLANE COORDINATES NORTH ZONE (NAD 27)	WELL NO. WV 514300 STATE PLANE COORDINATES NORTH ZONE (NAD 27)
N. 293,285.9 E. 1,812,085.2	N. 297,172.8 E. 1,810,066.1
LAT=(N) 39.303337 LONG=(W) 80.164053	LAT=(N) 39.313967 LONG=(W) 80.171290
UTM (NAD'83) N. 4,350,782.3 E. 572,093.2	UTM (NAD'83) N. 4,351,956.3 E. 571,458.4

NOTES ON SURVEY

- TIES TO WELLS, CORNERS, AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD'27.
- LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 59 PAGE 101 & DEED BOOK 224 PAGE 408.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF TAYLOR COUNTY IN JULY, 2011.
- WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SURVEY GRADE).
- U.S. RT. 50 IN THIS AREA APPEARS TO BE PART OF THE OLD NORTHWESTERN TURNPIKE, A STRIP OF LAND CLAIMED IN FEE BY THE WOOD. SLS RECOMMENDS PROPER LEGAL & LEASING (IF NEEDED) PROCEDURES BE TAKEN BEFORE DRILLING COMMENCES.
- PLAT DATED 04/21/10 REVISED 05/31/11 TO EXTEND HORIZONTAL LEG & CHANGE BOTTOM HOLE COORDINATES, & REVISED AGAIN 07/25/11 TO CHANGE SIX DIGIT WELL NUMBERS.
- PLAT UPDATED ON 07/16/14 TO SHOW THE AS DRILLED PATH COORDINATES FROM INFORMATION PROVIDED BY EOT ON 03/27/14.



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE JULY 25, 20 11

REVISED DATE JULY 16, 20 14

OPERATORS WELL NO. WV 514300

API WELL NO. 47-091-01249

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7249ASDRILLED514300

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2,000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,586.5 (GROUND) / 1,590 (PROPOSED) WATERSHED CORBIN BRANCH & HUSTEAD FORK

DISTRICT BOOTH'S CREEK COUNTY TAYLOR QUADRANGLE ROSEMONT 7.5'

SURFACE OWNER SPENCER C. & TINA R. WOODDELL ACREAGE 107.17±

ROYALTY OWNER PEGGY KNOTTS ET AL (310 AC±) / O.E. & EVA L. CORDER ET AL (240 AC±) / D.W. BARNETT ET AL (81 AC±)

PROPOSED WORK: LEASE NO. 109869 / 125209 / 122971

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD

FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH _____

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 1710 PENNSYLVANIA AVENUE ADDRESS 1710 PENNSYLVANIA AVENUE

CHARLESTON, WV 25302 CHARLESTON, WV 25302

COUNTY NAME PERMIT