

02/15/2019

WR-35
Rev. 8/23/13

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

API 47-049-02426 County Marion District Lincoln
Quad Mannington Pad Name Worthington Field/Pool Name Marcellus
Farm name Bower, Richard & Jocelyn Well Number Brennan NW 13H
Operator (as registered with the OOG) XTO Energy Inc.
Address PO Box 1008 City Jane Lew State WV Zip 26378

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4372549.784 Easting 560568.880
Landing Point of Curve Northing 4372493.880 Easting 560034.223
Bottom Hole Northing 4374138.881 Easting 557745.492

Elevation (ft) 1,252' 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)
SOBM

Date permit issued 2/28/2017 Date drilling commenced 3/3/18 Date drilling ceased 7/9/18
Date completion activities began 8/7/18 Date completion activities ceased 9/3/18

Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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

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Freshwater depth(s) ft None Seen Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Seen Void(s) encountered (Y/N) depths N
Coal depth(s) ft 135-140, 574-581 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

SDW 11/3/19
Reviewed

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API 47- 049 - 02426 Farm name Bower, Richard & Jocelyn Well number Brennan NW 13H

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	30"	24"	40	New	PE&B / 94.62		Y
Surface	17 1/2"	13 3/8"	637.2'	New	H-40 / 48		Y
Coal							
Intermediate 1	12 3/8" / 12 1/4"	9 5/8"	3,179.4'	New	J-55 / 36		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" / 8 1/2"	5 1/2"	17,735.0'	New	P-110 / 23		Y - Est. 2,083'
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	Redi-Mix	5 Yards				0	8
Surface	A	535	15.60	1.20	642	0	8
Coal							
Intermediate 1	A	1,124	15.60	1.21	1,360.04	0	8
Intermediate 2							
Intermediate 3							
Production	CJ916 & 35% CJ305	545 / 1,935	15.20 / 15.60	1.10 / 1.57	599.5 / 3,038	Est. 2,083'	8
Tubing							

Drillers TD (ft) 17,775' Loggers TD (ft) 17,775'

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 5,570'

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 _____

Surface - Every 3rd Joint

Intermediate - Every Joint

Production - Every Joint

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

Perforation Record Brennan NW 13H 47-049-02426

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8/7/2018	17,417.00	17,563.00	48	Marcellus
2	8/8/2018	17,221.00	17,367.00	48	Marcellus
3	8/8/2018	17,025.00	17,171.00	48	Marcellus
4	8/8/2018	16,829.00	16,968.00	48	Marcellus
5	8/8/2018	16,636.00	16,779.00	48	Marcellus
6	8/9/2018	16,437.00	16,583.00	48	Marcellus
7	8/9/2018	16,241.00	16,387.00	48	Marcellus
8	8/9/2018	16,045.00	16,195.00	48	Marcellus
9	8/10/2018	15,849.00	15,995.00	48	Marcellus
10	8/10/2018	15,653.00	15,794.00	48	Marcellus
11	8/10/2018	15,462.00	15,603.00	48	Marcellus
12	8/10/2018	15,261.00	15,407.00	48	Marcellus
13	8/11/2018	15,065.00	15,211.00	48	Marcellus
14	8/11/2018	14,865.00	15,015.00	48	Marcellus
15	8/11/2018	14,673.00	14,819.00	48	Marcellus
16	8/11/2018	14,475.00	14,623.00	48	Marcellus
17	8/18/2018	14,281.00	14,427.00	48	Marcellus
18	8/18/2018	14,085.00	14,231.00	48	Marcellus
19	8/20/2018	13,889.00	14,035.00	48	Marcellus
20	8/20/2018	13,693.00	13,840.00	48	Marcellus
21	8/20/2018	13,499.00	13,643.00	48	Marcellus
22	8/21/2018	13,301.00	13,444.00	48	Marcellus
23	8/21/2018	13,105.00	13,254.00	48	Marcellus
24	8/21/2018	12,913.00	13,055.00	48	Marcellus
25	8/21/2018	12,713.00	12,859.00	48	Marcellus
26	8/22/2018	12,517.00	12,663.00	48	Marcellus
27	8/22/2018	12,321.00	12,467.00	48	Marcellus
28	8/22/2018	12,125.00	12,271.00	48	Marcellus
29	8/22/2018	11,929.00	12,079.00	48	Marcellus
30	8/23/2018	11,736.00	11,879.00	48	Marcellus
31	8/23/2018	11,537.00	11,683.00	48	Marcellus
32	8/23/2018	11,341.00	11,487.00	48	Marcellus
33	8/27/2018	11,145.00	11,291.00	48	Marcellus
34	8/27/2018	10,949.00	11,090.00	48	Marcellus
35	8/27/2018	10,750.00	10,899.00	48	Marcellus
36	8/29/2018	10,557.00	10,703.00	48	Marcellus
37	8/29/2018	10,361.00	10,507.00	48	Marcellus
38	8/29/2018	10,160.00	10,311.00	48	Marcellus
39	9/1/2018	9,969.00	10,115.00	48	Marcellus
40	9/1/2018	9,773.00	9,922.00	48	Marcellus
41	9/2/2018	9,580.00	9,723.00	48	Marcellus
42	9/2/2018	9,381.00	9,526.00	48	Marcellus
43	9/2/2018	9,179.00	9,331.00	48	Marcellus
44	9/2/2018	8,989.00	9,135.00	48	Marcellus
45	9/3/2018	8,795.00	8,939.00	48	Marcellus
46	9/3/2018	8,597.00	8,741.00	48	Marcellus

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Stimulation Information Per Stage Brennan NW 13H 47-049-02426

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)	Amt. of Nitrogen / other (units)
1	8/7/2018	77.6	9,145.0	9,537.0	5,595	401,420	11,674	
2	8/8/2018	81.8	8,941.2	8,032.1	4,691	401,940	11,015	
3	8/8/2018	85.3	8,689.2	7,066.4	4,883	401,780	10,026	
4	8/8/2018	85.9	8,605.8	6,777.3	5,106	398,620	9,922	
5	8/9/2018	83.3	8,342.0	8,147.0	5,886	401,360	11,293	02/15/2019
6	8/9/2018	85.5	8,198.1	6,334.5	5,277	398,340	10,358	
7	8/9/2018	85.5	8,061.3	6,400.0	5,146	405,200	9,840	
8	8/9/2018	84.6	7,909.7	6,244.9	5,177	389,260	9,660	
9	8/10/2018	85.0	7,845.1	6,692.6	5,110	406,220	10,677	
10	8/10/2018	85.4	7,904.0	6,574.8	5,093	396,820	9,959	
11	8/10/2018	85.5	7,978.5	6,393.7	5,561	400,100	10,103	
12	8/10/2018	85.0	8,093.3	8,030.8	4,893	402,940	10,735	
13	8/11/2018	84.8	8,051.1	8,011.7	4,867	399,500	10,572	
14	8/11/2018	85.5	8,062.6	8,201.3	5,086	400,120	9,783	
15	8/11/2018	85.0	8,073.7	6,479.3	5,127	403,840	9,782	
16	8/11/2018	84.0	8,037.2	5,953.8	4,904	402,740	10,153	
17	8/18/2018	85.2	8,178.4	6,256.0	4,872	400,300	10,365	
18	8/18/2018	85.3	8,064.1	7,051.0	5,143	401,360	10,070	
19	8/20/2018	85.6	8,216.2	7,027.6	5,036	397,360	10,031	
20	8/20/2018	85.4	8,186.6	7,017.8	5,206	401,620	10,128	
21	8/20/2018	83.8	8,323.8	6,474.9	5,994	361,020	10,262	
22	8/21/2018	83.8	8,167.6	6,948.0	5,669	403,220	10,359	
23	8/21/2018	85.6	8,415.4	7,694.4	5,367	409,380	9,931	
24	8/21/2018	85.6	8,231.8	7,026.6	5,591	399,080	9,955	
25	8/21/2018	80.2	8,377.4	7,507.7	5,358	401,040	9,829	
26	8/21/2018	85.9	8,231.7	7,349.2	5,699	397,520	10,523	
27	8/22/2018	85.3	8,163.8	7,192.2	5,355	407,280	9,605	
28	8/22/2018	85.7	8,177.4	7,190.3	5,557	399,160	10,077	
29	8/22/2018	81.6	8,293.5	7,413.6	5,526	401,360	12,059	
30	8/22/2018	85.4	8,314.9	7,634.9	5,800	401,560	10,211	
31	8/23/2018	86.1	8,094.4	7,220.1	5,353	402,220	9,832	
32	8/26/2018	85.8	8,082.9	6,993.9	5,252	403,640	10,178	
33	8/27/2018	85.3	7,916.0	7,599.7	5,620	405,320	9,527	
34	8/27/2018	85.4	7,882.4	6,910.0	5,716	403,160	11,689	
35	8/27/2018	84.8	8,096.6	7,150.1	5,518	241,640	9,431	
36	8/27/2018	85.6	8,049.2	7,013.5	5,375	399,420	9,768	
37	8/28/2018	85.7	7,939.6	7,334.3	5,550	404,740	9,813	
38	9/1/2018	85.3	8,167.9	7,753.6	5,764	401,200	10,911	
39	9/1/2018	83.7	8,327.6	7,592.4	6,523	265,920	9,643	
40	9/1/2018	83.9	7,991.9	7,396.5	5,284	401,780	10,375	
41	9/2/2018	84.7	7,713.3	7,293.1	5,529	401,360	9,720	
42	9/2/2018	85.0	8,093.6	7,851.8	5,224	399,820	10,496	
43	9/2/2018	85.2	7,590.0	8,328.4	5,350	400,540	10,091	
44	9/2/2018	83.8	7,876.2	7,785.2	5,228	363,350	9,899	
45	9/3/2018	86.0	7,565.8	7,384.9	5,317	395,620	10,051	
46	9/3/2018	84.0	7,451.0	8,436.8	5,527	347,090	9,490	

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Lithology Brennan NW 13H 47-049-02426

Lithology / Formation Name	Top Depth in FT 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, H2S, ETC)
SHALE	40	135	40	135	
COAL	135	140	135	140	
SHALE	140	360	140	360	
SAND	360	400	360	400	
SAND/SHALE	400	450	400	450	
SHALE	450	475	450	475	
SAND/SHALE	475	500	475	500	
SAND / SHALE	500	550	500	550	
SANDY SHALE	550	574	550	574	
COAL	574	581	574	581	
SHALE	581	600	581	600	
SHALE	600	650	600	650	
SANDY SHALE	650	700	650	700	
SHALE	700	750	700	750	
SHALE	750	800	750	800	
SHALE	800	850	800	850	
SHALE	850	900	850	900	
SHALE	900	950	900	950	
SAND	950	1000	950	1000	
SANDY SHALE	1000	1050	1000	1050	
SANDY SHALE	1050	1100	1050	1100	
SANDY SHALE	1100	1150	1100	1150	
SANDY SHALE	1150	1200	1150	1200	
WHITE SAND	1200	1250	1200	1250	
SAND/SHALE	1250	1300	1250	1300	
SAND/SHALE	1300	1350	1300	1350	
SAND/SHALE	1350	1400	1350	1400	
SAND/SHALE	1400	1450	1400	1450	
SAND/SHALE	1450	1500	1450	1500	
SAND/SHALE	1500	1550	1500	1550	
SAND	1550	1600	1550	1600	
SHALE	1600	1650	1600	1650	
SHALE/RED SHALE	1650	1700	1650	1700	
SHALE	1700	1750	1700	1750	
SAND	1750	1800	1750	1800	
SAND	1800	1850	1800	1850	
SHALE/SAND	1850	1900	1850	1900	
SHALE/SAND	1900	1950	1900	1950	
SHALE	1950	2000	1950	2000	
SAND	2000	2050	2000	2050	
SAND	2050	2100	2050	2100	
SHALW/SAND	2100	2150	2100	2150	
SHALE	2150	2200	2150	2200	
SHALE	2200	2250	2200	2250	
SHALE/SAND	2250	2300	2250	2300	
SAND	2300	2350	2300	2350	
SHALE/SAND	2350	2400	2350	2400	
SHALE/SAND	2400	2450	2400	2450	
SHALE/SAND	2450	2500	2450	2500	
SHALE/SAND	2500	2550	2500	2550	
SHALE/SAND	2550	2600	2550	2600	
SHALE	2600	2650	2600	2650	
SHALE/SAND	2650	2700	2650	2700	
SAND	2700	2750	2700	2750	
SAND	2750	2800	2750	2800	
SHALE/SAND	2800	2850	2800	2850	
SHALE/SAND	2850	2900	2850	2900	
SHALE/SAND	2900	2950	2900	2950	
SHALE/SAND	2950	3000	2950	3000	

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SHALE/SAND	3000	3050	3000	3050
SHALE/SAND	3050	3100	3050	3100
SHALE/SAND	3100	3150	3100	3150
SAND	3150	3200	3150	3200
SHALE	3200	3250	3200	3250
SANDY SHALE	3250	3300	3250	3300
SAND	3300	3350	3300	3350
SANDY SHALE	3350	3400	3350	3400
SHALE	3400	3570	3400	3570
SANDY SHALE	3570	3600	3570	3600
SAND	3600	3736	3600	3736
SAND	3736	3830	3736	3830
SANDY SHALE	3830	4300	3830	4300
SHALE	4300	4400	4300	4400
SHALE	4500	4600	4500	4600
SHALE	4600	4700	4600	4700
SHALE	4700	4750	4700	4750
SHALE	4750	4800	4750	4800
SHALE	4800	4850	4800	4850
SHALE	4850	4900	4850	4900
SHALE	4900	5000	4900	5000
SHALE	5000	5100	5000	5100
SHALE	5100	5150	5100	5150
SHALE	5200	7391	5200	7839
BURKETT	7391	7426	7839	7890
TULLY	7426	7482	7890	7982
HAMILTON	7482	7539	7982	8090
UPPER MARCELLUS	7539	7625	8090	8340
LOWER MARCELLUS	7625	7703	8340	17775

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BRENNAN NW 13H

SCALE: 1" = 2400'

LATITUDE: 39°32'30"
SCALE 1" = 2000'

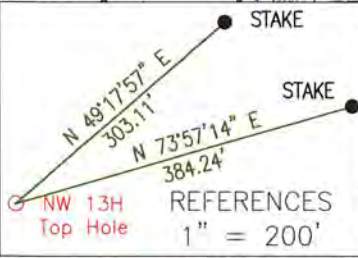
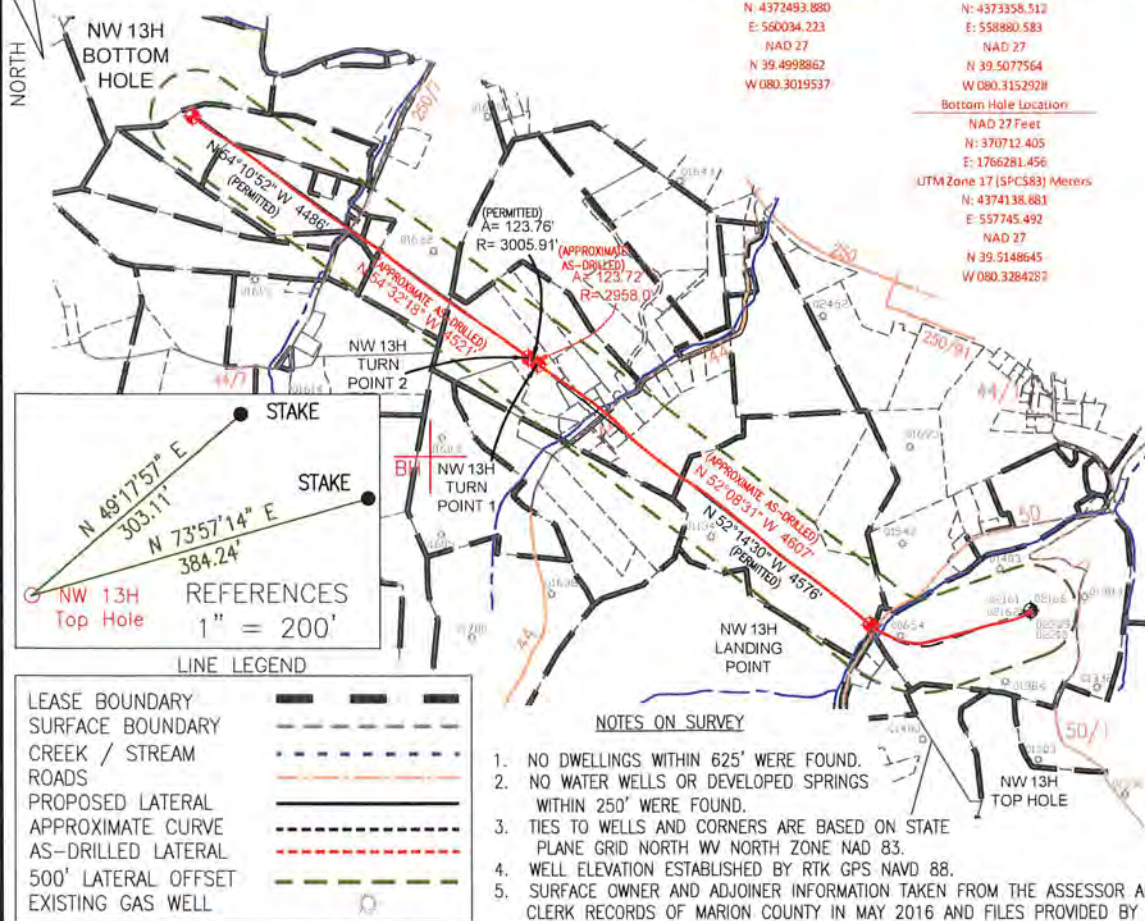
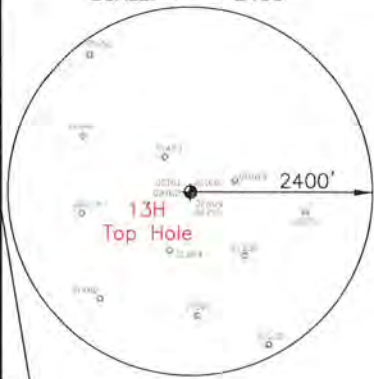
AS-DRILLED

State Plane Coordinate West Virginia North	State Plane Coordinate West Virginia North
Top Hole Location	Turn Point 1
NAD 27 Feet N: 365343.510 E: 1775459.183	NAD 27 Feet N: 368016.861 E: 1770064.006
UTM Zone 17 (SPCS83) Meters N: 4372549.784 E: 560568.880	UTM Zone 17 (SPCS83) Meters N: 4373336.856 E: 558911.583
NAD 27 N 39.5003524 W 080.2957309	NAD 27 N 39.5075591 W 080.3149253
Landing Point Location	Turn Point 2
NAD 27 Feet N: 365189.323 E: 1773701.737	NAD 27 Feet N: 368089.613 E: 1769963.793
UTM Zone 17 (SPCS83) Meters N: 4372493.880 E: 560094.223	UTM Zone 17 (SPCS83) Meters N: 4373358.512 E: 558880.583
NAD 27 N 39.4998862 W 080.3019537	NAD 27 N 39.5077564 W 080.3152920
	Bottom Hole Location
	NAD 27 Feet N: 370712.405 E: 1766281.456
	UTM Zone 17 (SPCS83) Meters N: 4374138.681 E: 557745.492
	NAD 27 N 39.5148645 W 080.3284287

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State Plane Coordinate West Virginia North
Top Hole Location
NAD 27 Feet N: 365343.510 E: 1775459.183
UTM Zone 17 (SPCS83) Meters N: 4372549.784 E: 560568.880
NAD 27 N 39.5003524 W 080.2957309
Landing Point Location
NAD 27 Feet N: 365213.569 E: 1773681.054
UTM Zone 17 (SPCS83) Meters N: 4372501.162 E: 560027.798
NAD 27 N 39.4995522 W 080.3020278
Turn Point 1
NAD 27 Feet N: 368015.695 E: 1770063.038
UTM Zone 17 (SPCS83) Meters N: 4373336.496 E: 558911.294
NAD 27 N 39.5075559 W 080.3149387
Turn Point 2
NAD 27 Feet N: 368089.442 E: 1769963.657
UTM Zone 17 (SPCS83) Meters N: 4373358.459 E: 558880.642
NAD 27 N 39.5077559 W 080.3152933
Bottom Hole Location
NAD 27 Feet N: 370714.990 E: 1766325.680
UTM Zone 17 (SPCS83) Meters N: 4374139.893 E: 557758.953
NAD 27 N 39.5148728 W 080.3282720



LINE LEGEND

LEASE BOUNDARY	---
SURFACE BOUNDARY	- - - -
CREEK / STREAM	~ ~ ~ ~
ROADS	— — — —
PROPOSED LATERAL	— — — —
APPROXIMATE CURVE	- · - · -
AS-DRILLED LATERAL	- · - · -
500' LATERAL OFFSET	- · - · -
EXISTING GAS WELL	○

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
4. WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WDEP.



2402 PENNSYLVANIA 66 DELMONT, PA 15626
(724) 757 - 2417 www.jonesconsultant.com

SHEET 1 OF 2

FILE #: JC2016-31
DRAWING #: BRENNAN NW 13H WELL
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1:2500
PROVEN SOURCE OF ELEVATION: RTK GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: Ryan Jones
R.P.E.: _____ P.S.: 2165



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304



DATE: 08/03/2018
OPERATOR'S WELL #: BRENNAN NW 13H
API WELL #: 47 049 02426
STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: BUFFALO CREEK (0502000301)
COUNTY/DISTRICT: MARION / LINCOLN
SURFACE OWNER: RICHARD & JOCELYN BOWER
OIL & GAS ROYALTY OWNER: JOHN E. BRENNAN, ET AL

ELEVATION: 1,252' FINISHED GRADE
QUADRANGLE: MANNINGTON 7.5'
ACREAGE: 94.5±
ACREAGE: 419±

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DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,703' (TVD) 17,775' (TMD)

WELL OPERATOR: XTO ENERGY INC.
Address: 190 THORN HILL ROAD
City: WARRENDALE State: PA Zip Code: 15086

DESIGNATED AGENT: GARY BEALL
Address: P.O. BOX 1008
City: JANE LEW State: WV Zip Code: 26378

BRENNAN NW 13H

LINE LEGEND

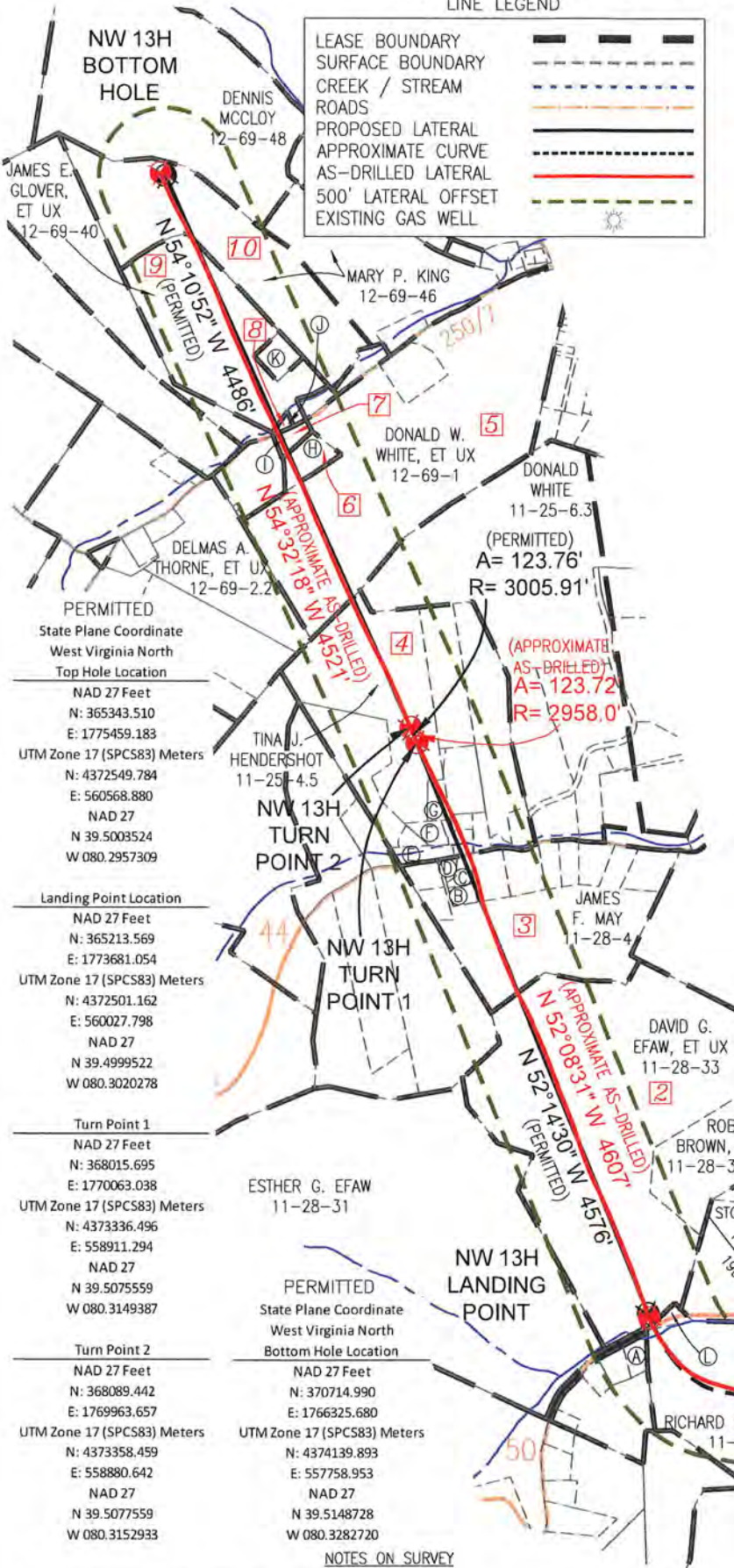
LEASE BOUNDARY	
SURFACE BOUNDARY	
CREEK / STREAM	
ROADS	
PROPOSED LATERAL	
APPROXIMATE CURVE	
AS-DRILLED LATERAL	
500' LATERAL OFFSET	
EXISTING GAS WELL	

AS-DRILLED	AS-DRILLED
State Plane Coordinate	State Plane Coordinate
West Virginia North	West Virginia North
Top Hole Location	Turn Point 2
NAD 27 Feet	NAD 27 Feet
N: 365343.510	N: 368089.611
E: 1775459.183	E: 1769963.657
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4372549.784	N: 4373958.512
E: 560568.880	E: 558880.583
NAD 27	NAD 27
N 39.5003524	N 39.5077564
W 080.2957309	W 080.3152928
Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet
N: 365189.323	N: 370712.405
E: 1773701.737	E: 1766281.456
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4372493.880	N: 4374138.881
E: 560034.223	E: 557745.492
NAD 27	NAD 27
N 39.4998862	N 39.5148645
W 080.3019537	W 080.3284287
Turn Point 1	
NAD 27 Feet	
N: 368016.861	
E: 1770064.006	
UTM Zone 17 (SPCS83) Meters	
N: 4373336.856	
E: 558911.583	
NAD 27	
N 39.5075591	
W 080.3149353	

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BRENNAN NW 13H		
LEASE	LESSOR	MINERAL ACREAGE
1)	JOHN E. BRENNAN	94.5000
2)	NANCY FOUT	109.4100
3)	JAMES W. TAYLOR, ET AL	35.2500
4)	JAMES W. TAYLOR, ET AL	57.1600
5)	DONALD W. WHITE, ET UX	66.3600
6)	THOMAS W. NEER, ET UX	2.1800
7)	ROBERT A. ICE, ET AL	1.00551
8)	KENNIS S. KETTERER, JR., ET AL	0.30938
9)	KENNIS S. KETTERER, JR., ET AL	24.689
10)	KENNIS S. KETTERER, JR., ET AL	28.115

LETTER	SURFACE OWNER	TAX PARCEL
A	ROBERT A. CREMEENS	11 28 32.4
B	NELLIE HAYES	11 28 4.5
C	NELLIE HAYES	11 28 4.3
D	PHILLIP M. HAYES, ET UX	11 28 4.10
E	KENNETH HAUGHT, ET UX	11 25 4.1
F	KENNETH HAUGHT, ET UX	11 25 4.3
G	JESSE W. MOORE, ET UX	11 25 4
H	THOMAS W. NEER, ET UX	12 69 1.2
I	HELEN R. ICE, ET AL	12 69 42.1
J	TRUSTEES OF TRINITY TEMPLE	12 69 42
K	MARY P. KING	12 69 41
L	FAYE C. ROCKWELL	11 28 35



PERMITTED	State Plane Coordinate	West Virginia North	Top Hole Location
	NAD 27 Feet		
	N: 365343.510		
	E: 1775459.183		
	UTM Zone 17 (SPCS83) Meters		
	N: 4372549.784		
	E: 560568.880		
	NAD 27		
	N 39.5003524		
	W 080.2957309		
	Landing Point Location		
	NAD 27 Feet		
	N: 365213.569		
	E: 1773681.054		
	UTM Zone 17 (SPCS83) Meters		
	N: 4372501.162		
	E: 560027.798		
	NAD 27		
	N 39.4999522		
	W 080.3020278		
	Turn Point 1		
	NAD 27 Feet		
	N: 368015.695		
	E: 1770063.038		
	UTM Zone 17 (SPCS83) Meters		
	N: 4373336.496		
	E: 558911.294		
	NAD 27		
	N 39.5075559		
	W 080.3149387		
	Turn Point 2		
	NAD 27 Feet		
	N: 368089.442		
	E: 1769963.657		
	UTM Zone 17 (SPCS83) Meters		
	N: 4373358.459		
	E: 558880.642		
	NAD 27		
	N 39.5077559		
	W 080.3152933		

PERMITTED	State Plane Coordinate	West Virginia North	Bottom Hole Location
	NAD 27 Feet		
	N: 370714.990		
	E: 1766325.680		
	UTM Zone 17 (SPCS83) Meters		
	N: 4374139.893		
	E: 557758.953		
	NAD 27		
	N 39.5148728		
	W 080.3282720		

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
4. WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN MAY 2016 AND FILES PROVIDED BY XTO ENERGY, INC.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WDEP.

JONES CONSULTANTS, LLC

SURVEYING • MAPPING • LAND • GAS WELL • PIPELINE Environmental
 2402 PENNSYLVANIA 66 DELMONT, PA 15626
 (724) 757 - 2417 www.jonesconsultant.com



XTO ENERGY
 190 THORN HILL ROAD
 WARRENDALE, PA 15086

0' 1200'



SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT		
BRENNAN NW 13H		
Drawn By:	Date:	LINCOLN DISTRICT
JRV	08/02/18	MARION COUNTY, WEST VIRGINIA
Scale: SCALE 1" = 1200'	Sheet:	File No.:
NE # 1503643	SHEET 2 OF 2	JC2016-31

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/7/2018
Job End Date:	9/3/2018
State:	West Virginia
County:	Marion
API Number:	47-049-02426-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Brennan 13H
Latitude:	39.50035300
Longitude:	-80.29573100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,676
Total Base Water Volume (gal):	20,147,022
Total Base Non Water Volume:	0



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	XTO Energy/ExxonMobil	Carrier Fluid	Water	7732-18-5	100.00000	89.47019	
GA-7F	C&J Energy Services	Gelling Agents		Listed Below			

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Sand	C&J Energy Services	Sand - Bulk - Pennsylvania		Listed Below				
BR-11	C&J Energy Services	Gel Breakers		Listed Below				
HC-7.5	C&J Energy Services	Bulk Acid		Listed Below				
SI-6	C&J Energy Services	Paraffin & Scale Additives		Listed Below				
CI-3	C&J Energy Services	Acid Corrosion Inhibitors		Listed Below				
Sand	C&J Energy Services	Sand - Bulk - Pennsylvania		Listed Below				
FR-16	C&J Energy Services	Friction Reducer		Listed Below				
BIO-CLEAR 2000	C&J Energy Services	Biocides		Listed Below				
Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.								
			Crystalline Silica, quartz	14808-60-7	99.90000	8.32846		
			Crystalline Silica, quartz	14808-60-7	99.90000	1.25685		

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				Water	7732-18-5	92.50000	0.73813	
				Aluminum Oxide	1344-28-1	1.10000	0.09171	
				Hydrochloric Acid	7647-01-0	7.50000	0.05985	
				Distillates (Petroleum), Hydrotreated Light	64742-47-8	35.00000	0.02845	
				Water	7732-18-5	30.00000	0.02438	
				2-Propenoic acid, polymer with 2- propenamide, sodium salt	25987-30-8	30.00000	0.02438	
				Water	7732-18-5	96.00000	0.01865	
				Aluminum Oxide	1344-28-1	1.10000	0.01384	
				Polyethylene glycol	25322-68-3	50.00000	0.01069	
				Iron Oxide	1309-37-1	0.10000	0.00834	
				Titanium Oxide	13463-67-7	0.10000	0.00834	
				Distillates (Petroleum), Hydrotreated Light	64742-47-8	60.00000	0.00795	
				Guar Gum	9000-30-0	60.00000	0.00795	
				2,2-Dibromo-3-nitro- propanamide (DBNPA)	10222-01-2	30.00000	0.00642	
				Water	7732-18-5	28.50000	0.00609	
				Ethylene Glycol	107-21-1	5.00000	0.00406	
				Sodium Acetate Anhydrous	127-09-3	3.00000	0.00244	
				Poly(oxy-1,2-ethandiylo), alpha-isodecyl-omega- hydroxy-phosphate	108918-88-8	2.00000	0.00163	
				Alcohols, C12-15- branched and linear, ethoxylated propoxylated	120313-48-6	2.00000	0.00163	
				Sorbitan Monooleate	1338-43-8	2.00000	0.00163	
				Iron Oxide	1309-37-1	0.10000	0.00126	
				Titanium Oxide	13463-67-7	0.10000	0.00126	
				Phosphoric Acid Salt	Proprietary	6.00000	0.00117	
				Ethoxylated Sorbitan Monooleate	9005-65-6	1.00000	0.00081	

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- Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
 - Information is based on the maximum potential for concentration and thus the total may be over 100%
 - If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line
- 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)

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