

# APPROVED

NAME: [Signature]

DATE: 11/8/17



WR-35  
Rev. 8/23/13

Page \_\_\_ of \_\_\_

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

API 47-049-02408 County Marion District Mannington  
Quad Shinnston Pad Name Rockwell Pad Field/Pool Name Marcellus  
Farm name Robinson, Allen H. Well Number Rockwell 8H  
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 4367536 Easting 554799  
Landing Point of Curve Northing 4367486.6 Easting 554807.0  
Bottom Hole Northing 4366235 Easting 556300

Elevation (ft) 1246 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)  
Synthetic Oil Based Mud

Date permit issued 10/21/15 Date drilling commenced 11/20/15 Date drilling ceased 4/16/16  
Date completion activities began 11/9/16 Date completion activities ceased JAN 20 2017  
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

Freshwater depth(s) ft None Noted Open mine(s) (Y/N) depths N  
Salt water depth(s) ft None Noted Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 433-439, 718-721 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:

01/05/2018

API 47-049 - 02408 Farm name Robinson, Allen H. Well number Rockwell 8H

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	28	24	40	New	94.62 / PE&B		Grouted to Surface
Surface	17 1/2	13 3/8	489.6	New	48 / H-40		Y
Coal							
Intermediate 1	12 3/8	9 5/8	3014.5	New	36 / J-55		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4, 8 1/2	5 1/2	14487	New	20 / P-110		TOC 4,303'
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

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	Redi-Mix	6 Yards				0	8
Surface	A	445	15.60	1.19	529.55	0	8
Coal							
Intermediate 1	A	1105	15.60	1.18	1303.90	0	8
Intermediate 2							
Intermediate 3							
Production	50:50 POZ / H	510 / 1985	15.2 / 15.6	1.07 / 1.18	545.7 / 2342.3	2196	8
Tubing							

Drillers TD (ft) 14,530' Loggers TD (ft) 14,530'  
 Deepest formation penetrated Marcellus Plug back to (ft) \_\_\_\_\_  
 Plug back procedure \_\_\_\_\_

Kick off depth (ft) 5071

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 3rd Joint  
Production - Every other Joint (TD-TOC)

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 Rockwell 8H 47-049-02408**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/9/2016	14,210	14,340	60	Marcellus
2	11/9/2016	14,008	14,133	60	Marcellus
3	11/9/2016	13,806	13,934	60	Marcellus
4	11/9/2016	13,604	13,734	60	Marcellus
5	11/10/2016	13,402	13,532	60	Marcellus
6	11/10/2016	13,200	13,330	60	Marcellus
7	11/10/2016	12,998	13,128	60	Marcellus
8	11/10/2016	12,796	12,926	60	Marcellus
9	11/11/2016	12,594	12,724	60	Marcellus
10	11/11/2016	12,444	12,522	36	Marcellus
11	11/11/2016	12,220	12,372	60	Marcellus
12	11/11/2016	12,028	12,158	60	Marcellus
13	11/12/2016	11,826	11,956	60	Marcellus
14	11/12/2016	11,624	11,754	60	Marcellus
15	11/12/2016	11,422	11,552	60	Marcellus
16	11/13/2016	11,220	11,350	60	Marcellus
17	11/13/2016	11,022	11,148	60	Marcellus
18	11/13/2016	10,816	10,946	60	Marcellus
19	11/13/2016	10,665	10,744	36	Marcellus
20	11/14/2016	10,516	10,594	36	Marcellus
21	11/14/2016	10,366	10,444	36	Marcellus
22	11/14/2016	10,164	10,294	60	Marcellus
23	11/14/2016	9,962	10,092	60	Marcellus
24	11/14/2016	9,760	9,890	60	Marcellus
25	11/15/2016	9,558	9,688	60	Marcellus
26	11/15/2016	9,356	9,486	60	Marcellus
27	11/15/2016	9,154	9,284	60	Marcellus
28	11/15/2016	9,004	9,082	36	Marcellus
29	11/15/2016	8,854	8,932	36	Marcellus
30	11/15/2016	8,704	8,782	36	Marcellus
31	11/16/2016	8,502	8,632	60	Marcellus
32	11/16/2016	8,300	8,430	60	Marcellus
33	11/16/2016	8,098	8,228	60	Marcellus
34	11/16/2016	7,892	8,026	60	Marcellus

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**Stimulation Information Per Stage Rockwell 8H 47-049-02408**

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	11/9/2016	84	8,041	7,305	4,787	310,520	9,257	
2	11/9/2016	85	8,042	6,937	4,995	303,920	9,679	
3	11/9/2016	81	8,061	6,615	4,857	305,040	10,967	
4	11/9/2016	85	8,021	6,604	5,385	309,100	9,287	
5	11/10/2016	85	8,207	6,575	6,024	299,420	9,458	
6	11/10/2016	85	8,094	6,667	5,252	311,200	9,470	
7	11/10/2016	81	7,836	6,364	5,360	305,210	10,376	
8	11/10/2016	86	7,957	6,729	5,778	306,190	9,204	
9	11/11/2016	85	8,075	6,887	5,891	306,880	8,823	
10	11/11/2016	77	8,303	7,149	6,055	166,020	9,886	
11	11/11/2016	75	8,174	8,160	5,741	306,580	14,647	
12	11/12/2016	83	8,032	6,537	6,598	251,840	13,553	
13	11/12/2016	83	8,141	6,486	5,312	307,734	9,403	
14	11/12/2016	84	7,620	6,481	5,312	309,860	9,277	
15	11/12/2016	82	7,630	6,349	5,010	309,260	10,926	
16	11/13/2016	86	7,453	6,463	5,114	306,650	9,034	
17	11/13/2016	85	7,427	6,185	4,846	305,840	10,915	
18	11/13/2016	86	7,257	5,866	5,113	310,580	9,180	
19	11/13/2016	86	7,626	6,187	5,083	239,940	8,472	
20	11/14/2016	85	7,370	6,944	5,190	246,240	8,183	
21	11/14/2016	86	7,769	6,407	5,599	234,020	11,334	
22	11/14/2016	86	7,404	6,425	4,903	299,500	10,637	
23	11/14/2016	84	7,159	6,479	5,349	308,340	9,144	
24	11/14/2016	85	7,044	6,221	6,227	309,880	9,105	
25	11/15/2016	83	7,105	6,187	5,112	307,920	9,129	
26	11/15/2016	82	7,262	6,401	4,918	287,360	10,885	
27	11/15/2016	87	7,371	6,403	4,874	305,340	10,224	
28	11/15/2016	82	7,432	6,716	5,211	301,760	9,072	
29	11/15/2016	85	7,381	6,330	5,189	298,840	9,023	
30	11/16/2016	85	7,392	6,542	5,229	296,680	9,199	
31	11/16/2016	87	7,189	6,293	5,231	307,420	9,013	
32	11/16/2016	85	7,214	6,885	5,060	307,220	9,056	
33	11/16/2016	85	6,994	6,823	5,549	304,120	9,039	
34	11/16/2016	85	6,832	6,938	5,040	303,100	9,158	

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Lithology Rockwell 8H 47-049-02408

Lithology / Formation Name	Top	Bottom	Top	Bottom	Describe Rock Type and Record Quantity and Type of Fluid (Freshwater, Brine, Oil, Gas, H2S, ETC)
	Depth in FT TVD	Depth in TVD	Depth in FT MD	Depth in FT MD	
CONDUCTOR	0	40	0	40	
GRAY SANDSTONE	40	272	40	272	
GRAY SAND	272	388	272	388	
SAND/SHALE	388	433	388	433	
COAL	433	439	433	439	
GRAY SAND / SHALE	439	588	439	588	
COAL	718	721	718	721	
SAND/SHALE	721	960	721	960	
GR SHALE	960	965	960	965	
GRAY SHALE/SAND	965	1513	965	1513	
GRAY SHALE	1513	2102	1513	2102	
WHITE SAND	2102	2632	2102	2632	
RED ROCK	2632	2730	2632	2730	
GRAY SAND	2730	2950	2730	2950	
GRAY SHALE	2950	3436	2950	3436	
GRAY SAND/SHALE	3436	3661	3436	3661	
GRAY SHALE	3661	3774	3661	3774	
GRAY SAND/SHALE	3774	4500	3774	4500	
SHALE			4520	4590	
SHALE, SILTSTONE			4590	4620	
SHALE			4620	4680	
SHALE, SILTSTONE			4680	4860	
SHALE			4860	4950	
SHALE, SILTSTONE			4950	4980	
SHALE, SILTSTONE, SANDSTONE			4980	5070	
SHALE, SILTSTONE			5070	5550	
SHALE			5550	5670	
SHALE, SILTSTONE			5670	5700	
SHALE			5700	7380	
LIMESTONE, SHALE			7380	7590	
SHALE			7590	7860	
LIMESTONE, SHALE			7860	7920	
SHALE			7920	9000	
SHALE, MARL			9000	9090	
SHALE			9090	9900	
SHALE, MARL			9900	10170	
SHALE			10170	13240	
SHALE, MARL			13240	13500	
SHALE			13500	14310	
SHALE, MARL			14310	14400	
SHALE			14400	14530	

Geneseo Shale @ 7,341' MD / 7,092' TVD  
 Burkett Shale @ 7,363' MD / 7,099' TVD  
 Tully Limestone @ 7,403' MD / 7,128' TVD  
 Hamilton Shale @ 7,480' MD / 7,178' TVD  
 Upper Marcellus Shale @ 7,603' MD / 7,238' TVD  
 Purcell Limestone @ 7,901' MD / 7,322' TVD  
 Lower Marcellus Shale @ 7,930' MD / 7,327' TVD

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/9/2016
Job End Date:	11/16/2016
State:	West Virginia
County:	Marion
API Number:	47-049-02408-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Rockwell 8H
Latitude:	39.45556300
Longitude:	-80.36324100
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,432
Total Base Water Volume (gal):	13,786,248
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	Carrier/Base Fluid	Water	7732-18-5	100.00000	91.07602	None
Sand (Proppant)	Keane	Proppant	Crystalline silica: Quartz (SiO2)	14808-60-7	100.00000	7.90323	None
Hydrochloric Acid (15%)	Keane	Acidizing	Water	7732-18-5	85.00000	0.76368	None
			Hydrochloric Acid	7647-01-0	15.00000	0.13477	None
MBC-516	Keane	Biocide	glutaral	111-30-8	26.70000	0.00614	None
			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00077	None
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00051	None
KSI-16	Keane	Scale Inhibitor	Alkyl phosphonic acid	Proprietary	5.00000	0.00442	None
			Ethylene glycol	107-21-1	5.00000	0.00115	None
			ammonia	7664-41-7	0.50000	0.00044	None
KFR-16FW	Keane	Friction Reducer					



			oleic acid diethanolamide	93-83-4	1.50000	0.00133	None
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00088	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.00024	None
			ammonium chloride	12125-02-9	1.50000	0.00002	None
KAI-13	Keane	Acid Inhibitor					
			ethanediol	107-21-1	40.00000	0.00048	None
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00024	None
			Ethoxylated alcohol	Proprietary	10.00000	0.00012	None
			Cinnamaldehyde	104-55-2	10.00000	0.00012	None
			formic acid	64-18-6	10.00000	0.00012	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00012	None
			propan-2-ol	67-63-0	5.00000	0.00006	None
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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.76368	
			Alkyl phosphonic acid	Proprietary	5.00000	0.00442	
			oleic acid diethanolamide	93-83-4	1.50000	0.00133	
			Ethylene glycol	107-21-1	5.00000	0.00115	
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00088	
			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00077	
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	5.30000	0.00051	
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00024	
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00012	
			Cinnamaldehyde	104-55-2	10.00000	0.00012	
			Ethoxylated alcohol	Proprietary	10.00000	0.00012	
			formic acid	64-18-6	10.00000	0.00012	
			propan-2-ol	67-63-0	5.00000	0.00006	
			ammonium chloride	12125-02-9	1.50000	0.00002	

\* 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)



3486'

(Scale: 1" = 2000') Latitude: 39°27'30"

Longitude: 80°20'00" (Scale: 1" = 2000')

**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 DIRECT GPS NAVD88.
5. BOUNDARIES SHOWN ARE TAKEN FROM TAX MAPS, DEEDS, AND FIELD SURVEY. THIS DRAWING IS NOT REPRESENTATIVE OF A FULL BOUNDARY SURVEY.
6. SURFACE OWNER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY, WV IN AUGUST OF 2015. LEASE OWNERS AND BOUNDARIES PROVIDED BY XTO ENERGY, INC.
7. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.

# ROCKWELL 8H

State Plane Coord.  
West Virginia North  
NAD27

Top Hole Loc  
(N) 349206.724  
(E) 1756252.987

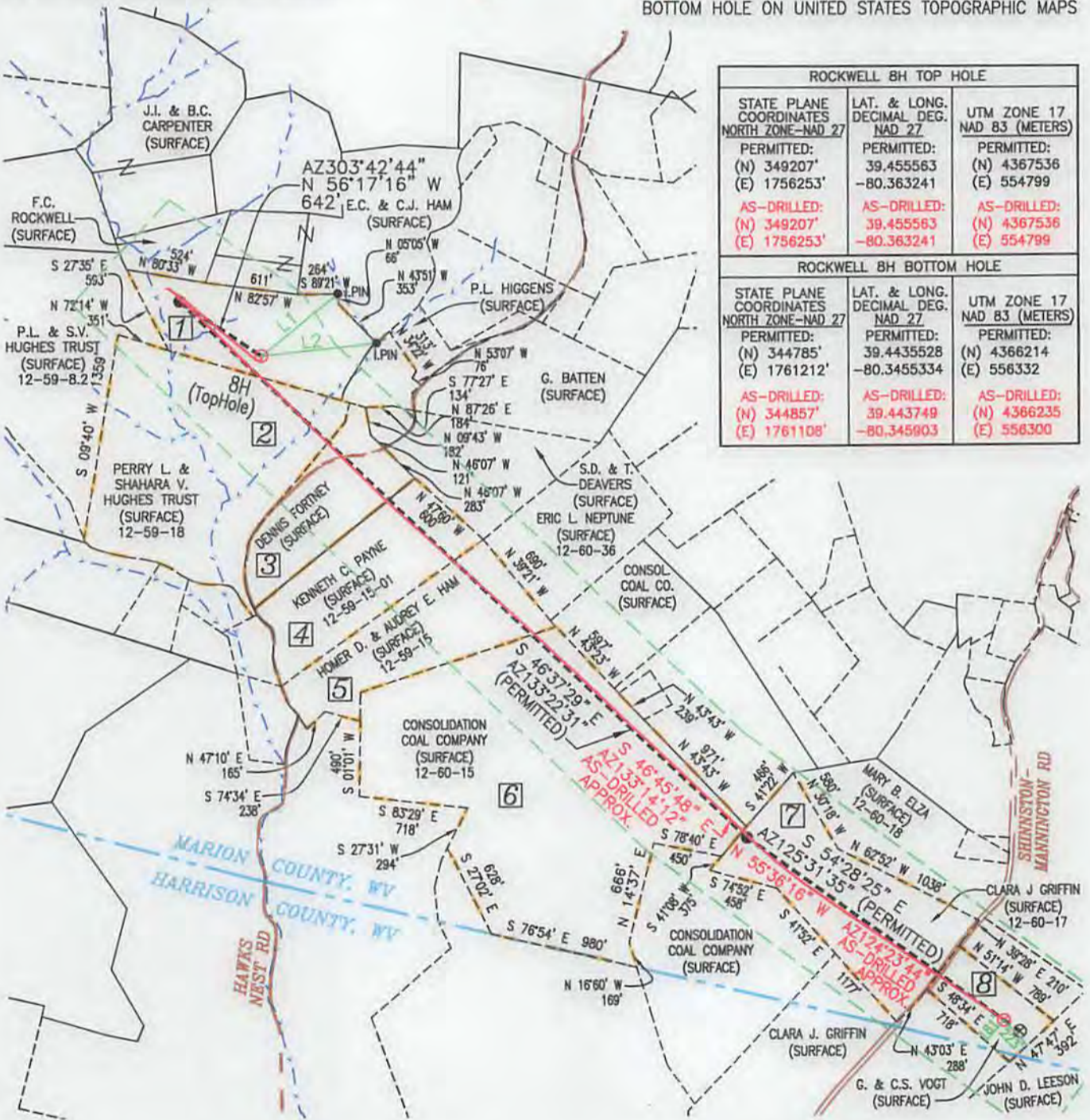
LEGEND	
LEASE BOUNDARY	—
SURFACE BOUNDARY	- - - - -
CREEK / STREAM	~ ~ ~ ~ ~
ROADS	— — — — —
PROPOSED LATERAL	- - - - -
AS-DRILLED LATERAL	— — — — —
500' LATERAL OFFSET	— — — — —
EXISTING GAS WELL	⊛
GROUNDWATER SOURCE / WATER SUPPLY	⊕

TOP HOLE TIES:  
L1-S 51°22' W 647'  
L2-S 83°42' W 761'

ROCKWELL 8H		
LEASE	LESSOR	
1)	ALICE E. JOSEPH et al.	18.31±
2)	PERRY L. HUGHES	39.06±
3)	OKEY GENE HELDRETH et al.	17.22±
4)	BARBARA TETRICK et al.	17.22±
5)	HOMER D. & AUDREY E. HAM	18.52±
6)	WILLIS G. TETRICK, III & SANDRA C. TETRICK et al.	147.86±
7)	MARGARET MARIE & W. CARL CHRISTIE et al.	20.50±
8)	HARRY L. & DORIS SHARP	11.66±



QUADRANGLE (BHL) SHINNSTON 7.5'  
(+) DENOTES LOCATION OF AS-DRILLED WELL  
BOTTOM HOLE ON UNITED STATES TOPOGRAPHIC MAPS



ROCKWELL 8H TOP HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	LAT. & LONG. DECIMAL DEG. NAD 27	UTM ZONE 17 NAD 83 (METERS)
PERMITTED: (N) 349207' (E) 1756253'	PERMITTED: 39.455563 -80.363241	PERMITTED: (N) 4367536 (E) 554799
AS-DRILLED: (N) 349207' (E) 1756253'	AS-DRILLED: 39.455563 -80.363241	AS-DRILLED: (N) 4367536 (E) 554799

ROCKWELL 8H BOTTOM HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	LAT. & LONG. DECIMAL DEG. NAD 27	UTM ZONE 17 NAD 83 (METERS)
PERMITTED: (N) 344785' (E) 1761212'	PERMITTED: 39.4435528 -80.3455334	PERMITTED: (N) 4366214 (E) 556332
AS-DRILLED: (N) 344857' (E) 1761108'	AS-DRILLED: 39.443749 -80.345903	AS-DRILLED: (N) 4366235 (E) 556300



**XTO ENERGY**  
810 HOUSTON STREET  
FORT WORTH, TX 76102



Voice: (724) 635-0210

**TRI-COUNTY ENGINEERING, LLC**  
An ENERCON Company  
319 Paintersville Road  
Hunkar, PA 15639  
www.tricountyeng.com

01/05/2018  
Fax: (724) 635-0676



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SUPPLEMENTAL SURFACE & LESSOR EXHIBIT	
ROCKWELL 8H	
DRAWN BY: NJP	MANNINGTON DISTRICT, MARION COUNTY, WEST VIRGINIA
DATE: 6/28/2016	FILE NO.
SHEET: SCALE: 1"=1000'	2 OF 2 OG57-09