

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

API 47 - 049 - 02489 County Marion District Lincoln  
Quad Shinnston Pad Name Crim Pad Field/Pool Name Marcellus  
Farm name Rochester & Pittsburgh Coal Co. Well Number Crim South Unit 10H  
Operator (as registered with the OOG) XTO Energy Inc.  
Address P.O. 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 4369364.719 Easting 560036.756  
Landing Point of Curve Northing 4369188.100 Easting 560094.058  
Bottom Hole Northing 4366750.470 Easting 562584.412

Elevation (ft) 1,221' 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 6/4/2019 Date drilling commenced 6/7/2019 Date drilling ceased 10/5/2019  
Date completion activities began 1/8/2020 Date completion activities ceased 2/9/2020  
Verbal plugging (Y/N) \_\_\_\_\_ 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 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 130' - 134', 460' - 465' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
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Office of Oil and Gas  
MAY - 8 2020  
WV Department of  
Environmental Protection

API 47-049 - 02489 Farm name Rochester & Pittsburgh Coal Co. Well number Crim South Unit 10H

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"	76'	New	PE&B / 95		N
Surface	17 1/2"	13 3/8"	513'	New	H-40 / 48	425'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	3,125'	New	J-55 / 36		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	19,183'	New	P-110 / 20		Est. TOC 5,125'
Tubing							
Packer type and depth set							

Comment Details Conductor - concrete poured directly into annulus.

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	A	10 yards				0	8
Surface	A	650	15.6	1.21	786.5	0	8
Coal							
Intermediate 1	A	1130	15.6	1.19	1344.7	0	8
Intermediate 2							
Intermediate 3							
Production	H	490/1975	15.2/15.6	1.1/1.57	539/3100.75	Est. TOC 5,125'	8
Tubing							

Drillers TD (ft) 19,237' Loggers TD (ft) 19,212'  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 6,927'

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 joint to top of production cement.

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 ProTechnics Spectra Chem water soluble tracers





Well Crim South Unit 10H  
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Stage	Perf Date	Perf from MD ft.	Perf to MD ft.	Number of Perfs	Formation(s)
1.00	1/8/2020	18,837.00	18,987.00	48	Marcelus
2.00	1/9/2020	18,637.00	18,787.00	48	Marcelus
3.00	1/9/2020	18,437.00	18,587.00	48	Marcelus
4.00	1/10/2020	18,237.00	18,387.00	48	Marcelus
5.00	1/11/2020	18,036.00	18,187.00	48	Marcelus
6.00	1/12/2020	17,837.00	17,987.00	48	Marcelus
7.00	1/13/2020	17,635.00	17,787.00	48	Marcelus
8.00	1/14/2020	17,437.00	17,587.00	48	Marcelus
9.00	1/15/2020	17,241.00	17,387.00	48	Marcelus
10.00	1/15/2020	17,037.00	17,187.00	48	Marcelus
11.00	1/16/2020	16,839.00	16,987.00	48	Marcelus
12.00	1/16/2020	16,637.00	16,785.00	48	Marcelus
13.00	1/17/2020	16,437.00	16,587.00	48	Marcelus
14.00	1/17/2020	16,237.00	16,382.00	48	Marcelus
15.00	1/18/2020	16,037.00	16,187.00	48	Marcelus
16.00	1/18/2020	15,837.00	15,991.00	48	Marcelus
17.00	1/19/2020	15,637.00	15,787.00	48	Marcelus
18.00	1/20/2020	15,437.00	15,587.00	48	Marcelus
19.00	1/20/2020	15,237.00	15,387.00	48	Marcelus
20.00	1/20/2020	15,033.00	15,187.00	48	Marcelus
21.00	1/22/2020	14,837.00	14,987.00	48	Marcelus
22.00	1/22/2020	14,641.00	14,787.00	48	Marcelus
23.00	1/23/2020	14,437.00	14,585.00	48	Marcelus
24.00	1/24/2020	14,237.00	14,387.00	48	Marcelus
25.00	1/24/2020	14,037.00	14,181.00	48	Marcelus
26.00	1/24/2020	13,837.00	13,987.00	48	Marcelus
27.00	1/25/2020	13,637.00	13,789.00	48	Marcelus
28.00	1/25/2020	13,437.00	13,587.00	48	Marcelus
29.00	1/26/2020	13,234.00	13,387.00	48	Marcelus
30.00	1/26/2020	13,037.00	13,187.00	48	Marcelus
31.00	1/27/2020	12,841.00	12,987.00	48	Marcelus
32.00	1/27/2020	12,637.00	12,787.00	48	Marcelus
33.00	1/28/2020	12,440.00	12,587.00	48	Marcelus
34.00	1/28/2020	12,237.00	12,385.00	48	Marcelus
35.00	1/29/2020	12,037.00	12,187.00	48	Marcelus
36.00	1/29/2020	11,837.00	11,981.00	48	Marcelus
37.00	1/30/2020	11,637.00	11,787.00	48	Marcelus
38.00	1/30/2020	11,437.00	11,587.00	48	Marcelus
39.00	1/31/2020	11,237.00	11,387.00	48	Marcelus
40.00	2/1/2020	11,037.00	11,187.00	48	Marcelus
41.00	2/1/2020	10,837.00	10,987.00	48	Marcelus
42.00	2/1/2020	10,637.00	10,787.00	48	Marcelus
43.00	2/2/2020	10,437.00	10,587.00	48	Marcelus
44.00	2/2/2020	10,240.00	10,387.00	48	Marcelus
45.00	2/3/2020	10,037.00	10,187.00	48	Marcelus
46.00	2/3/2020	9,832.00	9,987.00	48	Marcelus
47.00	2/4/2020	9,637.00	9,787.00	48	Marcelus
48.00	2/4/2020	9,437.00	9,587.00	48	Marcelus
49.00	2/5/2020	9,237.00	9,387.00	48	Marcelus
50.00	2/5/2020	9,040.00	9,187.00	48	Marcelus
51.00	2/6/2020	8,837.00	8,987.00	48	Marcelus
52.00	2/7/2020	8,637.00	8,787.00	48	Marcelus
53.00	2/7/2020	8,437.00	8,591.00	48	Marcelus
54.00	2/8/2020	8,237.00	8,387.00	48	Marcelus
55.00	2/8/2020	8,034.00	8,187.00	48	Marcelus
56.00	2/9/2020	7,837.00	7,987.00	48	Marcelus

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Stage	Stimulation Date	Avg. Pump Rate (BPM)	Avg. Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen
1	1/8/2020	84.80	8,109.00	6,092	5,525.00	401,000.00	12,653.00	N/A
2	1/9/2020	85.10	8,269.00	8,775	5,560.00	405,100.00	12,621.00	N/A
3	1/10/2020	85.00	8,341.00	7,541	5,283.00	403,200.00	12,806.00	N/A
4	1/10/2020	85.20	8,208.00	6,051	5,415.00	403,000.00	12,992.00	N/A
5	1/11/2020	83.20	7,942.00	5,659	4,848.00	406,800.00	9,884.00	N/A
6	1/12/2020	85.00	8,220.00	5,781	5,516.00	4,004,000.00	10,085.00	N/A
7	1/14/2020	85.00	8,024.00	6,894	4,777.00	407,800.00	10,273.00	N/A
8	1/14/2020	85.30	8,062.00	6,626	5,380.00	412,600.00	10,126.00	N/A
9	1/15/2020	84.90	7,858.00	5,867	4,963.00	406,400.00	10,210.00	N/A
10	1/15/2020	85.30	7,907.00	6,783	4,832.00	406,500.00	10,261.00	N/A
11	1/16/2020	85.10	8,024.00	5,196	5,429.00	407,400.00	9,740.00	N/A
12	1/16/2020	85.10	7,569.00	6,224	4,980.00	407,600.00	9,021.00	N/A
13	1/17/2020	85.50	7,964.00	6,462	5,441.00	404,300.00	9,668.00	N/A
14	1/17/2020	85.30	7,818.00	6,422	5,365.00	406,500.00	9,712.00	N/A
15	1/18/2020	84.90	8,231.00	9,443	5,592.00	406,500.00	9,473.00	N/A
16	1/19/2020	85.50	7,839.00	6,425	4,970.00	405,500.00	9,686.00	N/A
17	1/19/2020	85.20	8,037.00	5,130	5,130.00	406,300.00	9,703.00	N/A
18	1/20/2020	84.80	7,851.00	6,210	5,420.00	406,700.00	9,774.00	N/A
19	1/21/2020	84.90	7,904.00	6,437	5,875.00	103,745.00	9,681.00	N/A
20	1/21/2020	85.10	7,720.00	6,161	4,915.00	403,200.00	9,634.00	N/A
21	1/22/2020	85.50	8,025.00	5,926	5,487.00	409,800.00	9,893.00	N/A
22	1/22/2020	85.20	8,099.00	6,729	5,560.00	406,300.00	9,746.00	N/A
23	1/23/2020	85.50	8,081.00	5,587	5,475.00	409,200.00	9,795.00	N/A
24	1/24/2020	85.00	7,914.00	6,964	5,100.00	407,400.00	9,687.00	N/A
25	1/24/2020	82.00	7,988.00	7,143	5,545.00	408,700.00	9,827.00	N/A
26	1/25/2020	84.60	7,967.00	5,194	5,148.00	410,300.00	9,592.00	N/A
27	1/25/2020	85.70	8,029.00	6,844	5,312.00	406,500.00	9,745.00	N/A
28	1/26/2020	85.10	8,102.00	4,696	5,808.00	408,100.00	9,476.00	N/A
29	1/26/2020	85.30	8,031.00	6,744	5,788.00	407,800.00	9,746.00	N/A
30	1/26/2020	85.30	7,623.00	5,980	5,484.00	407,400.00	9,397.00	N/A
31	1/27/2020	85.90	7,187.00	6,354	5,315.00	410,100.00	10,838.00	N/A
32	1/28/2020	85.20	7,233.00	6,195	5,854.00	406,900.00	9,530.00	N/A
33	1/28/2020	85.40	7,222.00	6,194	5,400.00	411,900.00	9,132.00	N/A
34	1/28/2020	85.90	7,369.00	6,468	5,886.00	412,400.00	9,143.00	N/A
35	1/29/2020	85.20	7,331.00	6,178	5,285.00	411,900.00	9,113.00	N/A
36	1/30/2020	85.20	7,305.00	6,693	5,500.00	411,900.00	9,144.00	N/A
37	1/30/2020	84.70	7,283.00	6,153	5,325.00	412,600.00	9,171.00	N/A
38	1/31/2020	85.60	7,310.00	6,479	5,566.00	411,400.00	9,105.00	N/A
39	1/31/2020	84.90	7,253.00	4,115	5,709.00	412,200.00	9,164.00	N/A
40	2/1/2020	85.20	7,418.00	6,445	5,150.00	412,900.00	9,098.00	N/A
41	2/1/2020	85.60	7,471.00	6,772	5,680.00	418,000.00	9,174.00	N/A
42	2/2/2020	85.50	7,643.00	6,548	4,997.00	413,700.00	9,130.00	N/A
43	2/2/2020	85.50	7,536.00	6,638	5,525.00	412,600.00	9,123.00	N/A
44	2/3/2020	85.50	7,434.00	6,480	5,760.00	414,800.00	9,077.00	N/A
45	2/3/2020	85.20	7,366.00	7,018	5,450.00	411,500.00	9,051.00	N/A
46	2/4/2020	85.20	7,334.00	6,796	5,714.00	413,800.00	9,028.00	N/A
47	2/4/2020	85.30	7,125.00	6,234	4,957.00	411,300.00	9,012.00	N/A
48	2/5/2020	85.80	6,960.00	6,669	5,176.00	411,100.00	9,059.00	N/A

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Well  
API

Crim South Unit 10H  
47-049-02489

Lithology/Formation Name	Top Depth TVD	Bottom Depth TVD	Top Depth MD	Bottom Depth MD	Describe Rock Type and Record Quantity and Type of Fluid (Freshwater, Brine, Oil, Gas, H2S, ETC)
Dirt	0	71	0	71	
Sandstone	71	130	71	130	
Coal	130	134	130	134	
Shale	134	270	134	270	
Sandstone	270	430	270	430	
Shale	430	460	430	460	
Coal	460	465	460	465	
Shale	465	533	465	533	
SDY Shale	533	620	533	620	
Red Rock	620	630	620	630	
SDY Shale	630	650	630	650	
Red Rock	650	695	650	695	
Shale	695	960	695	960	
Sandstone	960	1000	960	1000	
SDY Shale	1000	1400	1000	1400	
Sandstone	1400	1530	1400	1530	
Shale	1530	1810	1530	1810	
Sandstone	1810	1890	1810	1890	
Shale	1890	2030	1890	2030	
Sandstone	2030	2100	2030	2100	
SDY Shale	2100	2300	2100	2300	
Sandstone	2300	2380	2300	2380	
SDY Shale	2380	2510	2380	2510	
Sandstone	2510	2540	2510	2540	
SDY Shale	2540	2620	2540	2620	
Sandstone	2620	2730	2620	2730	
Shale	2730	2880	2730	2880	
Sandstone	2880	2910	2880	2910	
SDY Shale	2910	3145	2910	3145	
Shale	3145	3980	3145	3980	
Sandstone	3980	4250	3980	4250	
Shale	4250	4460	4250	4460	
SDY Shale	4460	4629	4460	4629	
Sandstone	4629	4670	4629	4670	
SDY Shale	4670	5200	4670	5200	
Shale	5200	5310	5200	5310	
Sandstone	5310	5450	5310	5450	
Shale	5450	7247	5450	7279	
Geneseo	7247	7266	7279	7301	
Burket	7266	7290	7301	7332	
Tully	7290	7339	7332	7396	
Hamilton	7339	7483	7396	7650	
Marcellus	7483		7650	19237	



BOTTOM HOLE 6324' TOP HOLE 2921'

# CRIM SOUTH UNIT 10H

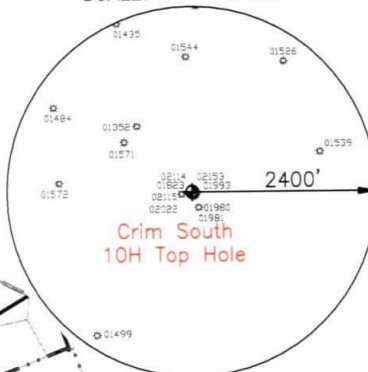
SCALE: 1" = 2000' LATITUDE: 39°30'00" (TOP HOLE)  
 SCALE: 1" = 2000' LATITUDE: 39°27'30" (BOTTOM HOLE)

PERMITTED

State Plane Coordinate  
 West Virginia North

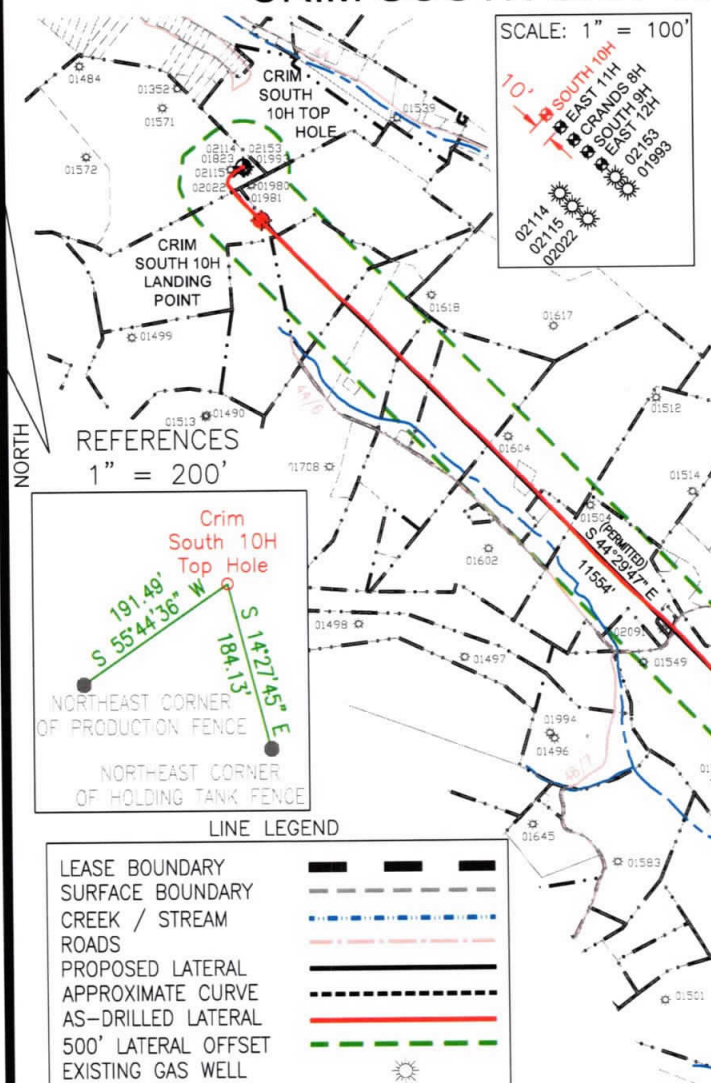
Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354921.201	N: 354338.277	N: 346096.509
E: 1773538.932	E: 1773726.386	E: 1781824.479
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369364.719	N: 4369188.075	N: 4366718.226
E: 560036.756	E: 560096.827	E: 562605.898
NAD 27	NAD 27	NAD 27
N 39.4716918	N 39.4700960	N 39.4476634
W 80.3022057	W 80.3015233	W 80.2725880

SCALE: 1" = 2400'

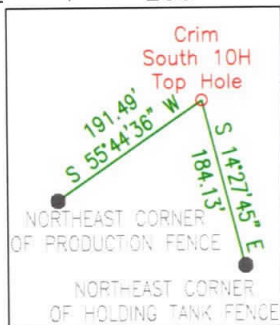


SCALE: 1" = 2000' LONGITUDE: 80°17'30" (TOP HOLE)  
 SCALE: 1" = 2000' LONGITUDE: 80°15'00" (BOTTOM HOLE)  
 SCALE: 1" = 2000'

3856'  
 10280'  
 TOP HOLE



REFERENCES  
 1" = 200'



LINE LEGEND

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

AS-DRILLED

State Plane Coordinate

West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354921.201	N: 354338.510	N: 346203.490
E: 1773538.932	E: 1773717.300	E: 1781755.738
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369364.719	N: 4369188.100	N: 4366750.470
E: 560036.756	E: 560094.058	E: 562584.412
NAD 27	NAD 27	NAD 27
N 39.4716918	N 39.4700964	N 39.4479555
W 80.3022057	W 80.3015555	W 80.2728347

- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN APRIL 2020 AND FILES PROVIDED BY XTO ENERGY INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

(724) 757 - 2417

**JONES**  
 CONSULTANTS

SHEET 1 OF 2

2402 PENNSYLVANIA 66 DELMONT, PA 15626 www.jonesconsultant.com

FILE #: JC2017-17  
 DRAWING #: CRIM SOUTH 10H AS-DRILLED  
 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  
 WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304



DATE: 4/7/2020  
 OPERATOR'S WELL #: CRIM SOUTH UNIT 10H  
 API WELL #: 47 049 02489  
 STATE COUNTY PERMIT

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

WATERSHED: LOWER WEST FORK RIVER (0502000206) ELEVATION: 1,221' (EXISTING FINISH GRADE)  
 COUNTY/DISTRICT: MARION / LINCOLN QUADRANGLE: SHINNSTON 7.5'  
 SURFACE OWNER: ROCHESTER & PITTSBURGH COAL COMPANY ACREAGE: 55±  
 OIL & GAS ROYALTY OWNER: LOUIS A. FERRARI, ET UX ACREAGE: 672.6±

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: 7,615' (TVD), 19,237' (TMD) (AS-DRILLED)  
 WELL OPERATOR: XTO ENERGY INC. DESIGNATED AGENT: GARY BEALL  
 Address: 190 THORN HILL ROAD Address: P.O. BOX 1008  
 City: WARRENDALE State: PA Zip Code: 15086 City: JANE LEW State: WV Zip Code: 26378



# CRIM SOUTH UNIT 10H

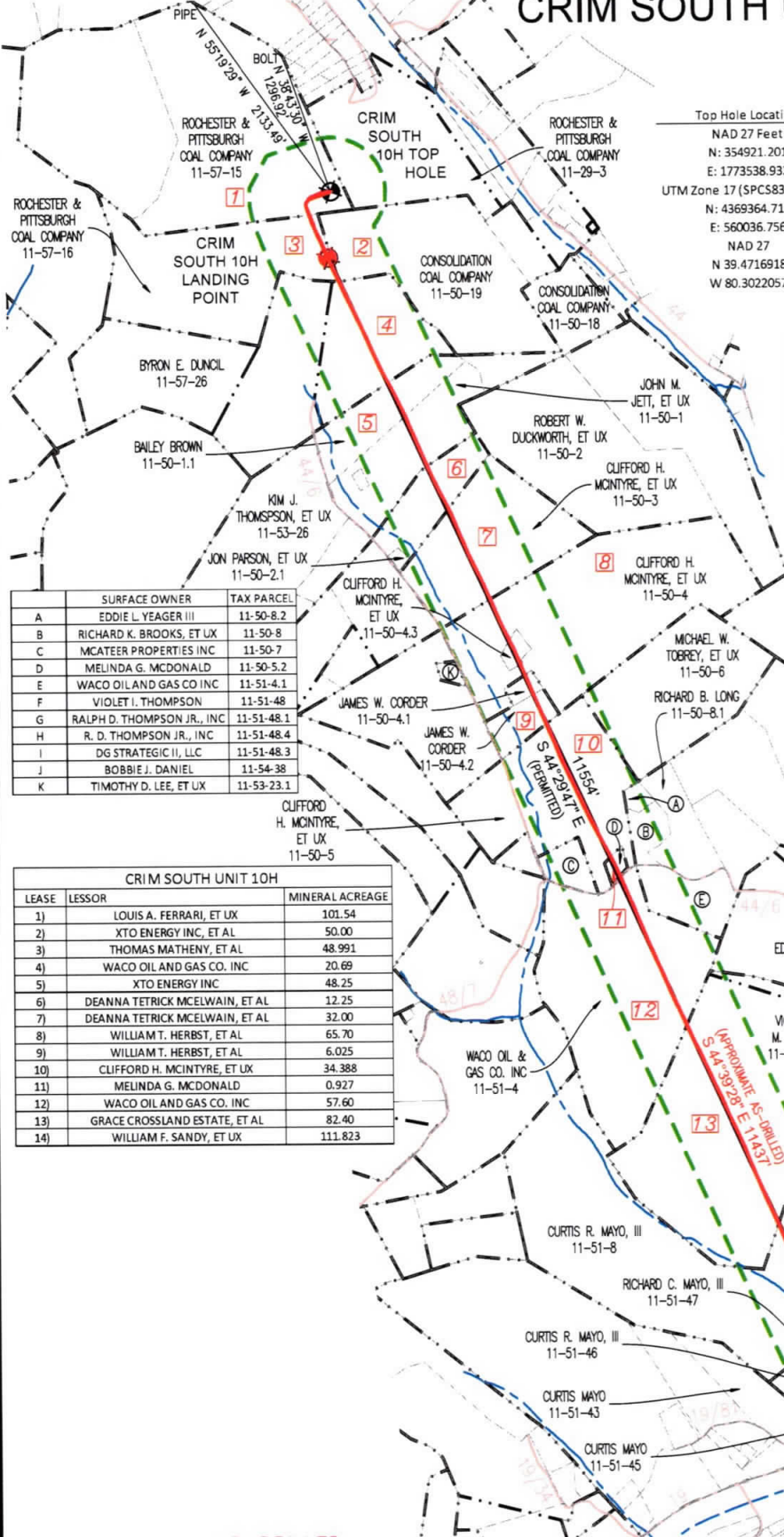
## PERMITTED

State Plane Coordinate  
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354921.201	N: 354338.277	N: 346096.509
E: 1773538.932	E: 1773726.386	E: 1781824.479
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369364.719	N: 4369188.075	N: 4366718.226
E: 560036.756	E: 560096.827	E: 562605.898
NAD 27	NAD 27	NAD 27
N 39.4716918	N 39.4700960	N 39.4476634
W 80.3022057	W 80.3015233	W 80.2725880

### LINE LEGEND

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



	SURFACE OWNER	TAX PARCEL
A	EDDIE L. YEAGER III	11-50-8.2
B	RICHARD K. BROOKS, ET UX	11-50-8
C	MCATEER PROPERTIES INC	11-50-7
D	MELINDA G. McDONALD	11-50-5.2
E	WACO OIL AND GAS CO INC	11-51-4.1
F	VIOLET I. THOMPSON	11-51-48
G	RALPH D. THOMPSON JR., INC	11-51-48.1
H	R. D. THOMPSON JR., INC	11-51-48.4
I	DG STRATEGIC II, LLC	11-51-48.3
J	BOBBIE J. DANIEL	11-54-38
K	TIMOTHY D. LEE, ET UX	11-53-23.1

CRIM SOUTH UNIT 10H		
LEASE	LESSOR	MINERAL ACREAGE
1)	LOUIS A. FERRARI, ET UX	101.54
2)	XTO ENERGY INC, ET AL	50.00
3)	THOMAS MATHENY, ET AL	48.991
4)	WACO OIL AND GAS CO. INC	20.69
5)	XTO ENERGY INC	48.25
6)	DEANNA TETRICK MCELWAIN, ET AL	12.25
7)	DEANNA TETRICK MCELWAIN, ET AL	32.00
8)	WILLIAM T. HERBST, ET AL	65.70
9)	WILLIAM T. HERBST, ET AL	6.025
10)	CLIFFORD H. MCINTYRE, ET UX	34.388
11)	MELINDA G. McDONALD	0.927
12)	WACO OIL AND GAS CO. INC	57.60
13)	GRACE CROSSLAND ESTATE, ET AL	82.40
14)	WILLIAM F. SANDY, ET UX	111.823

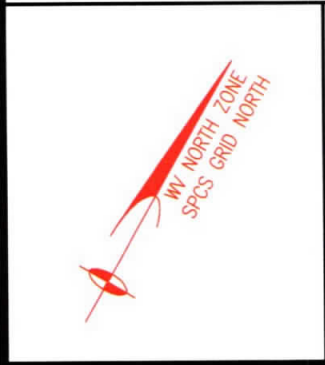
### NOTES ON SURVEY

- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN APRIL 2020 AND FILES PROVIDED BY XTO ENERGY INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

## JONES CONSULTANTS, LLC

**AS-DRILLED**  
State Plane Coordinate  
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354921.201	N: 354338.510	N: 346203.490
E: 1773538.932	E: 1773717.300	E: 1781755.738
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369364.719	N: 4369188.100	N: 4366750.470
E: 560036.756	E: 560094.058	E: 562584.412
NAD 27	NAD 27	NAD 27
N 39.4716918	N 39.4700964	N 39.4479555
W 80.3022057	W 80.3015555	W 80.2728347



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

SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT		
CRIM SOUTH UNIT 10H		
Drawn By: JRV	Date: 4/7/2020	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA
Scale: 1" = 1500'	Sheet: SHEET 2 OF 2	File No.: JC2017-17



# XTO ENERGY INC

Location: Marion County, WV  
 Field: Marion  
 Facility: Crim Pad

Slot: Slot #10  
 Well: Crim South Unit 10H  
 Wellbore: Crim South Unit 10H PWB



Grid System: NAD83 / Lambert West Virginia S.P. Northern Zone (F701), US feet	
True vertical depths are referenced to Patterson 579 (RKB)	
North Reference: True north	
Scale: True distance	
Measured depths are referenced to Patterson 579 (RKB)	
Depths are in feet	
Patterson 579 (RKB) to Mean Sea Level: 1247 feet	
Mean Sea Level to Ground level (At Slot #10): -1221 feet	
Created by: WA, MPL, EasternUS, Dats	
Database: WA, MPL, EasternUS, Dats	
Coordinates are in feet referenced to S.M.	

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Crim Pad	1773568.370	354894.110	80°18'07.562"W
Slot	Local N (ft)	Local E (ft)	Longitude
Slot #10	26.83	-29.68	80°18'07.941"W
Comment: Crim South Unit 10H			
Patterson 579 (RKB) to Ground level (At Slot, Slot #10): -1221ft			
Mean Sea Level to Ground level (At Slot, Slot #10): -1247ft			
Patterson 579 (RKB) to Mean Sea Level			

Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6423.00	4.510	198.210	6417.47	-141.33	-160.40	0.58	-13.53
Proj To Bottom	6468.00	4.510	198.210	6462.33	-144.68	-161.51	0.00	-11.93
Curve KOP	8868.40	4.510	198.210	6861.49	-174.60	-171.35	0.00	2.25
End of 3D Arc	7285.64	33.301	137.922	7253.62	-277.77	-97.88	7.50	127.16
Landing Pt	7916.17	90.000	134.990	7541.00	-690.99	271.81	9.00	659.54
BHL	19356.97	90.000	134.990	7541.00	-8750.86	8364.50	0.00	12102.34

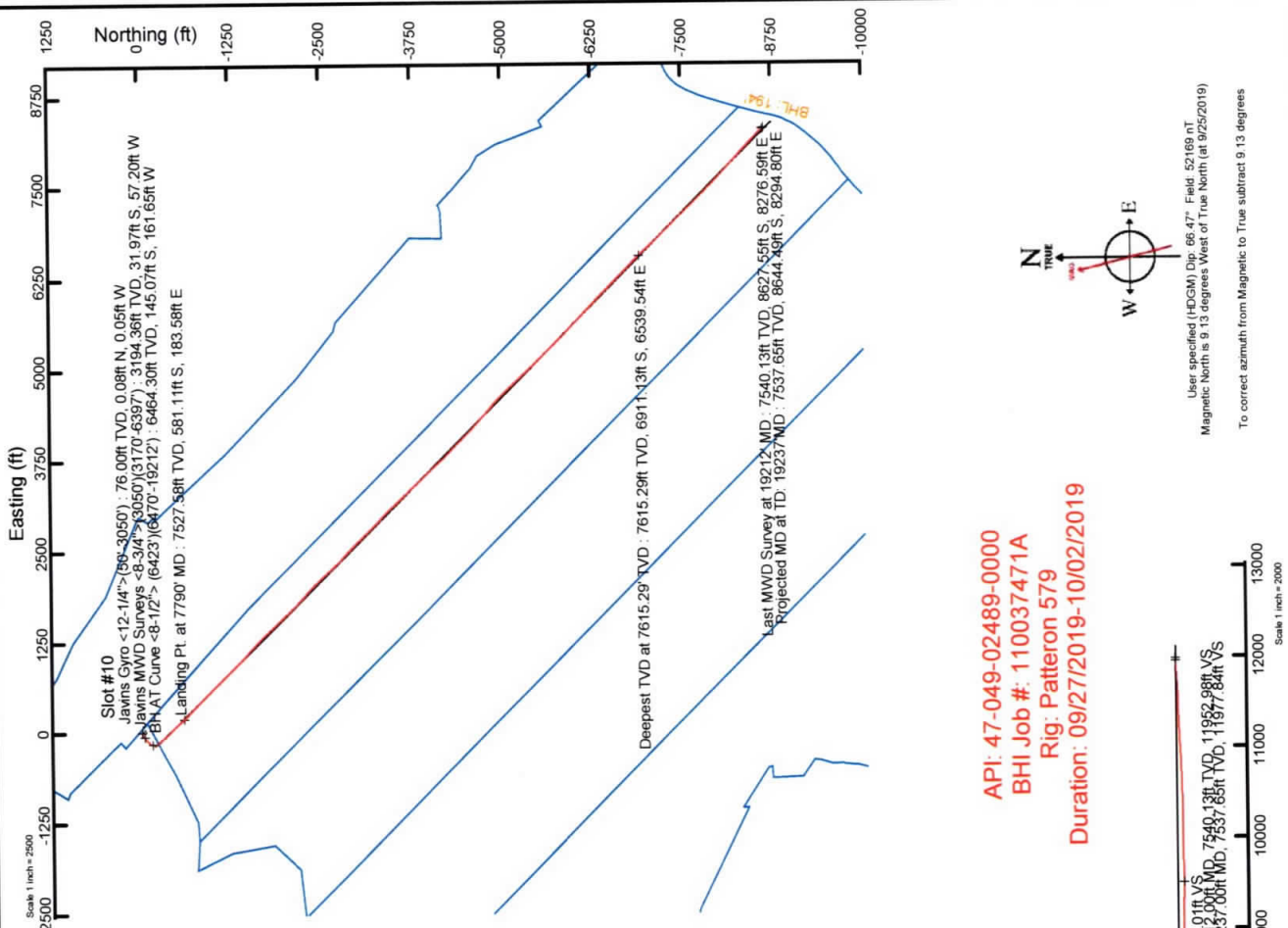
Javins Gyro <12-1/4">(50°-3050°) : 0.22° Inc, 76.00ft MD, 76.00ft TVD, -0.09ft VS

Javins MWD Surveys <8-3/4">(3050°)(3170°-6397°) : 2.84° Inc, 3196.00ft MD, 3194.36ft TVD, -17.85ft VS

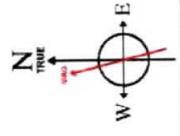
BH AT Curve <8-1/2"> (6423)(6470°-19212°) : 5.12° Inc, 6470.00ft MD, 6464.30ft TVD, -11.76ft VS

Landing Pt. at 7790 MD : 78.66° Inc, 7790.00ft MD, 7527.58ft TVD, 540.67ft VS

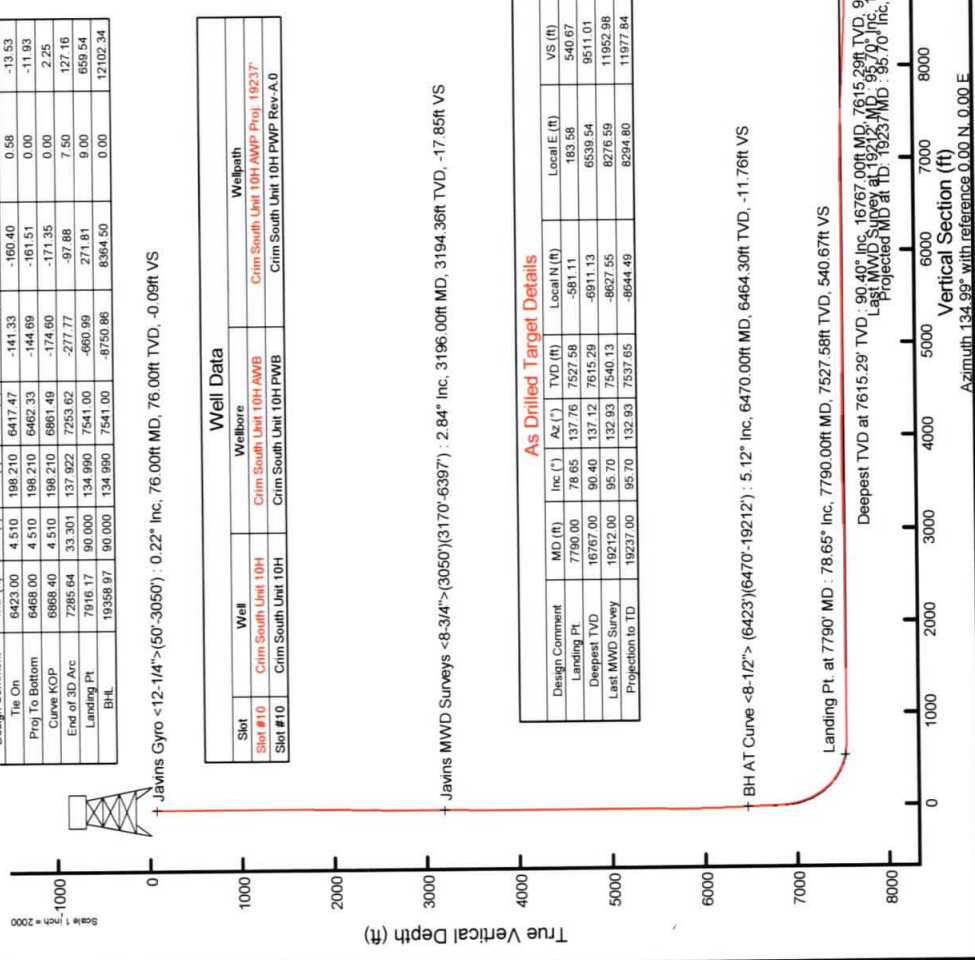
Deepest TVD at 7615.29' TVD : 90.40° Inc, 16767.00ft MD, 7615.29ft TVD, 9511.01ft VS  
 Last MWD Survey at 19212 MD : 95.70° Inc, 16767.00ft MD, 7540.13ft TVD, 11952.98ft VS  
 Projected MD at TD : 7625 MD : 95.70° Inc, 16237.88ft MD, 7537.85ft TVD, 11877.84ft VS



API: 47-049-02489-0000  
 BHI Job #: 110037471A  
 Rig: Patterson 579  
 Duration: 09/27/2019-10/02/2019



User specified (HDGM) Dip: 66.47° Field: 52169 nT  
 Magnetic North is 9.13 degrees West of True North (at 9/25/2019)  
 To correct azimuth from Magnetic to True subtract 9.13 degrees



Vertical Section (ft)  
 Azimuth: 134.99° with reference 0.00 N.0.00 E



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/8/2020
Job End Date:	2/9/2020
State:	West Virginia
County:	Marion
API Number:	47-049-02489-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Crim South Unit 10H
Latitude:	39.47177650
Longitude:	-80.30201330
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,538
Total Base Water Volume (gal):	22,865,304
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	88.69496	None
Sand	JPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.64923	None
HCL Acid (15%)	JPP	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.08197	None
K-BAC 1005	JPP	Biocide	Polyethylene glycol	25322-68-3	50.00000	0.00944	None
			Water	7732-18-5	44.30000	0.00836	None
			2,2-Dibromo-3-nitripropionamide	10222-01-2	5.80000	0.00109	None
FR-3	JPP	Friction reducer	Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01228	None
			Ammonium chloride (NH4Cl)	12125-02-9	1.50000	0.00092	None
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00092	None
			Alcohols, C-12-16, ethoxylated	68551-12-2	1.00000	0.00061	None
Scale Hib PE-18	JPP	Scale Inhibitor					

