

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

API 47 - 049 - 02487 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 9H
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 4369358.641 Easting 560043.587
Landing Point of Curve Northing 4369129.805 Easting 559777.318
Bottom Hole Northing 4366579.937 Easting 562363.551

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 6/8/2019 Date drilling ceased 9/11/2019
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:

RECEIVED
Office of Oil and Gas
MAY - 8 2020
WV Department of
Environmental Protection

API 47- 049 - 02487 Farm name Rochester & Pittsburgh Coal Co. Well number Crim South Unit 9H

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"	514'	New	H-40 / 48	434'	N
Coal							
Intermediate 1	12 3/8"	9 5/8"	3,173'	New	J-55 / 36		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	19,611'	New	P-110 / 20		Est. TOC 5,125'
Tubing							
Packer type and depth set							

Comment Details Conductor - concrete poured directly into annulus.

Surface - Pumped grout job, received returns.

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	A	10 yards				0	8
Surface	A	672	15.6	1.21	813.12	0	8
Coal							
Intermediate 1	A	1135	15.6	1.19	1350.65	0	8
Intermediate 2							
Intermediate 3							
Production	H	495/2010	15.2/15.6	1.1/1.57	544.5/3155.7	Est. TOC 5,125'	8
Tubing							

Drillers TD (ft) 19,651 Loggers TD (ft) 19,605
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6,931

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

API 47- 049 - 02487 Farm name Rochester & Pittsburgh Coal Co. Well number Crim South Unit 9H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7,584'	TVD	19,651' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

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

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME 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, H ₂ S, ETC)
See attached	0		0		

Please insert additional pages as applicable.

Drilling Contractor Appalachian Drillers / Patterson - UTI
Address 409 Butler Road, Suite A / 207 Carlton Drive City Kittanning / Eighty Four State PA/PA Zip 16201/15330

Logging Company MS Directional/Baker Hughes
Address 903 Old Brick Rd./370 Westec Drive City West Alexander/Mt. Pleasant State PA/PA Zip 15376/15666

Cementing Company C&J Energy Services
Address 1650 Hackers Creek Rd. City Jane Lew State WV Zip 26378

Stimulating Company Universal Pressure Pumping, Inc.
Address 10713 West Sam Houston Parkway North, Suite 800 City Houston State TX Zip 77064

Please insert additional pages as applicable.

Completed by Tim Sands Telephone 304-884-6000
Signature [Signature] Title Regulatory Coordinator Date 5/6/2020

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry
RECEIVED
Office of Oil and Gas
MAY - 8 2020
WV Department of Environmental Protection

Well Crim South Unit 9H
 API 47-049-02487

Stage	Perf Date	Perf from MD ft.	Perf to MD ft.	Number of Perfs	Formation(s)
1.00	1/8/2020	19,266.00	19,416.00	8	Marcellus
2.00	1/8/2020	19,067.00	19,216.00	8	Marcellus
3.00	1/9/2020	18,866.00	19,016.00	8	Marcellus
4.00	1/10/2020	18,665.00	18,816.00	8	Marcellus
5.00	1/10/2020	18,466.00	18,616.00	8	Marcellus
6.00	1/12/2020	18,266.00	18,416.00	8	Marcellus
7.00	1/12/2020	18,066.00	18,216.00	8	Marcellus
8.00	1/14/2020	17,866.00	18,016.00	8	Marcellus
9.00	1/14/2020	17,667.00	17,811.00	8	Marcellus
10.00	1/15/2020	17,470.00	17,616.00	8	Marcellus
11.00	1/15/2020	17,266.00	17,416.00	8	Marcellus
12.00	1/16/2020	17,066.00	17,216.00	8	Marcellus
13.00	1/16/2020	16,863.00	17,016.00	8	Marcellus
14.00	1/17/2020	16,665.00	16,816.00	8	Marcellus
15.00	1/17/2020	16,466.00	16,616.00	8	Marcellus
16.00	1/18/2020	16,266.00	16,416.00	8	Marcellus
17.00	1/19/2020	16,066.00	16,213.00	8	Marcellus
18.00	1/19/2020	15,865.00	16,016.00	8	Marcellus
19.00	1/20/2020	15,665.00	15,816.00	8	Marcellus
20.00	1/21/2020	15,466.00	15,616.00	8	Marcellus
21.00	1/21/2020	15,269.00	15,416.00	8	Marcellus
22.00	1/21/2020	15,066.00	15,216.00	8	Marcellus
23.00	1/23/2020	14,866.00	15,016.00	8	Marcellus
24.00	1/23/2020	14,666.00	14,816.00	8	Marcellus
25.00	1/24/2020	14,466.00	14,612.00	8	Marcellus
26.00	1/24/2020	14,266.00	14,416.00	8	Marcellus
27.00	1/25/2020	14,066.00	14,191.00	8	Marcellus
28.00	1/25/2020	13,866.00	14,016.00	8	Marcellus
29.00	1/26/2020	13,668.00	13,816.00	8	Marcellus
30.00	1/26/2020	13,466.00	13,616.00	8	Marcellus
31.00	1/26/2020	13,266.00	13,416.00	8	Marcellus
32.00	1/27/2020	13,066.00	13,216.00	8	Marcellus
33.00	1/28/2020	12,866.00	13,016.00	8	Marcellus
34.00	1/28/2020	12,666.00	12,816.00	8	Marcellus
35.00	1/28/2020	12,466.00	12,616.00	8	Marcellus
36.00	1/29/2020	12,263.00	12,416.00	8	Marcellus
37.00	1/30/2020	12,066.00	12,216.00	8	Marcellus
38.00	1/30/2020	11,866.00	12,016.00	8	Marcellus
39.00	1/31/2020	11,667.00	11,816.00	8	Marcellus
40.00	1/31/2020	11,466.00	11,614.00	8	Marcellus
41.00	2/1/2020	11,266.00	11,416.00	8	Marcellus
42.00	2/1/2020	11,066.00	11,216.00	8	Marcellus
43.00	2/2/2020	10,866.00	11,012.00	8	Marcellus
44.00	2/2/2020	10,666.00	10,816.00	8	Marcellus
45.00	2/3/2020	10,466.00	10,616.00	8	Marcellus
46.00	2/3/2020	10,266.00	10,413.00	8	Marcellus
47.00	2/4/2020	10,066.00	10,216.00	8	Marcellus
48.00	2/4/2020	9,866.00	10,016.00	8	Marcellus
49.00	2/5/2020	9,667.00	9,812.00	8	Marcellus
50.00	2/5/2020	9,466.00	9,616.00	8	Marcellus
51.00	2/6/2020	9,266.00	9,416.00	8	Marcellus
52.00	2/6/2020	9,066.00	9,216.00	8	Marcellus
53.00	2/7/2020	8,862.00	9,016.00	8	Marcellus
54.00	2/8/2020	8,666.00	8,816.00	8	Marcellus
55.00	2/8/2020	8,466.00	8,620.00	8	Marcellus

RECEIVED
 Office of Oil and Gas
 MAY - 8 2020
 WV Department of
 Environmental Protection

56.00	2/9/2020	8,262.00	8,416.00	8	Marcellus
57.00	2/9/2020	8,066.00	8,216.00	8	Marcellus
58.00	2/9/2020	7,866.00	8,016.00	8	Marcellus

Well Crim South Unit 9H
 API 47-049-02487

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	85.00	7,769.00	5,845	4,120.00	405,200.00	12,677.00	N/A
2	1/9/2020	85.20	7,854.00	5,015	4,067.00	402,800.00	12,336.00	N/A
3	1/9/2020	85.40	8,380.00	3,852	4,305.00	405,100.00	12,731.00	N/A
4	1/10/2020	85.20	8,306.00	7,458	4,985.00	405,000.00	12,623.00	N/A
5	1/11/2020	85.00	8,154.00	7,066	4,398.00	408,000.00	12,879.00	N/A
6	1/12/2020	82.00	7,804.00	6,697	4,930.00	406,500.00	10,368.00	N/A
7	1/12/2020	83.60	8,086.00	7,168	5,685.00	401,400.00	10,411.00	N/A
8	1/14/2020	84.90	8,143.00	6,837	5,166.00	401,600.00	10,194.00	N/A
9	1/14/2020	84.90	8,244.00	7,452	5,024.00	407,100.00	10,599.00	N/A
10	1/15/2020	84.90	8,203.00	5,829	4,411.00	409,700.00	10,059.00	N/A
11	1/15/2020	84.80	7,902.00	5,274	4,665.00	406,400.00	10,203.00	N/A
12	1/16/2020	85.50	8,236.00	6,608	5,484.00	409,500.00	8,522.00	N/A
13	1/17/2020	85.20	7,983.00	7,011	5,275.00	406,600.00	9,855.00	N/A
14	1/17/2020	85.30	8,082.00	6,554	4,909.00	406,900.00	9,669.00	N/A
15	1/18/2020	85.00	7,910.00	5,710	5,225.00	406,500.00	9,927.00	N/A
16	1/18/2020	84.90	8,148.00	6,948	5,112.00	407,400.00	9,677.00	N/A
17	1/19/2020	85.40	7,871.00	5,925	5,212.00	407,500.00	9,927.00	N/A
18	1/19/2020	85.50	7,961.00	5,392	5,635.00	406,700.00	9,683.00	N/A
19	1/20/2020	85.10	8,054.00	5,947	5,825.00	405,300.00	11,144.00	N/A
20	1/21/2020	84.30	7,928.00	5,768	5,096.00	411,900.00	9,426.00	N/A
21	1/22/2020	85.50	8,025.00	5,926	5,487.00	409,800.00	9,711.00	N/A
22	1/22/2020	85.10	7,974.00	6,085	5,105.00	406,200.00	9,561.00	N/A
23	1/23/2020	85.00	7,979.00	6,421	5,250.00	410,500.00	9,817.00	N/A
24	1/23/2020	84.50	7,644.00	5,967	4,760.00	407,900.00	9,672.00	N/A
25	1/24/2020	85.70	7,935.00	5,268	5,266.00	407,800.00	9,846.00	N/A
26	1/24/2020	85.10	7,920.00	6,429	5,064.00	407,100.00	9,548.00	N/A
27	1/25/2020	85.30	7,916.00	7,413	5,922.00	409,300.00	9,742.00	N/A
28	1/25/2020	85.40	7,760.00	6,575	4,903.00	407,200.00	9,048.00	N/A
29	1/25/2020	84.80	7,751.00	5,985	5,343.00	408,100.00	9,746.00	N/A
30	1/26/2020	85.50	7,689.00	5,962	6,107.00	406,000.00	9,705.00	N/A
31	1/27/2020	85.60	7,615.00	6,647	6,026.00	101,400.00	9,416.00	N/A
32	1/27/2020	85.30	7,703.00	7,269	5,583.00	407,000.00	98,765.00	N/A
33	1/28/2020	85.30	7,325.00	8,556	4,265.00	407,200.00	9,368.00	N/A
34	1/28/2020	85.30	7,342.00	8,597	4,090.00	411,500.00	9,612.00	N/A
35	1/29/2020	85.20	7,165.00	8,035	4,690.00	410,600.00	9,114.00	N/A
36	1/29/2020	85.10	6,979.00	5,682	5,060.00	412,400.00	9,143.00	N/A
37	1/30/2020	85.10	7,029.00	4,959	5,260.00	412,800.00	9,216.00	N/A
38	1/30/2020	85.20	7,079.00	5,407	5,244.00	411,100.00	9,114.00	N/A
39	1/31/2020	85.30	7,148.00	5,723	5,460.00	412,600.00	9,190.00	N/A
40	1/31/2020	85.40	7,119.00	5,712	6,046.00	412,800.00	9,053.00	N/A
41	2/1/2020	86.00	7,081.00	5,580	5,490.00	412,800.00	9,079.00	N/A
42	2/1/2020	85.00	7,080.00	5,821	5,329.00	413,000.00	9,144.00	N/A
43	2/2/2020	85.80	7,054.00	5,769	5,480.00	412,400.00	9,113.00	N/A
44	2/2/2020	85.20	7,112.00	6,247	5,471.00	414,900.00	9,104.00	N/A
45	2/3/2020	85.70	7,146.00	5,273	5,480.00	411,300.00	9,102.00	N/A
46	2/3/2020	85.10	7,087.00	6,261	5,250.00	413,300.00	9,062.00	N/A
47	2/4/2020	85.60	7,195.00	6,442	5,550.00	411,200.00	9,081.00	N/A
48	2/4/2020	85.10	7,013.00	4,733	5,583.00	414,200.00	8,807.00	N/A
49	2/5/2020	85.30	6,919.00	5,306	5,692.00	413,200.00	9,075.00	N/A

RECEIVED
 Office of Oil and Gas

MAY - 8 2020

WV Department of
 Environmental Protection

Well
API

Crim South Unit 9H
47-049-02487

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	7243	5450	7408	
Geneseo	7243	7259	7408	7429	
Burket	7259	7293	7429	7473	
Tully	7293	7340	7473	7535	
Hamilton	7340	7477	7535	7741	
Marcellus	7477		7741	19651	

XTO ENERGY INC

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

Slot: Slot #09
 Well: Crim South Unit 9H ST01
 Wellbore: Crim South Unit 9H ST01 PWB

Plot reference wellbore is Crim South Unit 9H ST01 PWB Rev-C-0
 True vertical depths are referenced to Patterson 579 (RKB)
 Measured depths are referenced to Patterson 579 (RKB)
 Patterson 579 (RKB) to Mean Sea Level: 1247 ft
 Mean Sea Level to Ground level (At Slot: Slot #09) -121 ft
 Coordinates are in feet referenced to Slot

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 E (ft)	Grid North (US ft)	Longitude
Slot #09	6.71	1773561.010	80°18'07.657"W
Comment	Crim South Unit 9H		
Patterson 579 (RKB) to Ground level (At Slot: Slot #09)	26ft		
Mean Sea Level to Ground level (At Slot: Slot #09)	-1221ft		
Patterson 579 (RKB) to Mean Sea Level	1247ft		

Well Data		
Slot	Well	Wellbore
Slot #09	Crim South Unit 9H	Crim South Unit 9H AWWB
Slot #09	Crim South Unit 9H ST01	Crim South Unit 9H ST01 AWWB
Slot #09	Crim South Unit 9H ST01	Crim South Unit 9H ST01 PWB Rev-C-0



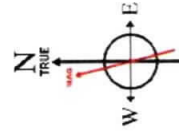
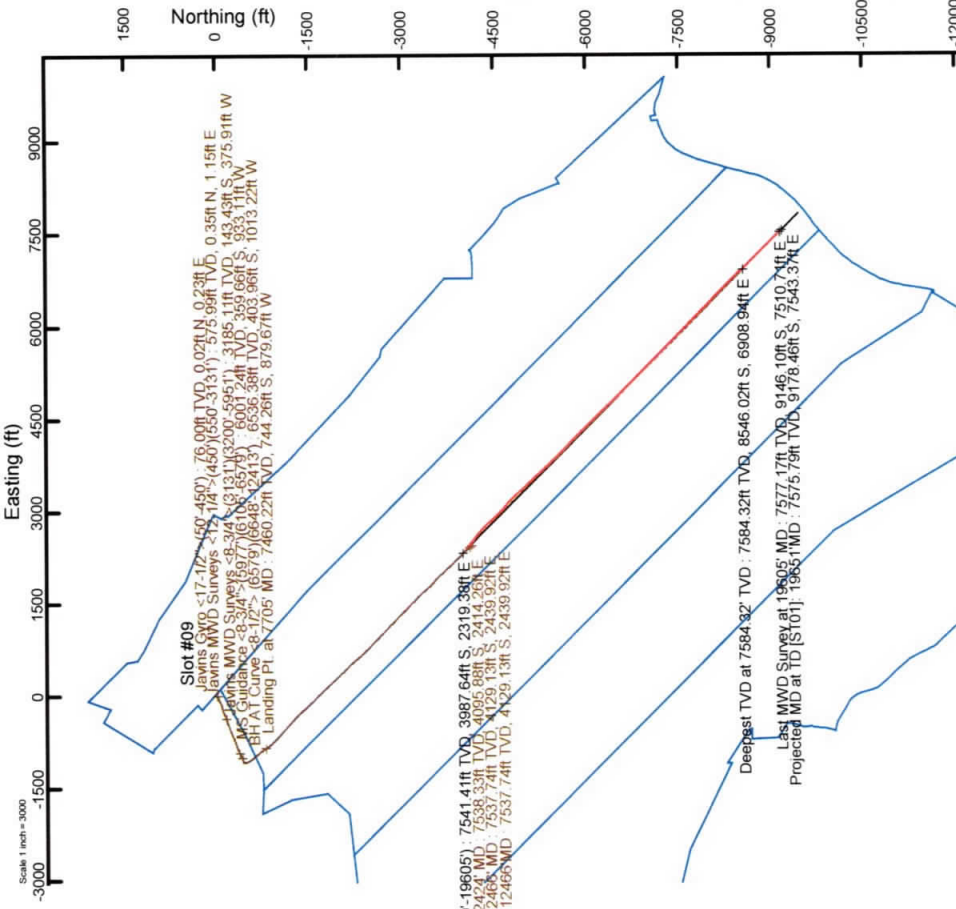
Well Profile Data					
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)
The On	12223.00	88.550	134.310	7539.22	-3847.76
Est. Side Track Point	12246.00	89.067	134.768	7539.70	-3865.89
Checkshot at 12860'	12280.00	87.050	134.580	7540.84	-3887.78
End of 30 Arc	12484.88	91.265	129.712	7544.00	-4131.87
Back to Azi	12676.09	90.000	134.992	7542.00	-4253.90
BHL	20034.09	90.000	134.992	7542.00	-9456.09
					7815.94
					0.00
					12212.97

As Drilled Target Details					
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local E (ft)
Landing PI	7705.00	95.99	145.41	7460.22	-744.26
Deepest TVD	18755.00	90.000	137.980	7584.32	-8546.02
Last MWD Survey	19651.00	91.720	134.740	7577.17	-9146.10
Projection to TD	19651.00	91.720	134.740	7575.79	-9178.46
					7543.37
					11823.92

M/S Guidance $\langle -8.3/4^\circ \rangle \langle 6105^\circ - 6579^\circ \rangle$: 9.70° Inc, 6105.00ft MD, 6001.24ft TVD, -405.65ft VS
 BH AT Curve $\langle -8.1/2^\circ \rangle \langle 6579^\circ \rangle \langle 6648^\circ - 12413^\circ \rangle$: 9.99° Inc, 6564.00ft MD, 6536.38ft TVD, -430.99ft VS

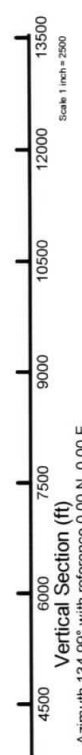
Landing PI at 7705' MD, 55.99° Inc, 7705.00ft MD, 7460.22ft TVD, -95.95ft VS

BH AT Curve $\langle -8.1/2^\circ \rangle \langle 12223^\circ \rangle \langle 12280^\circ - 19605^\circ \rangle$: 87.05° Inc, 12280.00ft MD, 7541.41ft TVD, 4459.53ft VS
 Top of Fish - 12466' MD, 90.80° Inc, 12466.00ft MD, 7537.74ft TVD, 4644.81ft VS
 Bottom of Fish - 12466' MD, 90.80° Inc, 12466.00ft MD, 7537.74ft TVD, 4644.81ft VS
 Projected MD at TD [OPH] : 12466' MD, 90.80° Inc, 12466.00ft MD, 7537.74ft TVD, 4644.81ft VS
 Deepest TVD at 7584.32' TVD, 90.00° Inc, 18755.00ft MD, 7584.32ft TVD, 10928.10ft VS
 Last MWD Survey at 19651' MD, 91.72° Inc, 19651.00ft MD, 7577.17ft TVD, 11777.94ft VS
 Projected MD at TD [ST01] : 19651' MD, 91.72° Inc, 19651.00ft MD, 7575.79ft TVD, 11823.92ft VS



User specified (HDGM) Dip: 66.47° Field: 52177 nT
 Magnetic North is 9.13 degrees West of True North (at 8/28/2019)
 To correct azimuth from Magnetic to True subtract 9.13 degrees

API: 47-049-02487-0100
 BHI Job #: 1100058193B
 Rig: Patterson 579
 Duration: 09/01/2019-09/09/2019



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/8/2020
Job End Date:	2/10/2020
State:	West Virginia
County:	Marion
API Number:	47-049-02487-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Crim South Unit 9H
Latitude:	39.47172120
Longitude:	-80.30193450
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,576
Total Base Water Volume (gal):	23,888,466
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	88.82529	None
Sand	UPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.53041	None
HCL Acid (15%)	UPP	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.08040	None
K-BAC 1005	UPP	Biocide	Polyethylene glycol	25322-68-3	50.00000	0.00961	None
			Water	7732-18-5	44.30000	0.00851	None
			2,2-Dibromo-3-nitripropionamide	10222-01-2	5.80000	0.00111	None
FR-3	UPP	Friction reducer	Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01202	None
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00090	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.50000	0.00090	None
			Alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00060	None
Scale Hib PE-18	UPP	Scale Inhibitor					

			Ethylene glycol	107-21-1	40.00000	0.00720	None
			Proprietary Scale Inhibitor	Proprietary	30.00000	0.00540	None
Unihib G	UPP	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00031	None
			Alcohols, C10-16, ethoxylated	38002-97-1	50.00000	0.00021	None
			Methanol	67-56-1	5.00000	0.00002	None
			Formaldehyde	50-00-0	1.00000	0.00000	None
			Thiourea	62-56-6	1.00000	0.00000	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					
			Polyethylene glycol	25322-68-3	50.00000	0.00961	
			Water	7732-18-5	44.30000	0.00851	
			Ethylene glycol	107-21-1	40.00000	0.00720	
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.50000	0.00090	
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00090	
			Alcohols, C12-16, ethoxylated	38551-12-2	1.00000	0.00060	
			Alcohols, C10-16, ethoxylated	38002-97-1	50.00000	0.00021	
			Methanol	67-56-1	5.00000	0.00002	
			Formaldehyde	50-00-0	1.00000	0.00000	
			Thiourea	62-56-6	1.00000	0.00000	

* 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)

CRIM SOUTH UNIT 9H

BOTTOM HOLE ← 6851' TOP HOLE → 2899'

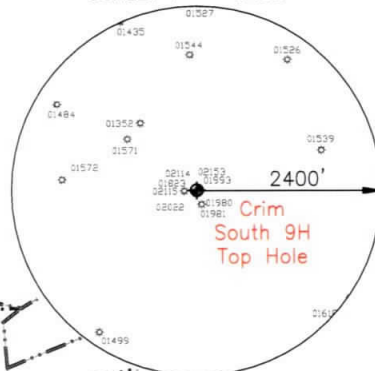
SCALE: 1" = 2000' LATITUDE: 39°30'00" (TOP HOLE)
SCALE: 1" = 2000' LATITUDE: 39°27'30" (BOTTOM HOLE)

PERMITTED

State Plane Coordinate
West Virginia North

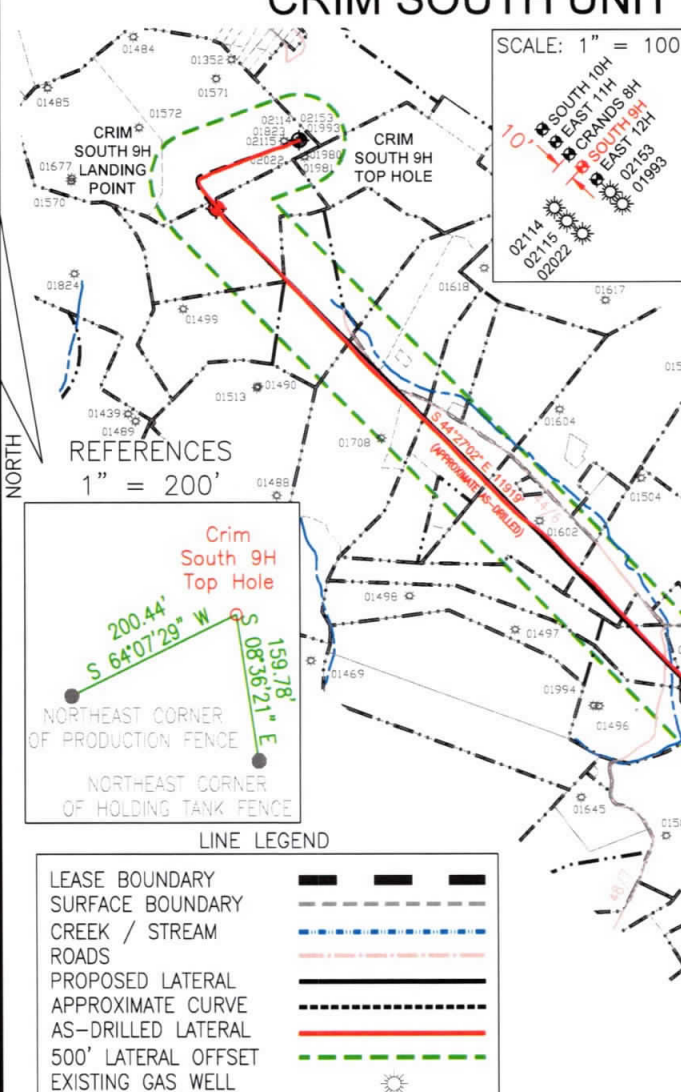
Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354900.881	N: 354161.023	N: 345375.942
E: 1773561.012	E: 1772659.834	E: 1781291.769
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369358.641	N: 4369128.655	N: 4366495.989
E: 560043.587	E: 559772.782	E: 562447.254
NAD 27	NAD 27	NAD 27
N 39.4716365	N 39.4695831	N 39.4456725
W 80.3021269	W 80.3052955	W 80.2744523

SCALE: 1" = 2400'

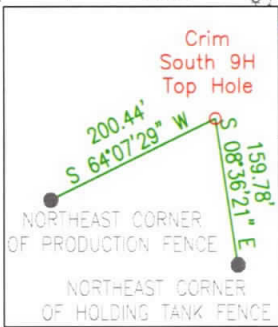


SCALE: 1" = 2000' LONGITUDE: 80°17'30" (TOP HOLE)
SCALE: 1" = 2000' LONGITUDE: 80°15'00" (BOTTOM HOLE)

4581' BOTTOM HOLE 10301' 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: 354900.881	N: 354164.550	N: 345655.984
E: 1773561.012	E: 1772674.780	E: 1781021.697
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369358.641	N: 4369129.805	N: 4366579.937
E: 560043.587	E: 559777.318	E: 562363.551
NAD 27	NAD 27	NAD 27
N 39.4716365	N 39.4695932	N 39.4464350
W 80.3021269	W 80.3052427	W 80.2754172

- 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

www.jonesconsultant.com



SHEET 1 OF 2

2402 PENNSYLVANIA 66 DELMONT, PA 15626

FILE #: JC2017-112
DRAWING #: CRIM SOUTH 9H 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 9H
API WELL #: 47 049 02487
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: 752.4±

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

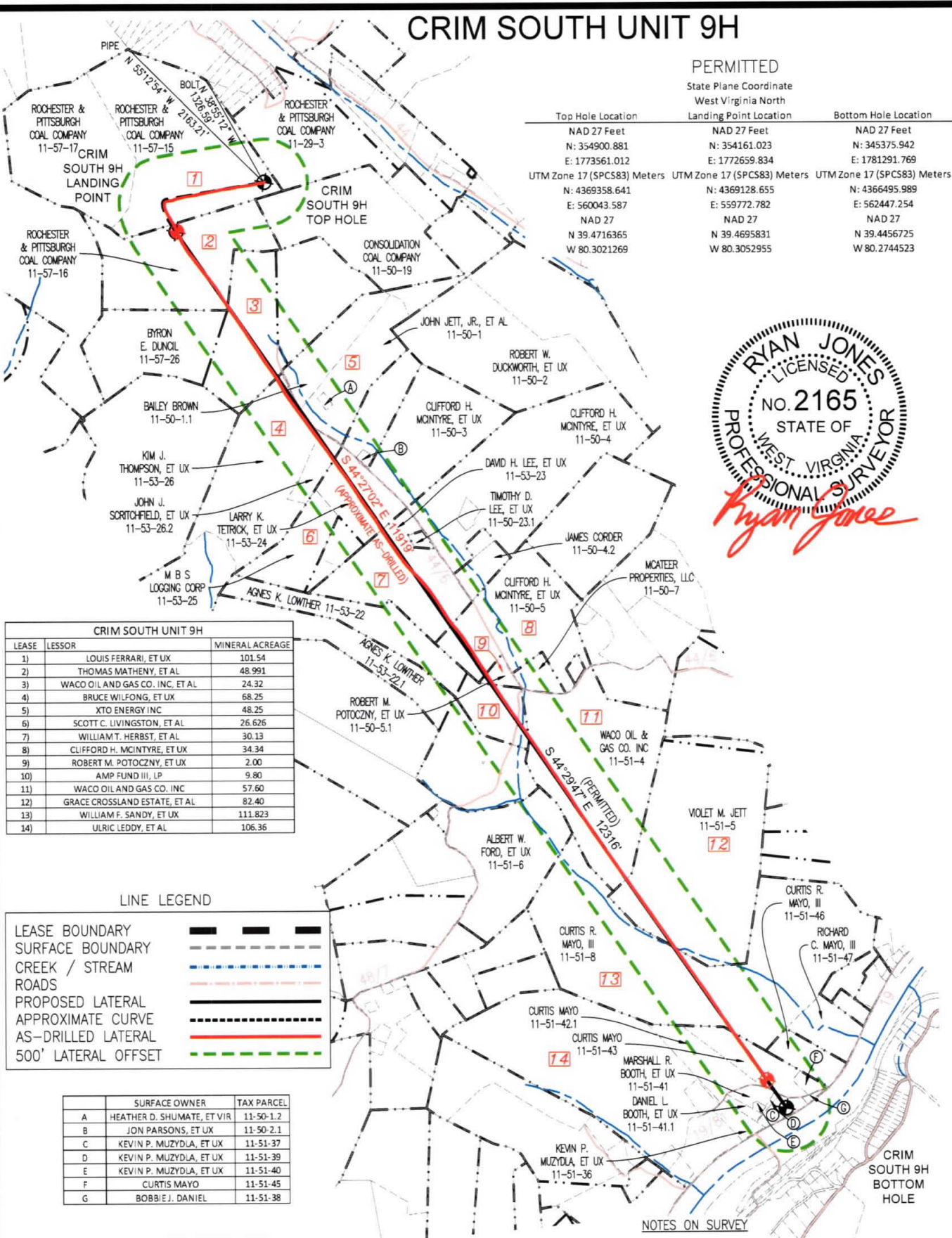
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,584' (TVD), 19,651' (TMD) (AS-DRILLED)
WELL OPERATOR: XTO ENERGY INC. DESIGNATED AGENT: GARY BEALL
Address: 190 THORN HILL ROAD Address: P.O. BOX 1008
City: WARRENDALE State: PA Zip Code: 15086 City: JANE LEW State: WV Zip Code: 26378

CRIM SOUTH UNIT 9H

PERMITTED

State Plane Coordinate
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet N: 354900.881 E: 1773561.012	NAD 27 Feet N: 354161.023 E: 1772659.834	NAD 27 Feet N: 345375.942 E: 1781291.769
UTM Zone 17 (SPCS83) Meters N: 4369358.641 E: 560043.587	UTM Zone 17 (SPCS83) Meters N: 4369128.655 E: 559772.782	UTM Zone 17 (SPCS83) Meters N: 4366495.989 E: 562447.254
NAD 27 N 39.4716365 W 80.3021269	NAD 27 N 39.4695831 W 80.3052955	NAD 27 N 39.4456725 W 80.2744523



CRIM SOUTH UNIT 9H		
LEASE	LESSOR	MINERAL ACREAGE
1)	LOUIS FERRARI, ET UX	101.54
2)	THOMAS MATHENY, ET AL	48.991
3)	WACO OIL AND GAS CO., INC, ET AL	24.32
4)	BRUCE WILFONG, ET UX	68.25
5)	XTO ENERGY INC	48.25
6)	SCOTT C. LIVINGSTON, ET AL	26.626
7)	WILLIAM T. HERBST, ET AL	30.13
8)	CLIFFORD H. MCINTYRE, ET UX	34.34
9)	ROBERT M. POTOCZNY, ET UX	2.00
10)	AMP FUND III, LP	9.90
11)	WACO OIL AND GAS CO., INC	57.60
12)	GRACE CROSSLAND ESTATE, ET AL	82.40
13)	WILLIAM F. SANDY, ET UX	111.823
14)	ULRIC LEDDY, ET AL	106.36

LINE LEGEND

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

	SURFACE OWNER	TAX PARCEL
A	HEATHER D. SHUMATE, ET VIR	11-50-1.2
B	JON PARSONS, ET UX	11-50-2.1
C	KEVIN P. MUZYDLA, ET UX	11-51-37
D	KEVIN P. MUZYDLA, ET UX	11-51-39
E	KEVIN P. MUZYDLA, ET UX	11-51-40
F	CURTIS MAYO	11-51-45
G	BOBBIE J. DANIEL	11-51-38

AS-DRILLED

State Plane Coordinate
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet N: 354900.881 E: 1773561.012	NAD 27 Feet N: 354164.550 E: 1772674.780	NAD 27 Feet N: 345655.984 E: 1781021.697
UTM Zone 17 (SPCS83) Meters N: 4369358.641 E: 560043.587	UTM Zone 17 (SPCS83) Meters N: 4369129.805 E: 559777.318	UTM Zone 17 (SPCS83) Meters N: 4366579.937 E: 562363.551
NAD 27 N 39.4716365 W 80.3021269	NAD 27 N 39.4695932 W 80.3052427	NAD 27 N 39.4464350 W 80.2754172

- 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

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



190 THORN HILL ROAD
WARRENDALE, PA 15086

0' 1500'



SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT

CRIM SOUTH UNIT 9H

Drawn By: JRV	Date: 4/7/2020	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA
Scale: 1" = 1500'	Sheet: SHEET 2 OF 2	File No.: JC2017-112
AFE # DD.2011.06190.CAP.DRL.01		