

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

API 47 - 049 - 02488 County Marion District Lincoln
Quad Shinnston Pad Name Crim Pad Field/Pool Name Marcellus
Farm name Rochester & Pittsburgh Coal Co. Well Number Crim East Unit 12H
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 4369356.615 Easting 560045.860
Landing Point of Curve Northing 4369560.475 Easting 560500.361
Bottom Hole Northing 4367347.107 Easting 562746.859

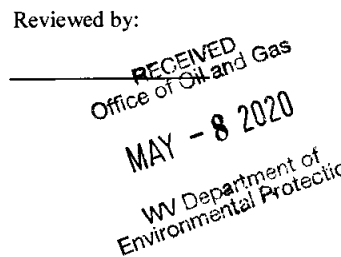
Elevation (ft) 1,221' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution 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 8/26/2019
Date completion activities began 2/12/2020 Date completion activities ceased 3/4/2020
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 - 02488 Farm name Rochester & Pittsburgh Coal Co. Well number Crim East Unit 12H

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"	537'	New	H-40 / 48	452'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	3,171'	New	J-55 / 36		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	18,183'	New	P-110 / 20		Est. TOC 5,130'
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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A	10 yards				0	8
Surface	A	510	15.6	1.21	617.1	0	8
Coal							
Intermediate 1	A	1135	15.6	1.19	1350.65	0	8
Intermediate 2							
Intermediate 3							
Production	H	535/1790	15.2/15.6	1.1/1.57	588.5/2810.3	Est. TOC 5,130'	8
Tubing							

Drillers TD (ft) 18,237 Loggers TD (ft) 18,172
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 7,147

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 - 02488 Farm name Rochester & Pittsburgh Coal Co. Well number Crim East Unit 12H

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
			See attached					

Please insert additional pages as applicable.

RECEIVED
Office of
MAY - 8 2020
WV Department of
Environmental Protection

API 47- 049 - 02488 Farm name Rochester & Pittsburgh Coal Co. Well number Crim East Unit 12H

PRODUCING FORMATION(S)	DEPTHS		
	DEPTH IN FT	TVD	MD
Marcellus	7,578'		18,237'

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	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
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
Address 903 Old Brick Rd. City West Alexander State PA Zip 15376

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 East Unit 12H
 API 47-049-02488

Stage	Perf Date	Perf from MD ft.	Perf to MD ft.	Number of Perfs	Formation(s)
1.00	2/12/2020	17,838.00	17,988.00	48	Marcellus
2.00	2/13/2020	17,637.00	17,788.00	48	Marcellus
3.00	2/19/2020	17,438.00	17,588.00	48	Marcellus
4.00	2/20/2020	17,238.00	17,391.00	48	Marcellus
5.00	2/20/2020	17,043.00	17,188.00	48	Marcellus
6.00	2/20/2020	16,838.00	16,988.00	48	Marcellus
7.00	2/20/2020	16,635.00	16,788.00	48	Marcellus
8.00	2/21/2020	16,438.00	16,588.00	48	Marcellus
9.00	2/21/2020	16,238.00	16,388.00	48	Marcellus
10.00	2/21/2020	16,038.00	16,188.00	48	Marcellus
11.00	2/22/2020	15,838.00	15,988.00	48	Marcellus
12.00	2/22/2020	15,638.00	15,784.00	48	Marcellus
13.00	2/22/2020	15,445.00	15,588.00	48	Marcellus
14.00	2/23/2020	15,238.00	15,388.00	48	Marcellus
15.00	2/23/2020	15,038.00	15,188.00	48	Marcellus
16.00	2/23/2020	14,838.00	14,988.00	48	Marcellus
17.00	2/24/2020	14,638.00	14,781.00	48	Marcellus
18.00	2/24/2020	14,434.00	14,588.00	48	Marcellus
19.00	2/24/2020	14,238.00	14,388.00	48	Marcellus
20.00	2/24/2020	14,038.00	14,188.00	48	Marcellus
21.00	2/25/2020	13,838.00	13,988.00	48	Marcellus
22.00	2/25/2020	13,638.00	13,792.00	48	Marcellus
23.00	2/25/2020	13,434.00	13,588.00	48	Marcellus
24.00	2/26/2020	13,238.00	13,388.00	48	Marcellus
25.00	2/26/2020	13,038.00	13,188.00	48	Marcellus
26.00	2/26/2020	12,838.00	12,988.00	48	Marcellus
27.00	2/27/2020	12,638.00	12,788.00	48	Marcellus
28.00	2/27/2020	12,438.00	12,588.00	48	Marcellus
29.00	2/27/2020	12,238.00	12,388.00	48	Marcellus
30.00	2/27/2020	12,038.00	12,188.00	48	Marcellus
31.00	2/28/2020	11,840.00	11,988.00	48	Marcellus
32.00	2/28/2020	11,638.00	11,787.00	48	Marcellus
33.00	2/28/2020	11,434.00	11,588.00	48	Marcellus
34.00	2/29/2020	11,238.00	11,388.00	48	Marcellus
35.00	2/29/2020	11,038.00	11,188.00	48	Marcellus
36.00	2/29/2020	10,838.00	10,988.00	48	Marcellus
37.00	3/1/2020	10,638.00	10,788.00	48	Marcellus
38.00	3/1/2020	10,436.00	10,588.00	48	Marcellus
39.00	3/1/2020	10,238.00	10,388.00	48	Marcellus
40.00	3/2/2020	10,038.00	10,192.00	48	Marcellus
41.00	3/2/2020	9,843.00	9,988.00	48	Marcellus
42.00	3/2/2020	9,638.00	9,788.00	48	Marcellus
43.00	3/2/2020	9,438.00	9,587.00	48	Marcellus
44.00	3/3/2020	9,238.00	9,387.00	48	Marcellus
45.00	3/3/2020	9,038.00	9,182.00	48	Marcellus
46.00	3/3/2020	8,836.00	8,988.00	48	Marcellus
47.00	3/3/2020	8,638.00	8,788.00	48	Marcellus
48.00	3/3/2020	8,438.00	8,590.00	48	Marcellus
49.00	3/3/2020	8,245.00	8,388.00	48	Marcellus
50.00	3/4/2020	8,038.00	8,188.00	48	Marcellus

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

Well Crim East Unit 12H
 API 47-049-02488

Stage	Stimulation Date	Avg. Pump Rate (BPM)	Avg. Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen
1	2/12/2020	85.30	8,086.00	6,310	4,660.00	406,300.00	10,563.00	N/A
2	2/13/2020	85.00	8,021.00	6,756	5,595.00	406,600.00	10,537.00	N/A
3	2/19/2020	85.40	8,151.00	5,457	6,137.00	405,800.00	10,446.00	N/A
4	2/20/2020	85.80	8,143.00	5,017	5,760.00	406,400.00	10,459.00	N/A
5	2/20/2020	85.30	8,447.00	5,035	5,089.00	405,000.00	10,486.00	N/A
6	2/20/2020	85.50	8,274.00	5,756	5,168.00	406,200.00	9,233.00	N/A
7	2/21/2020	85.20	8,216.00	5,819	4,811.00	406,300.00	9,275.00	N/A
8	2/21/2020	85.20	7,934.00	3,147	5,490.00	405,300.00	9,307.00	N/A
9	2/21/2020	84.80	8,146.00	5,268	5,393.00	406,700.00	10,758.00	N/A
10	2/22/2020	85.30	8,150.00	6,127	4,840.00	406,200.00	9,260.00	N/A
11	2/22/2020	85.10	8,316.00	5,131	5,183.00	405,200.00	9,163.00	N/A
12	2/22/2020	85.00	8,221.00	7,108	5,012.00	102,300.00	9,246.00	N/A
13	2/23/2020	84.80	8,081.00	5,817	5,437.00	406,100.00	9,218.00	N/A
14	2/23/2020	85.20	7,883.00	5,902	5,090.00	404,900.00	9,181.00	N/A
15	2/23/2020	85.10	7,922.00	6,202	5,460.00	405,100.00	9,177.00	N/A
16	2/23/2020	85.10	7,938.00	5,161	5,260.00	405,900.00	9,254.00	N/A
17	2/24/2020	85.40	7,968.00	6,835	4,881.00	404,800.00	9,147.00	N/A
18	2/24/2020	85.80	8,163.00	6,617	5,180.00	405,100.00	9,166.00	N/A
19	2/24/2020	85.10	8,388.00	6,423	5,263.00	406,100.00	9,265.00	N/A
20	2/25/2020	85.00	8,515.00	7,402	5,865.00	406,200.00	9,082.00	N/A
21	2/25/2020	85.20	8,505.00	6,690	5,665.00	405,100.00	9,089.00	N/A
22	2/25/2020	85.80	8,220.00	6,297	5,085.00	405,100.00	9,303.00	N/A
23	2/26/2020	85.70	8,302.00	6,755	5,524.00	405,200.00	9,216.00	N/A
24	2/26/2020	85.40	8,203.00	4,004	6,020.00	405,100.00	9,035.00	N/A
25	2/26/2020	84.80	8,024.00	4,665	5,730.00	405,000.00	9,079.00	N/A
26	2/26/2020	84.90	7,793.00	6,185	4,759.00	405,000.00	9,252.00	N/A
27	2/27/2020	85.10	7,739.00	5,911	5,366.00	405,700.00	9,245.00	N/A
28	2/27/2020	84.70	7,740.00	6,015	4,890.00	405,200.00	8,994.00	N/A
29	2/27/2020	85.10	7,488.00	5,906	4,874.00	405,800.00	9,233.00	N/A
30	2/28/2020	85.90	7,549.00	6,191	4,790.00	405,000.00	9,222.00	N/A
31	2/28/2020	85.70	7,319.00	4,617	5,560.00	405,100.00	9,023.00	N/A
32	2/28/2020	84.70	7,521.00	6,278	4,880.00	404,900.00	8,965.00	N/A
33	2/28/2020	85.50	7,399.00	5,886	5,554.00	405,300.00	9,207.00	N/A
34	2/29/2020	84.90	7,369.00	6,232	5,674.00	406,300.00	8,992.00	N/A
35	2/29/2020	85.60	7,332.00	5,813	6,472.00	405,600.00	8,947.00	N/A
36	2/29/2020	85.80	7,473.00	6,083	5,516.00	405,700.00	9,171.00	N/A
37	3/1/2020	85.20	7,668.00	6,118	5,059.00	360,400.00	8,647.00	N/A
38	3/1/2020	85.10	7,369.00	6,363	4,750.00	406,200.00	8,962.00	N/A
39	3/1/2020	85.10	7,623.00	6,839	5,589.00	404,900.00	9,174.00	N/A
40	3/2/2020	85.90	7,559.00	6,447	6,187.00	406,100.00	4,622.00	N/A
41	3/2/2020	85.30	7,582.00	4,713	5,477.00	406,100.00	8,965.00	N/A
42	3/2/2020	85.60	7,481.00	6,583	5,491.00	406,400.00	8,965.00	N/A
43	3/2/2020	85.00	7,222.00	6,490	5,141.00	405,100.00	9,141.00	N/A
44	3/3/2020	85.40	7,076.00	6,593	5,552.00	404,500.00	9,125.00	N/A
45	3/3/2020	85.40	7,116.00	6,468	5,225.00	405,600.00	9,183.00	N/A
46	3/3/2020	85.60	6,968.00	4,751	5,581.00	405,500.00	8,963.00	N/A
47	3/3/2020	85.40	7,051.00	6,513	4,696.00	406,200.00	9,012.00	N/A
48	3/3/2020	85.00	6,845.00	5,674	5,793.00	348,200.00	8,408.00	N/A
49	3/4/2020	85.60	6,729.00	6,077	4,980.00	405,100.00	9,160.00	N/A
50	3/4/2020	85.60	6,709.00	6,198	6,108.00	101,500.00	9,337.00	N/A

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

Well
API

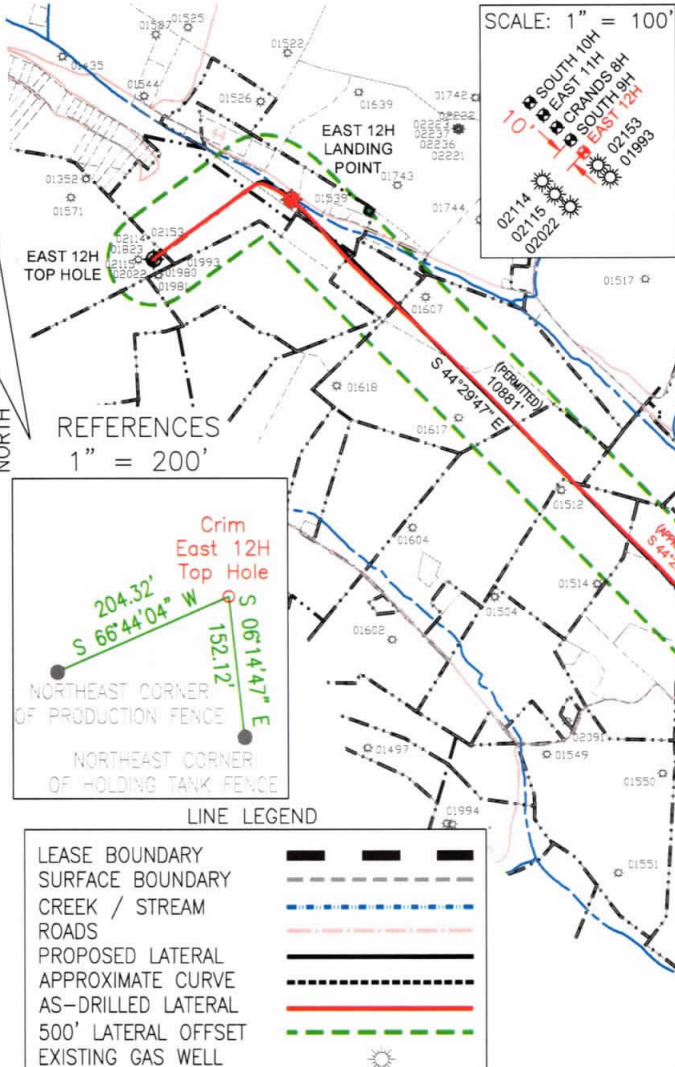
Crim East Unit 12H
47-049-02488

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	7266	5450	7490	
Geneseo	7266	7285	7490	7513	
Burket	7285	7310	7513	7544	
Tully	7310	7360	7544	7610	
Hamilton	7360	7501	7610	7882	
Marcellus	7501	7549	7882	15275	
Hamilton	7549	7542	15275	16772	
Marcellus	7542		16772	18237	

CRIM EAST UNIT 12H

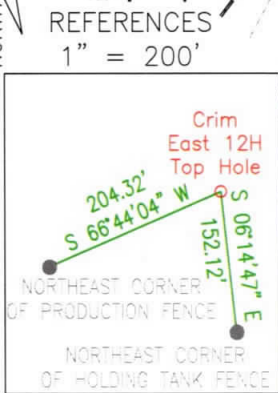
BOTTOM HOLE ← 5466' TOP HOLE ← 2891'

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



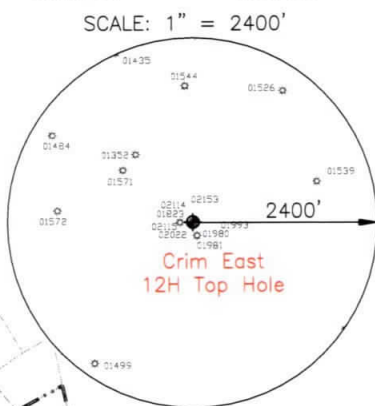
PERMITTED
State Plane Coordinate
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet N: 354894.111 E: 1773568.362	NAD 27 Feet N: 355538.190 E: 1775070.877	NAD 27 Feet N: 347776.725 E: 1782697.037
UTM Zone 17 (SPCS83) Meters N: 4369356.615 E: 560045.860	UTM Zone 17 (SPCS83) Meters N: 4369560.475 E: 560500.360	UTM Zone 17 (SPCS83) Meters N: 4367234.560 E: 562863.212
NAD 27 N 39.4716181 W 80.3021006	NAD 27 N 39.4734230 W 80.2967987	NAD 27 N 39.4522969 W 80.2695493



LINE LEGEND

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



2168' ← BOTTOM HOLE
 10307' ← TOP HOLE

SCALE: 1" = 2000' LONGITUDE: 80°17'30" (TOP HOLE)
 SCALE: 1" = 2000' LONGITUDE: 80°15'08" (BOTTOM HOLE)

- 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 APRIL 2020 AND FILES PROVIDED BY XTO ENERGY INC.
 6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

AS-DRILLED

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet N: 354894.111 E: 1773568.362	NAD 27 Feet N: 355538.190 E: 1775070.880	NAD 27 Feet N: 348152.398 E: 1782321.395
UTM Zone 17 (SPCS83) Meters N: 4369356.615 E: 560045.860	UTM Zone 17 (SPCS83) Meters N: 4369560.475 E: 560500.361	UTM Zone 17 (SPCS83) Meters N: 4367347.107 E: 562746.859
NAD 27 N 39.4716181 W 80.3021006	NAD 27 N 39.4734231 W 80.2967987	NAD 27 N 39.4533195 W 80.2708909

2402 PENNSYLVANIA 66 DELMONT, PA 15626

(724) 757 - 2417
 www.jonesconsultant.com

JONES CONSULTANTS SHEET 1 OF 2

FILE #: JC2017-113
 DRAWING #: CRIM EAST 12H 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 EAST UNIT 12H
 API WELL #: 47 049 02488
 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: 678.4±

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: 7,580' (TVD), 18,237' (TMD) (AS-DRILLED)

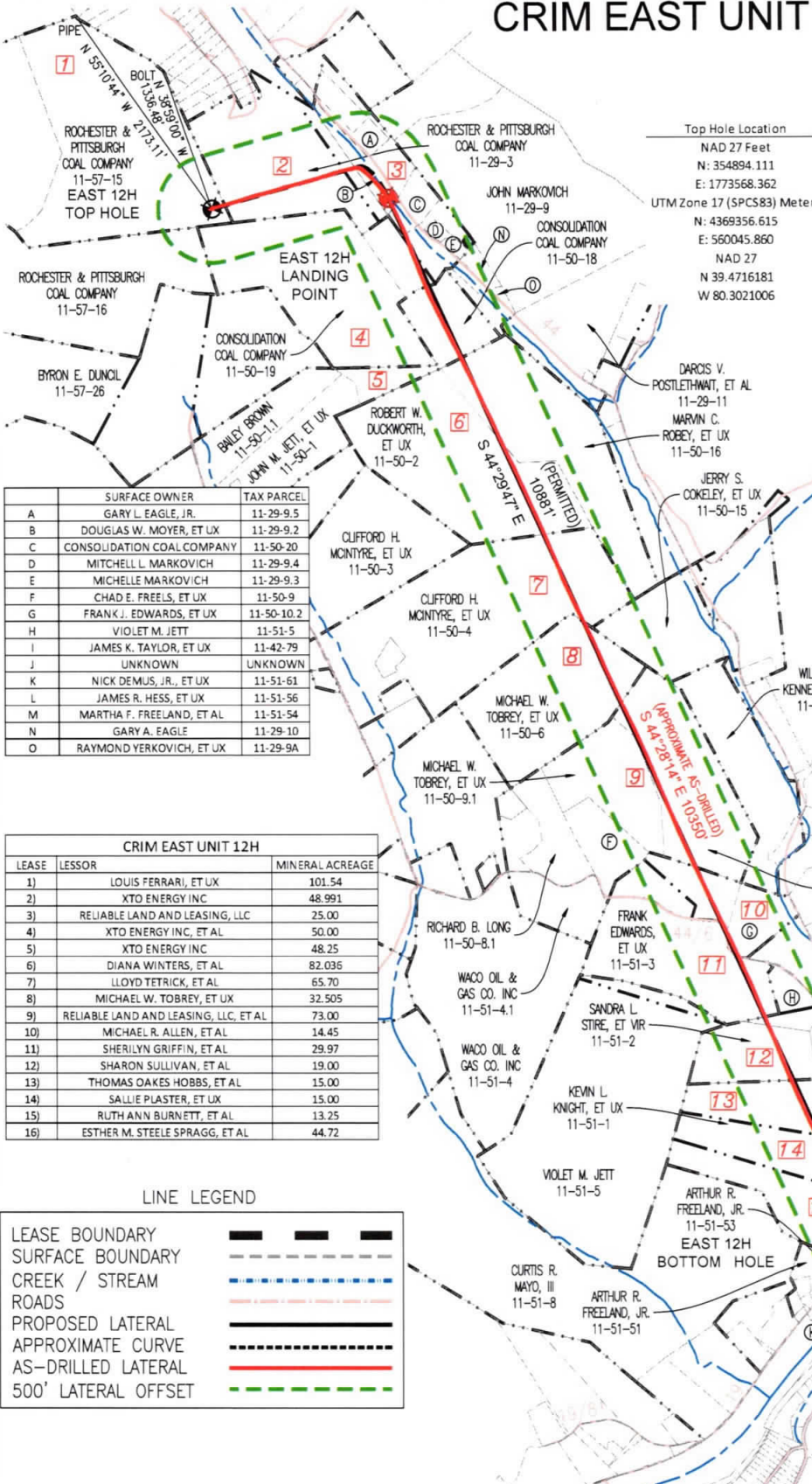
WELL OPERATOR: XTO ENERGY INC. DESIGNATED AGENT: GARY BEALL
 Address: 190 THORN HILL ROAD Address: P.O. BOX 1008
 City: WARRENDALE State: PA Zip Code: 15086 City: JANE LEW State: WV Zip Code: 26378

CRIM EAST UNIT 12H

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: 354894.111	N: 355538.190	N: 347776.725
E: 1773568.362	E: 1775070.877	E: 1782697.037
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369356.615	N: 4369560.475	N: 4367234.560
E: 560045.860	E: 560500.360	E: 562863.212
NAD 27	NAD 27	NAD 27
N 39.4716181	N 39.4734230	N 39.4522969
W 80.3021006	W 80.2967987	W 80.2695493



	SURFACE OWNER	TAX PARCEL
A	GARY L. EAGLE, JR.	11-29-9.5
B	DOUGLAS W. MOYER, ET UX	11-29-9.2
C	CONSOLIDATION COAL COMPANY	11-50-20
D	MITCHELL L. MARKOVICH	11-29-9.4
E	MICHELLE MARKOVICH	11-29-9.3
F	CHAD E. FREELS, ET UX	11-50-9
G	FRANK J. EDWARDS, ET UX	11-50-10.2
H	VIOLET M. JETT	11-51-5
I	JAMES K. TAYLOR, ET UX	11-42-79
J	UNKNOWN	UNKNOWN
K	NICK DEMUS, JR., ET UX	11-51-61
L	JAMES R. HESS, ET UX	11-51-56
M	MARTHA F. FREELAND, ET AL	11-51-54
N	GARY A. EAGLE	11-29-10
O	RAYMOND YERKOVICH, ET UX	11-29-9A

CRIM EAST UNIT 12H		
LEASE	LESSOR	MINERAL ACREAGE
1)	LOUIS FERRARI, ET UX	101.54
2)	XTO ENERGY INC	48.991
3)	RELIABLE LAND AND LEASING, LLC	25.00
4)	XTO ENERGY INC, ET AL	50.00
5)	XTO ENERGY INC	48.25
6)	DIANA WINTERS, ET AL	82.036
7)	LLOYD TETRICK, ET AL	65.70
8)	MICHAEL W. TOBREY, ET UX	32.505
9)	RELIABLE LAND AND LEASING, LLC, ET AL	73.00
10)	MICHAEL R. ALLEN, ET AL	14.45
11)	SHERILYN GRIFFIN, ET AL	29.97
12)	SHARON SULLIVAN, ET AL	19.00
13)	THOMAS OAKES HOBBS, ET AL	15.00
14)	SALLIE PLASTER, ET UX	15.00
15)	RUTH ANN BURNETT, ET AL	13.25
16)	ESTHER M. STEELE SPRAGG, ET AL	44.72

LINE LEGEND

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

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.

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: 354894.111	N: 355538.190	N: 348152.398
E: 1773568.362	E: 1775070.880	E: 1782321.395
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369356.615	N: 4369560.475	N: 4367347.107
E: 560045.860	E: 560500.361	E: 562746.859
NAD 27	NAD 27	NAD 27
N 39.4716181	N 39.4734231	N 39.4533195
W 80.3021006	W 80.2967987	W 80.2708909

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 EAST UNIT 12H

Drawn By:	Date:	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA
JRV	4/7/2020	
Scale: 1" = 1500'	Sheet:	File No.:
AFE # DD.2011.06194.CAP.DRL.01	SHEET 2 OF 2	JC2017-113



Company: XTO Energy
 Well: Crim East Unit 12H
 County: Marion County, West Virginia (NAD 27)
 Rig: Patterson 579
 Wellbore: Wellbore #1
 Design: Design #4
 Created By: BSW
 Date: 12.37, March 30 2020

Geoidetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: West Virginia North 4701
 System Datum: Mean Sea Level

Azimuths to True North
 Magnetic North: -9.10°
 Magnetic Field
 Strength: 52084.7nT
 Dip Angle: 66.47°
 Date: 9/12/2019
 Model: HDGM2019



WELL DETAILS: Crim East Unit 12H

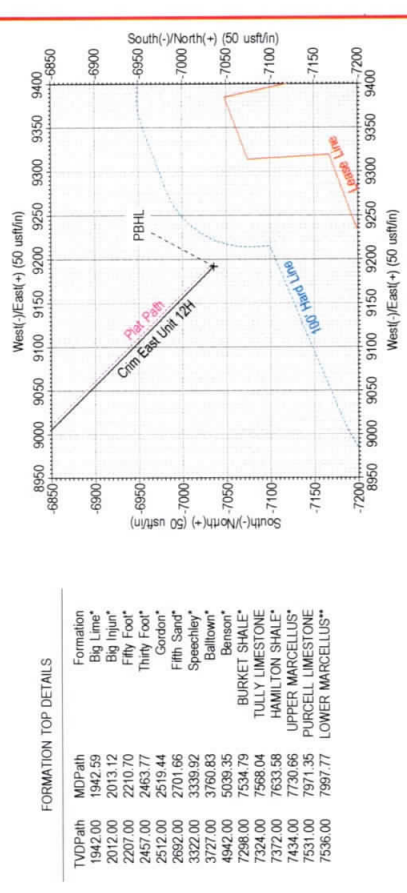
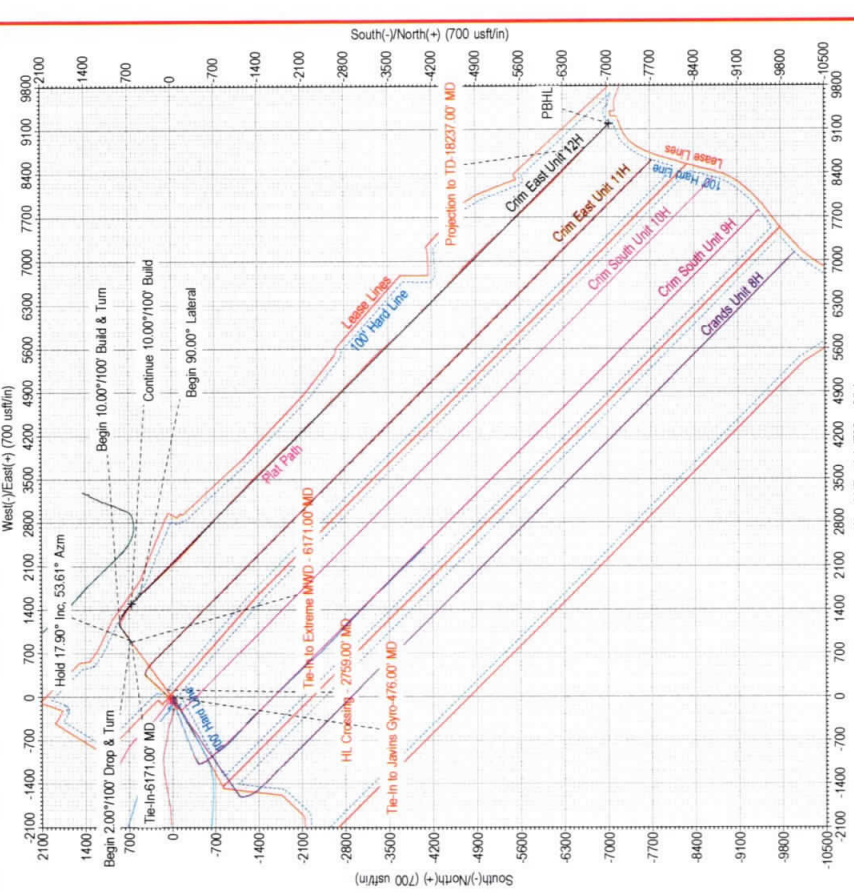
GL @ 1221.00	Well @ 1247.00usft (Patterson 579)	Longitude
+E/W	0.00	80° 18' 7.562" W
+N/S	354894.11	39° 28' 17.825" N
GL @ 1221.00	Well @ 1247.00usft (Patterson 579)	Longitude
+E/W	0.00	80° 18' 7.562" W
+N/S	354894.11	39° 28' 17.825" N

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Eastng	Latitude	Longitude
PBHL v4 - Crim East Unit 12H	7544.00	-7035.60	34776.72	1782697.04	1782697.04	39° 27' 8.269" N	80° 16' 10.378" W
LP Final - Crim East Unit 12H	7544.00	-7035.60	34776.72	1782697.04	1782697.04	39° 27' 8.269" N	80° 16' 10.378" W
LP Final - Crim East Unit 12H	7544.00	-7035.60	34776.72	1782697.04	1782697.04	39° 27' 8.269" N	80° 16' 10.378" W

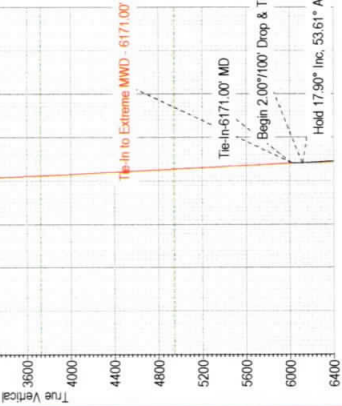
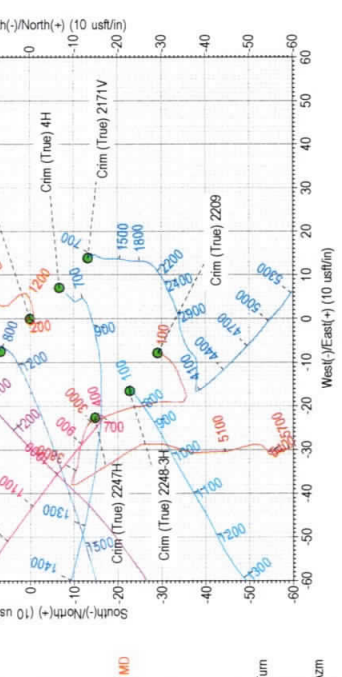
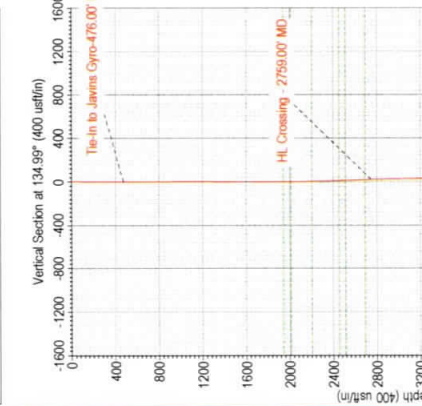
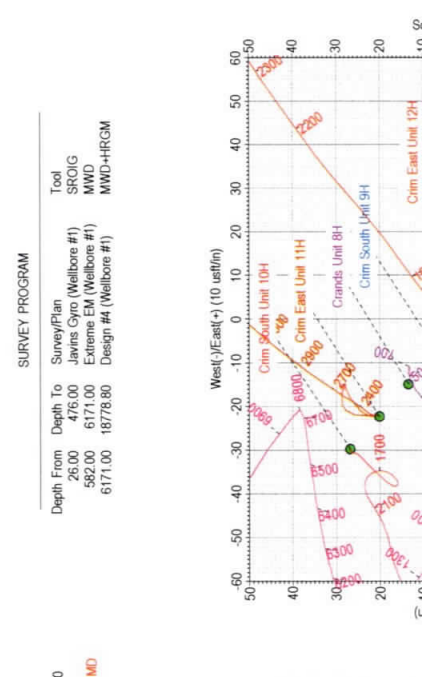
SECTION DETAILS

MD	Inc	Azi	TVD	+N/S	+E/W	Diag	TFace	VSect	Annotation
6171.00	17.96	53.18	6017.37	653.35	864.89	0.00	0.000	162.50	Tie-In-6171.00 MD
6271.00	17.96	53.18	6124.49	673.63	869.57	0.00	0.000	166.89	Begin 2,007/100 Drop & Turn
6278.38	17.90	53.61	6193.52	675.18	911.40	2.00	115.951	167.22	Hold 17.90° Inc, 53.61° Azm
7210.04	17.90	53.61	7006.10	843.02	1141.86	0.00	0.000	210.14	Begin 10,007/100 Build & Turn
7893.65	70.00	134.99	7509.45	657.46	1486.70	10.00	88.215	593.70	Continue 10,007/100 Build
8093.65	90.00	134.99	7544.00	518.91	1635.29	10.00	0.006	789.66	Begin 90.00° Lateral
18778.80	90.00	134.99	7544.00	-7035.60	9191.86	0.00	0.000	11474.81	PBHL



FORMATION TOP DETAILS

TVDPath	Formation
1942.59	Big Line*
2013.12	Filly Foot
2207.00	Thirty Foot
2457.00	Gordon
2512.00	Film Sand
2682.00	Speechley
3322.00	Balltown
3727.00	Benson
4942.00	BURKET SHALE
5039.35	TULLY LIMESTONE
7298.00	HAMILTON SHALE
7324.00	UPPER MARCELLUS
7372.00	PURCELL LIMESTONE
7434.00	LOWER MARCELLUS**
7531.00	
7536.00	





XTO Energy

Marion County, West Virginia (NAD 27)

Crim - Crands

Crim East Unit 12H

Wellbore #1

Design: Surveys

Standard Survey Report

30 August, 2019



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/13/2020
Job End Date:	3/4/2020
State:	West Virginia
County:	Marion
API Number:	47-049-02488-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Crim East Unit 12H
Latitude:	39.47170280
Longitude:	-80.30190820
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,579
Total Base Water Volume (gal):	18,596,466
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical 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	87.89194	None
Sand	JPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	11.41731	None
HCL Acid (15%)	JPP	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.08676	None
K-BAC 1005	JPP	Biocide	Polyethylene glycol	25322-68-3	50.00000	0.00974	None
			Water	7732-18-5	44.30000	0.00863	None
			2,2-Dibromo-3-nitropropionamide	10222-01-2	5.80000	0.00112	None
FR-3	JPP	Friction reducer	Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01237	None
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00093	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.50000	0.00093	None
			Alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00062	None
Scale Hib PE-18	JPP	Scale Inhibitor					

			Ethylene glycol	107-21-1	40.00000	0.00751	None
			Proprietary Scale Inhibitor	Proprietary	30.00000	0.00563	None
Unihib G	Upp	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00034	None
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00022	None
			Methanol	67-56-1	5.00000	0.00002	None
			Thiourea	62-56-6	1.00000	0.00000	None
			Formaldehyde	50-00-0	1.00000	0.00000	None
PlexLube G	Upp	Friction Reducer					
			Graphite	7782-42-5	40.00000	0.00016	None
			Quartz (SiO2)	14808-60-7	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	0.00974	
			Water	7732-18-5	44.30000	0.00863	
			Ethylene glycol	107-21-1	40.00000	0.00751	
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.50000	0.00093	
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00093	
			Alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00062	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00022	
			Methanol	67-56-1	5.00000	0.00002	
			Formaldehyde	50-00-0	1.00000	0.00000	
			Thiourea	62-56-6	1.00000	0.00000	
			Quartz (SiO2)	14808-60-7	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)