



Company: XTO Energy
 Site: Hackett
 Well: 4H
 Project: Marion County, West Virginia (NAD 27)
 Rig: Nomac 78



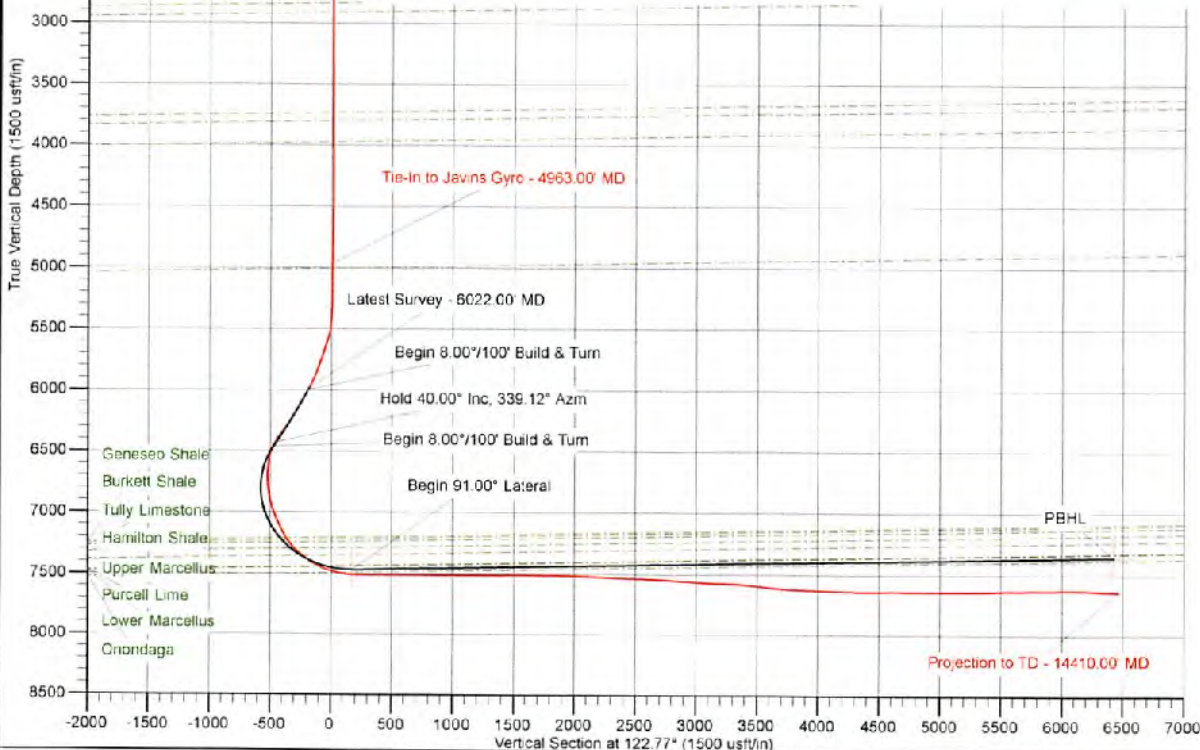
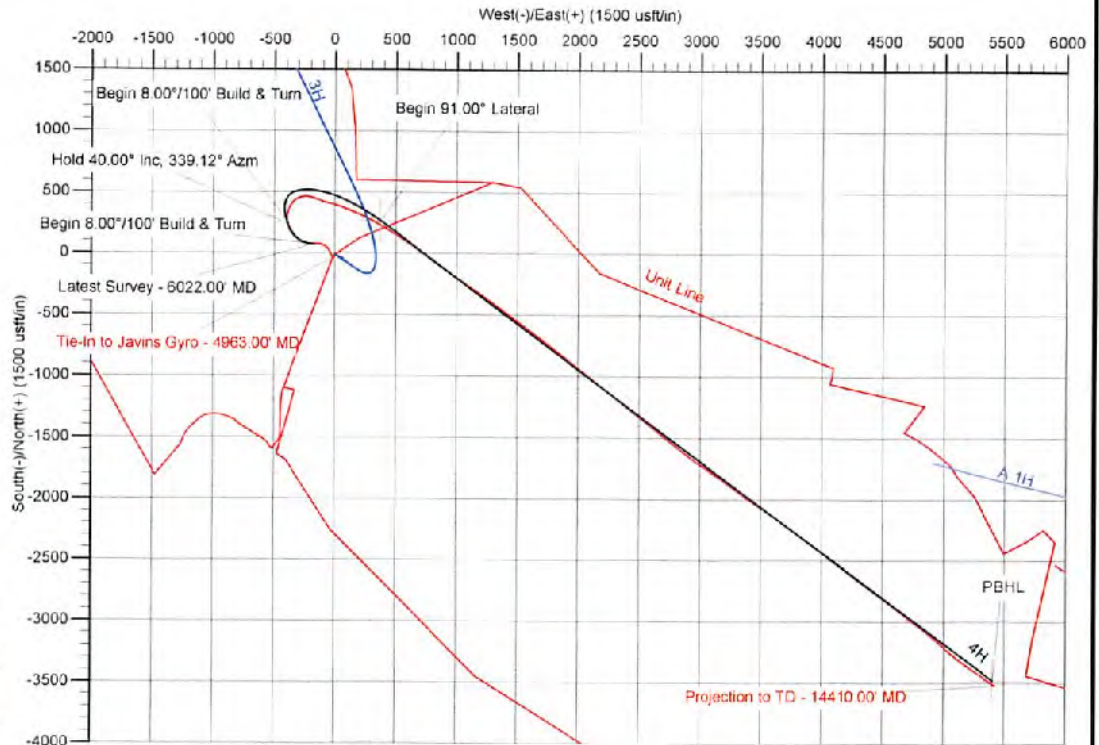
M T
 Azimuths to True North
 Magnetic North: -8.87°
 Magnetic Field
 Strength: 52114.0snT
 Dip Angle: 66.76°
 Date: 03/16/2016
 Model: BGGM2015

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Departure	Annotation
6022.00	33.05	267.99	5983.18	75.12	-168.05	-181.97	0.00	Latest Survey - 6022.00' MD
6039.00	33.05	267.99	5997.43	74.79	-177.32	-189.58	9.27	Begin 8.00°/100' Build & Turn
6550.64	40.00	339.12	6426.24	230.19	-384.22	-447.67	287.59	Hold 40.00° Inc, 339.12° Azm
6598.63	40.00	339.12	6463.00	258.01	-395.22	-472.51	318.44	Begin 8.00°/100' Build & Turn
8145.44	91.00	126.64	7466.00	264.08	372.71	170.46	1367.43	Begin 91.00° Lateral
14417.10	91.00	126.64	7356.53	-3478.49	5404.10	6426.34	7638.14	PBHL

US State Plane 1927 (Exact solution)
 West Virginia North 4701

Created By: CJH
 Date: 11/03, March 29 2016
 Plan: Design #2



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein. 09/15/2017



XTO Energy

Marion County, West Virginia (NAD 27)

Hackett

4H

Wellbore #1

Survey: Javins Gyro

Standard Survey Report

29 March, 2016



09/15/2017

RECEIVED
Office of Oil and Gas

JAN 26 2017

WV Department of
Environmental Protection



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Project	Marion County, West Virginia (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Well	4H				
Well Position	+N-S	0.00 usft	Northing:	352,092.03 usft	Latitude: 39° 27' 48.787 N
	+E-W	0.00 usft	Easting:	1,758,823.37 usft	Longitude: 80° 21' 15.247 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 1,376.00 usft

Wellbore	Wellbore #1				
-----------------	-------------	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	03/16/16	-8.86	66.76	52,114

Design	Surveys				
---------------	---------	--	--	--	--

Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.00	0.00	0.00	122.77

Survey Program	Date	03/29/16			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
13.00	4,963.00	Javins Gyro (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
5,070.00	14,410.00	Cathedral MWD (Wellbore #1)	MWD	OWSG MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
13.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	
Added to adjust for KB - 13.00' MD										
113.00	0.61	101.50	113.00	-0.11	0.52	0.50	0.61	0.61	0.00	
213.00	1.00	95.10	212.99	-0.29	1.91	1.76	0.40	0.39	-6.40	
313.00	1.01	114.20	312.97	-0.73	3.59	3.41	0.33	0.01	19.10	
413.00	0.86	186.00	412.96	-1.84	4.31	4.62	1.10	-0.15	71.80	
513.00	1.00	165.50	512.95	-3.43	4.45	5.60	0.36	0.14	-20.50	
613.00	1.27	217.10	612.93	-5.16	4.00	6.16	1.02	0.27	51.60	
713.00	1.12	229.50	712.91	-6.67	2.59	5.79	0.30	-0.15	12.40	
813.00	0.88	232.30	812.90	-7.78	1.24	5.25	0.24	-0.24	2.80	
913.00	0.72	232.50	912.89	-8.63	0.13	4.78	0.16	-0.16	0.20	
1,013.00	0.73	232.20	1,012.88	-9.40	-0.87	4.36	0.01	0.01	-0.30	
1,113.00	0.11	226.90	1,112.87	-9.86	-1.44	4.12	0.62	-0.62	-5.30	
1,213.00	0.54	170.80	1,212.87	-10.39	-1.44	4.42	0.49	0.43	-56.10	



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,313.00	0.74	187.40	1,312.87	-11.50	-1.45	5.01	0.27	0.20	16.60
1,413.00	0.54	235.00	1,412.86	-12.41	-1.91	5.11	0.55	-0.20	47.60
1,513.00	0.48	236.60	1,512.86	-12.91	-2.65	4.76	0.06	-0.06	1.60
1,613.00	0.31	145.70	1,612.86	-13.36	-2.85	4.84	0.58	-0.17	-90.90
1,713.00	0.82	146.90	1,712.85	-14.19	-2.30	5.74	0.51	0.51	1.20
1,813.00	0.56	131.00	1,812.84	-15.11	-1.54	6.88	0.32	-0.26	-15.90
1,913.00	0.27	108.40	1,912.84	-15.50	-0.95	7.59	0.33	-0.29	-22.60
2,013.00	0.13	149.00	2,012.84	-15.67	-0.67	7.92	0.19	-0.14	40.60
2,113.00	0.36	231.30	2,112.84	-15.97	-0.86	7.92	0.37	0.23	82.30
2,213.00	0.51	212.10	2,212.84	-16.54	-1.34	7.83	0.21	0.15	-19.20
2,313.00	0.71	181.70	2,312.83	-17.54	-1.59	8.15	0.37	0.20	-30.40
2,413.00	0.70	209.70	2,412.82	-18.69	-1.91	8.50	0.34	-0.01	28.00
2,513.00	0.63	190.80	2,512.82	-19.76	-2.32	8.74	0.23	-0.07	-18.90
2,613.00	0.42	140.50	2,612.81	-20.58	-2.19	9.30	0.49	-0.21	-50.30
2,713.00	0.34	254.90	2,712.81	-20.94	-2.24	9.45	0.64	-0.08	114.40
2,813.00	0.61	196.30	2,812.81	-21.53	-2.68	9.40	0.52	0.27	-58.60
2,913.00	0.61	171.30	2,912.80	-22.56	-2.75	9.90	0.26	0.00	-25.00
3,013.00	0.69	176.10	3,012.80	-23.69	-2.63	10.61	0.10	0.08	4.80
3,113.00	0.17	174.00	3,112.79	-24.44	-2.57	11.07	0.52	-0.52	-2.10
3,213.00	0.05	233.70	3,212.79	-24.61	-2.59	11.14	0.15	-0.12	59.70
3,313.00	0.27	130.90	3,312.79	-24.79	-2.45	11.36	0.29	0.22	-102.80
3,413.00	0.38	160.80	3,412.79	-25.26	-2.16	11.86	0.20	0.11	29.90
3,513.00	0.54	229.10	3,512.79	-25.88	-2.41	11.99	0.53	0.16	68.30
3,613.00	0.83	167.90	3,612.78	-26.90	-2.61	12.36	0.74	0.29	-61.20
3,713.00	0.58	224.20	3,712.78	-27.97	-2.81	12.77	0.70	-0.25	56.30
3,813.00	0.97	197.20	3,812.77	-29.14	-3.42	12.90	0.52	0.39	-27.00
3,913.00	0.66	166.70	3,912.76	-30.51	-3.53	13.54	0.52	-0.31	-30.50
4,013.00	0.75	167.60	4,012.75	-31.71	-3.26	14.42	0.09	0.09	0.90
4,113.00	0.38	231.10	4,112.75	-32.56	-3.38	14.78	0.67	-0.37	63.50
4,213.00	0.98	197.20	4,212.74	-33.58	-3.89	14.91	0.70	0.60	-33.90
4,313.00	0.49	210.50	4,312.73	-34.77	-4.36	15.15	0.52	-0.49	13.30
4,413.00	0.97	212.70	4,412.72	-35.85	-5.03	15.17	0.48	0.48	2.20
4,513.00	1.40	254.20	4,512.70	-36.89	-6.67	14.36	0.93	0.43	41.50
4,613.00	1.00	291.90	4,612.68	-36.90	-8.65	12.70	0.86	-0.40	37.70
4,713.00	0.75	292.50	4,712.67	-36.32	-10.07	11.20	0.25	-0.25	0.60
4,813.00	1.07	269.90	4,812.66	-36.08	-11.60	9.77	0.48	0.32	-22.60
4,913.00	1.19	315.40	4,912.64	-35.34	-13.27	7.97	0.88	0.12	45.50
4,963.00	1.16	293.80	4,962.63	-34.76	-14.09	6.97	0.88	-0.06	-43.20
5,013.00	1.16	293.80	5,012.62	-34.36	-15.02	5.97	0.00	0.00	0.00

Projection to Bit - 5013.00' MD



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
13.00	13.00	0.00	0.00	Added to adjust for KB - 13.00' MD
5,013.00	5,012.62	-34.36	-15.02	Projection to Bit - 5013.00' MD



XTO Energy

Marion County, West Virginia (NAD 27)

Hackett

4H

Wellbore #1

Survey: Cathedral MWD

Standard Survey Report

29 March, 2016



09/15/2017



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Project	Marion County, West Virginia (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Well	4H				
Well Position	+N/-S	0.00 usft	Northing:	352,092.03 usft	Latitude: 39° 27' 48.787 N
	+E/-W	0.00 usft	Easting:	1,758,823.37 usft	Longitude: 80° 21' 15.247 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 1,376.00 usft

Wellbore	Wellbore #1				
-----------------	-------------	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGCM2015	03/16/16	-8.86	66.76	52,114

Design	Surveys				
---------------	---------	--	--	--	--

Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	122.77

Survey Program	Date 03/29/16				
-----------------------	---------------	--	--	--	--

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
13.00	4,963.00	Javins Gyro (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
5,070.00	14,410.00	Cathedral MWD (Wellbore #1)	MWD	OWSG MWD - Standard

Survey										
---------------	--	--	--	--	--	--	--	--	--	--

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,963.00	1.16	293.80	4,962.63	-34.76	-14.09	6.97	0.00	0.00	0.00	
Tie-In to Javins Gyro - 4963.00' MD										
5,070.00	0.92	305.87	5,069.61	-33.82	-15.78	5.04	0.30	-0.22	11.28	
5,165.00	0.62	289.61	5,164.60	-33.20	-16.88	3.78	0.39	-0.32	-17.12	
5,260.00	0.31	260.95	5,259.60	-33.07	-17.62	3.08	0.40	-0.33	-30.17	
5,354.00	0.44	223.69	5,353.60	-33.37	-18.12	2.83	0.29	0.14	-39.64	
5,450.00	5.27	315.89	5,449.46	-30.47	-21.45	-1.54	5.53	5.03	96.04	
5,545.00	15.82	332.23	5,542.74	-15.84	-30.54	-17.11	11.43	11.11	17.20	
5,641.00	21.93	332.76	5,633.54	11.71	-44.86	-44.06	6.37	6.36	0.55	
5,736.00	18.90	319.75	5,722.61	39.24	-62.94	-74.16	5.73	-3.19	-13.69	
5,831.00	20.22	303.76	5,812.19	60.12	-86.54	-105.31	5.79	1.39	-16.83	
5,927.00	26.19	279.06	5,900.59	72.72	-121.37	-141.41	11.77	6.22	-25.73	
6,022.00	33.05	267.99	5,983.18	75.12	-168.05	-181.97	9.21	7.22	-11.65	
6,118.00	35.02	274.84	6,062.77	76.52	-221.69	-227.82	4.49	2.05	7.14	
6,214.00	29.88	296.29	6,144.02	89.49	-270.77	-276.11	13.05	-5.35	22.34	



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,309.00	29.93	310.44	6,226.47	115.38	-310.07	-323.17	7.41	0.05	14.89
6,404.00	37.53	318.79	6,305.47	152.59	-347.25	-374.58	9.36	8.00	8.79
6,499.00	39.38	335.49	6,380.06	201.92	-378.90	-427.89	11.08	1.95	17.58
6,595.00	37.84	351.66	6,455.27	258.92	-395.85	-473.00	10.61	-1.60	16.84
6,690.00	32.26	10.55	6,533.24	312.88	-395.43	-501.85	12.78	-5.87	19.88
6,785.00	26.68	24.27	6,616.01	357.33	-382.00	-514.62	9.19	-5.87	14.44
6,881.00	23.86	31.47	6,702.83	393.55	-363.00	-518.24	4.34	-2.94	7.50
6,975.00	20.22	41.49	6,789.98	421.96	-342.30	-516.21	5.55	-3.87	10.66
7,071.00	23.25	60.65	6,879.26	443.70	-314.75	-504.82	7.99	3.16	19.96
7,166.00	26.68	76.38	6,965.47	457.94	-277.62	-481.31	7.84	3.61	16.56
7,261.00	26.02	90.45	7,050.68	462.80	-236.02	-448.95	6.60	-0.69	14.81
7,357.00	27.33	107.06	7,136.58	456.16	-193.83	-409.89	7.86	1.36	17.30
7,452.00	32.96	110.31	7,218.70	440.78	-148.71	-363.62	6.17	5.93	3.42
7,547.00	46.19	107.67	7,291.77	421.32	-91.55	-305.03	14.04	13.93	-2.78
7,642.00	53.61	104.86	7,352.93	401.07	-21.83	-235.44	8.13	7.81	-2.98
7,738.00	56.69	109.87	7,407.80	377.51	53.29	-159.52	5.35	3.21	5.22
7,834.00	67.37	112.51	7,452.77	346.83	132.19	-76.57	11.39	11.13	2.75
7,929.00	76.86	114.44	7,481.91	310.82	215.00	12.55	10.17	9.99	2.03
8,024.00	81.91	118.75	7,499.41	269.01	298.43	105.33	6.94	5.32	4.54
8,120.00	87.41	120.24	7,508.35	221.97	381.59	200.72	5.93	5.73	1.55
8,215.00	89.34	120.68	7,511.04	173.83	463.44	295.60	2.06	2.03	0.46
8,310.00	91.54	124.28	7,510.31	122.83	543.56	390.57	4.44	2.32	3.79
8,405.00	89.65	124.99	7,509.32	68.84	621.72	485.51	2.13	-1.99	0.75
8,501.00	89.47	124.72	7,510.06	13.98	700.49	581.45	0.34	-0.19	-0.28
8,597.00	90.13	126.22	7,510.40	-41.73	778.68	677.33	1.71	0.69	1.56
8,692.00	90.46	125.95	7,509.89	-97.68	855.45	772.17	0.47	0.37	-0.28
8,787.00	90.75	126.13	7,508.87	-153.57	932.26	867.01	0.34	0.28	0.19
8,882.00	89.78	124.37	7,508.43	-208.39	1,009.84	961.92	2.12	-1.02	-1.85
8,977.00	89.08	122.61	7,509.38	-260.81	1,089.08	1,056.90	1.99	-0.74	-1.85
9,071.00	89.39	124.72	7,510.63	-312.91	1,167.28	1,150.88	2.27	0.33	2.24
9,166.00	89.60	125.43	7,511.47	-367.50	1,245.03	1,245.80	0.78	0.22	0.75
9,262.00	91.23	127.01	7,510.77	-424.22	1,322.47	1,341.61	2.36	1.70	1.65
9,357.00	91.54	126.48	7,508.48	-481.04	1,398.57	1,436.36	0.65	0.33	-0.56
9,452.00	89.82	127.19	7,507.35	-537.98	1,474.60	1,531.11	1.96	-1.81	0.75
9,547.00	89.43	126.39	7,507.97	-594.88	1,550.67	1,625.87	0.94	-0.41	-0.84
9,643.00	89.60	126.39	7,508.78	-651.83	1,627.95	1,721.68	0.18	0.18	0.00
9,738.00	88.90	127.19	7,510.03	-708.72	1,704.02	1,816.43	1.12	-0.74	0.84
9,833.00	88.90	126.75	7,511.85	-765.84	1,779.91	1,911.16	0.46	0.00	-0.46
9,928.00	88.42	126.75	7,514.07	-822.66	1,856.01	2,005.90	0.51	-0.51	0.00
10,024.00	87.76	128.59	7,517.27	-881.29	1,931.95	2,101.50	2.04	-0.69	1.92
10,119.00	87.58	129.03	7,521.14	-940.79	2,005.91	2,195.89	0.50	-0.19	0.46
10,214.00	86.79	128.06	7,525.80	-999.91	2,080.12	2,290.29	1.32	-0.83	-1.02
10,310.00	86.84	128.77	7,531.14	-1,059.47	2,155.23	2,385.68	0.74	0.05	0.74



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,405.00	88.90	127.80	7,534.67	-1,118.28	2,229.74	2,480.17	2.40	2.17	-1.02
10,499.00	88.29	127.54	7,536.97	-1,175.71	2,304.12	2,573.79	0.71	-0.65	-0.28
10,594.00	86.66	128.15	7,541.16	-1,233.94	2,379.06	2,668.33	1.83	-1.72	0.64
10,689.00	86.88	128.06	7,546.51	-1,292.47	2,453.70	2,762.76	0.25	0.23	-0.09
10,784.00	86.57	127.98	7,551.94	-1,350.89	2,528.42	2,857.21	0.34	-0.33	-0.08
10,879.00	86.13	128.24	7,557.98	-1,409.40	2,603.01	2,951.61	0.54	-0.46	0.27
10,975.00	85.87	128.50	7,564.68	-1,468.84	2,678.10	3,046.92	0.38	-0.27	0.27
11,071.00	87.19	127.89	7,570.49	-1,528.09	2,753.40	3,142.31	1.51	1.38	-0.64
11,166.00	87.50	128.42	7,574.89	-1,586.72	2,828.03	3,236.79	0.65	0.33	0.56
11,262.00	87.10	128.50	7,579.41	-1,646.36	2,903.11	3,332.21	0.42	-0.42	0.08
11,356.00	83.89	124.20	7,586.80	-1,701.89	2,978.56	3,425.70	5.70	-3.41	-4.57
11,452.00	84.02	124.37	7,596.91	-1,755.67	3,057.44	3,521.13	0.22	0.14	0.18
11,547.00	83.63	123.93	7,607.13	-1,808.69	3,135.60	3,615.55	0.62	-0.41	-0.46
11,642.00	85.96	126.39	7,615.75	-1,863.16	3,212.93	3,710.06	3.56	2.45	2.59
11,737.00	88.55	125.69	7,620.30	-1,918.99	3,289.65	3,804.79	2.82	2.73	-0.74
11,833.00	88.77	126.31	7,622.54	-1,975.40	3,367.30	3,900.61	0.69	0.23	0.65
11,928.00	87.94	124.99	7,625.27	-2,030.74	3,444.46	3,995.45	1.64	-0.87	-1.39
12,023.00	87.06	123.49	7,629.41	-2,084.14	3,522.92	4,090.33	1.83	-0.93	-1.58
12,119.00	87.23	125.34	7,634.19	-2,138.33	3,602.01	4,186.16	1.93	0.18	1.93
12,214.00	88.99	126.92	7,637.33	-2,194.31	3,678.69	4,280.94	2.49	1.85	1.66
12,309.00	88.90	127.27	7,639.08	-2,251.60	3,754.46	4,375.65	0.38	-0.09	0.37
12,404.00	90.53	126.83	7,639.55	-2,308.84	3,830.27	4,470.39	1.78	1.72	-0.46
12,499.00	91.36	126.83	7,637.98	-2,365.78	3,906.30	4,565.13	0.87	0.87	0.00
12,594.00	91.14	126.83	7,635.91	-2,422.71	3,982.32	4,659.87	0.23	-0.23	0.00
12,689.00	89.03	127.54	7,635.77	-2,480.12	4,058.00	4,754.58	2.34	-2.22	0.75
12,784.00	89.17	127.36	7,637.26	-2,537.88	4,133.41	4,849.26	0.24	0.15	-0.19
12,879.00	89.69	126.75	7,638.21	-2,595.12	4,209.22	4,943.98	0.84	0.55	-0.64
12,974.00	89.47	126.48	7,638.90	-2,651.78	4,285.48	5,038.77	0.37	-0.23	-0.28
13,070.00	89.65	126.39	7,639.64	-2,708.80	4,362.71	5,134.57	0.21	0.19	-0.09
13,165.00	89.74	126.04	7,640.15	-2,764.92	4,439.35	5,229.40	0.38	0.09	-0.37
13,260.00	91.10	127.10	7,639.45	-2,821.52	4,515.65	5,324.18	1.82	1.43	1.12
13,356.00	92.20	127.98	7,636.69	-2,879.99	4,591.73	5,419.81	1.47	1.15	0.92
13,452.00	92.37	127.54	7,632.86	-2,938.73	4,667.57	5,515.37	0.49	0.18	-0.46
13,547.00	90.31	127.62	7,630.64	-2,996.65	4,742.83	5,610.00	2.17	-2.17	0.08
13,641.00	89.91	127.62	7,630.46	-3,054.03	4,817.29	5,703.66	0.43	-0.43	0.00
13,737.00	90.00	127.80	7,630.53	-3,112.75	4,893.23	5,799.31	0.21	0.09	0.19
13,832.00	93.56	132.90	7,627.58	-3,174.19	4,965.57	5,893.39	6.54	3.75	5.37
13,928.00	91.06	130.70	7,623.71	-3,238.12	5,037.06	5,988.11	3.47	-2.60	-2.29
14,023.00	88.77	128.33	7,623.85	-3,298.56	5,110.34	6,082.44	3.47	-2.41	-2.49
14,119.00	87.63	124.99	7,626.87	-3,355.84	5,187.30	6,178.15	3.67	-1.19	-3.48
14,214.00	87.06	125.16	7,631.27	-3,410.37	5,264.97	6,272.97	0.63	-0.60	0.18
14,309.00	88.24	123.49	7,635.16	-3,463.89	5,343.35	6,367.85	2.15	1.24	-1.76
14,350.00	88.33	124.37	7,636.39	-3,486.77	5,377.36	6,408.83	2.16	0.22	2.15



MS Energy Services
Survey Report



Company:	XTO Energy	Local Co-ordinate Reference:	Well 4H
Project:	Marion County, West Virginia (NAD 27)	TVD Reference:	WELL @ 1402.00usft (Nomac 78)
Site:	Hackett	MD Reference:	WELL @ 1402.00usft (Nomac 78)
Well:	4H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,410.00	88.33	124.37	7,638.14	-3,520.62	5,426.86	6,468.78	0.00	0.00	0.00
Projection to TD - 14410.00' MD									

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
4,963.00	4,962.63	-34.76	-14.09	Tie-In to Javins Gyro - 4963.00' MD	
14,410.00	7,638.14	-3,520.62	5,426.86	Projection to TD - 14410.00' MD	