



Company: XTO Energy  
 Site: Swearingen  
 Well: 3H  
 Project: Marion County, West Virginia (NAD 27)  
 Rig: Nomac 78



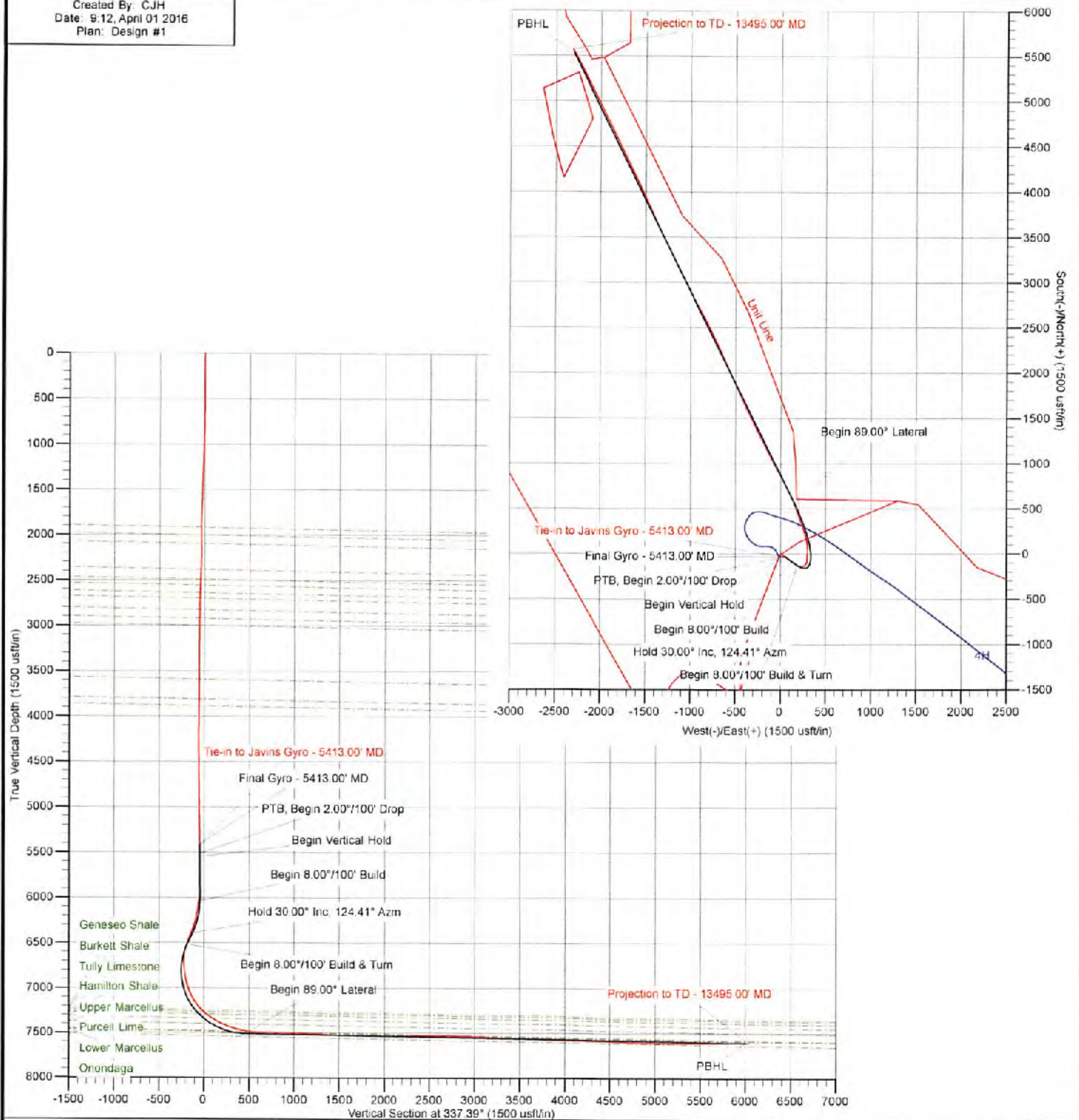
M T  
 Azimuths to True North  
 Magnetic North: -8.87°  
 Magnetic Field  
 Strength: 52109.2snT  
 Dip Angle: 66.75°  
 Date: 03/31/2016  
 Model: BGCM2015

ANNOTATIONS

MD	Inc	Azi	TVD	+N/S	+E/W	V Sect	Departure	Annotation
5413.00	0.74	317.50	5411.08	-30.37	49.25	-46.97	0.00	Final Gyro - 5413.00' MD
5513.00	0.74	317.50	5511.07	-29.42	48.38	-45.76	1.29	PTB, Begin 2.00°/100' Drop
5550.00	0.00	0.00	5548.07	-29.24	48.22	-45.53	1.53	Begin Vertical Hold
6036.50	0.00	0.00	6034.57	-29.24	48.22	-45.53	1.53	Begin 8.00°/100' Build
6411.50	30.00	124.41	6392.67	-83.46	127.38	-126.02	97.48	Hold 30.00° Inc, 124.41° Azm
6557.16	30.00	124.41	6518.82	-124.62	187.47	-187.12	170.31	Begin 8.00°/100' Build & Turn
7993.34	89.00	333.69	7510.00	563.91	153.07	461.72	1048.50	Begin 89.00° Lateral
13543.34	89.00	333.69	7606.86	5538.18	-2306.57	5699.31	6597.66	PBHL

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

Created By: CJH  
 Date: 9/12, April 01 2016  
 Plan: Design #1



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)  
Swearingen  
3H**

**Wellbore #1**

**Survey: Javins Gyro**

## **Standard Survey Report**

**01 April, 2016**



09/15/2017





**MS Energy Services**  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Conroe DB

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

<b>Well</b>	3H				
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	352,082.58 usft	<b>Latitude:</b> 39° 27' 48.693 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,758,819.77 usft	<b>Longitude:</b> 80° 21' 15.291 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 1,376.00 usft

<b>Wellbore</b>	Wellbore #1				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	03/31/16	-8.87	66.75	52,109

<b>Design</b>	Surveys				
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<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	337.39

Survey Program	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
	13.00	5,413.00	Javins Gyro (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
	5,546.00	13,495.00	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	
<b>Added to adjust for KB-13.00' MD</b>										
38.00	0.08	101.40	38.00	0.00	0.02	-0.01	0.32	0.32	0.00	
63.00	0.24	136.30	63.00	-0.04	0.07	-0.07	0.72	0.64	139.60	
88.00	0.41	113.50	88.00	-0.12	0.19	-0.18	0.84	0.68	-91.20	
113.00	0.33	112.70	113.00	-0.18	0.34	-0.30	0.32	-0.32	-3.20	
138.00	0.37	116.10	138.00	-0.25	0.48	-0.41	0.18	0.16	13.60	
163.00	0.26	111.30	163.00	-0.30	0.60	-0.51	0.45	-0.44	-19.20	
188.00	0.53	127.80	188.00	-0.39	0.75	-0.65	1.16	1.08	66.00	
213.00	0.51	132.40	213.00	-0.54	0.92	-0.85	0.19	-0.08	18.40	
238.00	0.46	138.90	238.00	-0.69	1.07	-1.05	0.30	-0.20	26.00	
263.00	0.33	157.50	263.00	-0.83	1.16	-1.21	0.72	-0.52	74.40	
288.00	0.21	152.50	287.99	-0.94	1.21	-1.33	0.49	-0.48	-20.00	
313.00	0.41	165.30	312.99	-1.07	1.25	-1.47	0.84	0.80	51.20	





**MS Energy Services**  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)
338.00	0.21	182.60	337.99	-1.20	1.27	-1.60	0.87	-0.80	69.20
363.00	0.21	179.10	362.99	-1.29	1.27	-1.68	0.05	0.00	-14.00
388.00	0.08	245.70	387.99	-1.34	1.26	-1.72	0.77	-0.52	266.40
413.00	0.20	166.30	412.99	-1.39	1.25	-1.77	0.81	0.48	-317.60
438.00	0.14	182.10	437.99	-1.46	1.26	-1.84	0.30	-0.24	63.20
463.00	0.03	296.60	462.99	-1.49	1.25	-1.86	0.62	-0.44	458.00
488.00	0.09	44.50	487.99	-1.48	1.26	-1.85	0.41	0.24	431.60
513.00	0.08	108.60	512.99	-1.47	1.29	-1.85	0.36	-0.04	256.40
538.00	0.16	136.00	537.99	-1.50	1.33	-1.90	0.39	0.32	109.60
563.00	0.21	137.50	562.99	-1.56	1.39	-1.97	0.20	0.20	6.00
588.00	0.23	147.40	587.99	-1.63	1.45	-2.06	0.17	0.08	39.60
613.00	0.24	162.40	612.99	-1.72	1.49	-2.16	0.25	0.04	60.00
638.00	0.26	167.60	637.99	-1.83	1.52	-2.27	0.12	0.08	20.80
663.00	0.28	159.10	662.99	-1.94	1.55	-2.39	0.18	0.08	-34.00
688.00	0.26	163.50	687.99	-2.05	1.59	-2.51	0.12	-0.08	17.60
713.00	0.24	155.00	712.99	-2.16	1.63	-2.62	0.17	-0.08	-34.00
813.00	1.61	125.90	812.98	-3.17	2.85	-4.02	1.41	1.37	-29.10
913.00	2.10	115.00	912.92	-4.77	5.65	-6.57	0.60	0.49	-10.90
1,013.00	2.29	110.20	1,012.85	-6.23	9.19	-9.29	0.26	0.19	-4.80
1,113.00	1.94	121.20	1,112.78	-7.80	12.51	-12.01	0.53	-0.35	11.00
1,213.00	2.24	115.30	1,212.72	-9.51	15.73	-14.83	0.37	0.30	-5.90
1,313.00	2.75	114.40	1,312.62	-11.34	19.68	-18.03	0.51	0.51	-0.90
1,413.00	2.78	116.30	1,412.51	-13.40	24.04	-21.61	0.10	0.03	1.90
1,513.00	2.16	123.30	1,512.41	-15.51	27.78	-25.00	0.69	-0.62	7.00
1,613.00	1.96	143.60	1,612.35	-17.92	30.37	-28.22	0.75	-0.20	20.30
1,713.00	2.15	156.20	1,712.28	-21.02	32.15	-31.76	0.49	0.19	12.60
1,813.00	1.82	176.90	1,812.23	-24.32	32.99	-35.13	0.78	-0.33	20.70
1,913.00	0.79	267.40	1,912.21	-25.93	32.39	-36.39	1.99	-1.03	90.50
2,013.00	1.10	39.40	2,012.20	-25.22	32.31	-35.71	1.73	0.31	132.00
2,113.00	1.14	30.30	2,112.18	-23.62	33.42	-34.66	0.18	0.04	-9.10
2,213.00	1.19	78.70	2,212.16	-22.56	34.94	-34.26	0.96	0.05	48.40
2,313.00	2.81	91.90	2,312.10	-22.44	38.41	-35.48	1.67	1.62	13.20
2,413.00	3.75	97.60	2,411.93	-22.95	44.10	-38.14	0.99	0.94	5.70
2,513.00	4.16	106.10	2,511.70	-24.39	50.82	-42.06	0.71	0.41	8.50
2,613.00	3.34	128.40	2,611.49	-27.21	56.59	-46.87	1.66	-0.82	22.30
2,713.00	1.97	160.60	2,711.38	-30.64	59.45	-51.14	1.97	-1.37	32.20
2,813.00	1.02	139.80	2,811.35	-32.94	60.59	-53.70	1.08	-0.95	-20.80
2,913.00	0.52	73.00	2,911.34	-33.49	61.60	-54.59	0.94	-0.50	-66.80
3,013.00	0.73	85.00	3,011.33	-33.30	62.67	-54.83	0.25	0.21	12.00
3,113.00	0.99	64.00	3,111.32	-32.86	64.08	-54.97	0.40	0.26	-21.00
3,213.00	0.48	73.80	3,211.31	-32.37	65.26	-54.97	0.52	-0.51	9.80
3,313.00	0.54	104.90	3,311.31	-32.37	66.12	-55.30	0.28	0.06	31.10
3,413.00	0.17	250.60	3,411.31	-32.54	66.43	-55.58	0.69	-0.37	145.70



MS Energy Services  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)
3,513.00	0.50	131.10	3,511.31	-32.88	66.62	-55.96	0.60	0.33	-119.50
3,613.00	0.50	91.80	3,611.30	-33.18	67.39	-56.54	0.34	0.00	-39.30
3,713.00	0.54	125.20	3,711.30	-33.46	68.21	-57.11	0.30	0.04	33.40
3,813.00	0.84	158.90	3,811.29	-34.42	68.86	-58.25	0.49	0.30	33.70
3,913.00	0.73	216.20	3,911.29	-35.62	68.74	-59.31	0.76	-0.11	57.30
4,013.00	0.60	227.10	4,011.28	-36.49	67.98	-59.82	0.18	-0.13	10.90
4,113.00	0.69	168.60	4,111.27	-37.43	67.72	-60.59	0.64	0.09	-58.50
4,213.00	0.82	251.60	4,211.27	-38.25	67.16	-61.13	1.01	0.13	83.00
4,313.00	0.95	259.40	4,311.26	-38.63	65.67	-60.91	0.18	0.13	7.80
4,413.00	1.03	271.40	4,411.24	-38.76	63.95	-60.37	0.22	0.08	12.00
4,513.00	1.38	285.60	4,511.22	-38.41	61.89	-59.26	0.46	0.35	14.20
4,613.00	0.90	275.00	4,611.20	-38.02	59.95	-58.15	0.52	-0.48	-10.60
4,713.00	0.70	307.30	4,711.19	-37.58	58.68	-57.26	0.48	-0.20	32.30
4,813.00	1.10	300.40	4,811.18	-36.73	57.37	-55.96	0.41	0.40	-6.90
4,913.00	1.01	337.40	4,911.16	-35.43	56.20	-54.31	0.67	-0.09	37.00
5,013.00	0.87	278.80	5,011.15	-34.50	55.11	-53.04	0.93	-0.14	-58.60
5,113.00	1.08	287.80	5,111.14	-34.09	53.47	-52.03	0.26	0.21	9.00
5,213.00	1.07	328.20	5,211.12	-33.01	52.08	-50.50	0.74	-0.01	40.40
5,313.00	1.34	306.90	5,311.10	-31.53	50.64	-48.58	0.54	0.27	-22.30
5,413.00	0.74	317.50	5,411.08	-30.37	49.25	-46.97	0.63	-0.60	11.60
5,513.00	0.74	317.50	5,511.07	-29.42	48.38	-45.76	0.00	0.00	0.00

Projection to Bit - 5513.00' MD

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
5,513.00	5,511.07	-29.42	48.38	Projection to Bit - 5513.00' MD





## **XTO Energy**

**Marion County, West Virginia (NAD 27)  
Swearingen  
3H**

**Wellbore #1**

**Survey: Cathedral MWD**

## **Standard Survey Report**

**01 April, 2016**



09/15/2017



**MS Energy Services**  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Conroe DB

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

<b>Well</b>	3H				
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	352,082.58 usft	<b>Latitude:</b> 39° 27' 48.693 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,758,819.77 usft	<b>Longitude:</b> 80° 21' 15.291 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 1,376.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	03/31/16	-8.87	66.75	52,109

<b>Design</b>	Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	337.39	

<b>Survey Program</b>	Date 04/01/16				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
13.00	5,413.00	Javins Gyro (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
5,546.00	13,495.00	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)	
5,413.00	0.74	317.50	5,411.08	-30.37	49.25	-46.97	0.00	0.00	0.00	
<b>Tie-in to Javins Gyro - 5413.00' MD</b>										
5,546.00	0.88	279.94	5,544.07	-29.56	47.67	-45.62	0.40	0.11	-28.24	
5,641.00	0.70	274.31	5,639.06	-29.39	46.37	-44.96	0.21	-0.19	-5.93	
5,737.00	0.40	269.74	5,735.05	-29.35	45.45	-44.57	0.32	-0.31	-4.76	
5,832.00	0.48	209.54	5,830.05	-29.70	44.92	-44.69	0.47	0.08	-63.37	
5,928.00	1.14	142.39	5,926.04	-30.80	45.31	-45.86	1.09	0.69	-69.95	
6,023.00	12.00	124.28	6,020.28	-37.13	54.07	-55.07	11.50	11.43	-19.06	
6,119.00	9.49	117.52	6,114.59	-46.41	69.34	-69.50	2.92	-2.61	-7.04	
6,214.00	13.84	127.71	6,207.62	-56.99	85.28	-85.40	5.05	4.58	10.73	
6,310.00	20.44	126.22	6,299.31	-73.94	107.92	-109.74	6.89	6.88	-1.55	
6,405.00	23.69	124.37	6,387.34	-94.52	137.06	-139.95	3.50	3.42	-1.95	
6,500.00	26.90	125.87	6,473.22	-117.89	170.24	-174.28	3.45	3.38	1.58	
6,596.00	23.56	106.00	6,560.20	-135.94	206.35	-204.83	9.43	-3.48	-20.70	
6,691.00	19.29	84.47	6,648.76	-139.67	240.29	-221.32	9.35	-4.49	-22.66	





**MS Energy Services**  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)
6,786.00	15.56	60.56	6,739.50	-131.88	267.05	-224.41	8.42	-3.93	-25.17
6,881.00	15.47	31.47	6,831.17	-114.79	284.79	-215.45	8.11	-0.09	-30.62
6,976.00	17.97	12.05	6,922.22	-89.63	294.47	-195.95	6.40	2.63	-20.44
7,072.00	22.19	4.49	7,012.38	-57.05	298.98	-167.61	5.15	4.40	-7.88
7,167.00	29.49	3.61	7,097.82	-15.77	301.86	-130.61	7.69	7.68	-0.93
7,262.00	38.58	359.83	7,176.48	37.30	303.25	-82.15	9.82	9.57	-3.98
7,357.00	46.49	354.47	7,246.45	101.34	299.84	-21.73	9.15	8.33	-5.64
7,453.00	52.43	345.33	7,308.89	172.94	286.82	49.38	9.51	6.19	-9.52
7,548.00	60.69	341.46	7,361.21	248.79	264.07	128.14	9.33	8.69	-4.07
7,643.00	64.82	343.31	7,404.70	329.27	238.54	212.26	4.68	4.35	1.95
7,739.00	71.90	337.42	7,440.10	413.18	208.49	301.27	9.32	7.38	-6.14
7,835.00	75.37	339.09	7,467.15	498.72	174.38	393.35	3.98	3.61	1.74
7,930.00	81.91	336.36	7,485.85	584.84	139.07	486.43	7.44	6.88	-2.87
8,025.00	88.51	334.34	7,493.78	670.83	99.61	580.98	7.26	6.95	-2.13
8,121.00	89.56	332.50	7,495.40	756.67	56.66	676.73	2.21	1.09	-1.92
8,216.00	88.07	330.48	7,497.36	840.12	11.33	771.20	2.64	-1.57	-2.13
8,311.00	89.39	333.29	7,499.47	923.88	-33.42	865.73	3.27	1.39	2.96
8,406.00	88.24	331.00	7,501.44	1,007.85	-77.80	960.30	2.70	-1.21	-2.41
8,502.00	87.06	333.82	7,505.37	1,092.85	-122.22	1,055.85	3.18	-1.23	2.94
8,597.00	86.88	333.82	7,510.39	1,177.99	-164.07	1,150.53	0.19	-0.19	0.00
8,693.00	86.97	333.11	7,515.54	1,263.75	-206.90	1,246.16	0.74	0.09	-0.74
8,788.00	87.32	334.26	7,520.28	1,348.80	-248.96	1,340.85	1.26	0.37	1.21
8,883.00	87.14	333.38	7,524.87	1,433.95	-290.82	1,435.55	0.94	-0.19	-0.93
8,978.00	86.48	331.53	7,530.15	1,518.05	-334.68	1,530.05	2.06	-0.69	-1.95
9,072.00	86.97	335.13	7,535.53	1,601.90	-376.80	1,623.64	3.86	0.52	3.83
9,167.00	89.82	335.49	7,538.19	1,688.17	-416.46	1,718.53	3.02	3.00	0.38
9,262.00	90.09	335.66	7,538.26	1,774.67	-455.74	1,813.48	0.34	0.28	0.18
9,357.00	89.65	337.07	7,538.48	1,861.70	-493.83	1,908.47	1.55	-0.46	1.48
9,453.00	89.82	335.66	7,538.92	1,949.64	-532.31	2,004.45	1.48	0.18	-1.47
9,548.00	90.44	335.93	7,538.71	2,036.29	-571.26	2,099.41	0.71	0.65	0.28
9,644.00	91.54	334.87	7,537.05	2,123.56	-611.22	2,195.34	1.59	1.15	-1.10
9,739.00	91.54	336.01	7,534.49	2,209.93	-650.69	2,290.24	1.20	0.00	1.20
9,834.00	91.23	335.05	7,532.20	2,296.37	-690.03	2,385.17	1.06	-0.33	-1.01
9,929.00	91.23	333.55	7,530.16	2,381.95	-731.22	2,480.00	1.58	0.00	-1.56
10,025.00	90.09	334.87	7,529.05	2,468.38	-772.98	2,575.84	1.82	-1.19	1.38
10,119.00	88.90	331.88	7,529.88	2,552.40	-815.10	2,669.80	3.42	-1.27	-3.18
10,215.00	87.85	330.83	7,532.60	2,636.61	-861.10	2,765.03	1.55	-1.09	-1.09
10,311.00	87.94	332.50	7,536.13	2,721.05	-906.63	2,860.48	1.74	0.09	1.74
10,406.00	87.76	332.23	7,539.69	2,805.15	-950.66	2,955.05	0.34	-0.19	-0.28
10,500.00	87.80	331.88	7,543.33	2,888.13	-994.68	3,048.57	0.37	0.04	-0.37
10,595.00	86.97	333.90	7,547.67	2,972.60	-1,037.93	3,143.17	2.30	-0.87	2.13
10,689.00	87.10	333.29	7,552.53	3,056.68	-1,079.67	3,236.84	0.66	0.14	-0.65
10,785.00	87.14	333.03	7,557.35	3,142.23	-1,122.96	3,332.46	0.27	0.04	-0.27





**MS Energy Services**  
Survey Report



<b>Company:</b>	XTO Energy	<b>Local Co-ordinate Reference:</b>	Well 3H
<b>Project:</b>	Marion County, West Virginia (NAD 27)	<b>TVD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Site:</b>	Swearingen	<b>MD Reference:</b>	WELL @ 1402.00usft (Nomac 78)
<b>Well:</b>	3H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)
10,880.00	87.54	334.69	7,561.76	3,227.42	-1,164.77	3,427.17	1.80	0.42	1.75
10,976.00	88.20	334.34	7,565.33	3,314.02	-1,206.05	3,522.98	0.78	0.69	-0.36
11,071.00	87.63	333.73	7,568.79	3,399.37	-1,247.61	3,617.76	0.88	-0.60	-0.64
11,167.00	87.28	332.06	7,573.05	3,484.74	-1,291.31	3,713.36	1.78	-0.36	-1.74
11,262.00	88.33	335.31	7,576.69	3,569.82	-1,333.38	3,808.08	3.59	1.11	3.42
11,357.00	87.72	335.49	7,579.96	3,656.14	-1,372.91	3,902.97	0.67	-0.64	0.19
11,452.00	88.42	336.10	7,583.16	3,742.74	-1,411.83	3,997.88	0.98	0.74	0.64
11,548.00	88.55	335.40	7,585.70	3,830.24	-1,451.25	4,093.80	0.74	0.14	-0.73
11,643.00	88.77	335.93	7,587.92	3,916.78	-1,490.38	4,188.73	0.60	0.23	0.56
11,738.00	90.48	336.28	7,588.55	4,003.63	-1,528.86	4,283.70	1.84	1.80	0.37
11,833.00	88.86	333.55	7,589.09	4,089.66	-1,569.13	4,378.60	3.34	-1.71	-2.87
11,929.00	87.56	334.34	7,592.08	4,175.86	-1,611.28	4,474.38	1.57	-1.33	0.82
12,024.00	86.57	333.29	7,596.92	4,260.99	-1,653.14	4,569.07	1.53	-1.06	-1.11
12,120.00	87.14	334.52	7,602.19	4,347.08	-1,695.30	4,664.74	1.41	0.59	1.28
12,215.00	87.67	333.82	7,606.49	4,432.50	-1,736.65	4,759.50	0.92	0.56	-0.74
12,310.00	89.21	333.99	7,609.08	4,517.78	-1,778.42	4,854.28	1.63	1.62	0.18
12,405.00	89.60	334.34	7,610.06	4,603.28	-1,819.82	4,949.13	0.55	0.41	0.37
12,500.00	89.30	333.29	7,610.98	4,688.52	-1,861.74	5,043.93	1.15	-0.32	-1.11
12,595.00	89.39	334.08	7,612.06	4,773.67	-1,903.85	5,138.73	0.84	0.09	0.83
12,690.00	89.56	333.99	7,612.93	4,859.08	-1,945.44	5,233.56	0.20	0.18	-0.09
12,785.00	89.30	333.82	7,613.88	4,944.39	-1,987.23	5,328.38	0.33	-0.27	-0.18
12,880.00	89.43	333.11	7,614.93	5,029.38	-2,029.66	5,423.15	0.76	0.14	-0.75
12,975.00	91.01	332.59	7,614.57	5,113.91	-2,073.01	5,517.85	1.75	1.66	-0.55
13,071.00	90.92	332.50	7,612.95	5,199.08	-2,117.27	5,613.49	0.13	-0.09	-0.09
13,166.00	91.19	332.76	7,611.20	5,283.43	-2,160.93	5,708.15	0.39	0.28	0.27
13,261.00	89.65	331.79	7,610.50	5,367.52	-2,205.13	5,802.77	1.92	-1.62	-1.02
13,357.00	90.31	331.79	7,610.54	5,452.12	-2,250.51	5,898.31	0.69	0.69	0.00
13,435.00	90.00	331.53	7,610.33	5,520.77	-2,287.53	5,975.92	0.52	-0.40	-0.33
13,495.00	90.00	331.53	7,610.33	5,573.51	-2,316.14	6,035.60	0.00	0.00	0.00

Projection to TD - 13495.00' MD

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,413.00	5,411.08	-30.37	49.25	Tie-in to Javins Gyro - 5413.00' MD
13,495.00	7,610.33	5,573.51	-2,316.14	Projection to TD - 13495.00' MD