

Project: Garfield Co., CO (NAD83)
 Site: PA Pad
 Well: PA 34-23
 Wellbore: OH
 Design: Plan #3
 Lat: 39.500021
 Long: -107.964184
 GL: 5486.00
 KB: KB=24' @ 5510.00usf (H&P 318)

WELL DETAILS: PA 34-23

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1616441.40	2304731.10	39.500021	-107.964184

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PA 34-23 KMW	5762.00	1929.00	648.72	1618352.10	2305431.90	Circle (Radius: 50.00)
PA 34-23 PBHL	8396.00	1929.00	648.72	1618352.10	2305431.90	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.50
175.00	0.00	0.00	175.00	0.00	0.00	0.00	0.00	0.00	Start DLS 3.00 TFO -6.15
295.00	3.00	24.00	294.95	2.87	1.28	2.50	24.00	3.13	Start 75.00 hold at 295.00 MD
370.00	3.00	24.00	369.84	6.46	2.87	0.00	0.00	7.03	Start 3318.33 hold at 1135.85 MD
1135.85	25.96	18.51	1106.43	186.13	65.09	3.00	-6.15	197.17	Start Drop -1.50
4454.18	25.96	18.51	4089.93	1563.54	526.34	0.00	0.00	1649.75	Start 2634.00 hold at 6184.86 MD
6184.86	0.00	0.00	5762.00	1929.00	648.72	1.50	180.00	2035.16	TD at 8818.86
8818.86	0.00	0.00	8396.00	1929.00	648.72	0.00	0.00	2035.16	

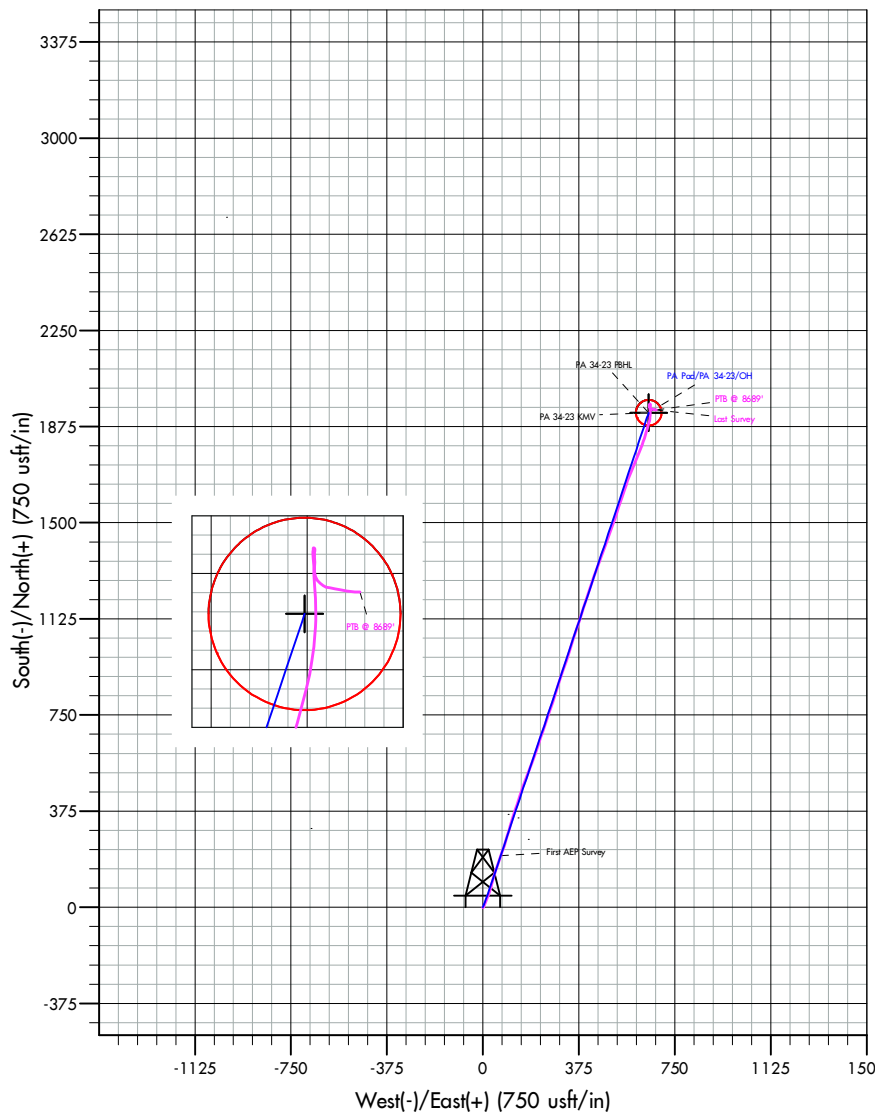
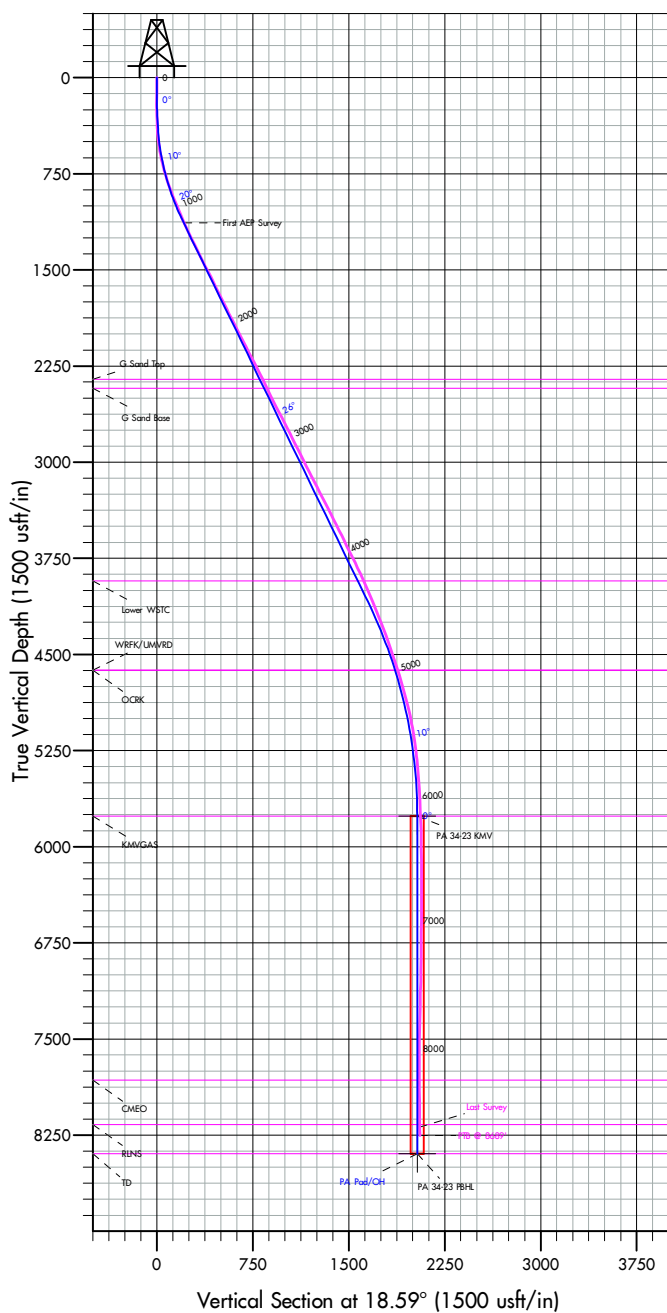
FORMATION TOP DETAILS

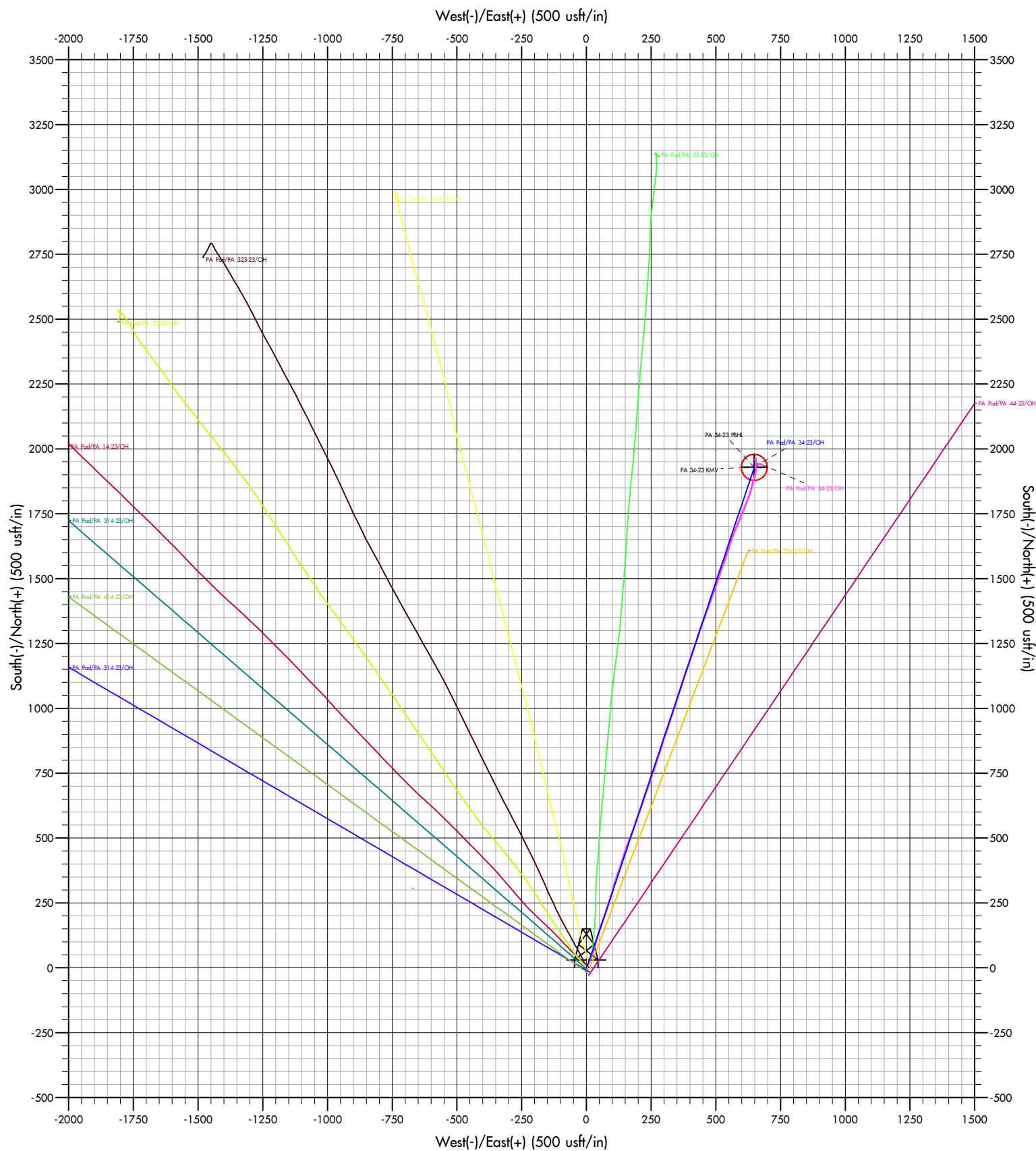
TVDPath	MDPath	Formation
2353.00	2522.32	G Sand Top
2423.00	2600.18	G Sand Base
3927.00	4272.96	Lower WSTC
4623.00	5028.27	OCRK
4623.00	5028.27	WRFK/UMVRD
5762.00	6184.86	KMWGAS
7821.00	8243.86	CMEQ
8168.00	8590.86	RLNS
8396.00	8818.86	TD



Azimuths to True North
 Magnetic North: 9.17°

Magnetic Field
 Strength: 51387.8nT
 Dip Angle: 65.70°
 Date: 8/16/2020
 Model: HDGM2020







ALTITUDE ENERGY PARTNERS LLC. SURVEY DATA CERTIFICATION

ALTITUDE JOB NUMBER				OPERATOR			
WELL NAME				COUNTY & STATE			
API WELL NUMBER				PROPOSED DIRECTION			
Latitude				Longitude			

TIE-IN DATA							
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE	
FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH		SURVEY INSTRUMENT TYPE		
					MWD		
				MAGNETIC DECLINATION OR TOTAL GRID			
LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH	TOTAL CORRECTION USED			
				DECLINATION OR GRID			
PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH				

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Altitude Energy Partners LLC. I am authorized and qualified to review the data, calculations and this report, and that the report represents a true and correct Directional Survey of this well based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using Minimum curvature or other method.

PRINT MWD NAME ABOVE

SIGN MWD NAME ABOVE

TODAY'S DATE



TEP Rocky Mountain LLC

Garfield Co., CO (NAD83)

PA Pad

PA 34-23

OH

Design: OH

Standard Survey Report

19 September, 2020



Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 34-23
Project:	Garfield Co., CO (NAD83)	TVD Reference:	KB=24' @ 5510.00usft (H&P 318)
Site:	PA Pad	MD Reference:	KB=24' @ 5510.00usft (H&P 318)
Well:	PA 34-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Garfield Co., CO (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	PA Pad					
Site Position:		Northing:	1,616,444.30	usft	Latitude:	39.500029
From:	Map	Easting:	2,304,740.70	usft	Longitude:	-107.964151
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"

Well	PA 34-23					
Well Position	+N/-S	0.00 usft	Northing:	1,616,441.40 usft	Latitude:	39.500021
	+E/-W	0.00 usft	Easting:	2,304,731.10 usft	Longitude:	-107.964184
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,486.00 usft
Grid Convergence:	-1.55 °					

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	8/16/2020	9.17	65.70	51,387.80000000

Design	OH				
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	18.59	

Survey Program	Date	9/19/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
117.00	1,037.00	Gyro (OH)	GYD_GWD70	Gyrodata Stationary Tool GWD70 run in open hole up	
1,167.00	8,689.00	MWD Survey (OH)	MWD+ HGDM	OWSG MWD + HGDM	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
117.00	0.56	153.27	117.00	-0.51	0.26	-0.40	0.48	0.48	0.00	
208.00	0.78	130.41	207.99	-1.31	0.93	-0.95	0.38	0.24	-25.12	
298.00	1.26	36.23	297.98	-0.91	1.98	-0.23	1.70	0.53	-104.64	
389.00	3.12	22.34	388.91	2.19	3.51	3.20	2.11	2.04	-15.26	
480.00	6.18	22.42	479.60	9.01	6.32	10.56	3.36	3.36	0.09	
572.00	9.97	21.54	570.67	21.00	11.14	23.45	4.12	4.12	-0.96	
663.00	13.17	21.54	659.81	37.97	17.84	41.68	3.52	3.52	0.00	
755.00	16.31	19.26	748.77	59.92	25.95	65.07	3.47	3.41	-2.48	

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Site:	PA Pad	MD Reference:	KB=24' @ 5510.00usft (H&P 318)
Well:	PA 34-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User 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)
849.00	19.51	15.30	838.21	87.53	34.45	93.95	3.64	3.40	-4.21
943.00	21.07	14.68	926.38	119.02	42.87	126.48	1.68	1.66	-0.66
1,037.00	23.00	20.05	1,013.51	152.62	53.45	161.70	2.97	2.05	5.71
1,167.00	23.83	19.25	1,132.81	201.28	70.82	213.35	0.68	0.64	-0.62
First AEP Survey									
1,261.00	25.55	18.01	1,218.21	238.48	83.35	252.61	1.91	1.83	-1.32
1,355.00	27.36	17.06	1,302.37	278.42	95.95	294.48	1.98	1.93	-1.01
1,449.00	26.42	15.65	1,386.20	319.20	107.93	336.96	1.21	-1.00	-1.50
1,544.00	26.08	19.16	1,471.41	359.28	120.49	378.95	1.67	-0.36	3.69
1,638.00	27.66	18.13	1,555.26	399.54	134.06	421.43	1.75	1.68	-1.10
1,732.00	26.25	16.90	1,639.05	440.17	146.89	464.03	1.61	-1.50	-1.31
1,826.00	26.78	21.24	1,723.17	479.80	160.61	505.97	2.14	0.56	4.62
1,920.00	25.81	21.01	1,807.44	518.64	175.62	547.57	1.04	-1.03	-0.24
2,015.00	27.74	19.58	1,892.25	558.78	190.44	590.34	2.14	2.03	-1.51
2,109.00	27.13	19.36	1,975.68	599.61	204.88	633.64	0.66	-0.65	-0.23
2,203.00	26.38	18.22	2,059.61	639.67	218.51	675.96	0.97	-0.80	-1.21
2,298.00	28.15	19.29	2,144.06	680.87	232.52	719.47	1.93	1.86	1.13
2,392.00	27.31	19.16	2,227.26	722.17	246.92	763.21	0.90	-0.89	-0.14
2,486.00	26.64	18.63	2,311.03	762.51	260.73	805.85	0.76	-0.71	-0.56
2,581.00	25.31	18.47	2,396.43	801.96	273.97	847.45	1.40	-1.40	-0.17
2,675.00	26.99	17.81	2,480.81	841.33	286.86	888.88	1.81	1.79	-0.70
2,770.00	26.46	17.81	2,565.66	882.00	299.92	931.60	0.56	-0.56	0.00
2,864.00	27.95	18.49	2,649.26	922.83	313.32	974.57	1.62	1.59	0.72
2,959.00	26.98	18.43	2,733.55	964.39	327.19	1,018.38	1.02	-1.02	-0.06
3,053.00	25.91	17.89	2,817.72	1,004.17	340.24	1,060.24	1.17	-1.14	-0.57
3,147.00	27.41	18.03	2,901.72	1,044.29	353.25	1,102.42	1.60	1.60	0.15
3,241.00	26.48	17.75	2,985.51	1,084.82	366.33	1,145.01	1.00	-0.99	-0.30
3,336.00	27.65	18.26	3,070.11	1,125.93	379.70	1,188.23	1.26	1.23	0.54
3,430.00	26.34	18.28	3,153.87	1,166.45	393.07	1,230.89	1.39	-1.39	0.02
3,524.00	27.94	18.97	3,237.51	1,207.08	406.77	1,273.77	1.73	1.70	0.73
3,618.00	27.07	18.19	3,320.89	1,248.22	420.61	1,317.18	1.00	-0.93	-0.83
3,712.00	27.47	19.63	3,404.44	1,288.96	434.57	1,360.25	0.82	0.43	1.53
3,807.00	25.93	19.23	3,489.31	1,329.21	448.77	1,402.93	1.63	-1.62	-0.42
3,901.00	27.18	20.09	3,573.39	1,368.78	462.92	1,444.94	1.39	1.33	0.91
3,996.00	25.91	20.27	3,658.38	1,408.63	477.56	1,487.38	1.34	-1.34	0.19
4,090.00	26.27	19.94	3,742.80	1,447.45	491.77	1,528.70	0.41	0.38	-0.35
4,184.00	25.22	19.28	3,827.47	1,485.91	505.48	1,569.53	1.16	-1.12	-0.70
4,279.00	24.21	18.81	3,913.76	1,523.46	518.44	1,609.24	1.08	-1.06	-0.49
4,373.00	23.69	18.68	3,999.67	1,559.59	530.70	1,647.40	0.56	-0.55	-0.14
4,468.00	23.05	18.15	4,086.87	1,595.34	542.61	1,685.09	0.71	-0.67	-0.56
4,562.00	22.40	17.79	4,173.58	1,629.88	553.82	1,721.40	0.71	-0.69	-0.38
4,657.00	21.30	21.61	4,261.76	1,663.16	565.70	1,756.73	1.89	-1.16	4.02
4,751.00	20.20	22.09	4,349.66	1,694.08	578.09	1,789.98	1.18	-1.17	0.51

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Well:	PA 34-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User 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)
4,845.00	19.27	22.62	4,438.13	1,723.43	590.16	1,821.65	1.01	-0.99	0.56
4,939.00	18.32	22.28	4,527.12	1,751.42	601.73	1,851.87	1.02	-1.01	-0.36
5,034.00	17.59	22.04	4,617.49	1,778.54	612.78	1,881.09	0.77	-0.77	-0.25
5,128.00	16.49	21.80	4,707.37	1,804.09	623.06	1,908.59	1.17	-1.17	-0.26
5,222.00	15.15	17.24	4,797.81	1,828.22	631.66	1,934.19	1.94	-1.43	-4.85
5,317.00	14.47	17.26	4,889.65	1,851.41	638.86	1,958.47	0.72	-0.72	0.02
5,411.00	12.28	14.99	4,981.10	1,872.28	644.93	1,980.19	2.40	-2.33	-2.41
5,505.00	10.05	14.57	5,073.31	1,889.88	649.58	1,998.35	2.37	-2.37	-0.45
5,600.00	8.60	8.34	5,167.06	1,904.93	652.69	2,013.61	1.86	-1.53	-6.56
5,694.00	7.68	4.18	5,260.11	1,918.15	654.17	2,026.61	1.16	-0.98	-4.43
5,789.00	5.35	0.08	5,354.49	1,928.91	654.64	2,036.96	2.50	-2.45	-4.32
5,883.00	4.64	357.43	5,448.13	1,937.09	654.48	2,044.66	0.79	-0.76	-2.82
5,977.00	4.07	354.55	5,541.86	1,944.21	653.99	2,051.25	0.65	-0.61	-3.06
6,072.00	2.67	358.88	5,636.69	1,949.78	653.62	2,056.42	1.50	-1.47	4.56
6,166.00	2.41	358.73	5,730.60	1,953.94	653.54	2,060.34	0.28	-0.28	-0.16
6,260.00	2.22	351.74	5,824.52	1,957.72	653.23	2,063.82	0.36	-0.20	-7.44
6,355.00	0.79	4.76	5,919.49	1,960.19	653.02	2,066.10	1.54	-1.51	13.71
6,449.00	0.61	8.08	6,013.48	1,961.33	653.15	2,067.22	0.20	-0.19	3.53
6,543.00	0.45	0.44	6,107.48	1,962.20	653.22	2,068.06	0.19	-0.17	-8.13
6,638.00	0.24	18.21	6,202.48	1,962.76	653.28	2,068.62	0.25	-0.22	18.71
6,732.00	0.21	340.25	6,296.48	1,963.11	653.29	2,068.95	0.16	-0.03	-40.38
6,827.00	0.31	75.24	6,391.48	1,963.34	653.48	2,069.23	0.41	0.11	99.99
6,921.00	0.28	122.80	6,485.47	1,963.28	653.92	2,069.31	0.25	-0.03	50.60
7,016.00	0.59	173.32	6,580.47	1,962.67	654.17	2,068.81	0.49	0.33	53.18
7,110.00	0.52	188.99	6,674.47	1,961.77	654.16	2,067.95	0.18	-0.07	16.67
7,204.00	0.37	203.79	6,768.46	1,961.07	653.97	2,067.23	0.20	-0.16	15.74
7,298.00	0.98	181.51	6,862.46	1,959.99	653.83	2,066.16	0.69	0.65	-23.70
7,393.00	1.26	171.46	6,957.44	1,958.14	653.96	2,064.45	0.36	0.29	-10.58
7,487.00	1.54	184.88	7,051.41	1,955.86	654.01	2,062.30	0.46	0.30	14.28
7,582.00	1.40	183.74	7,146.38	1,953.43	653.82	2,059.94	0.15	-0.15	-1.20
7,676.00	1.63	173.09	7,240.35	1,950.96	653.91	2,057.63	0.39	0.24	-11.33
7,770.00	1.52	162.91	7,334.31	1,948.44	654.43	2,055.41	0.32	-0.12	-10.83
7,864.00	1.39	142.61	7,428.28	1,946.34	655.49	2,053.76	0.56	-0.14	-21.60
7,959.00	1.14	127.11	7,523.26	1,944.85	656.95	2,052.81	0.44	-0.26	-16.32
8,053.00	1.09	128.55	7,617.24	1,943.73	658.39	2,052.21	0.06	-0.05	1.53
8,147.00	1.14	105.57	7,711.22	1,942.93	659.99	2,051.95	0.48	0.05	-24.45
8,241.00	1.41	98.67	7,805.20	1,942.50	662.04	2,052.20	0.33	0.29	-7.34
8,336.00	1.50	98.49	7,900.17	1,942.14	664.42	2,052.62	0.09	0.09	-0.19
8,430.00	1.98	101.07	7,994.13	1,941.65	667.23	2,053.05	0.52	0.51	2.74
8,524.00	2.35	102.26	8,088.06	1,940.93	670.71	2,053.47	0.40	0.39	1.27
8,625.00	2.43	91.77	8,188.97	1,940.42	674.87	2,054.32	0.44	0.08	-10.39
Last Survey									
8,689.00	2.43	91.77	8,252.91	1,940.34	677.58	2,055.11	0.00	0.00	0.00
PTB @ 8689'									

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User 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)

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,167.00	1,132.81	201.28	70.82	First AEP Survey
8,625.00	8,188.97	1,940.42	674.87	Last Survey
8,689.00	8,252.91	1,940.34	677.58	PTB @ 8689'

Checked By: _____ Approved By: _____ Date: _____