

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PA 422-24 BTV	5679.00	2214.14	-2338.81	1620682.70	2308174.60	39.5119164	-107.9523911	Circle (Radius: 50.00)
- plan misses target center by 17.16usft at 6613.71usft MD (5688.22 TVD, 2175.36 N, -2297.84 E)								
PA 422-24 PBHL	8235.00	2214.14	-2338.81	1620682.70	2308174.60	39.5119164	-107.9523911	Point
- plan misses target center by 0.01usft at 9163.73usft MD (8235.00 TVD, 2214.14 N, -2338.81 E)								



## **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**PA 34-24 Pad**

**PA 422-24 - Slot PA 422-24 (B8)**

**OH**

**Plan: Plan #2 9Aug2018 mmsdi**

## **Standard Planning Report**

**13 August, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well PA 422-24 - Slot PA 422-24 (B8)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Site:</b>	PA 34-24 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 422-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 9Aug2018 mmsdi		

<b>Project</b>	Garfield County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site		PA 34-24 Pad			
Site Position:		Northing:	1,618,371.20 usft	Latitude:	39.5057421
From:	Map	Easting:	2,310,465.70 usft	Longitude:	-107.9440532
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.54 °

Well	PA 422-24 - Slot PA 422-24 (B8)					
Well Position	+N/-S	34.90 usft	Northing:	1,618,406.45 usft	Latitude:	39.5058379
	+E/-W	-13.64 usft	Easting:	2,310,453.00 usft	Longitude:	-107.9441015
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,371.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	8/9/2018	9.37	65.77	51,590

<b>Design</b>	Plan #2 9Aug2018 mmsdi			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	313.43

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,163.19	35.99	313.43	1,096.91	214.79	-226.88	3.50	3.50	0.00	313.43	
4,871.91	35.99	313.43	4,097.83	1,712.98	-1,809.43	0.00	0.00	0.00	0.00	
6,604.35	10.00	313.43	5,679.00	2,174.25	-2,296.67	1.50	-1.50	0.00	180.00	
7,271.02	0.00	0.00	6,342.29	2,214.15	-2,338.81	1.50	-1.50	0.00	180.00	
9,163.73	0.00	0.00	8,235.00	2,214.15	-2,338.81	0.00	0.00	0.00	0.00	PA 422-24 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well PA 422-24 - Slot PA 422-24 (B8)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Site:</b>	PA 34-24 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 422-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 9Aug2018 mmsdi		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 3.50</b>									
200.00	2.28	313.43	199.98	0.89	-0.94	1.29	3.50	3.50	0.00
300.00	5.78	313.43	299.72	5.71	-6.03	8.31	3.50	3.50	0.00
400.00	9.28	313.43	398.84	14.71	-15.54	21.40	3.50	3.50	0.00
500.00	12.78	313.43	496.98	27.86	-29.43	40.52	3.50	3.50	0.00
600.00	16.28	313.43	593.77	45.10	-47.64	65.60	3.50	3.50	0.00
700.00	19.78	313.43	688.85	66.37	-70.11	96.54	3.50	3.50	0.00
800.00	23.28	313.43	781.86	91.59	-96.75	133.22	3.50	3.50	0.00
900.00	26.78	313.43	872.46	120.67	-127.46	175.52	3.50	3.50	0.00
1,000.00	30.28	313.43	960.31	153.49	-162.13	223.26	3.50	3.50	0.00
1,100.00	33.78	313.43	1,045.07	189.94	-200.64	276.28	3.50	3.50	0.00
<b>9 5/8" Casing @ 1100' MD</b>									
1,163.19	35.99	313.43	1,096.91	214.79	-226.88	312.42	3.50	3.50	0.00
<b>Start 3708.72 hold at 1163.19 MD</b>									
1,200.00	35.99	313.43	1,126.69	229.65	-242.58	334.05	0.00	0.00	0.00
1,300.00	35.99	313.43	1,207.61	270.05	-285.26	392.81	0.00	0.00	0.00
1,400.00	35.99	313.43	1,288.52	310.45	-327.93	451.57	0.00	0.00	0.00
1,500.00	35.99	313.43	1,369.44	350.84	-370.60	510.33	0.00	0.00	0.00
1,600.00	35.99	313.43	1,450.36	391.24	-413.27	569.09	0.00	0.00	0.00
1,700.00	35.99	313.43	1,531.27	431.64	-455.94	627.85	0.00	0.00	0.00
1,800.00	35.99	313.43	1,612.19	472.03	-498.61	686.61	0.00	0.00	0.00
1,900.00	35.99	313.43	1,693.10	512.43	-541.28	745.37	0.00	0.00	0.00
2,000.00	35.99	313.43	1,774.02	552.83	-583.95	804.13	0.00	0.00	0.00
2,100.00	35.99	313.43	1,854.93	593.22	-626.62	862.89	0.00	0.00	0.00
2,200.00	35.99	313.43	1,935.85	633.62	-669.30	921.65	0.00	0.00	0.00
2,300.00	35.99	313.43	2,016.76	674.02	-711.97	980.41	0.00	0.00	0.00
2,400.00	35.99	313.43	2,097.68	714.41	-754.64	1,039.17	0.00	0.00	0.00
2,500.00	35.99	313.43	2,178.59	754.81	-797.31	1,097.93	0.00	0.00	0.00
2,600.00	35.99	313.43	2,259.51	795.21	-839.98	1,156.69	0.00	0.00	0.00
2,612.97	35.99	313.43	2,270.00	800.44	-845.51	1,164.30	0.00	0.00	0.00
<b>GSAND</b>									
2,699.48	35.99	313.43	2,340.00	835.39	-882.43	1,215.14	0.00	0.00	0.00
<b>GSAND Base</b>									
2,700.00	35.99	313.43	2,340.42	835.60	-882.65	1,215.45	0.00	0.00	0.00
2,800.00	35.99	313.43	2,421.34	876.00	-925.32	1,274.20	0.00	0.00	0.00
2,900.00	35.99	313.43	2,502.25	916.40	-967.99	1,332.96	0.00	0.00	0.00
3,000.00	35.99	313.43	2,583.17	956.79	-1,010.66	1,391.72	0.00	0.00	0.00
3,100.00	35.99	313.43	2,664.09	997.19	-1,053.34	1,450.48	0.00	0.00	0.00
3,200.00	35.99	313.43	2,745.00	1,037.59	-1,096.01	1,509.24	0.00	0.00	0.00
3,300.00	35.99	313.43	2,825.92	1,077.98	-1,138.68	1,568.00	0.00	0.00	0.00
3,400.00	35.99	313.43	2,906.83	1,118.38	-1,181.35	1,626.76	0.00	0.00	0.00
3,500.00	35.99	313.43	2,987.75	1,158.78	-1,224.02	1,685.52	0.00	0.00	0.00
3,600.00	35.99	313.43	3,068.66	1,199.17	-1,266.69	1,744.28	0.00	0.00	0.00
3,700.00	35.99	313.43	3,149.58	1,239.57	-1,309.36	1,803.04	0.00	0.00	0.00
3,800.00	35.99	313.43	3,230.49	1,279.97	-1,352.03	1,861.80	0.00	0.00	0.00
3,900.00	35.99	313.43	3,311.41	1,320.36	-1,394.70	1,920.56	0.00	0.00	0.00
4,000.00	35.99	313.43	3,392.32	1,360.76	-1,437.38	1,979.32	0.00	0.00	0.00
4,100.00	35.99	313.43	3,473.24	1,401.16	-1,480.05	2,038.08	0.00	0.00	0.00
4,200.00	35.99	313.43	3,554.15	1,441.55	-1,522.72	2,096.84	0.00	0.00	0.00
4,300.00	35.99	313.43	3,635.07	1,481.95	-1,565.39	2,155.60	0.00	0.00	0.00
4,400.00	35.99	313.43	3,715.98	1,522.35	-1,608.06	2,214.36	0.00	0.00	0.00

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<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Site:</b>	PA 34-24 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 422-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 9Aug2018 mmsdi		

Planned 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)
4,500.00	35.99	313.43	3,796.90	1,562.74	-1,650.73	2,273.12	0.00	0.00	0.00
4,558.21	35.99	313.43	3,844.00	1,586.26	-1,675.57	2,307.32	0.00	0.00	0.00
<b>Lower Wasatch</b>									
4,600.00	35.99	313.43	3,877.82	1,603.14	-1,693.40	2,331.88	0.00	0.00	0.00
4,700.00	35.99	313.43	3,958.73	1,643.54	-1,736.07	2,390.64	0.00	0.00	0.00
4,800.00	35.99	313.43	4,039.65	1,683.93	-1,778.74	2,449.40	0.00	0.00	0.00
4,871.91	35.99	313.43	4,097.83	1,712.98	-1,809.43	2,491.65	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
4,900.00	35.57	313.43	4,120.62	1,724.27	-1,821.36	2,508.08	1.50	-1.50	0.00
5,000.00	34.07	313.43	4,202.72	1,763.52	-1,862.81	2,565.17	1.50	-1.50	0.00
5,100.00	32.57	313.43	4,286.28	1,801.28	-1,902.70	2,620.09	1.50	-1.50	0.00
5,200.00	31.07	313.43	4,371.26	1,837.52	-1,940.98	2,672.81	1.50	-1.50	0.00
5,300.00	29.57	313.43	4,457.58	1,872.22	-1,977.64	2,723.28	1.50	-1.50	0.00
5,394.11	28.15	313.43	4,540.00	1,903.45	-2,010.62	2,768.70	1.50	-1.50	0.00
<b>OCRK - MVRD - WRFK/UMVRD</b>									
5,400.00	28.07	313.43	4,545.19	1,905.36	-2,012.64	2,771.48	1.50	-1.50	0.00
5,500.00	26.57	313.43	4,634.04	1,936.90	-2,045.96	2,817.37	1.50	-1.50	0.00
5,600.00	25.07	313.43	4,724.06	1,966.84	-2,077.58	2,860.91	1.50	-1.50	0.00
5,700.00	23.57	313.43	4,815.19	1,995.15	-2,107.48	2,902.09	1.50	-1.50	0.00
5,800.00	22.07	313.43	4,907.36	2,021.81	-2,135.64	2,940.86	1.50	-1.50	0.00
5,900.00	20.57	313.43	5,000.52	2,046.80	-2,162.04	2,977.21	1.50	-1.50	0.00
6,000.00	19.07	313.43	5,094.59	2,070.10	-2,186.66	3,011.11	1.50	-1.50	0.00
6,100.00	17.57	313.43	5,189.52	2,091.70	-2,209.48	3,042.53	1.50	-1.50	0.00
6,200.00	16.07	313.43	5,285.25	2,111.59	-2,230.48	3,071.46	1.50	-1.50	0.00
6,300.00	14.57	313.43	5,381.69	2,129.75	-2,249.66	3,097.87	1.50	-1.50	0.00
6,400.00	13.07	313.43	5,478.80	2,146.17	-2,267.00	3,121.75	1.50	-1.50	0.00
6,500.00	11.57	313.43	5,576.49	2,160.83	-2,282.49	3,143.08	1.50	-1.50	0.00
6,600.00	10.07	313.43	5,674.71	2,173.73	-2,296.12	3,161.84	1.50	-1.50	0.00
6,604.35	10.00	313.43	5,679.00	2,174.25	-2,296.67	3,162.60	1.50	-1.50	0.00
<b>Start Drop -1.50 - KMGAS</b>									
6,613.71	9.86	313.43	5,688.22	2,175.36	-2,297.84	3,164.22	1.50	-1.50	0.00
<b>PA 422-24 BTV</b>									
6,700.00	8.57	313.43	5,773.39	2,184.86	-2,307.87	3,178.03	1.50	-1.50	0.00
6,800.00	7.07	313.43	5,872.46	2,194.20	-2,317.75	3,191.63	1.50	-1.50	0.00
6,900.00	5.57	313.43	5,971.85	2,201.77	-2,325.74	3,202.63	1.50	-1.50	0.00
7,000.00	4.07	313.43	6,071.49	2,207.54	-2,331.83	3,211.02	1.50	-1.50	0.00
7,100.00	2.57	313.43	6,171.32	2,211.51	-2,336.03	3,216.80	1.50	-1.50	0.00
7,200.00	1.07	313.43	6,271.27	2,213.69	-2,338.33	3,219.97	1.50	-1.50	0.00
7,271.02	0.00	0.00	6,342.29	2,214.15	-2,338.81	3,220.63	1.50	-1.50	0.00
<b>Start 1892.71 hold at 7271.02 MD</b>									
7,300.00	0.00	0.00	6,371.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,400.00	0.00	0.00	6,471.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,500.00	0.00	0.00	6,571.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,600.00	0.00	0.00	6,671.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,700.00	0.00	0.00	6,771.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,800.00	0.00	0.00	6,871.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
7,900.00	0.00	0.00	6,971.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,000.00	0.00	0.00	7,071.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,100.00	0.00	0.00	7,171.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,200.00	0.00	0.00	7,271.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,300.00	0.00	0.00	7,371.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,400.00	0.00	0.00	7,471.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00
8,500.00	0.00	0.00	7,571.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well PA 422-24 - Slot PA 422-24 (B8)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Site:</b>	PA 34-24 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 422-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 9Aug2018 mmsdi		

Planned 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)	
8,600.00	0.00	0.00	7,671.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
8,666.73	0.00	0.00	7,738.00	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
<b>CMEO</b>										
8,700.00	0.00	0.00	7,771.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
8,800.00	0.00	0.00	7,871.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
8,900.00	0.00	0.00	7,971.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,071.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
9,013.73	0.00	0.00	8,085.00	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
<b>RLNS</b>										
9,100.00	0.00	0.00	8,171.27	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
9,163.73	0.00	0.00	8,235.00	2,214.15	-2,338.81	3,220.63	0.00	0.00	0.00	
<b>TD at 9163.73 - TD - PA 422-24 PBHL</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PA 422-24 BTB	0.00	0.00	5,679.00	2,214.14	-2,338.81	1,620,682.70	2,308,174.60	39.5119164	-107.9523912	
- plan misses target center by 57.16usft at 6613.71usft MD (5688.22 TVD, 2175.36 N, -2297.84 E)										
- Circle (radius 50.00)										
PA 422-24 PBHL	0.00	0.00	8,235.00	2,214.14	-2,338.81	1,620,682.70	2,308,174.60	39.5119164	-107.9523912	
- plan misses target center by 0.01usft at 9163.73usft MD (8235.00 TVD, 2214.14 N, -2338.81 E)										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,100.00	1,045.07	9 5/8" Casing @ 1100' MD	9.62	13.50	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,612.97	2,270.00	GSAND		0.00	0.00	
2,699.48	2,340.00	GSAND Base		0.00	0.00	
4,558.21	3,844.00	Lower Wasatch		0.00	0.00	
5,394.11	4,540.00	OCRK		0.00	0.00	
5,394.11	4,540.00	MVRD		0.00	0.00	
5,394.11	4,540.00	WRFK/UMVRD		0.00	0.00	
6,604.35	5,679.00	KMVGAS		0.00	0.00	
8,666.73	7,738.00	CMEO		0.00	0.00	
9,013.73	8,085.00	RLNS		0.00	0.00	
9,163.73	8,235.00	TD		0.00	0.00	

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well PA 422-24 - Slot PA 422-24 (B8)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5371' & RKB 24' @ 5395.00usft
<b>Site:</b>	PA 34-24 Pad	<b>North Reference:</b>	True
<b>Well:</b>	PA 422-24	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 9Aug2018 mmsdi		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	0.00	0.00	Start Build 3.50
1,163.19	1,096.91	214.79	-226.88	Start 3708.72 hold at 1163.19 MD
4,871.91	4,097.83	1,712.98	-1,809.43	Start Drop -1.50
6,604.35	5,679.00	2,174.25	-2,296.67	Start Drop -1.50
7,271.02	6,342.29	2,214.15	-2,338.81	Start 1892.71 hold at 7271.02 MD
9,163.73	8,235.00	2,214.15	-2,338.81	TD at 9163.73