



Magnetic Field
Strength: 51491.8nT
Dip Angle: 65.75°
Date: 5/2/2019
Model: HDGM

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PA 521-24 KMW	6689.00	-2243.06	-2197.21	1621555.50	2308986.60	39.5143719	-107.9495975	Circle (Radius: 50.00)
- plan misses target center by 57.17usft at 7433.01usft MD (6698.36 TVD, -2202.78 N, -2157.75 E)								
PA 521-24 PBHL	9436.00	-2243.06	-2197.21	1621555.50	2308986.60	39.5143719	-107.9495975	Point
- plan hits target center								



TEP Rocky Mountain LLC

Garfield County, CO NAD83

PA 44-13 Pad

PA 521-24 - Slot PA 521-24 (B1)

OH

Plan: Plan #2 16May2019 mmsdi

Standard Planning Report

20 May, 2019



Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 521-24 - Slot PA 521-24 (B1)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Project:	Garfield County, CO NAD83	MD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	North Reference:	True
Well:	PA 521-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 16May2019 mmsdi		

Project	Garfield County, 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 44-13 Pad			
Site Position:		Northing:	1,623,813.70 usft	Latitude:	39.5207354
From:	Map	Easting:	2,311,233.50 usft	Longitude:	-107.9418514
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.54 °

Well	PA 521-24 - Slot PA 521-24 (B1)					
Well Position	+N/-S	-74.71 usft	Northing:	1,623,738.70 usft	Latitude:	39.5205303
	+E/-W	11.81 usft	Easting:	2,311,243.30 usft	Longitude:	-107.9418096
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,571.10 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/2/2019	9.32	65.75	51,492

Design	Plan #2 16May2019 mmsdi			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	224.41

Plan Sections										
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	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,071.04	28.53	224.41	1,032.22	-165.69	-162.30	3.00	3.00	0.00	224.41	
6,188.10	28.53	224.41	5,527.85	-1,911.68	-1,872.60	0.00	0.00	0.00	0.00	
7,423.51	10.00	224.41	6,689.00	-2,201.61	-2,156.60	1.50	-1.50	0.00	180.00	
8,090.18	0.00	0.00	7,352.29	-2,243.06	-2,197.21	1.50	-1.50	0.00	180.00	
10,173.89	0.00	0.00	9,436.00	-2,243.06	-2,197.21	0.00	0.00	0.00	0.00	PA 521-24 PBHL

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Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Project:	Garfield County, CO NAD83	MD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	North Reference:	True
Well:	PA 521-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 16May2019 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	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start Build 3.00										
200.00	2.40	224.41	199.98	-1.20	-1.17	1.68	3.00	3.00	0.00	
300.00	5.40	224.41	299.73	-6.06	-5.93	8.48	3.00	3.00	0.00	
400.00	8.40	224.41	399.00	-14.64	-14.34	20.49	3.00	3.00	0.00	
500.00	11.40	224.41	497.50	-26.92	-26.37	37.68	3.00	3.00	0.00	
600.00	14.40	224.41	594.96	-42.86	-41.99	60.00	3.00	3.00	0.00	
700.00	17.40	224.41	691.13	-62.43	-61.16	87.39	3.00	3.00	0.00	
800.00	20.40	224.41	785.72	-85.57	-83.82	119.78	3.00	3.00	0.00	
900.00	23.40	224.41	878.50	-112.21	-109.92	157.08	3.00	3.00	0.00	
1,000.00	26.40	224.41	969.19	-142.29	-139.38	199.18	3.00	3.00	0.00	
9 5/8"										
1,071.04	28.53	224.41	1,032.22	-165.69	-162.30	231.94	3.00	3.00	0.00	
Start 5117.06 hold at 1071.04 MD										
1,100.00	28.53	224.41	1,057.66	-175.57	-171.98	245.77	0.00	0.00	0.00	
1,200.00	28.53	224.41	1,145.52	-209.69	-205.41	293.53	0.00	0.00	0.00	
1,300.00	28.53	224.41	1,233.37	-243.81	-238.83	341.30	0.00	0.00	0.00	
1,400.00	28.53	224.41	1,321.23	-277.93	-272.25	389.06	0.00	0.00	0.00	
1,500.00	28.53	224.41	1,409.09	-312.06	-305.68	436.83	0.00	0.00	0.00	
1,600.00	28.53	224.41	1,496.94	-346.18	-339.10	484.59	0.00	0.00	0.00	
1,700.00	28.53	224.41	1,584.80	-380.30	-372.52	532.35	0.00	0.00	0.00	
1,800.00	28.53	224.41	1,672.65	-414.42	-405.95	580.12	0.00	0.00	0.00	
1,900.00	28.53	224.41	1,760.51	-448.54	-439.37	627.88	0.00	0.00	0.00	
2,000.00	28.53	224.41	1,848.36	-482.66	-472.79	675.64	0.00	0.00	0.00	
2,100.00	28.53	224.41	1,936.22	-516.78	-506.22	723.41	0.00	0.00	0.00	
2,200.00	28.53	224.41	2,024.08	-550.90	-539.64	771.17	0.00	0.00	0.00	
2,300.00	28.53	224.41	2,111.93	-585.02	-573.06	818.94	0.00	0.00	0.00	
2,400.00	28.53	224.41	2,199.79	-619.14	-606.49	866.70	0.00	0.00	0.00	
2,500.00	28.53	224.41	2,287.64	-653.27	-639.91	914.46	0.00	0.00	0.00	
2,600.00	28.53	224.41	2,375.50	-687.39	-673.33	962.23	0.00	0.00	0.00	
2,700.00	28.53	224.41	2,463.35	-721.51	-706.76	1,009.99	0.00	0.00	0.00	
2,800.00	28.53	224.41	2,551.21	-755.63	-740.18	1,057.75	0.00	0.00	0.00	
2,900.00	28.53	224.41	2,639.07	-789.75	-773.61	1,105.52	0.00	0.00	0.00	
3,000.00	28.53	224.41	2,726.92	-823.87	-807.03	1,153.28	0.00	0.00	0.00	
3,100.00	28.53	224.41	2,814.78	-857.99	-840.45	1,201.04	0.00	0.00	0.00	
3,200.00	28.53	224.41	2,902.63	-892.11	-873.88	1,248.81	0.00	0.00	0.00	
3,300.00	28.53	224.41	2,990.49	-926.23	-907.30	1,296.57	0.00	0.00	0.00	
3,400.00	28.53	224.41	3,078.34	-960.35	-940.72	1,344.34	0.00	0.00	0.00	
3,500.00	28.53	224.41	3,166.20	-994.48	-974.15	1,392.10	0.00	0.00	0.00	
3,600.00	28.53	224.41	3,254.06	-1,028.60	-1,007.57	1,439.86	0.00	0.00	0.00	
3,700.00	28.53	224.41	3,341.91	-1,062.72	-1,040.99	1,487.63	0.00	0.00	0.00	
3,724.00	28.53	224.41	3,363.00	-1,070.91	-1,049.02	1,499.09	0.00	0.00	0.00	
G Sand										
3,800.00	28.53	224.41	3,429.77	-1,096.84	-1,074.42	1,535.39	0.00	0.00	0.00	
3,825.31	28.53	224.41	3,452.00	-1,105.47	-1,082.87	1,547.48	0.00	0.00	0.00	
G Sand Base										
3,900.00	28.53	224.41	3,517.62	-1,130.96	-1,107.84	1,583.15	0.00	0.00	0.00	
4,000.00	28.53	224.41	3,605.48	-1,165.08	-1,141.26	1,630.92	0.00	0.00	0.00	
4,100.00	28.53	224.41	3,693.34	-1,199.20	-1,174.69	1,678.68	0.00	0.00	0.00	

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Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Project:	Garfield County, CO NAD83	MD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	North Reference:	True
Well:	PA 521-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 16May2019 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)	
4,200.00	28.53	224.41	3,781.19	-1,233.32	-1,208.11	1,726.45	0.00	0.00	0.00	
4,300.00	28.53	224.41	3,869.05	-1,267.44	-1,241.53	1,774.21	0.00	0.00	0.00	
4,400.00	28.53	224.41	3,956.90	-1,301.56	-1,274.96	1,821.97	0.00	0.00	0.00	
4,500.00	28.53	224.41	4,044.76	-1,335.68	-1,308.38	1,869.74	0.00	0.00	0.00	
4,600.00	28.53	224.41	4,132.61	-1,369.81	-1,341.80	1,917.50	0.00	0.00	0.00	
4,700.00	28.53	224.41	4,220.47	-1,403.93	-1,375.23	1,965.26	0.00	0.00	0.00	
4,800.00	28.53	224.41	4,308.33	-1,438.05	-1,408.65	2,013.03	0.00	0.00	0.00	
4,900.00	28.53	224.41	4,396.18	-1,472.17	-1,442.07	2,060.79	0.00	0.00	0.00	
5,000.00	28.53	224.41	4,484.04	-1,506.29	-1,475.50	2,108.55	0.00	0.00	0.00	
5,100.00	28.53	224.41	4,571.89	-1,540.41	-1,508.92	2,156.32	0.00	0.00	0.00	
5,200.00	28.53	224.41	4,659.75	-1,574.53	-1,542.35	2,204.08	0.00	0.00	0.00	
5,300.00	28.53	224.41	4,747.60	-1,608.65	-1,575.77	2,251.85	0.00	0.00	0.00	
5,400.00	28.53	224.41	4,835.46	-1,642.77	-1,609.19	2,299.61	0.00	0.00	0.00	
5,500.00	28.53	224.41	4,923.32	-1,676.89	-1,642.62	2,347.37	0.00	0.00	0.00	
5,600.00	28.53	224.41	5,011.17	-1,711.02	-1,676.04	2,395.14	0.00	0.00	0.00	
5,700.00	28.53	224.41	5,099.03	-1,745.14	-1,709.46	2,442.90	0.00	0.00	0.00	
5,800.00	28.53	224.41	5,186.88	-1,779.26	-1,742.89	2,490.66	0.00	0.00	0.00	
5,900.00	28.53	224.41	5,274.74	-1,813.38	-1,776.31	2,538.43	0.00	0.00	0.00	
6,000.00	28.53	224.41	5,362.59	-1,847.50	-1,809.73	2,586.19	0.00	0.00	0.00	
6,100.00	28.53	224.41	5,450.45	-1,881.62	-1,843.16	2,633.96	0.00	0.00	0.00	
6,188.10	28.53	224.41	5,527.85	-1,911.68	-1,872.60	2,676.03	0.00	0.00	0.00	
Start Drop -1.50										
6,200.00	28.35	224.41	5,538.31	-1,915.73	-1,876.57	2,681.70	1.50	-1.50	0.00	
6,300.00	26.85	224.41	5,626.93	-1,948.83	-1,908.99	2,728.04	1.50	-1.50	0.00	
6,355.92	26.01	224.41	5,677.00	-1,966.61	-1,926.41	2,752.93	1.50	-1.50	0.00	
WFRK UMVRD										
6,400.00	25.35	224.41	5,716.73	-1,980.26	-1,939.78	2,772.03	1.50	-1.50	0.00	
6,497.11	23.90	224.41	5,805.00	-2,009.16	-1,968.09	2,812.49	1.50	-1.50	0.00	
OCRK - MVRD										
6,500.00	23.85	224.41	5,807.65	-2,010.00	-1,968.91	2,813.66	1.50	-1.50	0.00	
6,600.00	22.35	224.41	5,899.63	-2,038.03	-1,996.37	2,852.90	1.50	-1.50	0.00	
6,700.00	20.85	224.41	5,992.60	-2,064.33	-2,022.13	2,889.72	1.50	-1.50	0.00	
6,800.00	19.35	224.41	6,086.50	-2,088.88	-2,046.18	2,924.08	1.50	-1.50	0.00	
6,900.00	17.85	224.41	6,181.28	-2,111.67	-2,068.50	2,955.98	1.50	-1.50	0.00	
7,000.00	16.35	224.41	6,276.85	-2,132.68	-2,089.08	2,985.39	1.50	-1.50	0.00	
7,100.00	14.85	224.41	6,373.16	-2,151.89	-2,107.90	3,012.29	1.50	-1.50	0.00	
7,200.00	13.35	224.41	6,470.15	-2,169.30	-2,124.95	3,036.65	1.50	-1.50	0.00	
7,300.00	11.85	224.41	6,567.74	-2,184.88	-2,140.22	3,058.47	1.50	-1.50	0.00	
7,400.00	10.35	224.41	6,665.86	-2,198.64	-2,153.69	3,077.73	1.50	-1.50	0.00	
7,423.51	10.00	224.41	6,689.00	-2,201.61	-2,156.60	3,081.88	1.50	-1.50	0.00	
Start Drop -1.50 - KMGAS										
7,433.01	9.86	224.41	6,698.36	-2,202.78	-2,157.75	3,083.52	1.50	-1.50	0.00	
PA 521-24 KMV										
7,500.00	8.85	224.41	6,764.46	-2,210.55	-2,165.37	3,094.41	1.50	-1.50	0.00	
7,600.00	7.35	224.41	6,863.46	-2,220.62	-2,175.23	3,108.50	1.50	-1.50	0.00	
7,700.00	5.85	224.41	6,962.79	-2,228.84	-2,183.27	3,120.00	1.50	-1.50	0.00	
7,800.00	4.35	224.41	7,062.39	-2,235.19	-2,189.50	3,128.89	1.50	-1.50	0.00	
7,900.00	2.85	224.41	7,162.19	-2,239.68	-2,193.90	3,135.18	1.50	-1.50	0.00	
8,000.00	1.35	224.41	7,262.12	-2,242.30	-2,196.46	3,138.85	1.50	-1.50	0.00	
8,090.18	0.00	0.00	7,352.29	-2,243.06	-2,197.21	3,139.91	1.50	-1.50	0.00	
Start 2083.71 hold at 8090.18 MD										

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Site:	PA 44-13 Pad	North Reference:	True
Well:	PA 521-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 16May2019 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)	
8,100.00	0.00	0.00	7,362.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,200.00	0.00	0.00	7,462.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,300.00	0.00	0.00	7,562.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,400.00	0.00	0.00	7,662.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,500.00	0.00	0.00	7,762.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,600.00	0.00	0.00	7,862.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,700.00	0.00	0.00	7,962.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,062.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,162.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,262.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,100.00	0.00	0.00	8,362.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,200.00	0.00	0.00	8,462.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,300.00	0.00	0.00	8,562.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,400.00	0.00	0.00	8,662.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,500.00	0.00	0.00	8,762.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,568.89	0.00	0.00	8,831.00	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
CMEO										
9,600.00	0.00	0.00	8,862.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,700.00	0.00	0.00	8,962.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,800.00	0.00	0.00	9,062.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
9,900.00	0.00	0.00	9,162.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
10,000.00	0.00	0.00	9,262.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
10,048.89	0.00	0.00	9,311.00	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
RLNS										
10,100.00	0.00	0.00	9,362.11	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
10,173.89	0.00	0.00	9,436.00	-2,243.06	-2,197.21	3,139.91	0.00	0.00	0.00	
TD at 10173.89 - TD - PA 521-24 PBHL										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PA 521-24 KMV	0.00	0.00	6,689.00	-2,243.06	-2,197.21	1,621,555.50	2,308,986.60	39.5143719	-107.9495976
- hit/miss target									
- Shape									
- plan misses target center by 57.17usft at 7433.01usft MD (6698.36 TVD, -2202.78 N, -2157.75 E)									
- Circle (radius 50.00)									
PA 521-24 PBHL	0.00	0.00	9,436.00	-2,243.06	-2,197.21	1,621,555.50	2,308,986.60	39.5143719	-107.9495976
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	969.19	9 5/8"	9.62	12.25	

Database:	Grand Junction District	Local Co-ordinate Reference:	Well PA 521-24 - Slot PA 521-24 (B1)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Project:	Garfield County, CO NAD83	MD Reference:	GL 6571.1' & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	North Reference:	True
Well:	PA 521-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 16May2019 mmsdi		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,724.00	3,363.00	G Sand		0.00	0.00
3,825.31	3,452.00	G Sand Base		0.00	0.00
6,355.92	5,677.00	WFRK UMVRD		0.00	0.00
6,497.11	5,805.00	OCRK		0.00	0.00
6,497.11	5,805.00	MVRD		0.00	0.00
7,423.51	6,689.00	KMVGAS		0.00	0.00
9,568.89	8,831.00	CME0		0.00	0.00
10,048.89	9,311.00	RLNS		0.00	0.00
10,173.89	9,436.00	TD		0.00	0.00

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
120.00	120.00	0.00	0.00	Start Build 3.00
1,071.04	1,032.22	-165.69	-162.30	Start 5117.06 hold at 1071.04 MD
6,188.10	5,527.85	-1,911.68	-1,872.60	Start Drop -1.50
7,423.51	6,689.00	-2,201.61	-2,156.60	Start Drop -1.50
8,090.18	7,352.29	-2,243.06	-2,197.21	Start 2083.71 hold at 8090.18 MD
10,173.89	9,436.00	-2,243.06	-2,197.21	TD at 10173.89