

TEP Rocky Mountain LLC

Garfield County, CO NAD83

RWF 13-19

PA 523-24

OH

Plan: Plan #1

Standard Planning Report

26 June, 2017

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 523-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5757.5ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5757.5ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 523-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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	RWF 13-19				
Site Position:		Northing:	1,618,780.80 ft	Latitude:	39° 30' 25.236 N
From:	Map	Easting:	2,312,540.00 ft	Longitude:	107° 56' 12.334 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.54 °

Well	PA 523-24, A6					
Well Position	+N/-S	1.9 ft	Northing:	1,618,782.90 ft	Latitude:	39° 30' 25.255 N
	+E/-W	-7.3 ft	Easting:	2,312,532.80 ft	Longitude:	107° 56' 12.426 W
Position Uncertainty		0.0 ft	Wellhead Elevation:		Ground Level:	5,733.5 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/9/2017	9.69	65.61	51,556.12908680

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	274.53

Plan Survey Tool Program	Date	6/26/2017		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	9,442.1 Plan #1 (OH)	SDI MWD	
			SDI MWD - Standard ver 1.0.1	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
533.3	10.00	245.00	531.6	-12.3	-26.3	3.00	3.00	0.00	245.00	
1,450.1	35.71	275.51	1,371.5	-20.4	-371.4	3.00	2.80	3.33	39.92	
5,164.6	35.71	275.51	4,387.6	187.9	-2,529.3	0.00	0.00	0.00	0.00	
7,545.1	0.00	0.00	6,617.0	256.9	-3,244.1	1.50	-1.50	0.00	180.00	
9,442.1	0.00	0.00	8,514.0	256.9	-3,244.1	0.00	0.00	0.00	0.00	PBHL (PA 523-24)

N/A
Planning Report

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Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5757.5ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5757.5ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 523-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL (PA 523-24)									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	3.00	245.00	300.0	-1.1	-2.4	2.3	3.00	3.00	0.00
400.0	6.00	245.00	399.6	-4.4	-9.5	9.1	3.00	3.00	0.00
500.0	9.00	245.00	498.8	-9.9	-21.3	20.5	3.00	3.00	0.00
533.3	10.00	245.00	531.6	-12.3	-26.3	25.2	3.00	3.00	0.00
600.0	11.60	251.39	597.1	-16.8	-37.9	36.4	3.00	2.41	9.59
700.0	14.20	258.18	694.6	-22.6	-59.4	57.5	3.00	2.59	6.79
800.0	16.92	262.87	790.9	-26.9	-85.9	83.5	3.00	2.73	4.68
900.0	19.73	266.27	885.9	-29.8	-117.2	114.5	3.00	2.80	3.40
1,000.0	22.58	268.85	979.1	-31.3	-153.2	150.3	3.00	2.85	2.58
1,100.0	25.47	270.87	1,070.4	-31.3	-193.9	190.9	3.00	2.89	2.02
9 5/8"									
1,200.0	28.37	272.51	1,159.6	-30.0	-239.2	236.1	3.00	2.91	1.64
1,300.0	31.30	273.86	1,246.3	-27.2	-288.8	285.8	3.00	2.92	1.35
1,400.0	34.23	275.00	1,330.4	-23.0	-342.8	339.9	3.00	2.94	1.14
1,450.1	35.71	275.51	1,371.5	-20.4	-371.4	368.6	3.00	2.94	1.02
1,500.0	35.71	275.51	1,412.0	-17.6	-400.4	397.7	0.00	0.00	0.00
1,600.0	35.71	275.51	1,493.2	-12.0	-458.5	456.1	0.00	0.00	0.00
1,700.0	35.71	275.51	1,574.4	-6.3	-516.6	514.4	0.00	0.00	0.00
1,800.0	35.71	275.51	1,655.6	-0.7	-574.7	572.8	0.00	0.00	0.00
1,900.0	35.71	275.51	1,736.8	4.9	-632.8	631.2	0.00	0.00	0.00
2,000.0	35.71	275.51	1,818.0	10.5	-690.8	689.5	0.00	0.00	0.00
2,100.0	35.71	275.51	1,899.2	16.1	-748.9	747.9	0.00	0.00	0.00
2,200.0	35.71	275.51	1,980.4	21.7	-807.0	806.2	0.00	0.00	0.00
2,300.0	35.71	275.51	2,061.6	27.3	-865.1	864.6	0.00	0.00	0.00
2,400.0	35.71	275.51	2,142.8	32.9	-923.2	922.9	0.00	0.00	0.00
2,500.0	35.71	275.51	2,224.0	38.5	-981.3	981.3	0.00	0.00	0.00
2,600.0	35.71	275.51	2,305.2	44.1	-1,039.4	1,039.7	0.00	0.00	0.00
2,700.0	35.71	275.51	2,386.4	49.7	-1,097.5	1,098.0	0.00	0.00	0.00
2,800.0	35.71	275.51	2,467.6	55.3	-1,155.6	1,156.4	0.00	0.00	0.00
2,814.1	35.71	275.51	2,479.0	56.1	-1,163.8	1,164.6	0.00	0.00	0.00
G Sand									
2,900.0	35.71	275.51	2,548.8	60.9	-1,213.7	1,214.7	0.00	0.00	0.00
3,000.0	35.71	275.51	2,630.0	66.5	-1,271.8	1,273.1	0.00	0.00	0.00
3,100.0	35.71	275.51	2,711.2	72.1	-1,329.9	1,331.4	0.00	0.00	0.00
3,200.0	35.71	275.51	2,792.4	77.8	-1,388.0	1,389.8	0.00	0.00	0.00
3,300.0	35.71	275.51	2,873.6	83.4	-1,446.1	1,448.1	0.00	0.00	0.00
3,400.0	35.71	275.51	2,954.8	89.0	-1,504.2	1,506.5	0.00	0.00	0.00
3,500.0	35.71	275.51	3,036.0	94.6	-1,562.3	1,564.9	0.00	0.00	0.00
3,600.0	35.71	275.51	3,117.2	100.2	-1,620.4	1,623.2	0.00	0.00	0.00
3,700.0	35.71	275.51	3,198.4	105.8	-1,678.5	1,681.6	0.00	0.00	0.00
3,800.0	35.71	275.51	3,279.6	111.4	-1,736.6	1,739.9	0.00	0.00	0.00
3,900.0	35.71	275.51	3,360.8	117.0	-1,794.7	1,798.3	0.00	0.00	0.00
4,000.0	35.71	275.51	3,442.0	122.6	-1,852.7	1,856.6	0.00	0.00	0.00
4,100.0	35.71	275.51	3,523.2	128.2	-1,910.8	1,915.0	0.00	0.00	0.00
4,200.0	35.71	275.51	3,604.4	133.8	-1,968.9	1,973.4	0.00	0.00	0.00
4,300.0	35.71	275.51	3,685.6	139.4	-2,027.0	2,031.7	0.00	0.00	0.00
4,400.0	35.71	275.51	3,766.8	145.0	-2,085.1	2,090.1	0.00	0.00	0.00
4,500.0	35.71	275.51	3,848.0	150.6	-2,143.2	2,148.4	0.00	0.00	0.00
4,600.0	35.71	275.51	3,929.2	156.3	-2,201.3	2,206.8	0.00	0.00	0.00

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 523-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5757.5ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5757.5ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 523-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,700.0	35.71	275.51	4,010.4	161.9	-2,259.4	2,265.1	0.00	0.00	0.00	
4,800.0	35.71	275.51	4,091.6	167.5	-2,317.5	2,323.5	0.00	0.00	0.00	
4,900.0	35.71	275.51	4,172.8	173.1	-2,375.6	2,381.8	0.00	0.00	0.00	
5,000.0	35.71	275.51	4,254.0	178.7	-2,433.7	2,440.2	0.00	0.00	0.00	
5,100.0	35.71	275.51	4,335.2	184.3	-2,491.8	2,498.6	0.00	0.00	0.00	
5,164.6	35.71	275.51	4,387.6	187.9	-2,529.3	2,536.2	0.00	0.00	0.00	
5,200.0	35.18	275.51	4,416.5	189.9	-2,549.8	2,556.8	1.50	-1.50	0.00	
5,300.0	33.68	275.51	4,499.0	195.3	-2,606.0	2,613.3	1.50	-1.50	0.00	
5,400.0	32.18	275.51	4,582.9	200.5	-2,660.1	2,667.7	1.50	-1.50	0.00	
5,500.0	30.68	275.51	4,668.2	205.5	-2,712.0	2,719.8	1.50	-1.50	0.00	
5,600.0	29.18	275.51	4,754.9	210.3	-2,761.7	2,769.7	1.50	-1.50	0.00	
5,638.9	28.59	275.51	4,789.0	212.1	-2,780.4	2,788.5	1.50	-1.50	0.00	
Ohio Creek										
5,700.0	27.68	275.51	4,842.9	214.9	-2,809.1	2,817.3	1.50	-1.50	0.00	
5,723.8	27.32	275.51	4,864.0	216.0	-2,820.0	2,828.3	1.50	-1.50	0.00	
Upper MVRD										
5,800.0	26.18	275.51	4,932.0	219.3	-2,854.1	2,862.5	1.50	-1.50	0.00	
5,900.0	24.68	275.51	5,022.3	223.4	-2,896.9	2,905.5	1.50	-1.50	0.00	
6,000.0	23.18	275.51	5,113.7	227.3	-2,937.2	2,946.0	1.50	-1.50	0.00	
6,100.0	21.68	275.51	5,206.2	230.9	-2,975.2	2,984.2	1.50	-1.50	0.00	
6,200.0	20.18	275.51	5,299.6	234.4	-3,010.8	3,019.9	1.50	-1.50	0.00	
6,300.0	18.68	275.51	5,393.9	237.6	-3,043.9	3,053.1	1.50	-1.50	0.00	
6,400.0	17.18	275.51	5,489.0	240.5	-3,074.5	3,083.9	1.50	-1.50	0.00	
6,500.0	15.68	275.51	5,584.9	243.2	-3,102.6	3,112.2	1.50	-1.50	0.00	
6,600.0	14.18	275.51	5,681.5	245.7	-3,128.3	3,137.9	1.50	-1.50	0.00	
6,700.0	12.68	275.51	5,778.8	247.9	-3,151.4	3,161.1	1.50	-1.50	0.00	
6,800.0	11.18	275.51	5,876.7	249.9	-3,172.0	3,181.8	1.50	-1.50	0.00	
6,900.0	9.68	275.51	5,975.0	251.7	-3,190.0	3,199.9	1.50	-1.50	0.00	
6,904.1	9.62	275.51	5,979.0	251.7	-3,190.6	3,200.6	1.50	-1.50	0.00	
Top of Gas										
7,000.0	8.18	275.51	6,073.8	253.2	-3,205.4	3,215.4	1.50	-1.50	0.00	
7,100.0	6.68	275.51	6,172.9	254.4	-3,218.3	3,228.3	1.50	-1.50	0.00	
7,200.0	5.18	275.51	6,272.4	255.4	-3,228.6	3,238.6	1.50	-1.50	0.00	
7,300.0	3.68	275.51	6,372.1	256.1	-3,236.2	3,246.4	1.50	-1.50	0.00	
7,400.0	2.18	275.51	6,472.0	256.6	-3,241.3	3,251.5	1.50	-1.50	0.00	
7,500.0	0.68	275.51	6,571.9	256.9	-3,243.8	3,253.9	1.50	-1.50	0.00	
7,545.1	0.00	0.00	6,617.0	256.9	-3,244.1	3,254.2	1.50	-1.50	0.00	
7,600.0	0.00	0.00	6,671.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
7,700.0	0.00	0.00	6,771.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
7,800.0	0.00	0.00	6,871.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
7,900.0	0.00	0.00	6,971.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,000.0	0.00	0.00	7,071.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,100.0	0.00	0.00	7,171.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,200.0	0.00	0.00	7,271.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,300.0	0.00	0.00	7,371.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,342.1	0.00	0.00	7,414.0	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
Cameo										
8,400.0	0.00	0.00	7,471.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,500.0	0.00	0.00	7,571.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,600.0	0.00	0.00	7,671.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,700.0	0.00	0.00	7,771.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,800.0	0.00	0.00	7,871.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
8,900.0	0.00	0.00	7,971.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
9,000.0	0.00	0.00	8,071.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 523-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5757.5ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5757.5ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 523-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,100.0	0.00	0.00	8,171.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
9,200.0	0.00	0.00	8,271.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
9,292.1	0.00	0.00	8,364.0	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
RLNS										
9,300.0	0.00	0.00	8,371.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
9,400.0	0.00	0.00	8,471.9	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
9,442.1	0.00	0.00	8,514.0	256.9	-3,244.1	3,254.2	0.00	0.00	0.00	
PBHL (PA 523-24)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
SHL (PA 523-24) - hit/miss target - Shape - Point	0.00	0.00	0.0	0.0	0.0	1,618,782.90	2,312,532.80	39° 30' 25.255 N	107° 56' 12.426 W	
PBHL (PA 523-24) - plan hits target center - Point	0.00	0.00	8,514.0	256.9	-3,244.1	1,619,126.70	2,309,296.80	39° 30' 27.792 N	107° 56' 53.817 W	

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)		
1,100.0	1,070.4	9 5/8"	9.625	12.250		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,814.1	2,479.0	G Sand		0.00		
5,638.9	4,789.0	Ohio Creek		0.00		
5,723.8	4,864.0	Upper MVRD		0.00		
6,904.1	5,979.0	Top of Gas		0.00		
8,342.1	7,414.0	Cameo		0.00		
9,292.1	8,364.0	RLNS		0.00		