

TEP Rocky Mountain LLC

Garfield County, CO NAD83

RWF 13-19

PA 434-24

OH

Plan: Plan #1

Standard Planning Report

21 June, 2017

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 434-24
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 434-24	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 434-24, A13					
Well Position	+N/-S	-11.4 ft	Northing:	1,618,768.20 ft	Latitude:	39° 30' 25.123 N
	+E/-W	43.5 ft	Easting:	2,312,583.20 ft	Longitude:	107° 56' 11.778 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	51,556.13222636

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	242.83

Plan Survey Tool Program	Date	6/21/2017			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	8,831.4 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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	3.00	180.00	799.9	-7.9	0.0	1.00	1.00	0.00	180.00	
1,560.3	24.00	243.54	1,536.6	-97.8	-140.3	3.00	2.76	8.36	69.91	
5,293.0	24.00	243.54	4,946.6	-774.2	-1,499.3	0.00	0.00	0.00	0.00	
6,892.7	0.00	0.00	6,500.0	-921.3	-1,794.8	1.50	-1.50	0.00	180.00	
8,831.7	0.00	0.00	8,439.0	-921.3	-1,794.8	0.00	0.00	0.00	0.00	PBHL (PA 434-24)

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 434-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5754.0ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5754.0ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 434-24	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 434-24)									
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	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	1.00	180.00	600.0	-0.9	0.0	0.4	1.00	1.00	0.00
700.0	2.00	180.00	700.0	-3.5	0.0	1.6	1.00	1.00	0.00
800.0	3.00	180.00	799.9	-7.9	0.0	3.6	1.00	1.00	0.00
900.0	4.92	214.99	899.6	-14.0	-2.5	8.6	3.00	1.92	34.99
1,000.0	7.57	228.16	999.0	-21.9	-9.8	18.7	3.00	2.66	13.17
1,100.0	10.42	234.36	1,097.8	-31.6	-22.1	34.1	3.00	2.84	6.20
9 5/8"									
1,200.0	13.33	237.90	1,195.7	-42.9	-39.2	54.5	3.00	2.91	3.54
1,300.0	16.27	240.18	1,292.3	-56.0	-61.1	80.0	3.00	2.94	2.28
1,400.0	19.23	241.78	1,387.6	-70.8	-87.8	110.4	3.00	2.96	1.60
1,500.0	22.20	242.96	1,481.1	-87.2	-119.1	145.8	3.00	2.97	1.18
1,560.3	24.00	243.54	1,536.6	-97.8	-140.3	169.5	3.00	2.98	0.96
1,600.0	24.00	243.54	1,572.8	-105.0	-154.7	185.6	0.00	0.00	0.00
1,700.0	24.00	243.54	1,664.2	-123.1	-191.1	226.3	0.00	0.00	0.00
1,800.0	24.00	243.54	1,755.5	-141.3	-227.5	266.9	0.00	0.00	0.00
1,900.0	24.00	243.54	1,846.9	-159.4	-263.9	307.6	0.00	0.00	0.00
2,000.0	24.00	243.54	1,938.2	-177.5	-300.4	348.3	0.00	0.00	0.00
2,100.0	24.00	243.54	2,029.6	-195.6	-336.8	388.9	0.00	0.00	0.00
2,200.0	24.00	243.54	2,121.0	-213.7	-373.2	429.6	0.00	0.00	0.00
2,300.0	24.00	243.54	2,212.3	-231.9	-409.6	470.3	0.00	0.00	0.00
2,400.0	24.00	243.54	2,303.7	-250.0	-446.0	510.9	0.00	0.00	0.00
2,500.0	24.00	243.54	2,395.0	-268.1	-482.4	551.6	0.00	0.00	0.00
2,591.9	24.00	243.54	2,479.0	-284.7	-515.9	589.0	0.00	0.00	0.00
G Sand									
2,600.0	24.00	243.54	2,486.4	-286.2	-518.8	592.3	0.00	0.00	0.00
2,700.0	24.00	243.54	2,577.7	-304.3	-555.2	632.9	0.00	0.00	0.00
2,800.0	24.00	243.54	2,669.1	-322.5	-591.6	673.6	0.00	0.00	0.00
2,900.0	24.00	243.54	2,760.4	-340.6	-628.0	714.2	0.00	0.00	0.00
3,000.0	24.00	243.54	2,851.8	-358.7	-664.4	754.9	0.00	0.00	0.00
3,100.0	24.00	243.54	2,943.2	-376.8	-700.8	795.6	0.00	0.00	0.00
3,200.0	24.00	243.54	3,034.5	-394.9	-737.3	836.2	0.00	0.00	0.00
3,300.0	24.00	243.54	3,125.9	-413.1	-773.7	876.9	0.00	0.00	0.00
3,400.0	24.00	243.54	3,217.2	-431.2	-810.1	917.6	0.00	0.00	0.00
3,500.0	24.00	243.54	3,308.6	-449.3	-846.5	958.2	0.00	0.00	0.00
3,600.0	24.00	243.54	3,399.9	-467.4	-882.9	998.9	0.00	0.00	0.00
3,700.0	24.00	243.54	3,491.3	-485.5	-919.3	1,039.6	0.00	0.00	0.00
3,800.0	24.00	243.54	3,582.7	-503.6	-955.7	1,080.2	0.00	0.00	0.00
3,900.0	24.00	243.54	3,674.0	-521.8	-992.1	1,120.9	0.00	0.00	0.00
4,000.0	24.00	243.54	3,765.4	-539.9	-1,028.5	1,161.6	0.00	0.00	0.00
4,100.0	24.00	243.54	3,856.7	-558.0	-1,064.9	1,202.2	0.00	0.00	0.00
4,200.0	24.00	243.54	3,948.1	-576.1	-1,101.3	1,242.9	0.00	0.00	0.00
4,300.0	24.00	243.54	4,039.4	-594.2	-1,137.8	1,283.6	0.00	0.00	0.00
4,400.0	24.00	243.54	4,130.8	-612.4	-1,174.2	1,324.2	0.00	0.00	0.00
4,500.0	24.00	243.54	4,222.2	-630.5	-1,210.6	1,364.9	0.00	0.00	0.00
4,600.0	24.00	243.54	4,313.5	-648.6	-1,247.0	1,405.6	0.00	0.00	0.00
4,700.0	24.00	243.54	4,404.9	-666.7	-1,283.4	1,446.2	0.00	0.00	0.00

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 434-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5754.0ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5754.0ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 434-24	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)
4,800.0	24.00	243.54	4,496.2	-684.8	-1,319.8	1,486.9	0.00	0.00	0.00
4,900.0	24.00	243.54	4,587.6	-703.0	-1,356.2	1,527.6	0.00	0.00	0.00
5,000.0	24.00	243.54	4,678.9	-721.1	-1,392.6	1,568.2	0.00	0.00	0.00
5,038.4	24.00	243.54	4,714.0	-728.0	-1,406.6	1,583.8	0.00	0.00	0.00
Ohio Creek									
5,100.0	24.00	243.54	4,770.3	-739.2	-1,429.0	1,608.9	0.00	0.00	0.00
5,120.5	24.00	243.54	4,789.0	-742.9	-1,436.5	1,617.2	0.00	0.00	0.00
Upper MVRD									
5,200.0	24.00	243.54	4,861.7	-757.3	-1,465.4	1,649.5	0.00	0.00	0.00
5,293.0	24.00	243.54	4,946.6	-774.2	-1,499.3	1,687.3	0.00	0.00	0.00
5,300.0	23.89	243.54	4,953.0	-775.4	-1,501.8	1,690.2	1.50	-1.50	0.00
5,400.0	22.39	243.54	5,045.0	-793.0	-1,537.0	1,729.5	1.50	-1.50	0.00
5,500.0	20.89	243.54	5,137.9	-809.4	-1,570.0	1,766.4	1.50	-1.50	0.00
5,600.0	19.39	243.54	5,231.8	-824.7	-1,600.9	1,800.8	1.50	-1.50	0.00
5,700.0	17.89	243.54	5,326.5	-839.0	-1,629.5	1,832.8	1.50	-1.50	0.00
5,800.0	16.39	243.54	5,422.1	-852.1	-1,655.9	1,862.2	1.50	-1.50	0.00
5,900.0	14.89	243.54	5,518.4	-864.1	-1,680.0	1,889.2	1.50	-1.50	0.00
6,000.0	13.39	243.54	5,615.4	-875.0	-1,701.9	1,913.6	1.50	-1.50	0.00
6,100.0	11.89	243.54	5,712.9	-884.7	-1,721.5	1,935.5	1.50	-1.50	0.00
6,200.0	10.39	243.54	5,811.1	-893.4	-1,738.8	1,954.8	1.50	-1.50	0.00
6,294.3	8.98	243.54	5,904.0	-900.4	-1,753.0	1,970.7	1.50	-1.50	0.00
Top of Gas									
6,300.0	8.89	243.54	5,909.6	-900.8	-1,753.7	1,971.6	1.50	-1.50	0.00
6,400.0	7.39	243.54	6,008.6	-907.1	-1,766.4	1,985.7	1.50	-1.50	0.00
6,500.0	5.89	243.54	6,108.0	-912.3	-1,776.8	1,997.3	1.50	-1.50	0.00
6,600.0	4.39	243.54	6,207.5	-916.3	-1,784.8	2,006.3	1.50	-1.50	0.00
6,700.0	2.89	243.54	6,307.3	-919.1	-1,790.5	2,012.6	1.50	-1.50	0.00
6,800.0	1.39	243.54	6,407.3	-920.8	-1,793.8	2,016.3	1.50	-1.50	0.00
6,892.7	0.00	0.00	6,500.0	-921.3	-1,794.8	2,017.5	1.50	-1.50	0.00
6,900.0	0.00	0.00	6,507.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,000.0	0.00	0.00	6,607.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,100.0	0.00	0.00	6,707.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,200.0	0.00	0.00	6,807.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,300.0	0.00	0.00	6,907.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,400.0	0.00	0.00	7,007.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,500.0	0.00	0.00	7,107.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,600.0	0.00	0.00	7,207.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,700.0	0.00	0.00	7,307.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,731.7	0.00	0.00	7,339.0	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
Cameo									
7,800.0	0.00	0.00	7,407.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
7,900.0	0.00	0.00	7,507.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,000.0	0.00	0.00	7,607.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,100.0	0.00	0.00	7,707.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,200.0	0.00	0.00	7,807.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,300.0	0.00	0.00	7,907.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,400.0	0.00	0.00	8,007.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,500.0	0.00	0.00	8,107.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,600.0	0.00	0.00	8,207.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,681.7	0.00	0.00	8,289.0	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
RLNS									
8,700.0	0.00	0.00	8,307.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,800.0	0.00	0.00	8,407.3	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00
8,831.7	0.00	0.00	8,439.0	-921.3	-1,794.8	2,017.5	0.00	0.00	0.00

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 434-24
Company:	TEP Rocky Mountain LLC	TVD Reference:	WELL @ 5754.0ft (Original Well Elev)
Project:	Garfield County, CO NAD83	MD Reference:	WELL @ 5754.0ft (Original Well Elev)
Site:	RWF 13-19	North Reference:	True
Well:	PA 434-24	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)
PBHL (PA 434-24)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL (PA 434-24)	0.00	0.00	0.0	0.0	0.0	1,618,768.20	2,312,583.20	39° 30' 25.123 N	107° 56' 11.778 W
- plan hits target center									
- Point									
PBHL (PA 434-24)	0.00	0.00	8,439.0	-921.3	-1,794.8	1,617,895.40	2,310,764.30	39° 30' 16.017 N	107° 56' 34.678 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,100.0	1,097.8	9 5/8"	9.625	13.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,591.9	2,479.0	G Sand		0.00		
5,038.4	4,714.0	Ohio Creek		0.00		
5,120.5	4,789.0	Upper MVRD		0.00		
6,294.3	5,904.0	Top of Gas		0.00		
7,731.7	7,339.0	Cameo		0.00		
8,681.7	8,289.0	RLNS		0.00		