

TEP Rocky Mountain LLC

Garfield County, CO NAD83

RWF 13-19

PA 324-24

OH

Plan: Plan #1

Standard Planning Report

21 June, 2017

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 324-24
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 324-24	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 324-24, A11					
Well Position	+N/-S	-7.6 ft	Northing:	1,618,772.40 ft	Latitude:	39° 30' 25.161 N
	+E/-W	29.0 ft	Easting:	2,312,568.80 ft	Longitude:	107° 56' 11.963 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	51,556.13132938

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	260.56

Plan Survey Tool Program	Date	6/21/2017		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	9,631.1 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	
850.0	0.00	0.00	850.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,183.3	10.00	240.00	1,181.6	-14.5	-25.1	3.00	3.00	0.00	240.00	
2,390.3	45.37	261.42	2,235.2	-135.0	-558.4	3.00	2.93	1.77	26.11	
4,661.3	45.37	261.42	3,830.5	-376.1	-2,156.6	0.00	0.00	0.00	0.00	
7,686.1	0.00	0.00	6,549.0	-545.6	-3,280.2	1.50	-1.50	0.00	180.00	
9,631.1	0.00	0.00	8,494.0	-545.6	-3,280.2	0.00	0.00	0.00	0.00	PBHL (PA 324-24)

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 324-24
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 324-24	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 324-24)									
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	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	1.50	240.00	900.0	-0.3	-0.6	0.6	3.00	3.00	0.00
1,000.0	4.50	240.00	999.8	-2.9	-5.1	5.5	3.00	3.00	0.00
1,100.0	7.50	240.00	1,099.3	-8.2	-14.2	15.3	3.00	3.00	0.00
9 5/8"									
1,183.3	10.00	240.00	1,181.6	-14.5	-25.1	27.2	3.00	3.00	0.00
1,200.0	10.45	241.21	1,198.0	-16.0	-27.7	29.9	3.00	2.71	7.28
1,300.0	13.23	246.74	1,295.9	-24.8	-46.2	49.6	3.00	2.78	5.53
1,400.0	16.09	250.35	1,392.6	-34.0	-69.7	74.4	3.00	2.86	3.61
1,500.0	18.99	252.89	1,488.0	-43.5	-98.4	104.2	3.00	2.90	2.54
1,600.0	21.92	254.78	1,581.7	-53.2	-131.9	138.9	3.00	2.93	1.89
1,700.0	24.86	256.24	1,673.4	-63.1	-170.4	178.4	3.00	2.94	1.46
1,800.0	27.82	257.41	1,763.1	-73.2	-213.6	222.7	3.00	2.96	1.17
1,900.0	30.78	258.37	1,850.3	-83.4	-261.4	271.5	3.00	2.96	0.96
2,000.0	33.75	259.17	1,934.8	-93.8	-313.8	324.9	3.00	2.97	0.81
2,100.0	36.72	259.86	2,016.5	-104.3	-370.5	382.6	3.00	2.97	0.69
2,200.0	39.70	260.46	2,095.0	-114.8	-431.4	444.4	3.00	2.98	0.60
2,300.0	42.68	260.99	2,170.3	-125.4	-496.4	510.3	3.00	2.98	0.53
2,390.3	45.37	261.42	2,235.2	-135.0	-558.4	573.0	3.00	2.98	0.47
2,400.0	45.37	261.42	2,242.0	-136.0	-565.3	579.9	0.00	0.00	0.00
2,500.0	45.37	261.42	2,312.3	-146.6	-635.6	651.1	0.00	0.00	0.00
2,600.0	45.37	261.42	2,382.5	-157.3	-706.0	722.2	0.00	0.00	0.00
2,700.0	45.37	261.42	2,452.8	-167.9	-776.4	793.4	0.00	0.00	0.00
2,737.3	45.37	261.42	2,479.0	-171.8	-802.7	820.0	0.00	0.00	0.00
G Sand									
2,800.0	45.37	261.42	2,523.0	-178.5	-846.8	864.6	0.00	0.00	0.00
2,900.0	45.37	261.42	2,593.3	-189.1	-917.1	935.7	0.00	0.00	0.00
3,000.0	45.37	261.42	2,663.5	-199.7	-987.5	1,006.9	0.00	0.00	0.00
3,100.0	45.37	261.42	2,733.8	-210.3	-1,057.9	1,078.0	0.00	0.00	0.00
3,200.0	45.37	261.42	2,804.0	-221.0	-1,128.2	1,149.2	0.00	0.00	0.00
3,300.0	45.37	261.42	2,874.3	-231.6	-1,198.6	1,220.4	0.00	0.00	0.00
3,400.0	45.37	261.42	2,944.5	-242.2	-1,269.0	1,291.5	0.00	0.00	0.00
3,500.0	45.37	261.42	3,014.8	-252.8	-1,339.4	1,362.7	0.00	0.00	0.00
3,600.0	45.37	261.42	3,085.0	-263.4	-1,409.7	1,433.9	0.00	0.00	0.00
3,700.0	45.37	261.42	3,155.3	-274.0	-1,480.1	1,505.0	0.00	0.00	0.00
3,800.0	45.37	261.42	3,225.5	-284.6	-1,550.5	1,576.2	0.00	0.00	0.00
3,900.0	45.37	261.42	3,295.8	-295.3	-1,620.9	1,647.3	0.00	0.00	0.00
4,000.0	45.37	261.42	3,366.0	-305.9	-1,691.2	1,718.5	0.00	0.00	0.00
4,100.0	45.37	261.42	3,436.3	-316.5	-1,761.6	1,789.7	0.00	0.00	0.00
4,200.0	45.37	261.42	3,506.5	-327.1	-1,832.0	1,860.8	0.00	0.00	0.00
4,300.0	45.37	261.42	3,576.8	-337.7	-1,902.3	1,932.0	0.00	0.00	0.00
4,400.0	45.37	261.42	3,647.0	-348.3	-1,972.7	2,003.1	0.00	0.00	0.00
4,500.0	45.37	261.42	3,717.3	-359.0	-2,043.1	2,074.3	0.00	0.00	0.00

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 324-24
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 324-24	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)	
4,600.0	45.37	261.42	3,787.5	-369.6	-2,113.5	2,145.5	0.00	0.00	0.00	
4,661.3	45.37	261.42	3,830.5	-376.1	-2,156.6	2,189.1	0.00	0.00	0.00	
4,700.0	44.79	261.42	3,857.9	-380.2	-2,183.7	2,216.5	1.50	-1.50	0.00	
4,800.0	43.29	261.42	3,929.8	-390.5	-2,252.4	2,286.0	1.50	-1.50	0.00	
4,900.0	41.79	261.42	4,003.5	-400.6	-2,319.3	2,353.6	1.50	-1.50	0.00	
5,000.0	40.29	261.42	4,078.9	-410.4	-2,384.2	2,419.2	1.50	-1.50	0.00	
5,100.0	38.79	261.42	4,156.0	-419.9	-2,447.2	2,482.9	1.50	-1.50	0.00	
5,200.0	37.29	261.42	4,234.7	-429.1	-2,508.1	2,544.5	1.50	-1.50	0.00	
5,300.0	35.79	261.42	4,315.1	-438.0	-2,567.0	2,604.0	1.50	-1.50	0.00	
5,400.0	34.29	261.42	4,397.0	-446.5	-2,623.7	2,661.4	1.50	-1.50	0.00	
5,500.0	32.79	261.42	4,480.3	-454.8	-2,678.4	2,716.7	1.50	-1.50	0.00	
5,600.0	31.29	261.42	4,565.1	-462.7	-2,730.8	2,769.7	1.50	-1.50	0.00	
5,700.0	29.79	261.42	4,651.2	-470.3	-2,781.1	2,820.6	1.50	-1.50	0.00	
5,800.0	28.29	261.42	4,738.6	-477.5	-2,829.1	2,869.1	1.50	-1.50	0.00	
5,834.4	27.78	261.42	4,769.0	-479.9	-2,845.1	2,885.3	1.50	-1.50	0.00	
Ohio Creek										
5,900.0	26.79	261.42	4,827.3	-484.4	-2,874.8	2,915.3	1.50	-1.50	0.00	
5,918.7	26.51	261.42	4,844.0	-485.7	-2,883.1	2,923.7	1.50	-1.50	0.00	
Upper MVRD										
6,000.0	25.29	261.42	4,917.1	-491.0	-2,918.2	2,959.2	1.50	-1.50	0.00	
6,100.0	23.79	261.42	5,008.1	-497.2	-2,959.3	3,000.7	1.50	-1.50	0.00	
6,200.0	22.29	261.42	5,100.1	-503.0	-2,998.0	3,039.9	1.50	-1.50	0.00	
6,300.0	20.79	261.42	5,193.1	-508.5	-3,034.3	3,076.6	1.50	-1.50	0.00	
6,400.0	19.29	261.42	5,287.1	-513.6	-3,068.2	3,110.9	1.50	-1.50	0.00	
6,500.0	17.79	261.42	5,381.9	-518.3	-3,099.6	3,142.7	1.50	-1.50	0.00	
6,600.0	16.29	261.42	5,477.5	-522.7	-3,128.6	3,172.0	1.50	-1.50	0.00	
6,700.0	14.79	261.42	5,573.8	-526.7	-3,155.1	3,198.7	1.50	-1.50	0.00	
6,800.0	13.29	261.42	5,670.8	-530.3	-3,179.1	3,223.0	1.50	-1.50	0.00	
6,900.0	11.79	261.42	5,768.4	-533.5	-3,200.5	3,244.7	1.50	-1.50	0.00	
7,000.0	10.29	261.42	5,866.6	-536.4	-3,219.5	3,263.9	1.50	-1.50	0.00	
7,093.7	8.89	261.42	5,959.0	-538.7	-3,234.9	3,279.5	1.50	-1.50	0.00	
Top of Gas										
7,100.0	8.79	261.42	5,965.2	-538.9	-3,235.9	3,280.4	1.50	-1.50	0.00	
7,200.0	7.29	261.42	6,064.2	-541.0	-3,249.7	3,294.4	1.50	-1.50	0.00	
7,300.0	5.79	261.42	6,163.6	-542.7	-3,261.0	3,305.8	1.50	-1.50	0.00	
7,400.0	4.29	261.42	6,263.2	-544.0	-3,269.7	3,314.6	1.50	-1.50	0.00	
7,500.0	2.79	261.42	6,363.0	-544.9	-3,275.8	3,320.8	1.50	-1.50	0.00	
7,600.0	1.29	261.42	6,462.9	-545.4	-3,279.3	3,324.3	1.50	-1.50	0.00	
7,686.1	0.00	0.00	6,549.0	-545.6	-3,280.2	3,325.3	1.50	-1.50	0.00	
7,700.0	0.00	0.00	6,562.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
7,800.0	0.00	0.00	6,662.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
7,900.0	0.00	0.00	6,762.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,000.0	0.00	0.00	6,862.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,100.0	0.00	0.00	6,962.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,200.0	0.00	0.00	7,062.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,300.0	0.00	0.00	7,162.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,400.0	0.00	0.00	7,262.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,500.0	0.00	0.00	7,362.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,531.1	0.00	0.00	7,394.0	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
Cameo										
8,600.0	0.00	0.00	7,462.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,700.0	0.00	0.00	7,562.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,800.0	0.00	0.00	7,662.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	
8,900.0	0.00	0.00	7,762.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00	

N/A
Planning Report

Database:	EDM_PRO	Local Co-ordinate Reference:	Well PA 324-24
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 324-24	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)
9,000.0	0.00	0.00	7,862.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,100.0	0.00	0.00	7,962.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,200.0	0.00	0.00	8,062.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,300.0	0.00	0.00	8,162.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,400.0	0.00	0.00	8,262.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,481.1	0.00	0.00	8,344.0	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
RLNS									
9,500.0	0.00	0.00	8,362.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,600.0	0.00	0.00	8,462.9	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
9,631.1	0.00	0.00	8,494.0	-545.6	-3,280.2	3,325.3	0.00	0.00	0.00
PBHL (PA 324-24)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHL (PA 324-24) - hit/miss target - Shape - Point	0.00	0.00	0.0	0.0	0.0	1,618,772.40	2,312,568.80	39° 30' 25.161 N	107° 56' 11.963 W
PBHL (PA 324-24) - plan hits target center - Point	0.00	0.00	8,494.0	-545.6	-3,280.2	1,618,315.00	2,309,275.10	39° 30' 19.766 N	107° 56' 53.815 W

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)		
1,100.0	1,099.3	9 5/8"	9.625	13.500		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,737.3	2,479.0	G Sand		0.00		
5,834.4	4,769.0	Ohio Creek		0.00		
5,918.7	4,844.0	Upper MVRD		0.00		
7,093.7	5,959.0	Top of Gas		0.00		
8,531.1	7,394.0	Cameo		0.00		
9,481.1	8,344.0	RLNS		0.00		