



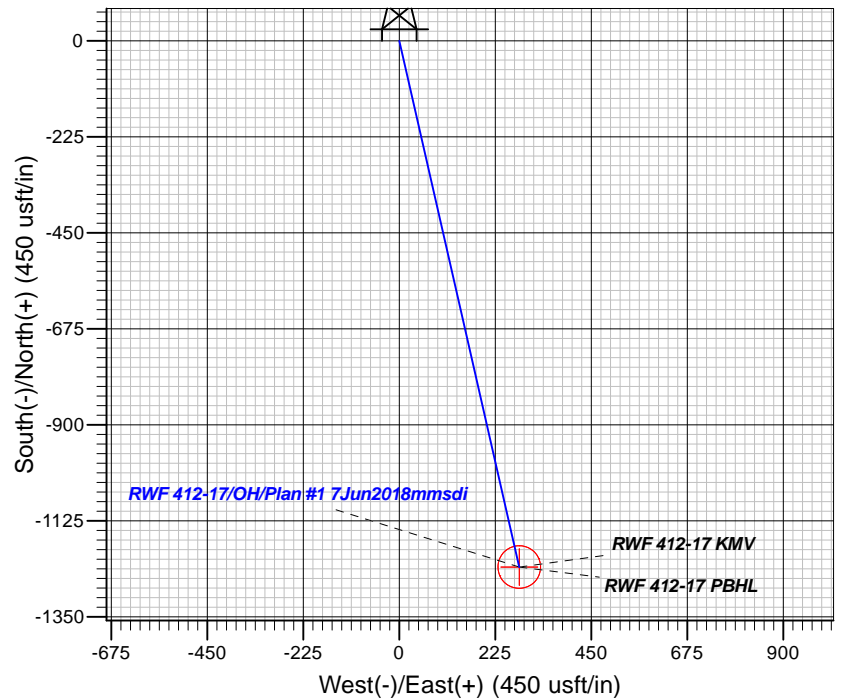
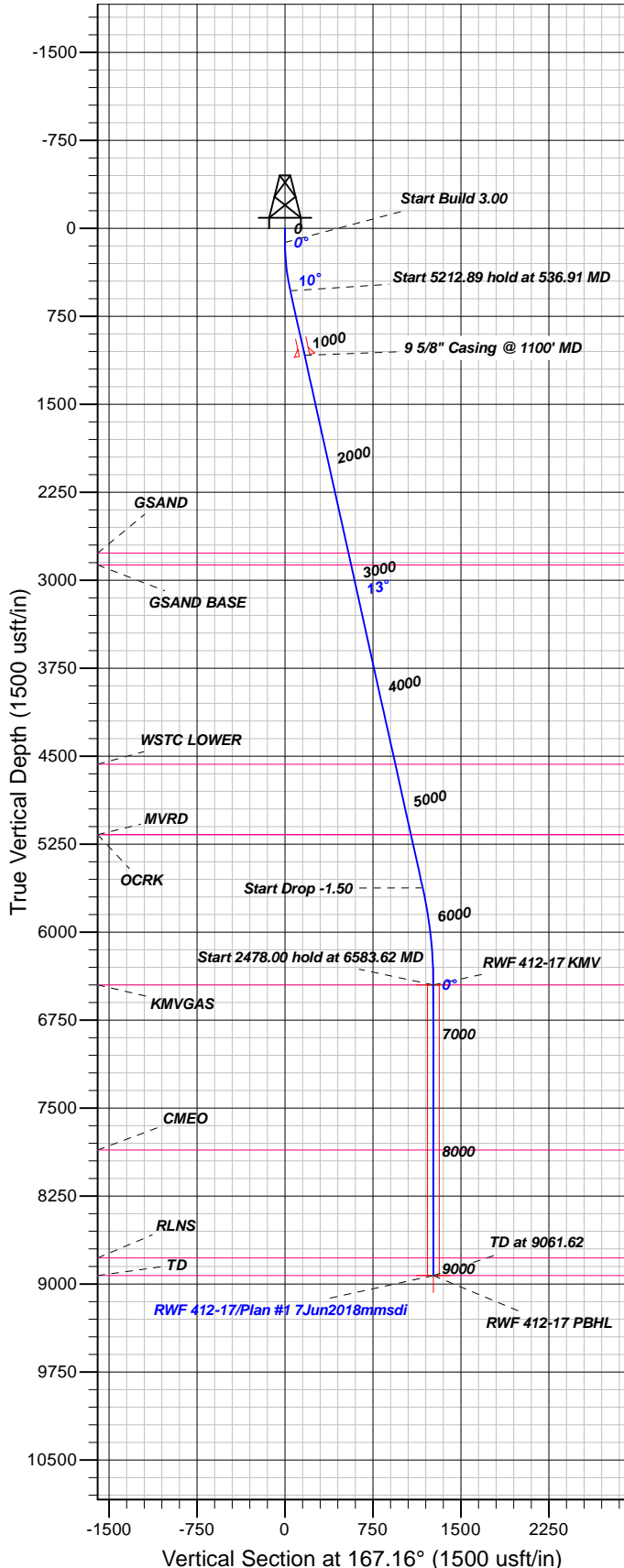
Azimuths to True North
Magnetic North: 9.43°

Magnetic Field
Strength: 51582.5nT
Dip Angle: 65.80°
Date: 6/7/2018
Model: HDGM

Well Details: RWF 412-17

GL 6174.5' & RKB 24' @ 6198.50usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1627375.90	2317159.50	39.5309470	-107.9211887	RWF 412-17 (A5)



FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
2770.00	2827.67	GSAND
2870.00	2930.10	GSAND BASE
4570.00	4671.42	WSTC LOWER
5170.00	5286.01	MVRD
5170.00	5286.01	OCRK
6450.00	6583.62	KMVGAS
7858.00	7991.62	CMEO
8778.00	8911.62	RLNS
8928.00	9061.62	TD

Plan: Plan #1 7Jun2018mmsdi

12:33, June 12 2018
Created By: Mel Mireles

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Central Zone

System Datum: Mean Sea Level

CASING DETAILS

TVD	MD	Name	Size
1083.33	1100.00	5/8" Casing @ 1100' MD	9.62

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	
3	536.91	12.51	167.16	533.61	-44.19	10.07	3.00	167.16	45.32	
4	5749.80	12.51	167.16	5622.79	-1144.89	260.94	0.00	0.001174.25		
5	6583.62	0.00	0.00	6450.00	-1233.27	281.08	1.50	180.001264.89		RWF 412-17 KMV
6	9061.62	0.00	0.00	8928.00	-1233.27	281.08	0.00	0.001264.89		RWF 412-17 PBHL

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
RWF 412-17 KMV	6450.00	-1233.27	281.08	1626135.58	2317407.62	39.5275612	-107.9201922	Circle (Radius: 50.00)
- plan hits target center								
RWF 412-17 PBHL	8928.00	-1233.27	281.08	1626135.58	2317407.62	39.5275612	-107.9201922	Point
- plan hits target center								



TEP Rocky Mountain LLC

Garfield County, CO NAD83

DOE 1-M-18

RWF 412-17 - Slot RWF 412-17 (A5)

OH

Plan: Plan #1 7Jun2018mmsdi

Standard Planning Report

12 June, 2018



Database:	Grand Junction District	Local Co-ordinate Reference:	Well RWF 412-17 - Slot RWF 412-17 (A5)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Site:	DOE 1-M-18	North Reference:	True
Well:	RWF 412-17	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7Jun2018mmsdi		

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	DOE 1-M-18					
Site Position:		Northing:	1,627,441.60 usft	Latitude:	39.5311260	
From:	Map	Easting:	2,317,141.30 usft	Longitude:	-107.9212595	
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.53 °

Well	RWF 412-17 - Slot RWF 412-17 (A5)					
Well Position	+N/-S	-65.19 usft	Northing:	1,627,375.90 usft	Latitude:	39.5309471
	+E/-W	19.94 usft	Easting:	2,317,159.50 usft	Longitude:	-107.9211888
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,174.50 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/7/2018	9.43	65.80	51,583

Design	Plan #1 7Jun2018mmsdi			
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	167.16

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	
536.91	12.51	167.16	533.61	-44.19	10.07	3.00	3.00	0.00	167.16	
5,749.80	12.51	167.16	5,622.79	-1,144.89	260.94	0.00	0.00	0.00	0.00	
6,583.62	0.00	0.00	6,450.00	-1,233.27	281.08	1.50	-1.50	0.00	180.00	RWF 412-17 KMV
9,061.62	0.00	0.00	8,928.00	-1,233.27	281.08	0.00	0.00	0.00	0.00	RWF 412-17 PBHL

Database:	Grand Junction District	Local Co-ordinate Reference:	Well RWF 412-17 - Slot RWF 412-17 (A5)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Site:	DOE 1-M-18	North Reference:	True
Well:	RWF 412-17	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7Jun2018mmsdi		

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	167.16	199.98	-1.63	0.37	1.68	3.00	3.00	0.00
300.00	5.40	167.16	299.73	-8.26	1.88	8.48	3.00	3.00	0.00
400.00	8.40	167.16	399.00	-19.98	4.55	20.49	3.00	3.00	0.00
500.00	11.40	167.16	497.50	-36.74	8.37	37.68	3.00	3.00	0.00
536.91	12.51	167.16	533.61	-44.19	10.07	45.32	3.00	3.00	0.00
Start 5212.89 hold at 536.91 MD									
600.00	12.51	167.16	595.20	-57.51	13.11	58.99	0.00	0.00	0.00
700.00	12.51	167.16	692.83	-78.63	17.92	80.64	0.00	0.00	0.00
800.00	12.51	167.16	790.45	-99.74	22.73	102.30	0.00	0.00	0.00
900.00	12.51	167.16	888.08	-120.86	27.55	123.96	0.00	0.00	0.00
1,000.00	12.51	167.16	985.71	-141.97	32.36	145.61	0.00	0.00	0.00
1,100.00	12.51	167.16	1,083.33	-163.09	37.17	167.27	0.00	0.00	0.00
9 5/8" Casing @ 1100' MD									
1,200.00	12.51	167.16	1,180.96	-184.20	41.98	188.93	0.00	0.00	0.00
1,300.00	12.51	167.16	1,278.59	-205.32	46.80	210.58	0.00	0.00	0.00
1,400.00	12.51	167.16	1,376.21	-226.43	51.61	232.24	0.00	0.00	0.00
1,500.00	12.51	167.16	1,473.84	-247.55	56.42	253.89	0.00	0.00	0.00
1,600.00	12.51	167.16	1,571.47	-268.66	61.23	275.55	0.00	0.00	0.00
1,700.00	12.51	167.16	1,669.09	-289.78	66.05	297.21	0.00	0.00	0.00
1,800.00	12.51	167.16	1,766.72	-310.89	70.86	318.86	0.00	0.00	0.00
1,900.00	12.51	167.16	1,864.35	-332.01	75.67	340.52	0.00	0.00	0.00
2,000.00	12.51	167.16	1,961.98	-353.12	80.48	362.18	0.00	0.00	0.00
2,100.00	12.51	167.16	2,059.60	-374.24	85.30	383.83	0.00	0.00	0.00
2,200.00	12.51	167.16	2,157.23	-395.35	90.11	405.49	0.00	0.00	0.00
2,300.00	12.51	167.16	2,254.86	-416.47	94.92	427.15	0.00	0.00	0.00
2,400.00	12.51	167.16	2,352.48	-437.58	99.73	448.80	0.00	0.00	0.00
2,500.00	12.51	167.16	2,450.11	-458.69	104.54	470.46	0.00	0.00	0.00
2,600.00	12.51	167.16	2,547.74	-479.81	109.36	492.11	0.00	0.00	0.00
2,700.00	12.51	167.16	2,645.36	-500.92	114.17	513.77	0.00	0.00	0.00
2,800.00	12.51	167.16	2,742.99	-522.04	118.98	535.43	0.00	0.00	0.00
2,827.67	12.51	167.16	2,770.00	-527.88	120.31	541.42	0.00	0.00	0.00
GSAND									
2,900.00	12.51	167.16	2,840.62	-543.15	123.79	557.08	0.00	0.00	0.00
2,930.10	12.51	167.16	2,870.00	-549.51	125.24	563.60	0.00	0.00	0.00
GSAND BASE									
3,000.00	12.51	167.16	2,938.24	-564.27	128.61	578.74	0.00	0.00	0.00
3,100.00	12.51	167.16	3,035.87	-585.38	133.42	600.40	0.00	0.00	0.00
3,200.00	12.51	167.16	3,133.50	-606.50	138.23	622.05	0.00	0.00	0.00
3,300.00	12.51	167.16	3,231.12	-627.61	143.04	643.71	0.00	0.00	0.00
3,400.00	12.51	167.16	3,328.75	-648.73	147.86	665.37	0.00	0.00	0.00
3,500.00	12.51	167.16	3,426.38	-669.84	152.67	687.02	0.00	0.00	0.00
3,600.00	12.51	167.16	3,524.01	-690.96	157.48	708.68	0.00	0.00	0.00
3,700.00	12.51	167.16	3,621.63	-712.07	162.29	730.33	0.00	0.00	0.00
3,800.00	12.51	167.16	3,719.26	-733.19	167.11	751.99	0.00	0.00	0.00
3,900.00	12.51	167.16	3,816.89	-754.30	171.92	773.65	0.00	0.00	0.00
4,000.00	12.51	167.16	3,914.51	-775.42	176.73	795.30	0.00	0.00	0.00
4,100.00	12.51	167.16	4,012.14	-796.53	181.54	816.96	0.00	0.00	0.00
4,200.00	12.51	167.16	4,109.77	-817.65	186.36	838.62	0.00	0.00	0.00
4,300.00	12.51	167.16	4,207.39	-838.76	191.17	860.27	0.00	0.00	0.00
4,400.00	12.51	167.16	4,305.02	-859.88	195.98	881.93	0.00	0.00	0.00

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Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Site:	DOE 1-M-18	North Reference:	True
Well:	RWF 412-17	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7Jun2018mmsdi		

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	12.51	167.16	4,402.65	-880.99	200.79	903.59	0.00	0.00	0.00
4,600.00	12.51	167.16	4,500.27	-902.11	205.61	925.24	0.00	0.00	0.00
4,671.42	12.51	167.16	4,570.00	-917.19	209.04	940.71	0.00	0.00	0.00
WSTC LOWER									
4,700.00	12.51	167.16	4,597.90	-923.22	210.42	946.90	0.00	0.00	0.00
4,800.00	12.51	167.16	4,695.53	-944.34	215.23	968.55	0.00	0.00	0.00
4,900.00	12.51	167.16	4,793.15	-965.45	220.04	990.21	0.00	0.00	0.00
5,000.00	12.51	167.16	4,890.78	-986.57	224.86	1,011.87	0.00	0.00	0.00
5,100.00	12.51	167.16	4,988.41	-1,007.68	229.67	1,033.52	0.00	0.00	0.00
5,200.00	12.51	167.16	5,086.03	-1,028.80	234.48	1,055.18	0.00	0.00	0.00
5,286.01	12.51	167.16	5,170.00	-1,046.96	238.62	1,073.81	0.00	0.00	0.00
OCRK - MVRD									
5,300.00	12.51	167.16	5,183.66	-1,049.91	239.29	1,076.84	0.00	0.00	0.00
5,400.00	12.51	167.16	5,281.29	-1,071.03	244.11	1,098.49	0.00	0.00	0.00
5,500.00	12.51	167.16	5,378.92	-1,092.14	248.92	1,120.15	0.00	0.00	0.00
5,600.00	12.51	167.16	5,476.54	-1,113.26	253.73	1,141.81	0.00	0.00	0.00
5,700.00	12.51	167.16	5,574.17	-1,134.37	258.54	1,163.46	0.00	0.00	0.00
5,749.80	12.51	167.16	5,622.79	-1,144.89	260.94	1,174.25	0.00	0.00	0.00
Start Drop -1.50									
5,800.00	11.75	167.16	5,671.87	-1,155.17	263.28	1,184.80	1.50	-1.50	0.00
5,900.00	10.25	167.16	5,770.02	-1,173.78	267.53	1,203.88	1.50	-1.50	0.00
6,000.00	8.75	167.16	5,868.65	-1,189.88	271.20	1,220.39	1.50	-1.50	0.00
6,100.00	7.25	167.16	5,967.67	-1,203.46	274.29	1,234.32	1.50	-1.50	0.00
6,200.00	5.75	167.16	6,067.03	-1,214.50	276.81	1,245.65	1.50	-1.50	0.00
6,300.00	4.25	167.16	6,166.64	-1,223.01	278.75	1,254.37	1.50	-1.50	0.00
6,400.00	2.75	167.16	6,266.45	-1,228.97	280.10	1,260.48	1.50	-1.50	0.00
6,500.00	1.25	167.16	6,366.39	-1,232.38	280.88	1,263.98	1.50	-1.50	0.00
6,583.62	0.00	0.00	6,450.00	-1,233.27	281.08	1,264.89	1.50	-1.50	-199.91
Start 2478.00 hold at 6583.62 MD - KMGAS - RWF 412-17 KMW									
6,600.00	0.00	0.00	6,466.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
6,700.00	0.00	0.00	6,566.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
6,800.00	0.00	0.00	6,666.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
6,900.00	0.00	0.00	6,766.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,000.00	0.00	0.00	6,866.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,100.00	0.00	0.00	6,966.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,200.00	0.00	0.00	7,066.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,300.00	0.00	0.00	7,166.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,400.00	0.00	0.00	7,266.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,500.00	0.00	0.00	7,366.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,600.00	0.00	0.00	7,466.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,700.00	0.00	0.00	7,566.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,800.00	0.00	0.00	7,666.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,900.00	0.00	0.00	7,766.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
7,991.62	0.00	0.00	7,858.00	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
CME0									
8,000.00	0.00	0.00	7,866.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,100.00	0.00	0.00	7,966.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,200.00	0.00	0.00	8,066.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,300.00	0.00	0.00	8,166.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,400.00	0.00	0.00	8,266.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,500.00	0.00	0.00	8,366.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,600.00	0.00	0.00	8,466.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00
8,700.00	0.00	0.00	8,566.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00

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Project:	Garfield County, CO NAD83	MD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Site:	DOE 1-M-18	North Reference:	True
Well:	RWF 412-17	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7Jun2018mmsdi		

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)	
8,800.00	0.00	0.00	8,666.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,766.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00	
8,911.62	0.00	0.00	8,778.00	-1,233.27	281.08	1,264.89	0.00	0.00	0.00	
RLNS										
9,000.00	0.00	0.00	8,866.38	-1,233.27	281.08	1,264.89	0.00	0.00	0.00	
9,061.62	0.00	0.00	8,928.00	-1,233.27	281.08	1,264.89	0.00	0.00	0.00	
TD at 9061.62 - TD - RWF 412-17 PBHL										

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										
RWF 412-17 KMV	0.00	0.00	6,450.00	-1,233.27	281.08	1,626,135.58	2,317,407.62	39.5275612	-107.9201923	
- plan hits target center										
- Circle (radius 50.00)										
RWF 412-17 PBHL	0.00	0.00	8,928.00	-1,233.27	281.08	1,626,135.58	2,317,407.62	39.5275612	-107.9201923	
- plan hits target center										
- Point										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)					
1,100.00	1,083.33	9 5/8" Casing @ 1100' MD	9.62	13.50					

Formations									
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)				
2,827.67	2,770.00	GSAND		0.00	0.00				
2,930.10	2,870.00	GSAND BASE		0.00	0.00				
4,671.42	4,570.00	WSTC LOWER		0.00	0.00				
5,286.01	5,170.00	OCRK		0.00	0.00				
5,286.01	5,170.00	MVRD		0.00	0.00				
6,583.62	6,450.00	KMVGAS		0.00	0.00				
7,991.62	7,858.00	CMEQ		0.00	0.00				
8,911.62	8,778.00	RLNS		0.00	0.00				
9,061.62	8,928.00	TD		0.00	0.00				

Database:	Grand Junction District	Local Co-ordinate Reference:	Well RWF 412-17 - Slot RWF 412-17 (A5)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6174.5' & RKB 24' @ 6198.50usft
Site:	DOE 1-M-18	North Reference:	True
Well:	RWF 412-17	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 7Jun2018mmsdi		

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
536.91	533.61	-44.19	10.07	Start 5212.89 hold at 536.91 MD
5,749.80	5,622.79	-1,144.89	260.94	Start Drop -1.50
6,583.62	6,450.00	-1,233.27	281.08	Start 2478.00 hold at 6583.62 MD
9,061.62	8,928.00	-1,233.27	281.08	TD at 9061.62