



Well Details: NR 22-3

TVD Reference: GL 6720' & RKB 24' @ 6744.00usft		Grid Level: 6720.00		Slot	
+N/-S	+E/-W	North	East	Latitude	Longitude
0.00	0.00	1634940.60	2329743.27	39.5526203	-107.8772920

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well NR 22-3 - Slot NR 22-3 (B5), True North
 Vertical (TVD) Reference: GL 6720' & RKB 24' @ 6744.00usft
 Section (VS) Reference: Slot - NR 22-3 (B5)(0.00N, 0.00E)
 Measured Depth Reference: GL 6720' & RKB 24' @ 6744.00usft
 Calculation Method: Minimum Curvature

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

Plan: OH

9:56, August 24 2018
 Created By: Mel Mireles Jr.



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	NR 22-3
County & State	Garfield County, CO
SDI Job No.	OP.012254
Rig	H&P 318

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 121 feet to a measured depth of 10,282 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

24-Aug-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 22-3 - Slot NR 22-3 (B5)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 22-3	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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		NR 23-3 Pad			
Site Position:		Northing:	1,634,904.55 usft	Latitude:	39.5525224
From:	Map	Easting:	2,329,757.66 usft	Longitude:	-107.8772377
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.50 °

Well	NR 22-3 - Slot NR 22-3 (B5)					
Well Position	+N/-S	0.00 usft	Northing:	1,634,940.60 usft	Latitude:	39.5526203
	+E/-W	0.00 usft	Easting:	2,329,743.27 usft	Longitude:	-107.8772920
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,720.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/11/2018	9.45	65.80	51,548

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	18.31	

Survey Program	Date	8/24/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	581.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
651.00	1,067.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,178.00	10,282.00	Survey #3 - Production MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	

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	
121.00	0.44	298.30	121.00	0.22	-0.41	0.08	0.36	0.36	0.00	
First SDI Gyro MWD Survey										
213.00	1.94	22.50	212.98	1.83	-0.12	1.70	2.11	1.63	91.52	
304.00	5.89	26.37	303.75	7.44	2.54	7.86	4.35	4.34	4.25	
396.00	9.15	18.90	394.95	18.59	7.01	19.85	3.69	3.54	-8.12	
489.00	11.70	18.19	486.41	34.55	12.35	36.68	2.75	2.74	-0.76	
581.00	15.13	16.70	575.88	54.91	18.71	58.01	3.75	3.73	-1.62	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 22-3 - Slot NR 22-3 (B5)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 22-3	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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)
Last SDI Gyro MWD Survey									
651.00	15.72	14.35	643.36	72.85	23.69	76.60	1.23	0.84	-3.36
First SDI Surface MWD Survey									
745.00	18.18	15.39	733.27	99.33	30.74	103.96	2.64	2.62	1.11
840.00	19.20	13.77	823.26	128.79	38.39	134.33	1.20	1.07	-1.71
934.00	17.30	15.98	912.53	157.24	45.91	163.71	2.15	-2.02	2.35
1,029.00	16.77	21.54	1,003.37	183.57	54.84	191.51	1.80	-0.56	5.85
1,067.00	16.80	21.49	1,039.75	193.78	58.86	202.46	0.09	0.08	-0.13
Last SDI Surface MWD Survey									
1,178.00	16.52	20.22	1,146.09	223.52	70.19	234.25	0.41	-0.25	-1.14
First SDI Production MWD Survey									
1,273.00	16.41	21.05	1,237.19	248.72	79.68	261.16	0.27	-0.12	0.87
1,367.00	14.96	19.32	1,327.69	272.56	88.46	286.55	1.62	-1.54	-1.84
1,462.00	16.78	19.81	1,419.07	297.03	97.17	312.52	1.92	1.92	0.52
1,557.00	15.79	18.83	1,510.25	322.17	105.99	339.15	1.08	-1.04	-1.03
1,651.00	18.59	20.68	1,600.05	348.30	115.41	366.92	3.03	2.98	1.97
1,745.00	18.62	19.95	1,689.13	376.42	125.82	396.89	0.25	0.03	-0.78
1,840.00	18.08	18.65	1,779.30	404.64	135.71	426.79	0.71	-0.57	-1.37
1,935.00	16.75	15.02	1,869.95	431.84	143.97	455.20	1.81	-1.40	-3.82
2,029.00	18.51	17.40	1,959.53	459.16	151.95	483.65	2.02	1.87	2.53
2,123.00	18.11	17.76	2,048.77	487.31	160.86	513.18	0.44	-0.43	0.38
2,218.00	17.26	15.31	2,139.28	514.97	169.09	542.01	1.19	-0.89	-2.58
2,312.00	18.82	16.92	2,228.66	542.92	177.18	571.10	1.74	1.66	1.71
2,407.00	19.21	15.71	2,318.48	572.63	185.88	602.03	0.58	0.41	-1.27
2,501.00	18.51	13.29	2,407.43	602.04	193.49	632.35	1.12	-0.74	-2.57
2,596.00	18.03	15.69	2,497.64	630.87	200.94	662.05	0.94	-0.51	2.53
2,690.00	18.64	18.94	2,586.87	659.08	209.75	691.61	1.27	0.65	3.46
2,785.00	18.64	17.27	2,676.89	687.94	219.18	721.97	0.56	0.00	-1.76
2,880.00	18.55	15.16	2,766.93	717.03	227.64	752.24	0.71	-0.09	-2.22
2,974.00	18.71	15.52	2,856.01	745.98	235.58	782.23	0.21	0.17	0.38
3,069.00	19.26	17.45	2,945.84	775.61	244.36	813.11	0.88	0.58	2.03
3,163.00	19.09	15.33	3,034.63	805.23	253.07	843.96	0.76	-0.18	-2.26
3,258.00	19.26	20.50	3,124.36	834.89	262.67	875.14	1.80	0.18	5.44
3,352.00	19.14	19.22	3,213.13	863.96	273.17	906.04	0.47	-0.13	-1.36
3,447.00	18.82	18.12	3,302.97	893.23	283.06	936.93	0.51	-0.34	-1.16
3,542.00	18.69	16.76	3,392.93	922.37	292.22	967.47	0.48	-0.14	-1.43
3,636.00	19.36	22.29	3,481.80	951.21	302.47	998.07	2.05	0.71	5.88
3,731.00	18.04	22.51	3,571.78	979.37	314.08	1,028.45	1.39	-1.39	0.23
3,825.00	16.96	22.34	3,661.43	1,005.50	324.86	1,056.65	1.15	-1.15	-0.18
3,920.00	16.09	22.81	3,752.50	1,030.45	335.23	1,083.59	0.93	-0.92	0.49
4,015.00	15.39	21.87	3,843.94	1,054.28	345.03	1,109.30	0.78	-0.74	-0.99
4,109.00	14.95	20.70	3,934.67	1,077.20	353.96	1,133.86	0.57	-0.47	-1.24
4,204.00	14.43	19.69	4,026.56	1,099.81	362.28	1,157.94	0.61	-0.55	-1.06
4,298.00	15.30	18.15	4,117.41	1,122.62	370.09	1,182.05	1.02	0.93	-1.64

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 22-3 - Slot NR 22-3 (B5)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 22-3	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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)	
4,393.00	16.50	19.56	4,208.78	1,147.25	378.51	1,208.07	1.33	1.26	1.48	
4,487.00	16.06	18.03	4,299.01	1,172.19	387.01	1,234.42	0.65	-0.47	-1.63	
4,582.00	15.30	15.34	4,390.47	1,196.77	394.39	1,260.08	1.11	-0.80	-2.83	
4,676.00	16.09	17.89	4,480.97	1,221.13	401.67	1,285.49	1.12	0.84	2.71	
4,771.00	15.56	17.54	4,572.37	1,245.81	409.56	1,311.40	0.57	-0.56	-0.37	
4,865.00	14.94	16.50	4,663.06	1,269.45	416.80	1,336.11	0.72	-0.66	-1.11	
4,960.00	16.68	18.54	4,754.46	1,294.12	424.61	1,361.99	1.92	1.83	2.15	
5,054.00	15.75	19.25	4,844.72	1,318.95	433.11	1,388.24	1.01	-0.99	0.76	
5,149.00	15.13	18.13	4,936.29	1,342.91	441.22	1,413.53	0.72	-0.65	-1.18	
5,243.00	16.88	19.73	5,026.65	1,367.41	449.64	1,439.44	1.92	1.86	1.70	
5,338.00	16.21	20.37	5,117.71	1,392.83	458.91	1,466.48	0.73	-0.71	0.67	
5,432.00	15.71	19.14	5,208.09	1,417.15	467.65	1,492.32	0.64	-0.53	-1.31	
5,526.00	14.77	19.00	5,298.78	1,440.50	475.73	1,517.02	1.00	-1.00	-0.15	
5,621.00	16.88	19.73	5,390.18	1,464.94	484.33	1,542.92	2.23	2.22	0.77	
5,715.00	16.00	18.59	5,480.33	1,490.06	493.06	1,569.52	1.00	-0.94	-1.21	
5,810.00	15.03	18.20	5,571.87	1,514.17	501.09	1,594.93	1.03	-1.02	-0.41	
5,904.00	17.32	21.97	5,662.15	1,538.73	510.13	1,621.09	2.68	2.44	4.01	
5,999.00	16.36	21.32	5,753.07	1,564.31	520.28	1,648.56	1.03	-1.01	-0.68	
6,093.00	15.12	21.49	5,843.54	1,588.05	529.59	1,674.02	1.32	-1.32	0.18	
6,188.00	16.71	27.64	5,934.91	1,611.68	540.46	1,699.88	2.44	1.67	6.47	
6,282.00	15.90	28.52	6,025.13	1,634.97	552.88	1,725.88	0.90	-0.86	0.94	
6,377.00	14.51	29.66	6,116.80	1,656.75	564.99	1,750.36	1.50	-1.46	1.20	
6,472.00	15.26	25.82	6,208.61	1,678.34	576.32	1,774.42	1.30	0.79	-4.04	
6,566.00	16.27	20.44	6,299.08	1,701.82	586.31	1,799.85	1.89	1.07	-5.72	
6,661.00	15.61	19.81	6,390.43	1,726.31	595.29	1,825.93	0.72	-0.69	-0.66	
6,756.00	14.81	20.91	6,482.10	1,749.68	603.95	1,850.83	0.90	-0.84	1.16	
6,851.00	13.37	22.81	6,574.24	1,771.15	612.54	1,873.91	1.59	-1.52	2.00	
6,945.00	12.84	22.90	6,665.79	1,790.79	620.82	1,895.16	0.56	-0.56	0.10	
7,040.00	10.99	24.13	6,758.74	1,808.78	628.63	1,914.69	1.97	-1.95	1.29	
7,135.00	8.70	24.61	6,852.33	1,823.58	635.33	1,930.84	2.41	-2.41	0.51	
7,229.00	6.07	26.32	6,945.55	1,834.50	640.49	1,942.83	2.81	-2.80	1.82	
7,324.00	4.09	27.70	7,040.17	1,842.00	644.29	1,951.15	2.09	-2.08	1.45	
7,419.00	1.85	1.80	7,135.04	1,846.53	645.92	1,955.96	2.69	-2.36	-27.26	
7,513.00	0.88	284.64	7,229.02	1,848.23	645.27	1,957.37	1.98	-1.03	-82.09	
7,608.00	0.97	268.55	7,324.00	1,848.40	643.76	1,957.05	0.29	0.09	-16.94	
7,702.00	1.06	240.07	7,417.99	1,847.94	642.21	1,956.14	0.54	0.10	-30.30	
7,713.76	1.08	239.12	7,429.75	1,847.83	642.02	1,955.97	0.25	0.20	-8.03	
NR 22-3 BTV										
7,797.00	1.26	233.49	7,512.97	1,846.88	640.61	1,954.63	0.25	0.21	-6.77	
7,891.00	1.19	240.88	7,606.95	1,845.79	638.92	1,953.06	0.18	-0.07	7.86	
7,986.00	1.69	234.93	7,701.92	1,844.51	636.91	1,951.21	0.55	0.53	-6.26	
8,080.00	0.77	209.89	7,795.90	1,843.16	635.47	1,949.48	1.11	-0.98	-26.64	
8,175.00	1.38	192.00	7,890.88	1,841.49	634.91	1,947.72	0.73	0.64	-18.83	
8,269.00	0.70	213.97	7,984.86	1,839.91	634.35	1,946.04	0.83	-0.72	23.37	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 22-3 - Slot NR 22-3 (B5)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 22-3	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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)
8,363.00	0.90	245.48	8,078.85	1,839.12	633.36	1,944.99	0.51	0.21	33.52
8,458.00	0.44	323.47	8,173.85	1,839.11	632.46	1,944.69	0.96	-0.48	82.09
8,552.00	0.79	354.24	8,267.84	1,840.04	632.18	1,945.49	0.50	0.37	32.73
8,647.00	0.53	295.45	8,362.84	1,840.88	631.72	1,946.14	0.72	-0.27	-61.88
8,741.00	0.29	227.28	8,456.84	1,840.91	631.16	1,945.99	0.53	-0.26	-72.52
8,836.00	0.71	196.35	8,551.83	1,840.18	630.81	1,945.19	0.51	0.44	-32.56
8,930.00	0.96	196.58	8,645.82	1,838.87	630.42	1,943.82	0.27	0.27	0.24
9,025.00	1.09	201.43	8,740.81	1,837.26	629.87	1,942.12	0.16	0.14	5.11
9,119.00	1.27	198.59	8,834.79	1,835.44	629.21	1,940.19	0.20	0.19	-3.02
9,213.00	1.67	205.53	8,928.76	1,833.22	628.29	1,937.79	0.47	0.43	7.38
9,307.00	0.79	229.53	9,022.73	1,831.56	627.20	1,935.87	1.07	-0.94	25.53
9,402.00	1.00	223.10	9,117.72	1,830.53	626.14	1,934.56	0.24	0.22	-6.77
9,496.00	1.20	213.74	9,211.71	1,829.12	625.03	1,932.87	0.29	0.21	-9.96
9,591.00	1.61	210.55	9,306.68	1,827.14	623.80	1,930.60	0.44	0.43	-3.36
9,685.00	2.29	210.10	9,400.62	1,824.38	622.19	1,927.48	0.72	0.72	-0.48
9,779.00	2.73	219.93	9,494.53	1,821.04	619.81	1,923.56	0.65	0.47	10.46
9,873.00	2.32	215.56	9,588.44	1,817.77	617.26	1,919.66	0.48	-0.44	-4.65
9,968.00	2.81	216.26	9,683.35	1,814.33	614.77	1,915.61	0.52	0.52	0.74
10,062.00	2.90	208.89	9,777.23	1,810.39	612.26	1,911.08	0.40	0.10	-7.84
10,157.00	2.20	215.11	9,872.13	1,806.79	610.05	1,906.97	0.79	-0.74	6.55
10,222.00	2.46	211.86	9,937.08	1,804.59	608.59	1,904.42	0.45	0.40	-5.00
Last SDI Production MWD Survey									
10,282.00	2.46	211.86	9,997.03	1,802.40	607.23	1,901.91	0.00	0.00	0.00
Projection to TD - NR 22-3 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	121.00	0.22	-0.41	First SDI Gyro MWD Survey
581.00	575.88	54.91	18.71	Last SDI Gyro MWD Survey
651.00	643.36	72.85	23.69	First SDI Surface MWD Survey
1,067.00	1,039.75	193.78	58.86	Last SDI Surface MWD Survey
1,178.00	1,146.09	223.52	70.19	First SDI Production MWD Survey
10,222.00	9,937.08	1,804.59	608.59	Last SDI Production MWD Survey
10,282.00	9,997.03	1,802.40	607.23	Projection to TD

Checked By: _____ Approved By: _____ Date: _____