

Well Details: NR 314-3

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	1634874.48	2329780.06	39.5524414	-107.8771554	NR 314-3 (A15)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well NR 314-3 - Slot NR 314-3 (A15), True North
 Vertical (TVD) Reference: GL 6720' & RKB 24' @ 6744.00usft
 Section (VS) Reference: Slot - NR 314-3 (A15)(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

15:49, December 27 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 314-3
County & State	Garfield County, CO
SDI Job No.	OP.015028
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 10,170 feet is true and correct as determined from all available records.


Signature

27-Dec-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 314-3 - Slot NR 314-3 (A15)
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 314-3	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 314-3 - Slot NR 314-3 (A15)					
Well Position	+N/-S	0.00 usft	Northing:	1,634,874.48 usft	Latitude:	39.5524415
	+E/-W	0.00 usft	Easting:	2,329,780.06 usft	Longitude:	-107.8771555
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	12/6/2018	9.42	65.78	51,511

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	231.62	

Survey Program	Date	12/27/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	489.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
560.00	1,055.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,179.00	10,170.00	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	0.70	238.36	121.00	-0.39	-0.63	0.73	0.58	0.58	0.00	
First SDI Gyro MWD Survey										
213.00	3.43	222.36	212.93	-2.72	-2.96	4.01	3.00	2.97	-17.39	
305.00	6.60	227.90	304.57	-8.30	-8.74	12.00	3.48	3.45	6.02	
398.00	9.94	229.83	396.59	-17.06	-18.84	25.36	3.60	3.59	2.08	
489.00	12.76	232.56	485.80	-28.24	-32.83	43.27	3.15	3.10	3.00	
Last SDI Gyro MWD Survey										

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 314-3 - Slot NR 314-3 (A15)
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 314-3	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)	
560.00	14.92	231.77	554.73	-38.66	-46.23	60.25	3.05	3.04	-1.11	
First SDI Surface MWD Survey										
652.00	17.18	232.10	643.14	-54.34	-66.26	85.68	2.46	2.46	0.36	
746.00	19.79	233.19	732.28	-72.40	-89.96	115.48	2.80	2.78	1.16	
840.00	18.48	231.69	821.09	-91.18	-114.39	146.28	1.49	-1.39	-1.60	
935.00	16.19	231.87	911.77	-108.69	-136.63	174.59	2.41	-2.41	0.19	
1,029.00	17.15	231.61	1,001.82	-125.39	-157.80	201.55	1.02	1.02	-0.28	
1,055.00	17.76	231.61	1,026.62	-130.23	-163.91	209.35	2.35	2.35	0.00	
Last SDI Surface MWD Survey										
1,179.00	17.85	227.91	1,144.68	-154.71	-192.84	247.23	0.92	0.07	-2.98	
First SDI Production MWD Survey										
1,274.00	17.46	228.53	1,235.21	-173.91	-214.32	275.99	0.46	-0.41	0.65	
1,368.00	16.71	226.25	1,325.06	-192.60	-234.65	303.52	1.07	-0.80	-2.43	
1,462.00	17.22	231.53	1,414.98	-210.60	-255.31	330.89	1.73	0.54	5.62	
1,557.00	16.42	230.19	1,505.91	-227.94	-276.63	358.38	0.94	-0.84	-1.41	
1,651.00	17.43	232.99	1,595.84	-244.92	-298.08	385.74	1.38	1.07	2.98	
1,746.00	17.25	230.22	1,686.52	-262.50	-320.27	414.04	0.89	-0.19	-2.92	
1,840.00	16.24	227.93	1,776.54	-280.23	-340.74	441.09	1.28	-1.07	-2.44	
1,935.00	16.80	230.38	1,867.62	-297.88	-361.17	468.08	0.94	0.59	2.58	
2,029.00	18.11	233.98	1,957.29	-315.14	-383.46	496.26	1.81	1.39	3.83	
2,124.00	17.67	231.96	2,047.70	-332.71	-406.75	525.43	0.80	-0.46	-2.13	
2,218.00	17.59	230.11	2,137.28	-350.61	-428.89	553.89	0.60	-0.09	-1.97	
2,313.00	17.33	227.86	2,227.91	-369.31	-450.39	582.36	0.76	-0.27	-2.37	
2,407.00	18.29	231.52	2,317.40	-387.88	-472.32	611.08	1.57	1.02	3.89	
2,502.00	17.76	230.07	2,407.74	-406.45	-495.10	640.47	0.73	-0.56	-1.53	
2,596.00	18.55	235.56	2,497.07	-424.11	-518.43	669.72	2.00	0.84	5.84	
2,691.00	18.47	233.01	2,587.15	-441.71	-542.91	699.84	0.86	-0.08	-2.68	
2,785.00	18.20	230.80	2,676.38	-459.95	-566.18	729.41	0.79	-0.29	-2.35	
2,880.00	18.72	235.84	2,766.50	-477.89	-590.30	759.45	1.77	0.55	5.31	
2,974.00	18.79	233.94	2,855.51	-495.27	-615.02	789.62	0.65	0.07	-2.02	
3,069.00	18.41	232.10	2,945.55	-513.49	-639.22	819.91	0.74	-0.40	-1.94	
3,162.00	17.85	230.73	3,033.93	-531.54	-661.85	848.84	0.76	-0.60	-1.47	
3,257.00	17.67	236.79	3,124.41	-548.65	-685.18	877.76	1.95	-0.19	6.38	
3,351.00	17.41	236.29	3,214.04	-564.27	-708.82	905.99	0.32	-0.28	-0.53	
3,445.00	16.82	235.22	3,303.88	-579.83	-731.69	933.58	0.71	-0.63	-1.14	
3,540.00	16.34	233.23	3,394.93	-595.67	-753.68	960.65	0.78	-0.51	-2.09	
3,635.00	15.16	230.78	3,486.36	-611.53	-774.01	986.43	1.43	-1.24	-2.58	
3,729.00	16.53	233.37	3,576.79	-627.28	-794.26	1,012.09	1.64	1.46	2.76	
3,824.00	15.92	233.45	3,668.00	-643.10	-815.58	1,038.62	0.64	-0.64	0.08	
3,918.00	17.59	232.57	3,758.01	-659.41	-837.21	1,065.71	1.80	1.78	-0.94	
4,013.00	16.96	232.40	3,848.73	-676.59	-859.59	1,093.92	0.67	-0.66	-0.18	
4,107.00	16.09	231.36	3,938.84	-693.09	-880.63	1,120.65	0.98	-0.93	-1.11	
4,202.00	17.92	232.02	4,029.68	-710.31	-902.43	1,148.44	1.94	1.93	0.69	
4,296.00	17.04	231.09	4,119.34	-727.86	-924.55	1,176.67	0.98	-0.94	-0.99	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 314-3 - Slot NR 314-3 (A15)
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 314-3	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)
4,395.00	15.65	229.94	4,214.34	-745.56	-946.06	1,204.52	1.44	-1.40	-1.16
4,492.00	17.15	230.11	4,307.39	-763.15	-967.04	1,231.90	1.55	1.55	0.18
4,586.00	16.44	230.90	4,397.38	-780.43	-988.00	1,259.05	0.79	-0.76	0.84
4,680.00	17.66	231.14	4,487.25	-797.77	-1,009.43	1,286.61	1.30	1.30	0.26
4,775.00	16.71	229.59	4,578.01	-815.66	-1,031.05	1,314.67	1.11	-1.00	-1.63
4,869.00	15.56	227.39	4,668.30	-832.96	-1,050.62	1,340.75	1.39	-1.22	-2.34
4,963.00	16.28	230.30	4,758.70	-849.91	-1,070.03	1,366.50	1.14	0.77	3.10
5,057.00	16.80	233.10	4,848.81	-866.48	-1,091.04	1,393.25	1.01	0.55	2.98
5,153.00	18.13	234.44	4,940.38	-883.50	-1,114.28	1,422.04	1.45	1.39	1.40
5,247.00	17.44	234.79	5,029.89	-900.13	-1,137.69	1,450.71	0.74	-0.73	0.37
5,342.00	16.36	232.40	5,120.79	-916.50	-1,159.92	1,478.31	1.35	-1.14	-2.52
5,436.00	16.53	233.98	5,210.94	-932.44	-1,181.23	1,504.90	0.51	0.18	1.68
5,531.00	18.66	236.68	5,301.49	-948.74	-1,204.86	1,533.55	2.40	2.24	2.84
5,626.00	18.38	236.00	5,391.57	-965.46	-1,229.98	1,563.62	0.37	-0.29	-0.72
5,720.00	17.44	236.23	5,481.02	-981.58	-1,253.97	1,592.44	1.00	-1.00	0.24
5,815.00	16.07	236.61	5,571.98	-996.73	-1,276.79	1,619.73	1.45	-1.44	0.40
5,907.00	17.15	237.50	5,660.14	-1,011.03	-1,298.86	1,645.91	1.21	1.17	0.97
6,002.00	16.09	237.50	5,751.17	-1,025.63	-1,321.77	1,672.94	1.12	-1.12	0.00
6,096.00	15.14	236.19	5,841.70	-1,039.46	-1,342.96	1,698.13	1.08	-1.01	-1.39
6,190.00	14.04	233.81	5,932.67	-1,053.02	-1,362.36	1,721.76	1.33	-1.17	-2.53
6,285.00	14.42	233.01	6,024.76	-1,066.94	-1,381.11	1,745.10	0.45	0.40	-0.84
6,378.00	13.87	230.51	6,114.94	-1,081.00	-1,398.96	1,767.83	0.88	-0.59	-2.69
6,474.00	13.45	231.46	6,208.22	-1,095.27	-1,416.58	1,790.49	0.50	-0.44	0.99
6,568.00	11.68	233.96	6,299.97	-1,107.68	-1,432.82	1,810.94	1.97	-1.88	2.66
6,662.00	11.08	235.83	6,392.12	-1,118.35	-1,447.99	1,829.45	0.75	-0.64	1.99
6,757.00	9.58	231.96	6,485.58	-1,128.35	-1,461.77	1,846.46	1.74	-1.58	-4.07
6,851.00	8.18	226.60	6,578.45	-1,137.77	-1,472.79	1,860.95	1.73	-1.49	-5.70
6,946.00	7.31	224.81	6,672.58	-1,146.70	-1,481.96	1,873.68	0.95	-0.92	-1.88
7,041.00	7.03	223.08	6,766.84	-1,155.23	-1,490.19	1,885.43	0.37	-0.29	-1.82
7,136.00	5.80	221.32	6,861.24	-1,163.08	-1,497.33	1,895.90	1.31	-1.29	-1.85
7,230.00	5.45	220.36	6,954.79	-1,170.05	-1,503.36	1,904.95	0.39	-0.37	-1.02
7,325.00	4.75	211.22	7,049.41	-1,176.85	-1,508.32	1,913.06	1.13	-0.74	-9.62
7,419.00	3.34	216.53	7,143.18	-1,182.38	-1,511.96	1,919.36	1.55	-1.50	5.65
7,514.00	2.02	227.21	7,238.07	-1,185.75	-1,514.84	1,923.70	1.48	-1.39	11.24
7,590.58	1.22	278.52	7,314.62	-1,186.54	-1,516.64	1,925.60	2.06	-1.05	67.00
NR 314-3 BTV									
7,608.00	1.26	295.06	7,332.04	-1,186.43	-1,516.99	1,925.81	2.06	0.24	94.94
7,703.00	1.14	323.28	7,427.02	-1,185.23	-1,518.50	1,926.25	0.63	-0.13	29.71
7,797.00	0.98	283.21	7,521.01	-1,184.30	-1,519.85	1,926.72	0.79	-0.17	-42.63
7,891.00	1.06	2.21	7,615.00	-1,183.25	-1,520.60	1,926.66	1.38	0.09	84.04
7,985.00	1.23	12.50	7,708.98	-1,181.39	-1,520.34	1,925.31	0.28	0.18	10.95
8,080.00	0.74	18.82	7,803.96	-1,179.82	-1,519.92	1,924.00	0.53	-0.52	6.65
8,174.00	0.44	56.09	7,897.96	-1,179.04	-1,519.43	1,923.13	0.50	-0.32	39.65
8,269.00	0.20	112.52	7,992.96	-1,178.90	-1,518.97	1,922.69	0.39	-0.25	59.40

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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	0.70	40.01	8,086.95	-1,178.52	-1,518.45	1,922.05	0.71	0.53	-77.14
8,457.00	0.44	66.11	8,180.95	-1,177.94	-1,517.75	1,921.13	0.38	-0.28	27.77
8,552.00	0.60	197.03	8,275.95	-1,178.27	-1,517.57	1,921.19	1.00	0.17	137.81
8,646.00	1.41	216.58	8,369.93	-1,179.67	-1,518.40	1,922.71	0.92	0.86	20.80
8,741.00	1.04	246.86	8,464.91	-1,180.94	-1,519.89	1,924.67	0.77	-0.39	31.87
8,836.00	1.80	334.12	8,559.89	-1,179.94	-1,521.33	1,925.18	2.14	0.80	91.85
8,927.00	1.62	332.64	8,650.85	-1,177.51	-1,522.55	1,924.63	0.20	-0.20	-1.63
9,023.00	1.31	324.86	8,746.82	-1,175.41	-1,523.80	1,924.31	0.38	-0.32	-8.10
9,117.00	1.28	305.28	8,840.79	-1,173.92	-1,525.28	1,924.54	0.47	-0.03	-20.83
9,211.00	1.85	256.66	8,934.76	-1,173.67	-1,527.61	1,926.21	1.48	0.61	-51.72
9,306.00	1.52	231.31	9,029.72	-1,174.81	-1,530.09	1,928.86	0.85	-0.35	-26.68
9,401.00	2.00	214.57	9,124.68	-1,176.96	-1,532.01	1,931.70	0.74	0.51	-17.62
9,495.00	2.11	213.45	9,218.62	-1,179.76	-1,533.90	1,934.92	0.12	0.12	-1.19
9,590.00	2.55	215.52	9,313.54	-1,182.93	-1,536.09	1,938.61	0.47	0.46	2.18
9,684.00	2.73	217.28	9,407.44	-1,186.42	-1,538.66	1,942.79	0.21	0.19	1.87
9,779.00	3.00	217.04	9,502.32	-1,190.20	-1,541.53	1,947.38	0.28	0.28	-0.25
9,873.00	3.52	217.54	9,596.17	-1,194.45	-1,544.77	1,952.56	0.55	0.55	0.53
9,968.00	3.54	222.30	9,690.99	-1,198.94	-1,548.52	1,958.29	0.31	0.02	5.01
10,063.00	3.78	224.58	9,785.79	-1,203.34	-1,552.69	1,964.29	0.30	0.25	2.40
10,112.00	3.78	223.52	9,834.69	-1,205.66	-1,554.94	1,967.49	0.14	0.00	-2.16
Last SDI Production MWD Survey									
10,170.00	3.78	223.52	9,892.56	-1,208.43	-1,557.57	1,971.28	0.00	0.00	0.00
Projection to TD - NR 314-3 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	121.00	-0.39	-0.63	First SDI Gyro MWD Survey
489.00	485.80	-28.24	-32.83	Last SDI Gyro MWD Survey
560.00	554.73	-38.66	-46.23	First SDI Surface MWD Survey
1,055.00	1,026.62	-130.23	-163.91	Last SDI Surface MWD Survey
1,179.00	1,144.68	-154.71	-192.84	First SDI Production MWD Survey
10,112.00	9,834.69	-1,205.66	-1,554.94	Last SDI Production MWD Survey
10,170.00	9,892.56	-1,208.43	-1,557.57	Projection to TD

Checked By: _____ Approved By: _____ Date: _____