



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.	SR 334-12
County & State	Garfield County, CO
SDI Job No.	OP.006665
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 127 feet to a measured depth of 9,735 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

8-Jan-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 334-12 - Slot SR 334-12 (B7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 334-12	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		SR 23-12 Pad			
Site Position:		Northing:	1,597,713.40 usft	Latitude:	39.4511965
From:	Map	Easting:	2,340,229.70 usft	Longitude:	-107.8367194
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well		SR 334-12 - Slot SR 334-12 (B7)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,675.10 usft	Latitude:	39.4510932
	+E/-W	0.00 usft	Easting:	2,340,255.30 usft	Longitude:	-107.8366253
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,478.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/16/2017	9.23	65.62	51,636

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	136.07	

Survey Program	Date	1/8/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
127.00	675.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
755.00	1,083.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,182.00	9,735.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	
127.00	0.70	111.97	127.00	-0.29	0.72	0.71	0.55	0.55	0.00	
First SDI Gyro MWD Survey										
214.00	3.96	135.09	213.91	-2.62	3.33	4.20	3.82	3.75	26.57	
307.00	6.86	141.50	306.49	-9.24	9.06	12.94	3.18	3.12	6.89	
399.00	9.85	138.78	397.50	-19.46	17.67	26.27	3.28	3.25	-2.96	
492.00	12.76	136.49	488.69	-32.90	29.98	44.49	3.17	3.13	-2.46	
584.00	15.13	133.68	577.97	-48.56	45.66	66.65	2.68	2.58	-3.05	
675.00	16.01	129.02	665.64	-64.66	64.00	90.97	1.68	0.97	-5.12	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 334-12 - Slot SR 334-12 (B7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 334-12	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									
755.00	16.24	135.24	742.50	-79.55	80.45	113.11	2.18	0.29	7.78
First SDI Surface MWD Survey									
849.00	16.82	135.27	832.61	-98.55	99.28	139.85	0.62	0.62	0.03
943.00	17.35	135.19	922.46	-118.15	118.73	167.46	0.56	0.56	-0.09
1,038.00	17.41	135.41	1,013.12	-138.32	138.69	195.84	0.09	0.06	0.23
1,083.00	17.67	134.29	1,056.03	-147.89	148.30	209.40	0.95	0.58	-2.49
Last SDI Surface MWD Survey									
1,182.00	17.73	133.43	1,150.35	-168.74	170.01	239.47	0.27	0.06	-0.87
First SDI Production MWD Survey									
1,276.00	16.94	132.21	1,240.08	-187.78	190.54	267.43	0.93	-0.84	-1.30
1,371.00	16.32	132.50	1,331.10	-206.10	210.64	294.56	0.66	-0.65	0.31
1,465.00	16.28	130.01	1,421.32	-223.49	230.47	320.85	0.74	-0.04	-2.65
1,559.00	16.44	138.95	1,511.53	-242.00	249.30	347.24	2.68	0.17	9.51
1,654.00	15.65	138.07	1,602.83	-261.67	266.69	373.47	0.87	-0.83	-0.93
1,749.00	17.74	142.69	1,693.83	-282.72	284.02	400.66	2.60	2.20	4.86
1,843.00	17.47	142.80	1,783.42	-305.35	301.23	428.90	0.29	-0.29	0.12
1,938.00	17.16	141.42	1,874.12	-327.66	318.60	457.01	0.54	-0.33	-1.45
2,032.00	16.14	139.82	1,964.18	-348.48	335.67	483.86	1.19	-1.09	-1.70
2,126.00	17.21	142.24	2,054.22	-369.46	352.62	510.72	1.36	1.14	2.57
2,221.00	17.07	141.97	2,145.00	-391.55	369.82	538.56	0.17	-0.15	-0.28
2,315.00	16.52	141.13	2,234.99	-412.83	386.70	565.60	0.64	-0.59	-0.89
2,409.00	18.68	139.93	2,324.59	-434.75	404.78	593.93	2.33	2.30	-1.28
2,504.00	18.02	140.67	2,414.76	-457.76	423.89	623.76	0.74	-0.69	0.78
2,598.00	17.14	140.28	2,504.37	-479.66	441.95	652.07	0.94	-0.94	-0.41
2,693.00	15.74	137.65	2,595.48	-499.95	459.58	678.91	1.67	-1.47	-2.77
2,787.00	16.19	138.59	2,685.86	-519.21	476.84	704.75	0.55	0.48	1.00
2,882.00	17.86	138.24	2,776.69	-540.01	495.30	732.54	1.76	1.76	-0.37
2,976.00	17.33	138.68	2,866.29	-561.27	514.15	760.93	0.58	-0.56	0.47
3,071.00	16.45	137.26	2,957.19	-581.78	532.62	788.51	1.02	-0.93	-1.49
3,165.00	17.73	138.25	3,047.04	-602.23	551.18	816.12	1.40	1.36	1.05
3,259.00	17.12	136.62	3,136.73	-622.97	570.22	844.26	0.83	-0.65	-1.73
3,354.00	16.03	137.63	3,227.78	-642.82	588.66	871.35	1.19	-1.15	1.06
3,448.00	17.59	136.13	3,317.76	-662.65	607.25	898.53	1.72	1.66	-1.60
3,543.00	16.84	135.24	3,408.50	-682.77	626.89	926.65	0.84	-0.79	-0.94
3,637.00	17.41	134.02	3,498.34	-702.21	646.59	954.32	0.72	0.61	-1.30
3,732.00	16.94	133.17	3,589.10	-721.56	666.90	982.34	0.56	-0.49	-0.89
3,826.00	18.80	136.35	3,678.56	-741.89	687.35	1,011.17	2.23	1.98	3.38
3,921.00	18.34	136.63	3,768.62	-763.83	708.18	1,041.42	0.49	-0.48	0.29
4,015.00	18.16	135.47	3,857.89	-785.02	728.61	1,070.86	0.43	-0.19	-1.23
4,109.00	17.10	134.22	3,947.47	-805.11	748.78	1,099.32	1.20	-1.13	-1.33
4,204.00	16.62	134.23	4,038.39	-824.32	768.53	1,126.86	0.51	-0.51	0.01
4,298.00	18.29	139.74	4,128.06	-844.96	787.70	1,155.02	2.50	1.78	5.86
4,393.00	18.44	139.73	4,218.23	-867.80	807.04	1,184.89	0.16	0.16	-0.01

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 334-12 - Slot SR 334-12 (B7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 334-12	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)
4,487.00	17.69	139.72	4,307.59	-890.04	825.89	1,213.98	0.80	-0.80	-0.01
4,582.00	16.59	139.21	4,398.37	-911.32	844.08	1,241.93	1.17	-1.16	-0.54
4,676.00	15.38	139.45	4,488.73	-930.95	860.95	1,267.77	1.29	-1.29	0.26
4,771.00	14.38	137.92	4,580.55	-949.28	877.05	1,292.14	1.13	-1.05	-1.61
4,865.00	13.70	135.52	4,671.74	-965.89	892.67	1,314.93	0.95	-0.72	-2.55
4,959.00	13.22	135.05	4,763.16	-981.43	908.06	1,336.81	0.52	-0.51	-0.50
5,054.00	12.57	133.85	4,855.76	-996.28	923.19	1,358.00	0.74	-0.68	-1.26
5,149.00	12.39	135.72	4,948.52	-1,010.74	937.76	1,378.52	0.47	-0.19	1.97
5,243.00	10.55	141.41	5,040.64	-1,024.69	950.17	1,397.18	2.30	-1.96	6.05
5,338.00	9.76	137.28	5,134.15	-1,037.40	961.06	1,413.89	1.13	-0.83	-4.35
5,434.00	9.38	135.85	5,228.82	-1,049.00	972.03	1,429.85	0.47	-0.40	-1.49
5,529.00	7.34	138.20	5,322.80	-1,059.08	981.47	1,443.66	2.18	-2.15	2.47
5,624.00	6.60	141.14	5,417.10	-1,067.85	988.94	1,455.16	0.86	-0.78	3.09
5,719.00	6.07	139.39	5,511.52	-1,075.91	995.63	1,465.61	0.59	-0.56	-1.84
5,813.00	5.80	139.47	5,605.01	-1,083.30	1,001.95	1,475.31	0.29	-0.29	0.09
5,907.00	5.63	136.39	5,698.55	-1,090.25	1,008.22	1,484.67	0.37	-0.18	-3.28
6,002.00	4.92	135.69	5,793.14	-1,096.54	1,014.28	1,493.40	0.75	-0.75	-0.74
6,063.97	4.51	135.61	5,854.90	-1,100.18	1,017.84	1,498.49	0.66	-0.66	-0.12
SR 334-12 BTV									
6,096.00	4.30	135.57	5,886.84	-1,101.94	1,019.56	1,500.95	0.66	-0.66	-0.14
6,190.00	2.48	132.92	5,980.67	-1,105.84	1,023.52	1,506.51	1.94	-1.94	-2.82
6,285.00	1.71	126.31	6,075.61	-1,108.08	1,026.17	1,509.96	0.85	-0.81	-6.96
6,379.00	1.32	112.40	6,169.58	-1,109.32	1,028.30	1,512.33	0.57	-0.41	-14.80
6,473.00	1.63	110.98	6,263.54	-1,110.21	1,030.55	1,514.53	0.33	0.33	-1.51
6,568.00	0.57	171.12	6,358.53	-1,111.16	1,031.88	1,516.15	1.51	-1.12	63.31
6,662.00	0.47	221.81	6,452.52	-1,111.91	1,031.70	1,516.56	0.48	-0.11	53.93
6,757.00	0.62	262.61	6,547.52	-1,112.27	1,030.93	1,516.28	0.43	0.16	42.95
6,851.00	0.88	276.41	6,641.51	-1,112.25	1,029.71	1,515.42	0.33	0.28	14.68
6,946.00	0.45	281.52	6,736.51	-1,112.10	1,028.62	1,514.55	0.46	-0.45	5.38
7,040.00	0.88	272.98	6,830.50	-1,111.99	1,027.53	1,513.72	0.47	0.46	-9.09
7,135.00	1.06	286.95	6,925.49	-1,111.69	1,025.96	1,512.42	0.31	0.19	14.71
7,229.00	1.06	284.93	7,019.47	-1,111.21	1,024.29	1,510.92	0.04	0.00	-2.15
7,323.00	0.79	285.81	7,113.46	-1,110.81	1,022.83	1,509.61	0.29	-0.29	0.94
7,418.00	0.53	311.30	7,208.45	-1,110.35	1,021.87	1,508.61	0.41	-0.27	26.83
7,512.00	0.88	301.46	7,302.44	-1,109.68	1,020.93	1,507.48	0.39	0.37	-10.47
7,606.00	0.79	292.58	7,396.43	-1,109.06	1,019.71	1,506.18	0.17	-0.10	-9.45
7,701.00	0.70	281.35	7,491.43	-1,108.69	1,018.54	1,505.11	0.18	-0.09	-11.82
7,795.00	0.44	296.71	7,585.42	-1,108.42	1,017.65	1,504.29	0.32	-0.28	16.34
7,889.00	0.53	306.73	7,679.42	-1,107.99	1,016.98	1,503.53	0.13	0.10	10.66
7,983.00	0.79	352.61	7,773.41	-1,107.09	1,016.55	1,502.58	0.60	0.28	48.81
8,078.00	0.70	311.21	7,868.40	-1,106.06	1,016.03	1,501.47	0.56	-0.09	-43.58
8,172.00	0.97	335.56	7,962.39	-1,104.96	1,015.27	1,500.15	0.47	0.29	25.90
8,267.00	1.06	325.10	8,057.38	-1,103.50	1,014.43	1,498.52	0.22	0.09	-11.01

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 334-12 - Slot SR 334-12 (B7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 334-12	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)
8,361.00	1.25	329.88	8,151.36	-1,101.90	1,013.42	1,496.67	0.23	0.20	5.09
8,456.00	1.58	310.25	8,246.33	-1,100.16	1,011.90	1,494.36	0.61	0.35	-20.66
8,550.00	1.58	320.79	8,340.30	-1,098.32	1,010.09	1,491.78	0.31	0.00	11.21
8,644.00	2.02	308.75	8,434.25	-1,096.28	1,007.98	1,488.84	0.61	0.47	-12.81
8,739.00	2.11	310.68	8,529.19	-1,094.09	1,005.35	1,485.44	0.12	0.09	2.03
8,833.00	2.11	304.62	8,623.12	-1,091.98	1,002.61	1,482.02	0.24	0.00	-6.45
8,928.00	2.29	297.94	8,718.05	-1,090.10	999.50	1,478.51	0.33	0.19	-7.03
9,022.00	2.29	280.19	8,811.98	-1,088.88	995.99	1,475.20	0.75	0.00	-18.88
9,117.00	2.55	282.03	8,906.90	-1,088.11	992.05	1,471.91	0.29	0.27	1.94
9,211.00	2.37	271.40	9,000.81	-1,087.62	988.07	1,468.80	0.52	-0.19	-11.31
9,305.00	2.11	273.33	9,094.74	-1,087.48	984.40	1,466.14	0.29	-0.28	2.05
9,400.00	1.23	275.00	9,189.70	-1,087.29	981.63	1,464.09	0.93	-0.93	1.76
9,494.00	0.79	292.49	9,283.68	-1,086.95	980.03	1,462.73	0.57	-0.47	18.61
9,589.00	1.85	344.08	9,378.66	-1,085.23	979.00	1,460.78	1.57	1.12	54.31
9,676.00	2.11	345.58	9,465.61	-1,082.32	978.22	1,458.15	0.30	0.30	1.72
Last SDI Production MWD Survey									
9,735.00	2.11	345.58	9,524.57	-1,080.22	977.68	1,456.26	0.00	0.00	0.00
Projection to TD - SR 334-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
127.00	127.00	-0.29	0.72	First SDI Gyro MWD Survey
675.00	665.64	-64.66	64.00	Last SDI Gyro MWD Survey
755.00	742.50	-79.55	80.45	First SDI Surface MWD Survey
1,083.00	1,056.03	-147.89	148.30	Last SDI Surface MWD Survey
1,182.00	1,150.35	-168.74	170.01	First SDI Production MWD Survey
9,676.00	9,465.61	-1,082.32	978.22	Last SDI Production MWD Survey
9,735.00	9,524.57	-1,080.22	977.68	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

