



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 314-12
County & State	Garfield County, CO
SDI Job No.	OP.007978
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 9,978 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

25-Feb-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 314-12 - Slot SR 314-12 (A9)
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 314-12	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 314-12 - Slot SR 314-12 (A9)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,657.50 usft	Latitude:	39.4510446
	+E/-W	0.00 usft	Easting:	2,340,251.40 usft	Longitude:	-107.8366375
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	2/9/2018	9.22	65.62	51,618

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	242.34	

Survey Program	Date	2/25/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	489.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
566.00	1,036.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,105.00	9,978.00	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	
121.00	2.38	241.35	120.97	-1.20	-2.21	2.51	1.97	1.97	0.00	
First SDI Gyro MWD Survey										
212.00	5.28	242.67	211.75	-4.03	-7.58	8.59	3.19	3.19	1.45	
305.00	8.80	245.83	304.04	-8.91	-17.88	19.97	3.81	3.78	3.40	
398.00	11.96	248.64	395.50	-15.34	-33.35	36.66	3.44	3.40	3.02	
489.00	15.31	244.07	483.93	-24.03	-52.94	58.04	3.86	3.68	-5.02	
Last SDI Gyro MWD Survey										

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 314-12 - Slot SR 314-12 (A9)
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 314-12	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)	
566.00	16.97	242.22	557.89	-33.71	-72.02	79.44	2.26	2.16	-2.40	
First SDI Surface MWD Survey										
658.00	18.73	240.45	645.46	-47.25	-96.76	107.63	2.00	1.91	-1.92	
753.00	20.51	240.02	734.94	-63.09	-124.44	139.51	1.88	1.87	-0.45	
847.00	21.95	238.34	822.56	-80.54	-153.66	173.49	1.66	1.53	-1.79	
941.00	23.57	242.83	909.25	-98.35	-185.34	209.82	2.53	1.72	4.78	
1,036.00	24.80	245.82	995.91	-115.19	-220.42	248.70	1.83	1.29	3.15	
Last SDI Surface MWD Survey										
1,105.00	25.24	245.82	1,058.43	-127.14	-247.04	277.83	0.64	0.64	0.00	
First SDI Production MWD Survey										
1,180.00	25.85	244.50	1,126.10	-140.73	-276.38	310.13	1.11	0.81	-1.76	
1,275.00	25.44	243.29	1,211.74	-158.82	-313.31	351.23	0.70	-0.43	-1.27	
1,369.00	25.04	242.57	1,296.77	-177.05	-349.00	391.31	0.54	-0.43	-0.77	
1,464.00	25.83	246.41	1,382.57	-194.60	-385.81	432.06	1.92	0.83	4.04	
1,558.00	25.75	247.79	1,467.21	-210.51	-423.48	472.81	0.64	-0.09	1.47	
1,653.00	25.59	247.84	1,552.83	-226.05	-461.59	513.78	0.17	-0.17	0.05	
1,747.00	26.96	246.29	1,637.12	-242.28	-499.90	555.24	1.63	1.46	-1.65	
1,842.00	26.74	246.86	1,721.87	-259.34	-539.27	598.03	0.36	-0.23	0.60	
1,936.00	26.39	246.48	1,805.95	-275.98	-577.87	639.95	0.41	-0.37	-0.40	
2,031.00	25.45	247.12	1,891.39	-292.35	-616.04	681.35	1.03	-0.99	0.67	
2,125.00	24.72	247.79	1,976.53	-307.63	-652.84	721.04	0.83	-0.78	0.71	
2,219.00	26.06	247.20	2,061.45	-323.06	-690.08	761.18	1.45	1.43	-0.63	
2,314.00	25.29	247.75	2,147.06	-338.83	-728.09	802.18	0.85	-0.81	0.58	
2,408.00	26.92	246.78	2,231.47	-354.82	-766.24	843.38	1.79	1.73	-1.03	
2,503.00	27.15	243.75	2,316.10	-372.89	-805.44	886.50	1.47	0.24	-3.19	
2,597.00	26.56	243.89	2,399.96	-391.63	-843.55	928.94	0.63	-0.63	0.15	
2,692.00	25.78	244.14	2,485.22	-409.98	-881.21	970.83	0.83	-0.82	0.26	
2,786.00	27.08	243.07	2,569.39	-428.59	-918.68	1,012.65	1.47	1.38	-1.14	
2,880.00	25.59	243.69	2,653.64	-447.28	-955.96	1,054.34	1.61	-1.59	0.66	
2,975.00	25.22	244.73	2,739.45	-465.01	-992.65	1,095.08	0.61	-0.39	1.09	
3,069.00	26.44	244.62	2,824.06	-482.53	-1,029.67	1,136.00	1.30	1.30	-0.12	
3,164.00	27.56	242.97	2,908.70	-501.59	-1,068.36	1,179.11	1.42	1.18	-1.74	
3,258.00	26.87	243.42	2,992.29	-520.97	-1,106.73	1,222.09	0.77	-0.73	0.48	
3,353.00	26.00	244.61	3,077.36	-539.51	-1,144.74	1,264.36	1.07	-0.92	1.25	
3,447.00	26.73	243.36	3,161.58	-557.82	-1,182.25	1,306.09	0.98	0.78	-1.33	
3,542.00	25.76	244.09	3,246.79	-576.42	-1,219.91	1,348.09	1.08	-1.02	0.77	
3,636.00	27.00	241.89	3,331.00	-595.40	-1,257.11	1,389.84	1.68	1.32	-2.34	
3,730.00	26.08	243.04	3,415.10	-614.83	-1,294.35	1,431.84	1.12	-0.98	1.22	
3,825.00	24.03	244.49	3,501.15	-632.62	-1,330.42	1,472.06	2.25	-2.16	1.53	
3,920.00	25.38	241.97	3,587.46	-650.52	-1,365.85	1,511.75	1.80	1.42	-2.65	
4,014.00	26.97	240.99	3,671.82	-670.33	-1,402.28	1,553.20	1.75	1.69	-1.04	
4,110.00	26.52	240.73	3,757.55	-691.37	-1,440.01	1,596.39	0.48	-0.47	-0.27	
4,205.00	24.84	241.96	3,843.16	-711.12	-1,476.13	1,637.55	1.86	-1.77	1.29	
4,300.00	25.39	241.11	3,929.18	-730.34	-1,511.57	1,677.87	0.69	0.58	-0.89	

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 314-12	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)	
4,395.00	24.22	242.03	4,015.41	-749.32	-1,546.62	1,717.72	1.30	-1.23	0.97	
4,490.00	23.42	242.33	4,102.32	-767.22	-1,580.55	1,756.08	0.85	-0.84	0.32	
4,584.00	22.51	242.83	4,188.87	-784.12	-1,613.10	1,792.76	0.99	-0.97	0.53	
4,678.00	21.61	242.55	4,275.99	-800.31	-1,644.47	1,828.06	0.96	-0.96	-0.30	
4,773.00	20.81	242.81	4,364.55	-816.09	-1,675.01	1,862.43	0.85	-0.84	0.27	
4,867.00	19.59	241.46	4,452.77	-831.25	-1,703.70	1,894.88	1.39	-1.30	-1.44	
4,961.00	19.08	242.79	4,541.47	-845.80	-1,731.21	1,926.00	0.72	-0.54	1.41	
5,056.00	17.15	243.89	4,631.75	-859.07	-1,757.60	1,955.54	2.06	-2.03	1.16	
5,150.00	16.22	244.64	4,721.79	-870.79	-1,781.91	1,982.51	1.02	-0.99	0.80	
5,244.00	14.35	240.73	4,812.47	-882.11	-1,803.94	2,007.27	2.27	-1.99	-4.16	
5,339.00	13.88	242.23	4,904.60	-893.17	-1,824.29	2,030.44	0.63	-0.49	1.58	
5,433.00	12.49	236.33	4,996.12	-904.06	-1,842.73	2,051.82	2.06	-1.48	-6.28	
5,527.00	9.67	232.37	5,088.36	-914.52	-1,857.44	2,069.71	3.11	-3.00	-4.21	
5,622.00	8.94	233.36	5,182.11	-923.80	-1,869.68	2,084.86	0.79	-0.77	1.04	
5,716.00	7.47	229.39	5,275.15	-932.14	-1,880.18	2,098.03	1.68	-1.56	-4.22	
5,811.00	6.94	232.51	5,369.40	-939.65	-1,889.42	2,109.70	0.69	-0.56	3.28	
5,905.00	5.45	225.87	5,462.85	-946.21	-1,897.14	2,119.58	1.76	-1.59	-7.06	
6,000.00	5.18	226.23	5,557.44	-952.32	-1,903.47	2,128.03	0.29	-0.28	0.38	
6,094.00	3.87	216.82	5,651.15	-957.80	-1,908.44	2,134.97	1.60	-1.39	-10.01	
6,189.00	3.43	212.51	5,745.95	-962.76	-1,911.88	2,140.32	0.55	-0.46	-4.54	
6,283.00	1.28	191.90	5,839.87	-966.16	-1,913.61	2,143.43	2.42	-2.29	-21.93	
6,331.02	1.12	191.57	5,887.88	-967.14	-1,913.82	2,144.07	0.33	-0.33	-0.68	
SR 314-12 BTV										
6,378.00	0.97	191.15	5,934.85	-967.99	-1,913.99	2,144.61	0.33	-0.33	-0.90	
6,472.00	0.89	173.89	6,028.84	-969.49	-1,914.06	2,145.38	0.31	-0.09	-18.36	
6,567.00	0.84	156.91	6,123.83	-970.87	-1,913.71	2,145.71	0.27	-0.05	-17.87	
6,662.00	0.62	159.25	6,218.82	-971.99	-1,913.26	2,145.82	0.23	-0.23	2.46	
6,757.00	0.62	117.85	6,313.82	-972.71	-1,912.62	2,145.59	0.46	0.00	-43.58	
6,851.00	0.62	91.84	6,407.81	-972.96	-1,911.66	2,144.86	0.30	0.00	-27.67	
6,946.00	0.81	75.02	6,502.80	-972.80	-1,910.50	2,143.76	0.30	0.20	-17.71	
7,041.00	0.88	38.58	6,597.79	-972.06	-1,909.40	2,142.44	0.56	0.07	-38.36	
7,135.00	0.97	25.83	6,691.78	-970.78	-1,908.60	2,141.14	0.24	0.10	-13.56	
7,230.00	0.62	11.42	6,786.77	-969.55	-1,908.15	2,140.17	0.42	-0.37	-15.17	
7,325.00	0.70	27.15	6,881.77	-968.53	-1,907.78	2,139.37	0.21	0.08	16.56	
7,420.00	0.97	199.77	6,976.76	-968.77	-1,907.79	2,139.49	1.75	0.28	181.71	
7,514.00	0.91	217.93	7,070.75	-970.11	-1,908.52	2,140.75	0.32	-0.06	19.32	
7,609.00	1.06	198.54	7,165.74	-971.54	-1,909.26	2,142.08	0.38	0.16	-20.41	
7,704.00	1.14	184.47	7,260.72	-973.31	-1,909.61	2,143.21	0.30	0.08	-14.81	
7,798.00	1.04	198.75	7,354.70	-975.05	-1,909.96	2,144.33	0.31	-0.11	15.19	
7,893.00	0.79	177.09	7,449.69	-976.52	-1,910.20	2,145.23	0.44	-0.26	-22.80	
7,988.00	0.44	179.90	7,544.68	-977.54	-1,910.17	2,145.67	0.37	-0.37	2.96	
8,082.00	0.50	91.56	7,638.68	-977.92	-1,909.76	2,145.48	0.70	0.06	-93.98	
8,177.00	0.35	51.67	7,733.68	-977.75	-1,909.12	2,144.83	0.34	-0.16	-41.99	
8,272.00	0.53	54.75	7,828.68	-977.31	-1,908.53	2,144.11	0.19	0.19	3.24	

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Well:	SR 314-12	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)
8,366.00	0.53	52.20	7,922.67	-976.80	-1,907.83	2,143.25	0.03	0.00	-2.71
8,461.00	0.40	53.94	8,017.67	-976.33	-1,907.22	2,142.49	0.14	-0.14	1.83
8,556.00	0.53	341.89	8,112.67	-975.72	-1,907.08	2,142.09	0.59	0.14	-75.84
8,650.00	0.70	321.41	8,206.66	-974.86	-1,907.58	2,142.13	0.29	0.18	-21.79
8,745.00	0.44	355.16	8,301.66	-974.04	-1,907.97	2,142.10	0.44	-0.27	35.53
8,839.00	0.58	351.33	8,395.65	-973.21	-1,908.07	2,141.80	0.15	0.15	-4.07
8,934.00	1.41	359.82	8,490.64	-971.57	-1,908.15	2,141.10	0.88	0.87	8.94
9,029.00	1.41	1.77	8,585.61	-969.23	-1,908.12	2,139.99	0.05	0.00	2.05
9,123.00	1.49	13.09	8,679.58	-966.88	-1,907.80	2,138.62	0.32	0.09	12.04
9,218.00	1.21	24.56	8,774.55	-964.77	-1,907.11	2,137.03	0.41	-0.29	12.07
9,313.00	1.20	25.46	8,869.53	-962.96	-1,906.26	2,135.44	0.02	-0.01	0.95
9,407.00	2.02	2.36	8,963.50	-960.41	-1,905.77	2,133.82	1.10	0.87	-24.57
9,502.00	2.63	10.02	9,058.42	-956.59	-1,905.32	2,131.65	0.72	0.64	8.06
9,597.00	2.64	14.58	9,153.32	-952.33	-1,904.39	2,128.85	0.22	0.01	4.80
9,691.00	2.26	0.91	9,247.23	-948.38	-1,903.82	2,126.51	0.74	-0.40	-14.54
9,786.00	2.48	359.84	9,342.15	-944.45	-1,903.79	2,124.66	0.24	0.23	-1.13
9,881.00	2.64	4.77	9,437.06	-940.22	-1,903.62	2,122.54	0.29	0.17	5.19
9,918.00	2.73	2.89	9,474.01	-938.49	-1,903.50	2,121.63	0.34	0.24	-5.08
Last SDI Production MWD Survey									
9,978.00	2.73	2.89	9,533.95	-935.63	-1,903.36	2,120.18	0.00	0.00	0.00
Projection to TD - SR 314-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	120.97	-1.20	-2.21	First SDI Gyro MWD Survey
489.00	483.93	-24.03	-52.94	Last SDI Gyro MWD Survey
566.00	557.89	-33.71	-72.02	First SDI Surface MWD Survey
1,036.00	995.91	-115.19	-220.42	Last SDI Surface MWD Survey
1,105.00	1,058.43	-127.14	-247.04	First SDI Production MWD Survey
9,918.00	9,474.01	-938.49	-1,903.50	Last SDI Production MWD Survey
9,978.00	9,533.95	-935.63	-1,903.36	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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