





## Directional Survey Certification

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

<b>Operator</b>	TEP Rocky Mountain, LLC.
<b>Well Name &amp; No.</b>	NR 414-3
<b>County &amp; State</b>	Garfield County, CO
<b>SDI Job No.</b>	OP.015452
<b>Rig</b>	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 10,215 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

14-Jan-19

Date

### **Mel Mireles Jr.**

Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well NR 414-3 - Slot NR 414-3 (A16)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6720' & RKB 24' @ 6744.00usft
<b>Site:</b>	NR 23-3 Pad	<b>MD Reference:</b>	GL 6720' & RKB 24' @ 6744.00usft
<b>Well:</b>	NR 414-3	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

<b>Project</b>	Garfield County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 414-3 - Slot NR 414-3 (A16)					
Well Position	+N/-S	0.00 usft	Northing:	1,634,868.47 usft	Latitude:	39.5524253
	+E/-W	0.00 usft	Easting:	2,329,784.54 usft	Longitude:	-107.8771390
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,720.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	12/26/2018	9.40	65.78	51,505

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	224.01	

<b>Survey Program</b>	<b>Date</b>	1/14/2019			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
121.00	580.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
652.00	1,030.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,057.00	10,214.00	Survey #3 - Production MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
121.00	1.58	226.85	120.98	-1.14	-1.22	1.67	1.31	1.31	0.00	
<b>First SDI Gyro MWD Survey</b>										
213.00	4.93	234.23	212.82	-4.32	-5.35	6.82	3.66	3.64	8.02	
305.00	7.21	222.01	304.31	-10.92	-12.42	16.49	2.84	2.48	-13.28	
398.00	9.41	214.98	396.33	-21.49	-20.69	29.83	2.60	2.37	-7.56	
489.00	11.96	219.02	485.74	-34.91	-30.89	46.57	2.92	2.80	4.44	
580.00	15.31	214.89	574.17	-52.10	-43.70	67.83	3.83	3.68	-4.54	

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<b>Site:</b>	NR 23-3 Pad	<b>MD Reference:</b>	GL 6720' & RKB 24' @ 6744.00usft
<b>Well:</b>	NR 414-3	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
<b>Last SDI Gyro MWD Survey</b>									
652.00	17.24	213.10	643.28	-68.83	-54.97	87.70	2.77	2.68	-2.49
<b>First SDI Surface MWD Survey</b>									
747.00	19.08	213.93	733.54	-93.51	-71.33	116.81	1.96	1.94	0.87
841.00	19.51	218.36	822.27	-118.57	-89.64	147.56	1.62	0.46	4.71
936.00	20.43	222.08	911.56	-143.32	-110.60	179.92	1.65	0.97	3.92
1,030.00	20.97	221.32	999.49	-168.13	-132.70	213.12	0.64	0.57	-0.81
<b>Last SDI Surface MWD Survey</b>									
1,057.00	21.02	222.01	1,024.70	-175.35	-139.13	222.78	0.93	0.19	2.56
<b>First SDI Production MWD Survey</b>									
1,181.00	21.02	222.01	1,140.45	-208.40	-168.90	267.24	0.00	0.00	0.00
1,276.00	20.71	221.42	1,229.22	-233.66	-191.42	301.04	0.39	-0.33	-0.62
1,371.00	20.75	225.11	1,318.07	-258.13	-214.45	334.65	1.38	0.04	3.88
1,465.00	20.69	225.44	1,405.99	-281.53	-238.08	367.90	0.14	-0.06	0.35
1,559.00	20.50	222.95	1,493.98	-305.23	-261.13	400.96	0.95	-0.20	-2.65
1,654.00	20.08	220.01	1,583.09	-329.90	-282.95	433.86	1.16	-0.44	-3.09
1,749.00	20.95	224.96	1,672.07	-354.41	-305.44	467.11	2.04	0.92	5.21
1,843.00	20.73	224.72	1,759.92	-378.13	-329.02	500.55	0.25	-0.23	-0.26
1,938.00	21.19	229.13	1,848.64	-401.31	-353.83	534.47	1.73	0.48	4.64
2,033.00	21.21	227.20	1,937.21	-424.22	-379.43	568.73	0.73	0.02	-2.03
2,129.00	20.59	225.85	2,026.90	-447.78	-404.28	602.94	0.82	-0.65	-1.41
2,222.00	19.99	225.39	2,114.13	-470.33	-427.33	635.17	0.67	-0.65	-0.49
2,317.00	19.20	225.12	2,203.62	-492.76	-449.96	667.03	0.84	-0.83	-0.28
2,412.00	18.61	225.48	2,293.50	-514.41	-471.84	697.80	0.63	-0.62	0.38
2,506.00	18.29	224.91	2,382.67	-535.37	-492.95	727.54	0.39	-0.34	-0.61
2,601.00	19.33	230.49	2,472.60	-555.93	-515.60	758.07	2.19	1.09	5.87
2,695.00	18.91	229.83	2,561.41	-575.66	-539.24	788.68	0.50	-0.45	-0.70
2,790.00	18.20	228.69	2,651.48	-595.38	-562.15	818.78	0.84	-0.75	-1.20
2,885.00	17.85	228.78	2,741.81	-614.77	-584.25	848.08	0.37	-0.37	0.09
2,979.00	19.87	227.72	2,830.76	-635.01	-606.91	878.38	2.18	2.15	-1.13
3,073.00	19.26	227.02	2,919.33	-656.33	-630.07	909.81	0.70	-0.65	-0.74
3,168.00	18.73	226.67	3,009.16	-677.48	-652.63	940.69	0.57	-0.56	-0.37
3,263.00	18.11	225.08	3,099.29	-698.37	-674.18	970.69	0.84	-0.65	-1.67
3,357.00	19.94	222.81	3,188.16	-720.45	-695.42	1,001.32	2.10	1.95	-2.41
3,451.00	19.15	222.09	3,276.74	-743.65	-716.64	1,032.76	0.88	-0.84	-0.77
3,546.00	18.38	221.66	3,366.69	-766.40	-737.04	1,063.30	0.82	-0.81	-0.45
3,640.00	20.01	224.08	3,455.46	-789.03	-758.08	1,094.19	1.93	1.73	2.57
3,735.00	18.96	223.22	3,545.02	-811.95	-779.96	1,125.88	1.15	-1.11	-0.91
3,829.00	21.46	224.50	3,633.23	-835.35	-802.47	1,158.34	2.70	2.66	1.36
3,924.00	21.32	223.54	3,721.68	-860.26	-826.55	1,192.99	0.40	-0.15	-1.01
4,018.00	20.62	222.51	3,809.46	-884.85	-849.51	1,226.63	0.84	-0.74	-1.10
4,112.00	19.87	221.30	3,897.65	-909.05	-871.24	1,259.13	0.91	-0.80	-1.29
4,207.00	19.44	219.70	3,987.11	-933.35	-891.99	1,291.02	0.73	-0.45	-1.68
4,301.00	20.93	221.66	4,075.34	-957.93	-913.14	1,323.40	1.74	1.59	2.09

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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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	19.79	220.78	4,163.47	-982.52	-934.70	1,356.06	1.26	-1.21	-0.94
4,490.00	21.05	223.85	4,252.50	-1,007.00	-957.02	1,389.18	1.74	1.33	3.23
4,584.00	20.55	223.11	4,340.37	-1,031.22	-979.99	1,422.56	0.60	-0.53	-0.79
4,678.00	20.93	227.87	4,428.29	-1,054.53	-1,003.72	1,455.81	1.84	0.40	5.06
4,773.00	20.49	227.40	4,517.15	-1,077.17	-1,028.54	1,489.34	0.50	-0.46	-0.49
4,867.00	19.77	226.89	4,605.40	-1,099.17	-1,052.26	1,521.64	0.79	-0.77	-0.54
4,961.00	18.88	226.02	4,694.11	-1,120.60	-1,074.81	1,552.72	1.00	-0.95	-0.93
5,055.00	20.05	224.38	4,782.73	-1,142.67	-1,097.03	1,584.03	1.37	1.24	-1.74
5,150.00	19.49	223.77	4,872.13	-1,165.76	-1,119.38	1,616.16	0.63	-0.59	-0.64
5,245.00	18.50	222.69	4,961.96	-1,188.28	-1,140.56	1,647.08	1.11	-1.04	-1.14
5,339.00	20.42	222.96	5,050.59	-1,211.25	-1,161.85	1,678.39	2.04	2.04	0.29
5,433.00	19.43	221.83	5,138.96	-1,234.90	-1,183.45	1,710.41	1.13	-1.05	-1.20
5,528.00	20.82	226.09	5,228.16	-1,258.38	-1,206.16	1,743.07	2.13	1.46	4.48
5,681.00	20.24	226.13	5,371.44	-1,295.58	-1,244.83	1,796.69	0.38	-0.38	0.03
5,717.00	19.53	226.02	5,405.30	-1,304.08	-1,253.65	1,808.93	1.97	-1.97	-0.31
5,811.00	18.35	224.87	5,494.21	-1,325.47	-1,275.39	1,839.43	1.32	-1.26	-1.22
5,906.00	18.99	224.56	5,584.21	-1,347.09	-1,296.79	1,869.84	0.68	0.67	-0.33
6,000.00	18.39	223.75	5,673.25	-1,368.69	-1,317.77	1,899.96	0.70	-0.64	-0.86
6,095.00	17.01	223.05	5,763.75	-1,389.67	-1,337.62	1,928.84	1.47	-1.45	-0.74
6,190.00	15.70	223.28	5,854.90	-1,409.19	-1,355.92	1,955.58	1.38	-1.38	0.24
6,284.00	14.62	221.26	5,945.63	-1,427.36	-1,372.46	1,980.15	1.28	-1.15	-2.15
6,379.00	14.68	220.07	6,037.54	-1,445.59	-1,388.12	2,004.14	0.32	0.06	-1.25
6,473.00	14.68	219.72	6,128.47	-1,463.86	-1,403.40	2,027.90	0.09	0.00	-0.37
6,568.00	14.16	220.16	6,220.48	-1,482.00	-1,418.58	2,051.49	0.56	-0.55	0.46
6,662.00	12.93	222.53	6,311.87	-1,498.54	-1,433.11	2,073.48	1.44	-1.31	2.52
6,756.00	10.76	223.90	6,403.86	-1,512.62	-1,446.30	2,092.77	2.33	-2.31	1.46
6,851.00	9.85	223.85	6,497.33	-1,524.87	-1,458.08	2,109.76	0.96	-0.96	-0.05
6,945.00	8.39	222.24	6,590.13	-1,535.74	-1,468.26	2,124.66	1.58	-1.55	-1.71
7,040.00	7.39	221.04	6,684.23	-1,545.48	-1,476.93	2,137.69	1.07	-1.05	-1.26
7,134.00	5.89	228.16	6,777.60	-1,553.26	-1,484.50	2,148.54	1.82	-1.60	7.57
7,228.00	5.27	229.86	6,871.16	-1,559.26	-1,491.39	2,157.64	0.68	-0.66	1.81
7,323.00	4.31	239.13	6,965.83	-1,563.90	-1,497.79	2,165.43	1.29	-1.01	9.76
7,417.00	3.23	248.98	7,059.62	-1,566.67	-1,503.29	2,171.24	1.34	-1.15	10.48
7,511.00	2.71	269.44	7,153.50	-1,567.64	-1,507.99	2,175.20	1.25	-0.55	21.76
7,606.00	1.23	303.92	7,248.44	-1,567.09	-1,511.08	2,176.95	1.93	-1.56	36.29
7,651.32	0.75	344.24	7,293.76	-1,566.53	-1,511.56	2,176.89	1.80	-1.06	88.97
<b>NR 414-3 BTV</b>									
7,701.00	1.03	42.13	7,343.43	-1,565.89	-1,511.35	2,176.28	1.80	0.56	116.52
7,795.00	0.79	60.29	7,437.42	-1,564.94	-1,510.22	2,174.81	0.40	-0.26	19.32
7,889.00	0.62	89.12	7,531.41	-1,564.61	-1,509.15	2,173.83	0.41	-0.18	30.67
7,983.00	0.70	142.55	7,625.41	-1,565.06	-1,508.30	2,173.56	0.64	0.09	56.84
8,077.00	0.62	137.19	7,719.40	-1,565.89	-1,507.60	2,173.67	0.11	-0.09	-5.70
8,171.00	0.36	357.20	7,813.40	-1,565.97	-1,507.27	2,173.50	0.98	-0.28	-148.93
8,266.00	0.66	316.08	7,908.39	-1,565.27	-1,507.66	2,173.27	0.48	0.32	-43.28

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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)
8,360.00	0.44	230.00	8,002.39	-1,565.12	-1,508.32	2,173.61	0.82	-0.23	-91.57
8,455.00	0.46	246.97	8,097.39	-1,565.50	-1,508.95	2,174.33	0.14	0.02	17.86
8,549.00	0.51	263.13	8,191.39	-1,565.70	-1,509.71	2,175.00	0.15	0.05	17.19
8,644.00	0.35	295.04	8,286.38	-1,565.63	-1,510.39	2,175.42	0.30	-0.17	33.59
8,739.00	0.53	274.04	8,381.38	-1,565.47	-1,511.09	2,175.80	0.25	0.19	-22.11
8,833.00	0.62	247.85	8,475.38	-1,565.63	-1,512.00	2,176.54	0.29	0.10	-27.86
8,928.00	1.06	220.34	8,570.37	-1,566.50	-1,513.04	2,177.89	0.62	0.46	-28.96
9,022.00	1.22	266.61	8,664.35	-1,567.22	-1,514.60	2,179.49	0.97	0.17	49.22
9,117.00	1.85	296.89	8,759.32	-1,566.58	-1,516.98	2,180.69	1.06	0.66	31.87
9,211.00	1.93	298.21	8,853.26	-1,565.15	-1,519.73	2,181.57	0.10	0.09	1.40
9,306.00	1.93	287.31	8,948.21	-1,563.92	-1,522.67	2,182.72	0.39	0.00	-11.47
9,400.00	1.58	260.53	9,042.17	-1,563.66	-1,525.46	2,184.48	0.94	-0.37	-28.49
9,495.00	1.32	220.34	9,137.14	-1,564.71	-1,527.46	2,186.62	1.08	-0.27	-42.31
9,589.00	1.72	189.04	9,231.11	-1,566.93	-1,528.38	2,188.86	0.96	0.43	-33.30
9,684.00	2.11	180.00	9,326.06	-1,570.09	-1,528.60	2,191.28	0.52	0.41	-9.52
9,778.00	1.49	170.88	9,420.01	-1,573.02	-1,528.41	2,193.26	0.72	-0.66	-9.70
9,873.00	2.11	219.12	9,514.97	-1,575.60	-1,529.32	2,195.74	1.66	0.65	50.78
9,967.00	2.73	232.49	9,608.88	-1,578.30	-1,532.18	2,199.68	0.89	0.66	14.22
10,061.00	3.05	233.82	9,702.76	-1,581.14	-1,535.98	2,204.36	0.35	0.34	1.41
10,155.00	3.34	231.76	9,796.62	-1,584.31	-1,540.15	2,209.54	0.33	0.31	-2.19
Last SDI Production MWD Survey									
10,214.00	3.34	231.76	9,855.52	-1,586.44	-1,542.85	2,212.94	0.00	0.00	0.00
Projection to TD - NR 414-3 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	120.98	-1.14	-1.22	First SDI Gyro MWD Survey
580.00	574.17	-52.10	-43.70	Last SDI Gyro MWD Survey
652.00	643.28	-68.83	-54.97	First SDI Surface MWD Survey
1,030.00	999.49	-168.13	-132.70	Last SDI Surface MWD Survey
1,057.00	1,024.70	-175.35	-139.13	First SDI Production MWD Survey
10,155.00	9,796.62	-1,584.31	-1,540.15	Last SDI Production MWD Survey
10,214.00	9,855.52	-1,586.44	-1,542.85	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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