



## 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 411-3
County & State	Garfield County, CO
SDI Job No.	OP.011801
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 76 feet to a measured depth of 10,820 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

28-Aug-18

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 411-3 - Slot NR 411-3 (A3)
<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 411-3	<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 411-3 - Slot NR 411-3 (A3)					
Well Position	+N/-S	0.00 usft	Northing:	1,634,946.66 usft	Latitude:	39.5526357
	+E/-W	0.00 usft	Easting:	2,329,726.29 usft	Longitude:	-107.8773528
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	7/23/2018	9.45	65.80	51,554

<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	334.59	

<b>Survey Program</b>	<b>Date</b>	8/28/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
76.00	673.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
746.00	1,068.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,179.00	10,820.00	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	
76.00	0.09	337.94	76.00	0.06	-0.02	0.06	0.12	0.12	0.00	
<b>First SDI Gyro MWD Survey</b>										
122.00	1.23	327.39	122.00	0.50	-0.30	0.59	2.48	2.48	-22.93	
214.00	2.90	356.40	213.94	3.66	-0.98	3.73	2.09	1.82	31.53	
305.00	5.28	349.98	304.70	10.08	-1.85	9.90	2.66	2.62	-7.05	
397.00	7.13	338.99	396.16	19.58	-4.64	19.68	2.38	2.01	-11.95	
489.00	9.50	327.30	487.19	31.30	-10.79	32.90	3.15	2.58	-12.71	
581.00	12.05	328.18	577.56	45.85	-19.95	49.98	2.78	2.77	0.96	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well NR 411-3 - Slot NR 411-3 (A3)
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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 411-3	<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)
673.00	16.19	328.36	666.76	64.94	-31.75	72.28	4.50	4.50	0.20
Last SDI Gyro MWD Survey									
746.00	19.80	339.88	736.20	85.23	-41.35	94.73	6.92	4.95	15.78
First SDI Surface MWD Survey									
840.00	22.70	338.13	823.80	117.02	-53.58	128.69	3.16	3.09	-1.86
935.00	25.76	335.24	910.43	152.78	-69.06	167.64	3.45	3.22	-3.04
1,029.00	28.82	330.10	993.97	190.99	-88.92	210.67	4.11	3.26	-5.47
1,068.00	29.02	329.20	1,028.10	207.26	-98.45	229.46	1.23	0.51	-2.31
Last SDI Surface MWD Survey									
1,179.00	29.36	326.13	1,125.01	252.98	-127.40	283.18	1.38	0.31	-2.77
First SDI Production MWD Survey									
1,273.00	29.38	325.22	1,206.93	291.06	-153.40	328.72	0.48	0.02	-0.97
1,368.00	29.12	330.15	1,289.83	330.25	-178.20	374.77	2.55	-0.27	5.19
1,463.00	29.14	327.18	1,372.82	369.74	-202.24	420.75	1.52	0.02	-3.13
1,557.00	28.83	328.74	1,455.04	408.35	-226.41	465.99	0.87	-0.33	1.66
1,652.00	28.83	329.11	1,538.27	447.58	-250.05	511.58	0.19	0.00	0.39
1,749.00	29.63	329.80	1,622.92	488.38	-274.12	558.76	0.89	0.82	0.71
1,841.00	30.51	332.53	1,702.54	528.76	-296.34	604.76	1.77	0.96	2.97
1,935.00	29.72	334.38	1,783.85	570.94	-317.42	651.91	1.30	-0.84	1.97
2,029.00	30.34	338.33	1,865.24	614.02	-336.26	698.90	2.20	0.66	4.20
2,124.00	30.47	335.77	1,947.18	658.28	-355.01	746.93	1.37	0.14	-2.69
2,218.00	30.07	336.31	2,028.36	701.58	-374.25	794.30	0.51	-0.43	0.57
2,313.00	30.98	334.63	2,110.20	745.47	-394.29	842.54	1.31	0.96	-1.77
2,407.00	31.16	332.58	2,190.71	788.92	-415.86	891.04	1.14	0.19	-2.18
2,502.00	31.53	331.14	2,271.85	832.49	-439.17	940.40	0.88	0.39	-1.52
2,596.00	31.59	330.27	2,351.95	875.40	-463.24	989.48	0.49	0.06	-0.93
2,691.00	31.13	329.63	2,433.07	918.19	-487.99	1,038.76	0.60	-0.48	-0.67
2,785.00	29.81	330.68	2,514.09	959.53	-511.72	1,086.28	1.51	-1.40	1.12
2,880.00	29.46	333.59	2,596.66	1,001.04	-533.68	1,133.20	1.56	-0.37	3.06
2,974.00	28.67	335.52	2,678.83	1,042.27	-553.30	1,178.86	1.30	-0.84	2.05
3,069.00	29.12	334.22	2,762.00	1,083.82	-572.80	1,224.76	0.81	0.47	-1.37
3,164.00	29.29	332.92	2,844.93	1,125.33	-593.43	1,271.10	0.69	0.18	-1.37
3,258.00	29.46	336.31	2,926.85	1,166.97	-613.19	1,317.19	1.78	0.18	3.61
3,353.00	29.52	336.20	3,009.54	1,209.78	-632.02	1,363.94	0.09	0.06	-0.12
3,448.00	29.46	335.36	3,092.23	1,252.43	-651.20	1,410.69	0.44	-0.06	-0.88
3,542.00	29.71	334.44	3,173.98	1,294.45	-670.89	1,457.10	0.55	0.27	-0.98
3,637.00	29.47	334.08	3,256.59	1,336.71	-691.26	1,504.01	0.31	-0.25	-0.38
3,731.00	29.34	333.47	3,338.48	1,378.11	-711.66	1,550.16	0.35	-0.14	-0.65
3,826.00	28.77	332.68	3,421.52	1,419.25	-732.55	1,596.28	0.72	-0.60	-0.83
3,920.00	28.82	332.20	3,503.90	1,459.39	-753.49	1,641.52	0.25	0.05	-0.51
4,015.00	27.60	331.14	3,587.61	1,498.92	-774.80	1,686.37	1.39	-1.28	-1.12
4,110.00	27.91	333.40	3,671.68	1,538.07	-795.37	1,730.57	1.15	0.33	2.38
4,204.00	27.29	332.70	3,754.99	1,576.89	-815.11	1,774.10	0.74	-0.66	-0.74
4,299.00	28.31	335.40	3,839.02	1,616.73	-834.48	1,818.39	1.71	1.07	2.84

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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 411-3	<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)	
4,392.00	29.82	335.35	3,920.31	1,657.80	-853.30	1,863.57	1.62	1.62	-0.05	
4,488.00	30.19	334.09	4,003.45	1,701.20	-873.80	1,911.57	0.76	0.39	-1.31	
4,582.00	29.90	333.94	4,084.82	1,743.51	-894.42	1,958.63	0.32	-0.31	-0.16	
4,676.00	29.37	332.97	4,166.52	1,785.09	-915.19	2,005.10	0.76	-0.56	-1.03	
4,771.00	30.12	336.21	4,249.01	1,827.66	-935.40	2,052.22	1.87	0.79	3.41	
4,866.00	29.37	336.05	4,331.49	1,870.76	-954.47	2,099.34	0.79	-0.79	-0.17	
4,960.00	30.81	335.21	4,412.82	1,913.68	-973.92	2,146.45	1.60	1.53	-0.89	
5,055.00	29.90	334.38	4,494.80	1,957.12	-994.36	2,194.46	1.05	-0.96	-0.87	
5,149.00	29.55	334.03	4,576.43	1,999.09	-1,014.64	2,241.07	0.42	-0.37	-0.37	
5,243.00	29.25	333.54	4,658.32	2,040.48	-1,035.03	2,287.21	0.41	-0.32	-0.52	
5,338.00	28.42	333.50	4,741.54	2,081.50	-1,055.45	2,333.02	0.87	-0.87	-0.04	
5,432.00	29.55	334.73	4,823.77	2,122.48	-1,075.33	2,378.56	1.36	1.20	1.31	
5,526.00	29.02	334.91	4,905.75	2,164.09	-1,094.89	2,424.54	0.57	-0.56	0.19	
5,621.00	31.04	337.19	4,988.00	2,207.54	-1,114.16	2,472.06	2.44	2.13	2.40	
5,715.00	30.50	336.97	5,068.77	2,251.83	-1,132.89	2,520.10	0.59	-0.57	-0.23	
5,810.00	29.49	337.26	5,151.04	2,295.59	-1,151.36	2,567.55	1.07	-1.06	0.31	
5,905.00	31.04	334.20	5,233.10	2,339.21	-1,171.06	2,615.41	2.30	1.63	-3.22	
5,999.00	30.72	333.79	5,313.77	2,382.57	-1,192.21	2,663.65	0.41	-0.34	-0.44	
6,094.00	30.04	332.95	5,395.73	2,425.52	-1,213.75	2,711.68	0.84	-0.72	-0.88	
6,189.00	29.46	332.71	5,478.21	2,467.46	-1,235.27	2,758.80	0.62	-0.61	-0.25	
6,283.00	28.75	332.18	5,560.34	2,507.99	-1,256.42	2,804.49	0.80	-0.76	-0.56	
6,377.00	25.59	331.83	5,643.95	2,545.89	-1,276.56	2,847.36	3.37	-3.36	-0.37	
6,472.00	23.83	331.65	5,730.25	2,580.87	-1,295.36	2,887.02	1.85	-1.85	-0.19	
6,567.00	23.74	331.04	5,817.18	2,614.49	-1,313.73	2,925.28	0.28	-0.09	-0.64	
6,661.00	21.72	332.53	5,903.88	2,646.48	-1,330.92	2,961.55	2.23	-2.15	1.59	
6,756.00	19.79	333.06	5,992.71	2,676.42	-1,346.31	2,995.19	2.04	-2.03	0.56	
6,851.00	18.55	332.80	6,082.44	2,704.20	-1,360.51	3,026.38	1.31	-1.31	-0.27	
6,946.00	16.44	330.42	6,173.04	2,729.33	-1,374.05	3,054.89	2.34	-2.22	-2.51	
7,040.00	16.27	329.72	6,263.24	2,752.27	-1,387.26	3,081.28	0.28	-0.18	-0.74	
7,135.00	14.68	327.70	6,354.79	2,773.94	-1,400.40	3,106.49	1.77	-1.67	-2.13	
7,230.00	14.25	332.53	6,446.78	2,794.49	-1,412.23	3,130.13	1.35	-0.45	5.08	
7,325.00	13.45	332.44	6,539.02	2,814.66	-1,422.73	3,152.85	0.84	-0.84	-0.09	
7,419.00	12.31	331.39	6,630.65	2,833.15	-1,432.59	3,173.78	1.24	-1.21	-1.12	
7,514.00	10.77	329.97	6,723.73	2,849.72	-1,441.88	3,192.74	1.65	-1.62	-1.49	
7,608.00	8.88	327.61	6,816.35	2,863.45	-1,450.17	3,208.70	2.06	-2.01	-2.51	
7,703.00	8.68	329.11	6,910.23	2,875.80	-1,457.77	3,223.11	0.32	-0.21	1.58	
7,797.00	7.30	324.97	7,003.32	2,886.78	-1,464.84	3,236.06	1.59	-1.47	-4.40	
7,891.00	6.29	335.54	7,096.66	2,896.35	-1,470.40	3,247.10	1.71	-1.07	11.24	
7,986.00	6.77	346.68	7,191.05	2,906.54	-1,473.85	3,257.78	1.42	0.51	11.73	
8,081.00	5.80	344.13	7,285.48	2,916.61	-1,476.45	3,267.99	1.06	-1.02	-2.68	
8,175.00	5.61	337.50	7,379.01	2,925.42	-1,479.51	3,277.26	0.73	-0.20	-7.05	
8,250.35	4.92	336.31	7,454.05	2,931.78	-1,482.22	3,284.17	0.93	-0.92	-1.58	
NR 411-3 BTV										

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8,269.00	4.75	335.96	7,472.63	2,933.22	-1,482.85	3,285.74	0.93	-0.91	-1.87	
8,364.00	4.58	332.62	7,567.31	2,940.18	-1,486.20	3,293.46	0.34	-0.18	-3.52	
8,458.00	3.25	356.70	7,661.10	2,946.17	-1,488.08	3,299.68	2.22	-1.41	25.62	
8,553.00	2.79	349.79	7,755.97	2,951.14	-1,488.64	3,304.41	0.62	-0.48	-7.27	
8,647.00	2.37	347.12	7,849.87	2,955.28	-1,489.48	3,308.51	0.46	-0.45	-2.84	
8,742.00	1.85	328.84	7,944.81	2,958.51	-1,490.71	3,311.96	0.89	-0.55	-19.24	
8,836.00	1.80	305.44	8,038.76	2,960.66	-1,492.70	3,314.76	0.79	-0.05	-24.89	
8,930.00	1.76	274.70	8,132.72	2,961.64	-1,495.34	3,316.77	1.00	-0.04	-32.70	
9,025.00	1.85	267.14	8,227.67	2,961.68	-1,498.33	3,318.09	0.27	0.09	-7.96	
9,119.00	1.93	252.99	8,321.62	2,961.14	-1,501.36	3,318.90	0.50	0.09	-15.05	
9,213.00	1.49	227.85	8,415.58	2,959.86	-1,503.78	3,318.78	0.91	-0.47	-26.74	
9,308.00	1.32	201.84	8,510.55	2,958.02	-1,505.10	3,317.68	0.69	-0.18	-27.38	
9,402.00	1.92	199.22	8,604.51	2,955.52	-1,506.02	3,315.83	0.64	0.64	-2.79	
9,496.00	1.06	237.70	8,698.48	2,953.57	-1,507.27	3,314.60	1.36	-0.91	40.94	
9,591.00	0.92	258.31	8,793.47	2,952.95	-1,508.76	3,314.68	0.40	-0.15	21.69	
9,685.00	0.79	228.38	8,887.46	2,952.36	-1,509.99	3,314.68	0.49	-0.14	-31.84	
9,780.00	1.20	218.32	8,982.45	2,951.15	-1,511.09	3,314.05	0.47	0.43	-10.59	
9,874.00	1.41	188.48	9,076.42	2,949.23	-1,511.88	3,312.66	0.75	0.22	-31.74	
9,968.00	2.73	194.19	9,170.36	2,945.92	-1,512.59	3,309.97	1.42	1.40	6.07	
10,063.00	3.94	209.02	9,265.20	2,940.87	-1,514.73	3,306.33	1.55	1.27	15.61	
10,157.00	3.96	213.09	9,358.98	2,935.33	-1,518.07	3,302.75	0.30	0.02	4.33	
10,251.00	2.99	211.77	9,452.80	2,930.52	-1,521.13	3,299.73	1.04	-1.03	-1.40	
10,346.00	1.14	216.25	9,547.74	2,927.66	-1,523.00	3,297.94	1.95	-1.95	4.72	
10,440.00	1.41	202.89	9,641.71	2,925.84	-1,524.00	3,296.72	0.43	0.29	-14.21	
10,535.00	1.67	206.85	9,736.68	2,923.52	-1,525.08	3,295.10	0.30	0.27	4.17	
10,629.00	2.29	209.13	9,830.62	2,920.66	-1,526.61	3,293.17	0.66	0.66	2.43	
10,723.00	2.29	205.88	9,924.55	2,917.33	-1,528.35	3,290.91	0.14	0.00	-3.46	
10,760.00	2.11	210.63	9,961.52	2,916.08	-1,529.02	3,290.06	0.69	-0.49	12.84	
Last SDI Production MWD Survey - NR 411-3 PBHL										
10,820.00	2.11	210.63	10,021.48	2,914.18	-1,530.14	3,288.83	0.00	0.00	0.00	
Projection to TD										

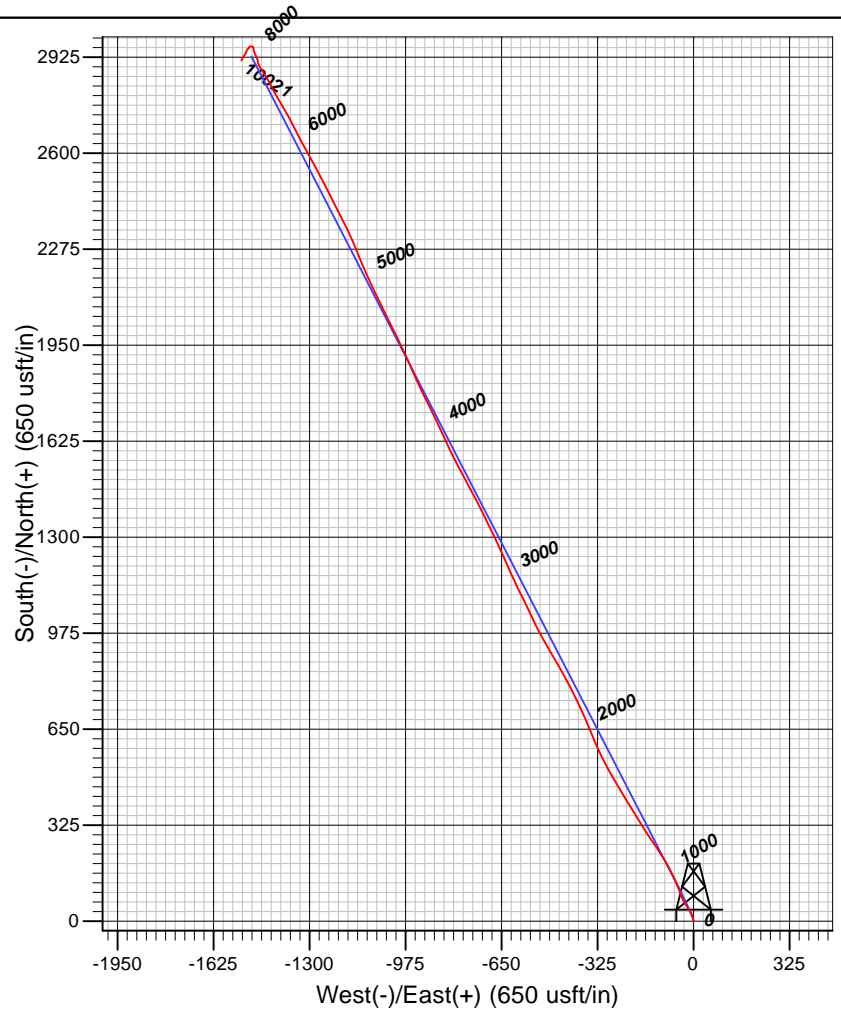
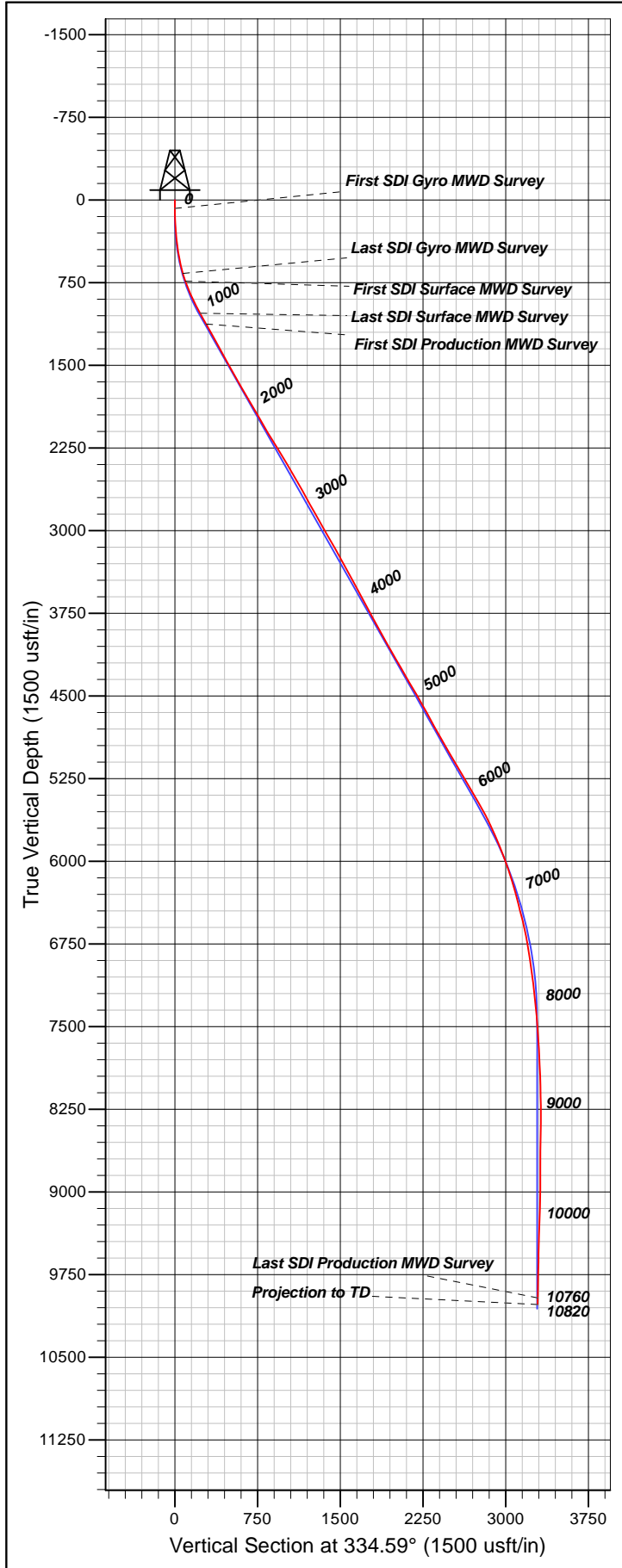
Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
76.00	76.00	0.06	-0.02	First SDI Gyro MWD Survey	
673.00	666.76	64.94	-31.75	Last SDI Gyro MWD Survey	
746.00	736.20	85.23	-41.35	First SDI Surface MWD Survey	
1,068.00	1,028.10	207.26	-98.45	Last SDI Surface MWD Survey	
1,179.00	1,125.01	252.98	-127.40	First SDI Production MWD Survey	
10,760.00	9,961.52	2,916.08	-1,529.02	Last SDI Production MWD Survey	
10,820.00	10,021.48	2,914.18	-1,530.14	Projection to TD	



Scientific Drilling, Intl  
Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 411-3 - Slot NR 411-3 (A3)
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 411-3	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Checked By:	_____	Approved By:	_____	Date:	_____
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TVD Reference: GL 6720' & RKB 24' @ 6744.00usft  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.00 0.00 1634946.66 2329726.29 39.5526357 -107.8773527 NR 411-3 (A3)

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well NR 411-3 - Slot NR 411-3 (A3), True North  
 Vertical (TVD) Reference: GL 6720' & RKB 24' @ 6744.00usft  
 Section (VS) Reference: Slot - NR 411-3 (A3)(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

18:06, August 28 2018  
 Created By: Mel Mireles Jr.