



Well Details: NR 313-3

TVD Reference: GL 6720' & RKB 24' @ 6744.00usft
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1634904.55 2329757.66 39.5525224 -107.8772376 NR 313-3 (A10)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well NR 313-3 - Slot NR 313-3 (A10), True North
 Vertical (TVD) Reference: GL 6720' & RKB 24' @ 6744.00usft
 Section (VS) Reference: Slot - NR 313-3 (A10)(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

12:51, October 25 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 313-3
County & State	Garfield County, CO
SDI Job No.	OP.013814
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 10,057 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-Oct-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 313-3 - Slot NR 313-3 (A10)
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 313-3	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 313-3 - Slot NR 313-3 (A10)				
Well Position	+N/-S	0.00 usft	Northing:	1,634,904.55 usft	Latitude:	39.5525224
	+E/-W	0.00 usft	Easting:	2,329,757.66 usft	Longitude:	-107.8772377
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	10/15/2018	9.43	65.78	51,527

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	230.98	

Survey Program	Date	10/25/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	580.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
650.00	1,072.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,180.00	10,057.00	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	1.23	230.98	120.99	-0.82	-1.01	1.30	1.02	1.02	0.00	
First SDI Gyro MWD Survey										
213.00	4.66	249.87	212.86	-2.73	-5.29	5.82	3.82	3.73	20.53	
305.00	6.77	257.87	304.40	-5.15	-14.10	14.20	2.45	2.29	8.70	
397.00	9.33	262.00	395.48	-7.33	-26.79	25.43	2.85	2.78	4.49	
489.00	10.82	265.08	486.06	-9.11	-42.78	38.97	1.72	1.62	3.35	
580.00	11.90	266.15	575.28	-10.47	-60.65	53.71	1.21	1.19	1.18	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 313-3 - Slot NR 313-3 (A10)
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Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 313-3	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)
Last SDI Gyro MWD Survey									
650.00	12.34	266.98	643.72	-11.35	-75.32	65.66	0.68	0.63	1.19
First SDI Surface MWD Survey									
745.00	13.19	266.07	736.37	-12.63	-96.27	82.74	0.92	0.89	-0.96
839.00	14.25	264.06	827.69	-14.56	-118.48	101.21	1.24	1.13	-2.14
934.00	14.77	268.00	919.66	-16.19	-142.21	120.68	1.17	0.55	4.15
1,028.00	14.41	273.07	1,010.63	-15.98	-165.86	138.93	1.41	-0.38	5.39
1,072.00	14.07	270.38	1,053.28	-15.66	-176.68	147.12	1.69	-0.77	-6.11
Last SDI Surface MWD Survey									
1,180.00	13.31	270.71	1,158.21	-15.41	-202.24	166.83	0.71	-0.70	0.31
First SDI Production MWD Survey									
1,275.00	13.79	269.61	1,250.57	-15.36	-224.50	184.08	0.57	0.51	-1.16
1,369.00	14.14	266.82	1,341.79	-16.07	-247.16	202.14	0.81	0.37	-2.97
1,464.00	14.38	266.91	1,433.86	-17.35	-270.53	221.10	0.25	0.25	0.09
1,558.00	14.42	263.52	1,524.91	-19.30	-293.81	240.42	0.90	0.04	-3.61
1,653.00	14.33	261.59	1,616.94	-22.35	-317.20	260.51	0.51	-0.09	-2.03
1,747.00	13.72	267.48	1,708.14	-24.54	-339.84	279.49	1.65	-0.65	6.27
1,842.00	13.10	264.49	1,800.55	-26.07	-361.81	297.52	0.98	-0.65	-3.15
1,936.00	13.23	264.29	1,892.08	-28.17	-383.12	315.39	0.15	0.14	-0.21
2,031.00	13.45	262.20	1,984.51	-30.75	-404.88	333.92	0.56	0.23	-2.20
2,125.00	13.37	259.83	2,075.95	-34.15	-426.41	352.79	0.59	-0.09	-2.52
2,220.00	13.45	267.56	2,168.37	-36.56	-448.26	371.29	1.89	0.08	8.14
2,314.00	13.28	265.46	2,259.82	-37.88	-469.95	388.96	0.55	-0.18	-2.23
2,409.00	13.45	273.81	2,352.26	-38.01	-491.85	406.06	2.04	0.18	8.79
2,503.00	13.59	271.06	2,443.66	-37.08	-513.80	422.53	0.70	0.15	-2.93
2,598.00	14.03	271.42	2,535.91	-36.59	-536.47	439.84	0.47	0.46	0.38
2,692.00	13.80	268.16	2,627.15	-36.67	-559.07	457.44	0.87	-0.24	-3.47
2,787.00	13.98	274.42	2,719.38	-36.14	-581.84	474.80	1.59	0.19	6.59
2,881.00	14.41	275.95	2,810.51	-34.06	-604.79	491.32	0.61	0.46	1.63
2,978.00	14.44	271.35	2,904.46	-32.52	-628.89	509.07	1.18	0.03	-4.74
3,070.00	13.54	268.71	2,993.73	-32.49	-651.12	526.33	1.20	-0.98	-2.87
3,165.00	13.63	267.04	3,086.07	-33.32	-673.42	544.18	0.42	0.09	-1.76
3,260.00	13.56	267.10	3,178.41	-34.46	-695.72	562.22	0.08	-0.07	0.06
3,354.00	12.40	264.75	3,270.00	-35.94	-716.78	579.51	1.36	-1.23	-2.50
3,449.00	12.31	262.56	3,362.80	-38.19	-736.98	596.62	0.50	-0.09	-2.31
3,543.00	12.05	262.56	3,454.69	-40.76	-756.64	613.51	0.28	-0.28	0.00
3,638.00	11.17	260.76	3,547.74	-43.52	-775.56	629.95	1.00	-0.93	-1.89
3,732.00	12.22	263.70	3,639.79	-46.07	-794.43	646.22	1.28	1.12	3.13
3,827.00	13.14	268.55	3,732.48	-47.45	-815.22	663.24	1.48	0.97	5.11
3,922.00	13.00	266.39	3,825.02	-48.39	-836.68	680.51	0.53	-0.15	-2.27
4,016.00	12.93	264.22	3,916.62	-50.12	-857.70	697.92	0.52	-0.07	-2.31
4,111.00	12.37	262.79	4,009.31	-52.47	-878.37	715.46	0.68	-0.59	-1.51
4,205.00	13.63	268.00	4,100.91	-54.12	-899.43	732.86	1.83	1.34	5.54
4,300.00	13.28	265.54	4,193.30	-55.36	-921.49	750.78	0.71	-0.37	-2.59

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 313-3 - Slot NR 313-3 (A10)
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 313-3	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)
4,394.00	12.89	263.57	4,284.86	-57.37	-942.67	768.51	0.63	-0.41	-2.10
4,489.00	13.07	270.07	4,377.44	-58.54	-963.95	785.77	1.55	0.19	6.84
4,584.00	12.49	270.03	4,470.08	-58.53	-984.96	802.09	0.61	-0.61	-0.04
4,679.00	12.15	267.54	4,562.90	-58.95	-1,005.22	818.10	0.66	-0.36	-2.62
4,773.00	11.87	265.72	4,654.84	-60.10	-1,024.75	833.99	0.50	-0.30	-1.94
4,867.00	13.07	269.24	4,746.62	-60.96	-1,045.01	850.28	1.51	1.28	3.74
4,962.00	12.63	266.85	4,839.24	-61.67	-1,066.13	867.13	0.73	-0.46	-2.52
5,056.00	13.10	269.59	4,930.88	-62.31	-1,087.04	883.78	0.82	0.50	2.91
5,151.00	12.66	270.20	5,023.49	-62.35	-1,108.22	900.26	0.48	-0.46	0.64
5,246.00	13.72	268.62	5,115.99	-62.59	-1,129.89	917.25	1.18	1.12	-1.66
5,340.00	13.19	266.42	5,207.41	-63.53	-1,151.74	934.81	0.78	-0.56	-2.34
5,434.00	12.84	262.64	5,298.99	-65.53	-1,172.80	952.44	0.98	-0.37	-4.02
5,529.00	14.33	265.19	5,391.33	-67.87	-1,194.99	971.15	1.69	1.57	2.68
5,623.00	13.89	260.97	5,482.50	-70.62	-1,217.72	990.54	1.19	-0.47	-4.49
5,718.00	13.28	268.18	5,574.85	-72.75	-1,239.89	1,009.11	1.89	-0.64	7.59
5,812.00	13.28	268.09	5,666.33	-73.46	-1,261.47	1,026.32	0.02	0.00	-0.10
5,907.00	12.88	267.99	5,758.87	-74.19	-1,282.96	1,043.47	0.42	-0.42	-0.11
6,002.00	13.01	267.92	5,851.45	-74.95	-1,304.23	1,060.48	0.14	0.14	-0.07
6,096.00	12.12	265.83	5,943.20	-76.05	-1,324.64	1,077.03	1.06	-0.95	-2.22
6,191.00	13.06	264.63	6,035.92	-77.78	-1,345.28	1,094.15	1.03	0.99	-1.26
6,285.00	13.98	267.21	6,127.31	-79.33	-1,367.19	1,112.15	1.17	0.98	2.74
6,380.00	14.60	267.48	6,219.37	-80.41	-1,390.62	1,131.03	0.66	0.65	0.28
6,474.00	13.37	271.08	6,310.59	-80.73	-1,413.32	1,148.87	1.60	-1.31	3.83
6,569.00	11.78	270.99	6,403.30	-80.36	-1,434.00	1,164.70	1.67	-1.67	-0.09
6,664.00	10.73	274.77	6,496.48	-79.45	-1,452.51	1,178.51	1.35	-1.11	3.98
6,759.00	7.83	280.48	6,590.23	-77.54	-1,467.69	1,189.10	3.20	-3.05	6.01
6,853.00	4.92	293.23	6,683.64	-74.79	-1,477.69	1,195.14	3.42	-3.10	13.56
6,948.00	3.08	314.59	6,778.41	-71.39	-1,483.25	1,197.32	2.46	-1.94	22.48
7,043.00	1.55	317.50	6,873.33	-68.65	-1,485.94	1,197.68	1.61	-1.61	3.06
7,138.00	1.23	317.22	6,968.30	-66.95	-1,487.50	1,197.83	0.34	-0.34	-0.29
7,232.00	0.79	293.23	7,062.29	-65.96	-1,488.78	1,198.20	0.64	-0.47	-25.52
7,327.00	0.44	250.78	7,157.28	-65.82	-1,489.73	1,198.84	0.58	-0.37	-44.68
7,420.00	0.44	232.14	7,250.28	-66.15	-1,490.34	1,199.54	0.15	0.00	-20.04
7,504.13	0.67	222.37	7,334.40	-66.71	-1,490.93	1,200.34	0.29	0.27	-11.61
NR 313-3 BTV									
7,516.00	0.70	221.51	7,346.27	-66.82	-1,491.02	1,200.48	0.29	0.28	-7.26
7,610.00	1.06	218.19	7,440.26	-67.93	-1,491.94	1,201.90	0.39	0.38	-3.53
7,705.00	0.23	70.27	7,535.26	-68.56	-1,492.31	1,202.58	1.33	-0.87	-155.71
7,799.00	0.88	58.74	7,629.25	-68.12	-1,491.51	1,201.68	0.70	0.69	-12.27
7,894.00	0.88	61.11	7,724.24	-67.39	-1,490.25	1,200.24	0.04	0.00	2.49
7,988.00	0.79	84.93	7,818.23	-66.98	-1,488.97	1,198.99	0.38	-0.10	25.34
8,083.00	0.79	112.44	7,913.22	-67.18	-1,487.71	1,198.14	0.40	0.00	28.96
8,177.00	0.97	137.40	8,007.21	-68.01	-1,486.58	1,197.78	0.45	0.19	26.55
8,274.00	1.14	168.25	8,104.20	-69.56	-1,485.82	1,198.17	0.60	0.18	31.80

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Design:	OH	Database:	Grand Junction District

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8,366.00	1.85	179.23	8,196.17	-71.94	-1,485.62	1,199.51	0.83	0.77	11.93
8,460.00	1.85	172.20	8,290.12	-74.96	-1,485.39	1,201.23	0.24	0.00	-7.48
8,555.00	0.79	161.04	8,385.09	-77.10	-1,484.97	1,202.25	1.14	-1.12	-11.75
8,649.00	0.44	201.03	8,479.08	-78.05	-1,484.89	1,202.79	0.57	-0.37	42.54
8,743.00	0.18	268.09	8,573.08	-78.39	-1,485.17	1,203.22	0.43	-0.28	71.34
8,838.00	0.60	245.38	8,668.08	-78.60	-1,485.77	1,203.82	0.46	0.44	-23.91
8,933.00	0.62	207.89	8,763.08	-79.26	-1,486.46	1,204.77	0.41	0.02	-39.46
9,027.00	0.70	208.94	8,857.07	-80.22	-1,486.98	1,205.77	0.09	0.09	1.12
9,121.00	1.14	187.14	8,951.06	-81.65	-1,487.37	1,206.98	0.59	0.47	-23.19
9,215.00	1.13	184.05	9,045.04	-83.50	-1,487.55	1,208.29	0.07	-0.01	-3.29
9,309.00	1.52	199.63	9,139.01	-85.60	-1,488.04	1,209.99	0.56	0.41	16.57
9,404.00	1.67	211.67	9,233.98	-87.96	-1,489.19	1,212.37	0.39	0.16	12.67
9,497.00	2.39	227.26	9,326.92	-90.43	-1,491.32	1,215.58	0.97	0.77	16.76
9,593.00	3.49	235.93	9,422.79	-93.43	-1,495.21	1,220.49	1.23	1.15	9.03
9,687.00	4.20	237.77	9,516.58	-96.87	-1,500.49	1,226.76	0.77	0.76	1.96
9,781.00	4.92	238.74	9,610.28	-100.79	-1,506.85	1,234.17	0.77	0.77	1.03
9,876.00	5.19	234.69	9,704.91	-105.39	-1,513.84	1,242.50	0.47	0.28	-4.26
9,970.00	5.97	234.02	9,798.47	-110.72	-1,521.27	1,251.62	0.83	0.83	-0.71
10,000.00	5.98	233.55	9,828.30	-112.56	-1,523.79	1,254.74	0.17	0.03	-1.57
Last SDI Production MWD Survey									
10,057.00	5.98	233.55	9,884.99	-116.09	-1,528.56	1,260.67	0.00	0.00	0.00
Projection to TD - NR 313-3 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	120.99	-0.82	-1.01	First SDI Gyro MWD Survey
580.00	575.28	-10.47	-60.65	Last SDI Gyro MWD Survey
650.00	643.72	-11.35	-75.32	First SDI Surface MWD Survey
1,072.00	1,053.28	-15.66	-176.68	Last SDI Surface MWD Survey
1,180.00	1,158.21	-15.41	-202.24	First SDI Production MWD Survey
10,000.00	9,828.30	-112.56	-1,523.79	Last SDI Production MWD Survey
10,057.00	9,884.99	-116.09	-1,528.56	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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