



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.	PA 312-26
County & State	Garfield County, CO
SDI Job No.	OP.012146
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 152 feet to a measured depth of 8,793 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

24-Aug-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 312-26 - Slot PA 312-26 (B14)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
Site:	PA 23-26 Pad	MD Reference:	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
Well:	PA 312-26	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		PA 23-26 Pad			
Site Position:		Northing:	1,614,399.90 usft	Latitude:	39.4943598
From:	Map	Easting:	2,303,951.10 usft	Longitude:	-107.9667508
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.56 °

Well	PA 312-26 - Slot PA 312-26 (B14), B14					
Well Position	+N/-S	0.00 usft	Northing:	1,614,389.00 usft	Latitude:	39.4943248
	+E/-W	0.00 usft	Easting:	2,303,883.10 usft	Longitude:	-107.9669906
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,637.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/5/2018	9.37	65.75	51,601

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	227.37	

Survey Program	Date	10/5/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
152.00	949.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
1,021.00	1,078.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,172.00	8,793.00	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	
152.00	0.09	317.90	152.00	0.09	-0.08	0.00	0.06	0.06	0.00	
First SDI Gyro MWD Survey										
213.00	0.44	118.56	213.00	0.01	0.09	-0.08	0.86	0.57	263.38	
305.00	0.44	217.27	305.00	-0.44	0.19	0.16	0.73	0.00	107.29	
397.00	0.26	205.84	397.00	-0.91	-0.11	0.70	0.21	-0.20	-12.42	
489.00	1.41	263.41	488.99	-1.22	-1.33	1.81	1.40	1.25	62.58	
581.00	2.38	288.81	580.94	-0.74	-4.26	3.64	1.37	1.05	27.61	
672.00	3.26	281.16	671.82	0.37	-8.59	6.07	1.05	0.97	-8.41	

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Site:	PA 23-26 Pad	MD Reference:	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
Well:	PA 312-26	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)
763.00	4.22	283.18	762.63	1.64	-14.39	9.48	1.06	1.05	2.22
854.00	5.54	279.32	853.30	3.11	-21.98	14.07	1.49	1.45	-4.24
949.00	5.89	286.35	947.83	5.23	-31.19	19.41	0.82	0.37	7.40
Last SDI Gyro MWD Survey									
1,021.00	5.54	303.62	1,019.47	8.19	-37.63	22.14	2.43	-0.49	23.99
First SDI Surface MWD Survey									
1,078.00	5.98	308.45	1,076.19	11.56	-42.24	23.25	1.15	0.77	8.47
Last SDI Surface MWD Survey									
1,172.00	6.04	314.78	1,169.67	18.09	-49.59	24.23	0.71	0.06	6.73
First SDI Production MWD Survey									
1,267.00	8.28	318.89	1,263.93	26.76	-57.63	24.28	2.42	2.36	4.33
1,361.00	10.66	310.80	1,356.64	37.55	-68.67	25.10	2.90	2.53	-8.61
1,456.00	13.31	308.68	1,449.56	50.12	-83.86	27.75	2.83	2.79	-2.23
1,551.00	15.66	306.04	1,541.54	64.50	-102.77	31.93	2.57	2.47	-2.78
1,645.00	17.74	306.17	1,631.57	80.42	-124.59	37.20	2.21	2.21	0.14
1,739.00	20.45	304.89	1,720.39	98.27	-149.62	43.53	2.92	2.88	-1.36
1,834.00	23.79	306.91	1,808.38	119.28	-178.57	50.60	3.61	3.52	2.13
1,928.00	27.06	307.97	1,893.27	143.82	-210.59	57.54	3.51	3.48	1.13
2,023.00	28.25	308.37	1,977.42	171.08	-245.25	64.59	1.27	1.25	0.42
2,117.00	28.21	308.02	2,060.23	198.57	-280.20	71.68	0.18	-0.04	-0.37
2,211.00	27.02	307.74	2,143.52	225.32	-314.58	78.86	1.27	-1.27	-0.30
2,306.00	28.59	306.81	2,227.55	252.15	-349.85	86.64	1.71	1.65	-0.98
2,400.00	26.89	306.51	2,310.75	278.28	-384.95	94.77	1.81	-1.81	-0.32
2,494.00	27.63	307.35	2,394.31	304.15	-419.36	102.57	0.89	0.79	0.89
2,589.00	26.56	307.57	2,478.88	330.47	-453.71	110.02	1.13	-1.13	0.23
2,683.00	29.46	309.48	2,561.86	357.98	-488.21	116.77	3.23	3.09	2.03
2,777.00	29.17	309.29	2,643.82	387.19	-523.78	123.16	0.32	-0.31	-0.20
2,871.00	28.78	308.73	2,726.06	415.85	-559.17	129.78	0.51	-0.41	-0.60
2,966.00	27.36	309.40	2,809.88	444.02	-593.88	136.25	1.53	-1.49	0.71
3,060.00	28.72	309.28	2,892.85	472.03	-628.05	142.42	1.45	1.45	-0.13
3,155.00	28.05	309.91	2,976.42	500.81	-662.85	148.54	0.77	-0.71	0.66
3,249.00	27.07	309.29	3,059.76	528.53	-696.36	154.41	1.09	-1.04	-0.66
3,344.00	29.13	308.84	3,143.55	556.73	-731.10	160.88	2.18	2.17	-0.47
3,438.00	28.34	308.51	3,225.98	584.97	-766.38	167.71	0.86	-0.84	-0.35
3,533.00	27.35	308.16	3,309.98	612.49	-801.19	174.68	1.06	-1.04	-0.37
3,627.00	28.62	306.88	3,392.99	639.34	-836.18	182.24	1.49	1.35	-1.36
3,721.00	28.35	306.22	3,475.61	666.04	-872.19	190.65	0.44	-0.29	-0.70
3,816.00	27.49	305.78	3,559.55	692.19	-908.17	199.42	0.93	-0.91	-0.46
3,910.00	27.51	305.65	3,642.93	717.53	-943.42	208.19	0.07	0.02	-0.14
4,004.00	26.73	305.81	3,726.59	742.55	-978.20	216.84	0.83	-0.83	0.17
4,098.00	27.92	307.56	3,810.10	768.34	-1,012.79	224.83	1.53	1.27	1.86
4,193.00	27.85	307.85	3,894.07	795.51	-1,047.95	232.29	0.16	-0.07	0.31
4,297.00	26.82	308.10	3,986.46	824.89	-1,085.59	240.09	1.00	-0.99	0.24
4,381.00	27.84	308.39	4,061.08	848.77	-1,115.88	246.20	1.22	1.21	0.35

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Site:	PA 23-26 Pad	MD Reference:	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
Well:	PA 312-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

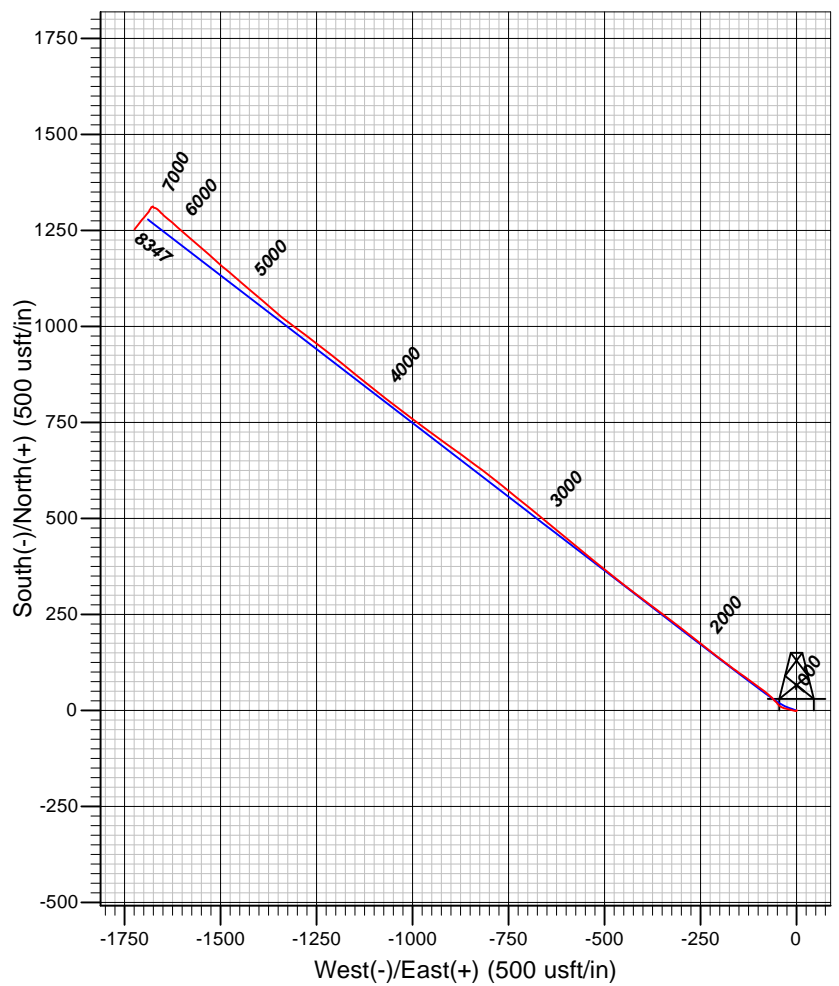
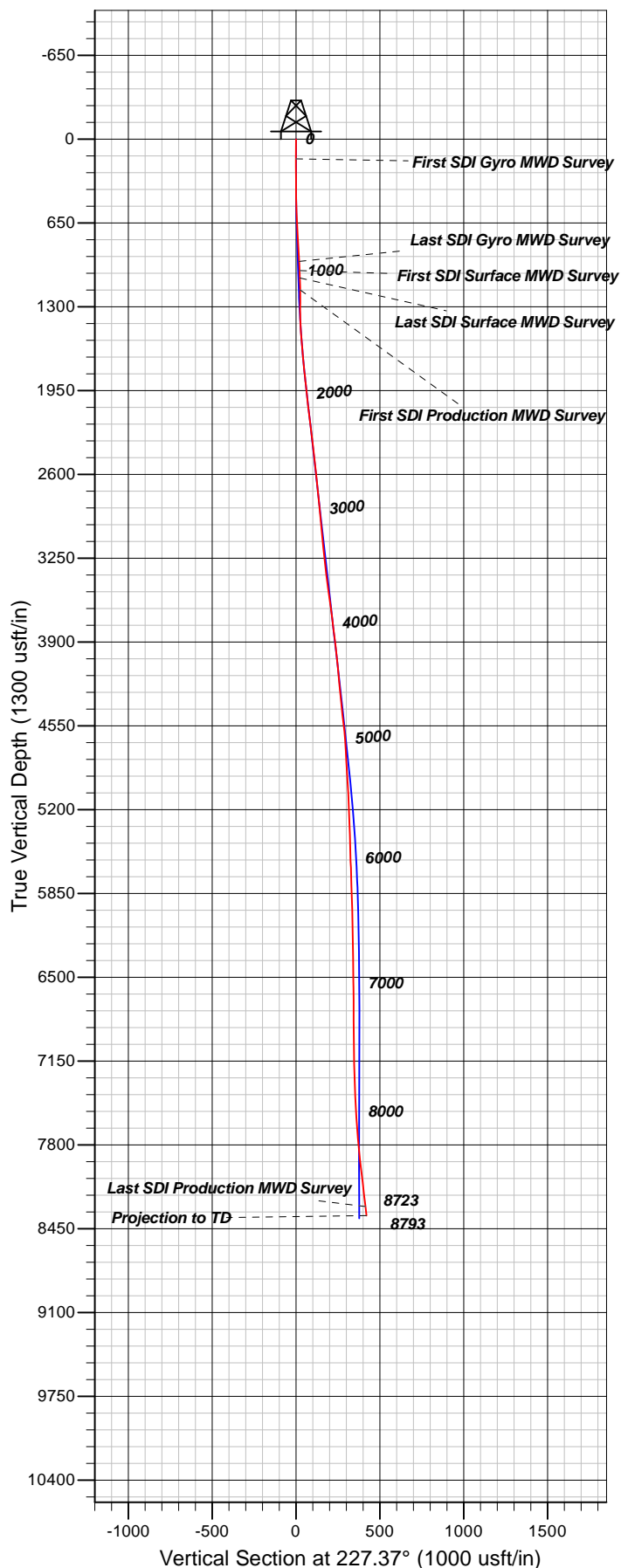
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,476.00	27.20	309.61	4,145.33	876.39	-1,149.99	252.60	0.90	-0.67	1.28	
4,570.00	26.56	308.63	4,229.17	903.20	-1,182.96	258.69	0.83	-0.68	-1.04	
4,664.00	25.78	308.13	4,313.54	928.94	-1,215.46	265.17	0.86	-0.83	-0.53	
4,759.00	25.06	307.66	4,399.34	953.99	-1,247.64	271.88	0.79	-0.76	-0.49	
4,853.00	24.89	306.54	4,484.55	977.93	-1,279.29	278.96	0.53	-0.18	-1.19	
4,947.00	24.74	306.71	4,569.87	1,001.47	-1,310.95	286.31	0.18	-0.16	0.18	
5,042.00	21.33	309.48	4,657.29	1,024.34	-1,340.23	292.37	3.77	-3.59	2.92	
5,137.00	21.56	311.12	4,745.71	1,046.81	-1,366.72	296.64	0.68	0.24	1.73	
5,231.00	21.06	310.67	4,833.28	1,069.17	-1,392.54	300.49	0.56	-0.53	-0.48	
5,325.00	21.65	309.75	4,920.83	1,091.27	-1,418.68	304.76	0.72	0.63	-0.98	
5,419.00	19.79	310.71	5,008.75	1,112.74	-1,444.08	308.91	2.01	-1.98	1.02	
5,514.00	16.62	311.07	5,098.98	1,132.16	-1,466.52	312.27	3.34	-3.34	0.38	
5,608.00	14.79	309.25	5,189.47	1,148.58	-1,485.94	315.44	2.02	-1.95	-1.94	
5,703.00	13.65	310.52	5,281.55	1,163.54	-1,503.86	318.49	1.24	-1.20	1.34	
5,797.00	12.57	312.85	5,373.10	1,177.70	-1,519.79	320.62	1.28	-1.15	2.48	
5,892.00	12.58	312.84	5,465.83	1,191.77	-1,534.95	322.25	0.01	0.01	-0.01	
5,986.00	13.79	310.33	5,557.35	1,205.98	-1,551.00	324.43	1.42	1.29	-2.67	
6,081.00	12.53	309.19	5,649.85	1,219.82	-1,567.62	327.29	1.35	-1.33	-1.20	
6,176.00	13.19	311.53	5,742.47	1,233.52	-1,583.72	329.86	0.88	0.69	2.46	
6,270.00	12.05	311.53	5,834.19	1,247.13	-1,599.09	331.95	1.21	-1.21	0.00	
6,364.00	10.36	312.10	5,926.40	1,259.30	-1,612.71	333.72	1.80	-1.80	0.61	
6,459.00	10.13	309.53	6,019.89	1,270.35	-1,625.49	335.65	0.54	-0.24	-2.71	
6,553.00	8.96	310.27	6,112.58	1,280.34	-1,637.45	337.68	1.25	-1.24	0.79	
6,647.00	7.54	311.20	6,205.61	1,289.14	-1,647.68	339.25	1.52	-1.51	0.99	
6,741.00	5.93	315.28	6,298.96	1,296.65	-1,655.74	340.09	1.79	-1.71	4.34	
6,836.00	4.37	314.11	6,393.57	1,302.66	-1,661.79	340.47	1.65	-1.64	-1.23	
6,930.00	2.95	303.15	6,487.38	1,306.47	-1,666.39	341.27	1.68	-1.51	-11.66	
7,024.00	1.70	296.85	6,581.30	1,308.42	-1,669.66	342.35	1.36	-1.33	-6.70	
7,118.00	1.63	279.38	6,675.26	1,309.27	-1,672.22	343.67	0.54	-0.07	-18.59	
7,213.00	0.88	277.87	6,770.23	1,309.59	-1,674.28	344.96	0.79	-0.79	-1.59	
7,307.00	1.06	0.13	6,864.23	1,310.56	-1,674.99	344.83	1.37	0.19	87.51	
7,402.00	0.77	342.48	6,959.21	1,312.05	-1,675.18	343.96	0.42	-0.31	-18.58	
7,496.00	1.23	256.42	7,053.20	1,312.41	-1,676.35	344.58	1.50	0.49	-91.55	
7,590.00	1.77	246.26	7,147.17	1,311.59	-1,678.66	346.83	0.64	0.57	-10.81	
7,685.00	0.88	211.07	7,242.15	1,310.38	-1,680.38	348.92	1.23	-0.94	-37.04	
7,779.00	1.32	209.40	7,336.13	1,308.82	-1,681.28	350.64	0.47	0.47	-1.78	
7,874.00	2.37	213.58	7,431.08	1,306.23	-1,682.91	353.59	1.11	1.11	4.40	
7,968.00	2.21	207.27	7,525.00	1,303.00	-1,684.81	357.18	0.32	-0.17	-6.71	
8,063.00	2.85	209.72	7,619.91	1,299.32	-1,686.82	361.15	0.68	0.67	2.58	
8,157.00	3.62	221.56	7,713.76	1,295.07	-1,689.95	366.33	1.08	0.82	12.60	
8,252.00	4.34	220.99	7,808.53	1,290.11	-1,694.30	372.89	0.76	0.76	-0.60	
8,346.00	5.09	219.64	7,902.21	1,284.21	-1,699.29	380.55	0.81	0.80	-1.44	
8,440.00	5.21	218.17	7,995.83	1,277.65	-1,704.59	388.90	0.19	0.13	-1.56	

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Site:	PA 23-26 Pad	MD Reference:	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
Well:	PA 312-26	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)
8,534.00	5.26	218.86	8,089.44	1,270.94	-1,709.93	397.37	0.09	0.05	0.73
8,629.00	5.15	217.37	8,184.05	1,264.16	-1,715.25	405.88	0.18	-0.12	-1.57
8,723.00	5.19	218.01	8,277.67	1,257.45	-1,720.43	414.23	0.07	0.04	0.68
Last SDI Production MWD Survey									
8,793.00	5.19	218.01	8,347.38	1,252.46	-1,724.33	420.48	0.00	0.00	0.00
Projection to TD - PBHL(PA 312-26)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
152.00	152.00	0.09	-0.08	First SDI Gyro MWD Survey
949.00	947.83	5.23	-31.19	Last SDI Gyro MWD Survey
1,021.00	1,019.47	8.19	-37.63	First SDI Surface MWD Survey
1,078.00	1,076.19	11.56	-42.24	Last SDI Surface MWD Survey
1,172.00	1,169.67	18.09	-49.59	First SDI Production MWD Survey
8,723.00	8,277.67	1,257.45	-1,720.43	Last SDI Production MWD Survey
8,793.00	8,347.38	1,252.46	-1,724.33	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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Well Details: PA 312-26

TVD Reference: GL 5637' & RKB 24' @ 5661.00usft (H&B 24' and Level: 5637.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1614389.00 2303883.10 39.4943248 -107.9669906 PA 312-26 (B14)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 312-26 - Slot PA 312-26 (B14), True North
 Vertical (TVD) Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
 Section (VS) Reference: Slot - PA 312-26 (B14)(0.00N, 0.00E)
 Measured Depth Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
 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

13:06, October 05 2018
 Created By: Mel Mireles Jr.