



## 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 412-26
County & State	Garfield County, CO
SDI Job No.	OP.011991
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 122 feet to a measured depth of 8,725 feet is true and correct as determined from all available records.

  
Signature

09-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 PA 412-26 - Slot PA 412-26 (B15)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
<b>Site:</b>	PA 23-26 Pad	<b>MD Reference:</b>	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
<b>Well:</b>	PA 412-26	<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		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 412-26 - Slot PA 412-26 (B15)					
Well Position	+N/-S	0.00 usft	Northing:	1,614,388.80 usft	Latitude:	39.4943237
	+E/-W	0.00 usft	Easting:	2,303,875.60 usft	Longitude:	-107.9670171
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,637.00 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	7/30/2018	9.37	65.75	51,603

<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	294.17	

<b>Survey Program</b>	<b>Date</b>	8/8/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
122.00	580.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
652.00	1,064.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,172.00	8,725.00	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	
122.00	0.44	130.34	122.00	-0.30	0.36	-0.45	0.36	0.36	0.00	
<b>First SDI Gyro MWD Survey</b>										
212.00	1.94	256.03	211.98	-0.89	-0.86	0.42	2.47	1.67	139.66	
305.00	3.78	273.78	304.86	-1.07	-5.44	4.53	2.17	1.98	19.09	
397.00	5.45	295.14	396.57	0.98	-12.43	11.74	2.58	1.82	23.22	
489.00	8.01	298.83	487.93	5.93	-22.00	22.50	2.82	2.78	4.01	
580.00	10.73	293.29	577.71	12.34	-35.34	37.29	3.15	2.99	-6.09	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well PA 412-26 - Slot PA 412-26 (B15)
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<b>Site:</b>	PA 23-26 Pad	<b>MD Reference:</b>	GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
<b>Well:</b>	PA 412-26	<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	12.92	293.95	648.18	18.26	-48.85	52.04	3.05	3.04	0.92
<b>First SDI Surface MWD Survey</b>									
742.00	15.06	297.80	735.50	27.80	-68.39	73.78	2.59	2.38	4.28
834.00	17.87	297.87	823.72	39.97	-91.45	99.80	3.05	3.05	0.08
928.00	20.93	296.33	912.37	54.16	-119.25	130.98	3.30	3.26	-1.64
1,023.00	22.42	292.38	1,000.66	68.59	-151.22	166.04	2.19	1.57	-4.16
1,064.00	23.13	291.24	1,038.46	74.48	-165.95	181.90	2.04	1.73	-2.78
<b>Last SDI Surface MWD Survey</b>									
1,172.00	24.29	292.56	1,137.35	90.69	-206.24	225.29	1.18	1.07	1.22
<b>First SDI Production MWD Survey</b>									
1,267.00	24.24	297.71	1,223.96	107.26	-241.55	264.29	2.23	-0.05	5.42
1,361.00	24.22	296.63	1,309.68	124.87	-275.87	302.81	0.47	-0.02	-1.15
1,455.00	23.98	295.64	1,395.49	141.78	-310.33	341.17	0.50	-0.26	-1.06
1,550.00	24.30	299.85	1,482.19	159.86	-344.69	379.93	1.84	0.34	4.44
1,644.00	23.57	298.39	1,568.10	178.43	-378.00	417.92	1.00	-0.78	-1.55
1,738.00	22.98	296.18	1,654.46	195.46	-411.00	455.00	1.12	-0.63	-2.35
1,833.00	24.31	299.57	1,741.48	213.29	-444.65	493.00	2.00	1.40	3.57
1,927.00	24.26	298.75	1,827.16	232.13	-478.41	531.52	0.36	-0.05	-0.87
2,021.00	23.71	297.78	1,913.05	250.22	-512.06	569.63	0.72	-0.59	-1.03
2,116.00	24.08	304.51	1,999.92	270.11	-544.94	607.76	2.89	0.39	7.08
2,210.00	23.66	303.96	2,085.88	291.51	-576.38	645.21	0.51	-0.45	-0.59
2,304.00	22.82	301.89	2,172.26	311.68	-607.51	681.87	1.25	-0.89	-2.20
2,399.00	21.50	301.62	2,260.24	330.54	-637.97	717.39	1.39	-1.39	-0.28
2,493.00	22.25	300.42	2,347.47	348.58	-667.99	752.16	0.93	0.80	-1.28
2,587.00	23.17	300.43	2,434.18	366.96	-699.28	788.23	0.98	0.98	0.01
2,682.00	25.02	300.12	2,520.90	386.51	-732.78	826.79	1.95	1.95	-0.33
2,776.00	24.72	299.40	2,606.18	406.13	-767.09	866.14	0.45	-0.32	-0.77
2,871.00	24.04	299.02	2,692.71	425.27	-801.32	905.20	0.73	-0.72	-0.40
2,965.00	23.69	298.44	2,778.67	443.55	-834.67	943.11	0.45	-0.37	-0.62
3,059.00	25.10	298.69	2,864.28	462.12	-868.77	981.82	1.50	1.50	0.27
3,154.00	23.74	297.36	2,950.78	480.58	-903.43	1,021.00	1.54	-1.43	-1.40
3,248.00	24.87	297.40	3,036.44	498.37	-937.78	1,059.63	1.20	1.20	0.04
3,342.00	23.81	296.75	3,122.09	516.01	-972.28	1,098.32	1.16	-1.13	-0.69
3,436.00	25.49	299.47	3,207.52	534.50	-1,006.83	1,137.42	2.16	1.79	2.89
3,531.00	24.37	299.60	3,293.67	554.24	-1,041.67	1,177.29	1.18	-1.18	0.14
3,625.00	22.74	299.34	3,379.83	572.72	-1,074.37	1,214.69	1.74	-1.73	-0.28
3,720.00	24.14	301.19	3,466.99	591.78	-1,107.00	1,252.26	1.66	1.47	1.95
3,814.00	23.17	301.56	3,553.09	611.42	-1,139.20	1,289.68	1.04	-1.03	0.39
3,909.00	22.64	301.71	3,640.60	630.81	-1,170.68	1,326.34	0.56	-0.56	0.16
4,003.00	20.96	300.97	3,727.88	648.97	-1,200.49	1,360.97	1.81	-1.79	-0.79
4,097.00	23.00	303.08	3,815.04	667.65	-1,230.30	1,395.81	2.33	2.17	2.24
4,191.00	24.36	302.52	3,901.13	688.10	-1,262.03	1,433.14	1.47	1.45	-0.60
4,286.00	24.39	302.04	3,987.66	709.03	-1,295.18	1,471.95	0.21	0.03	-0.51

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<b>Well:</b>	PA 412-26	<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

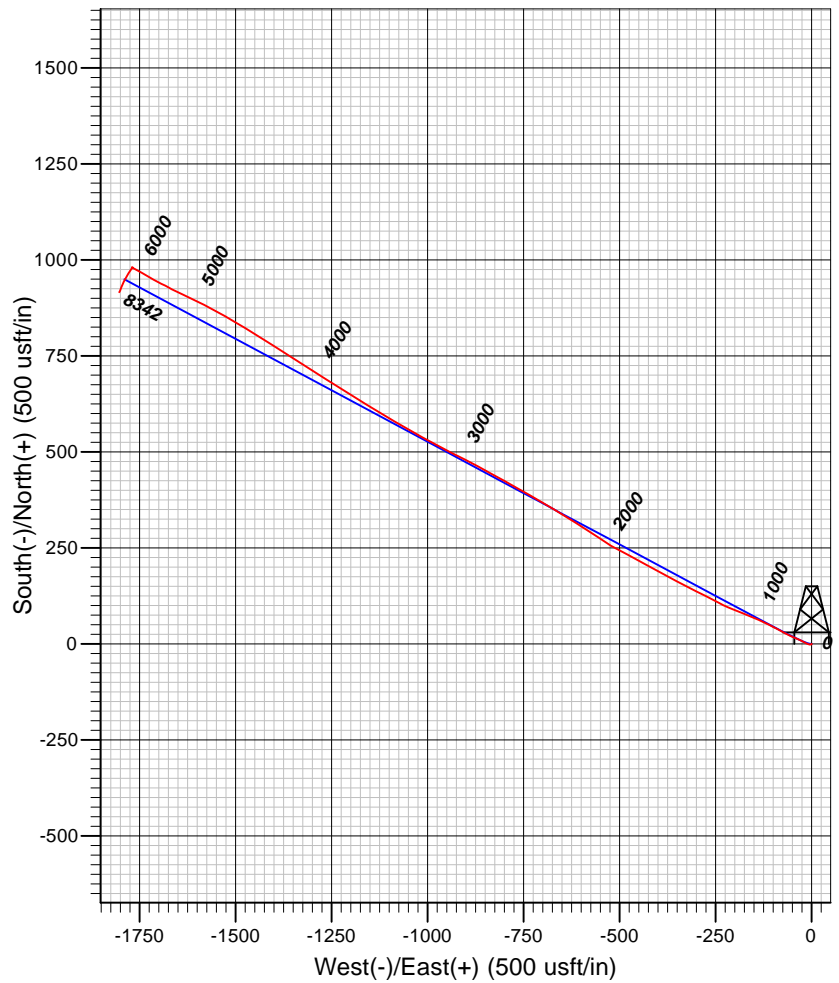
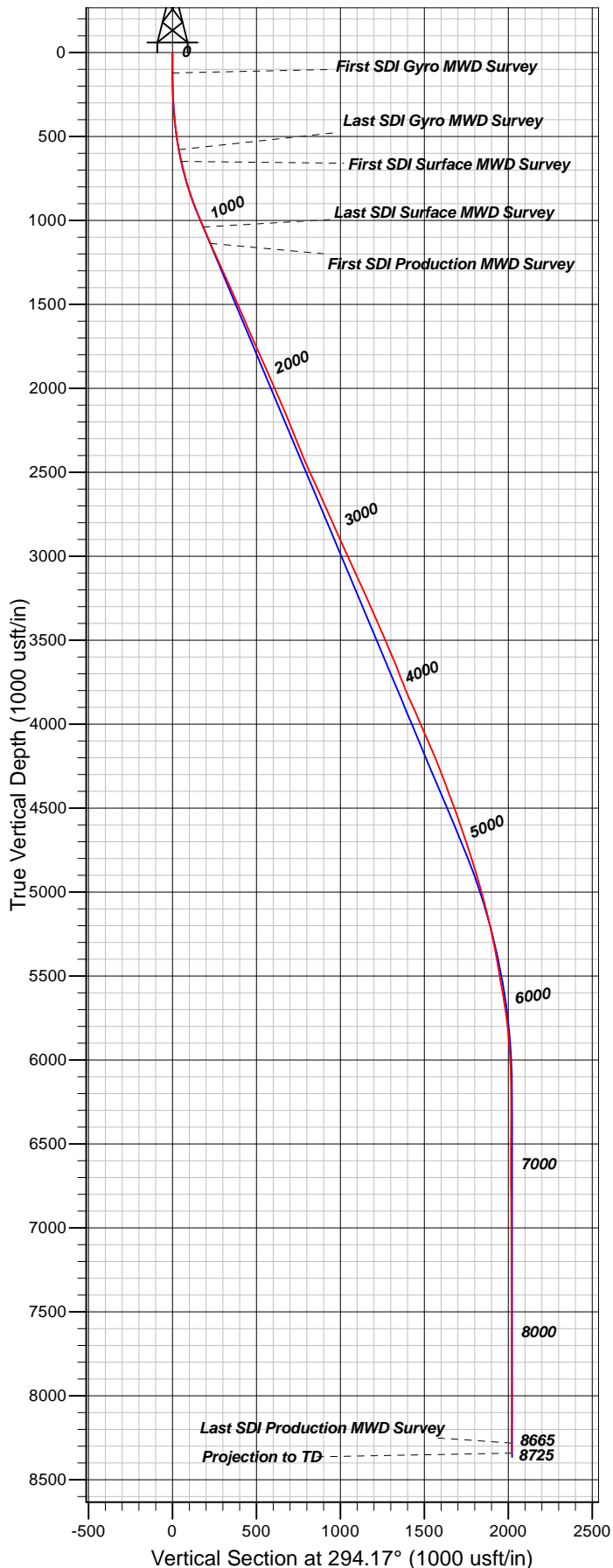
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,380.00	23.85	302.88	4,073.45	729.65	-1,327.59	1,509.96	0.68	-0.57	0.89	
4,474.00	23.14	302.39	4,159.66	749.86	-1,359.15	1,547.03	0.78	-0.76	-0.52	
4,569.00	21.81	302.81	4,247.44	769.42	-1,389.75	1,582.95	1.41	-1.40	0.44	
4,673.00	20.58	301.96	4,344.40	789.57	-1,421.49	1,620.17	1.22	-1.18	-0.82	
4,758.00	20.71	301.83	4,423.94	805.40	-1,446.94	1,649.86	0.16	0.15	-0.15	
4,852.00	20.34	300.94	4,511.98	822.57	-1,475.07	1,682.56	0.51	-0.39	-0.95	
4,946.00	18.87	301.56	4,600.53	838.92	-1,502.04	1,713.86	1.58	-1.56	0.66	
5,041.00	18.38	298.97	4,690.55	854.22	-1,528.23	1,744.02	1.01	-0.52	-2.73	
5,135.00	17.78	297.77	4,779.91	868.08	-1,553.90	1,773.11	0.75	-0.64	-1.28	
5,229.00	17.71	297.67	4,869.44	881.41	-1,579.26	1,801.71	0.08	-0.07	-0.11	
5,324.00	15.95	296.58	4,960.37	893.96	-1,603.73	1,829.17	1.88	-1.85	-1.15	
5,419.00	14.61	294.75	5,052.01	904.82	-1,626.29	1,854.20	1.50	-1.41	-1.93	
5,513.00	13.44	293.10	5,143.20	914.07	-1,647.10	1,876.97	1.32	-1.24	-1.76	
5,607.00	12.57	300.38	5,234.80	923.53	-1,665.98	1,898.07	1.97	-0.93	7.74	
5,702.00	11.07	297.44	5,327.78	932.96	-1,682.99	1,917.45	1.70	-1.58	-3.09	
5,796.00	9.63	294.91	5,420.25	940.43	-1,698.13	1,934.32	1.61	-1.53	-2.69	
5,891.00	10.31	300.91	5,513.82	948.14	-1,712.63	1,950.71	1.31	0.72	6.32	
5,985.00	9.58	300.90	5,606.40	956.48	-1,726.56	1,966.83	0.78	-0.78	-0.01	
6,080.00	8.88	298.97	5,700.17	964.09	-1,739.76	1,981.99	0.81	-0.74	-2.03	
6,174.00	6.42	298.00	5,793.33	970.07	-1,750.75	1,994.47	2.62	-2.62	-1.03	
6,268.00	4.54	299.02	5,886.90	974.35	-1,758.64	2,003.42	2.00	-2.00	1.09	
6,363.00	3.43	298.27	5,981.66	977.52	-1,764.43	2,010.00	1.17	-1.17	-0.79	
6,457.00	1.06	288.97	6,075.59	979.13	-1,767.73	2,013.67	2.54	-2.52	-9.89	
6,551.00	1.04	271.72	6,169.57	979.44	-1,769.41	2,015.32	0.34	-0.02	-18.35	
6,645.00	0.90	22.45	6,263.56	980.15	-1,769.98	2,016.13	1.70	-0.15	117.80	
6,740.00	0.48	34.58	6,358.56	981.17	-1,769.47	2,016.09	0.47	-0.44	12.77	
6,834.00	0.35	93.39	6,452.55	981.47	-1,768.96	2,015.75	0.45	-0.14	62.56	
6,928.00	0.61	178.02	6,546.55	980.96	-1,768.65	2,015.26	0.72	0.28	90.03	
7,023.00	1.25	211.64	6,641.54	979.57	-1,769.18	2,015.17	0.86	0.67	35.39	
7,117.00	1.74	215.22	6,735.51	977.53	-1,770.54	2,015.58	0.53	0.52	3.81	
7,212.00	2.41	222.37	6,830.44	974.88	-1,772.72	2,016.48	0.75	0.71	7.53	
7,306.00	1.67	210.82	6,924.38	972.24	-1,774.75	2,017.25	0.90	-0.79	-12.29	
7,401.00	0.53	210.73	7,019.37	970.67	-1,775.69	2,017.46	1.20	-1.20	-0.09	
7,495.00	1.23	209.41	7,113.35	969.42	-1,776.40	2,017.60	0.74	0.74	-1.40	
7,589.00	2.02	209.58	7,207.32	967.10	-1,777.72	2,017.85	0.84	0.84	0.18	
7,683.00	2.54	209.54	7,301.24	963.85	-1,779.56	2,018.20	0.55	0.55	-0.04	
7,778.00	1.27	224.21	7,396.19	961.26	-1,781.33	2,018.76	1.42	-1.34	15.44	
7,873.00	1.76	211.78	7,491.15	959.27	-1,782.84	2,019.31	0.62	0.52	-13.08	
7,967.00	2.42	211.09	7,585.09	956.34	-1,784.62	2,019.74	0.70	0.70	-0.73	
8,061.00	2.81	208.88	7,678.99	952.62	-1,786.76	2,020.17	0.43	0.41	-2.35	
8,156.00	2.90	209.94	7,773.87	948.50	-1,789.08	2,020.61	0.11	0.09	1.12	
8,250.00	3.15	202.76	7,867.74	944.06	-1,791.27	2,020.78	0.48	0.27	-7.64	
8,344.00	3.34	201.67	7,961.59	939.13	-1,793.28	2,020.60	0.21	0.20	-1.16	

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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)	
8,439.00	3.96	203.17	8,056.40	933.54	-1,795.59	2,020.42	0.66	0.65	1.58	
8,533.00	3.90	204.21	8,150.18	927.65	-1,798.18	2,020.36	0.10	-0.06	1.11	
8,627.00	3.78	197.54	8,243.97	921.78	-1,800.42	2,020.01	0.49	-0.13	-7.10	
8,665.00	3.69	207.21	8,281.89	919.49	-1,801.36	2,019.93	1.67	-0.24	25.45	
Last SDI Production MWD Survey										
8,725.00	3.69	207.21	8,341.76	916.06	-1,803.13	2,020.13	0.00	0.00	0.00	
Projection to TD - PBHL(PA 412-26)										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
122.00	122.00	-0.30	0.36	First SDI Gyro MWD Survey	
580.00	577.71	12.34	-35.34	Last SDI Gyro MWD Survey	
652.00	648.18	18.26	-48.85	First SDI Surface MWD Survey	
1,064.00	1,038.46	74.48	-165.95	Last SDI Surface MWD Survey	
1,172.00	1,137.35	90.69	-206.24	First SDI Production MWD Survey	
8,665.00	8,281.89	919.49	-1,801.36	Last SDI Production MWD Survey	
8,725.00	8,341.76	916.06	-1,803.13	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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#### Well Details: PA 412-26

TVD Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271) and Level: 5637.00  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.00 0.00 1614388.80 2303875.60 39.4943237 -107.967017PA 412-26 (B15)

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 412-26 - Slot PA 412-26 (B15), True North  
 Vertical (TVD) Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271)  
 Section (VS) Reference: Slot - PA 412-26 (B15)(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

12:42, August 09 2018  
 Created By: Mel Mireles Jr.