



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 541-26
County & State	Garfield County, CO
SDI Job No.	OP.007209
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 108 feet to a measured depth of 8,587 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

18-Jan-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 541-26 - Slot PA 541-26 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5224' RKB 24' @ 5248.00usft
Site:	PA 22-25 Pad	MD Reference:	GL 5224' RKB 24' @ 5248.00usft
Well:	PA 541-26	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 22-25 Pad			
Site Position:		Northing:	1,615,186.77 usft	Latitude:	39.4968742
From:	Map	Easting:	2,308,728.18 usft	Longitude:	-107.9499045
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.55 °

Well		PA 541-26 - Slot PA 541-26 (A7), B3				
Well Position	+N/-S	0.00 usft	Northing:	1,615,188.94 usft	Latitude:	39.4968838
	+E/-W	0.00 usft	Easting:	2,308,777.78 usft	Longitude:	-107.9497291
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,224.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/9/2018	9.40	65.78	51,668

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	204.11	

Survey Program	Date	1/18/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
108.00	1,102.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
1,174.00	8,587.00	Survey #2 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	
SHL (PA 541-26)										
108.00	0.53	56.51	108.00	0.28	0.42	-0.42	0.49	0.49	0.00	
First SDI Gyro MWD Survey										
199.00	0.79	169.72	199.00	-0.11	0.88	-0.26	1.22	0.29	124.41	
299.00	2.20	184.22	298.96	-2.70	0.86	2.11	1.45	1.41	14.50	
390.00	3.52	199.86	389.84	-7.07	-0.22	6.54	1.67	1.45	17.19	
482.00	4.05	214.01	481.65	-12.42	-2.99	12.56	1.16	0.58	15.38	
573.00	4.93	231.33	572.37	-17.53	-7.84	19.20	1.77	0.97	19.03	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 541-26 - Slot PA 541-26 (A7)
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Site:	PA 22-25 Pad	MD Reference:	GL 5224' RKB 24' @ 5248.00usft
Well:	PA 541-26	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)
666.00	5.63	249.52	664.98	-21.62	-15.24	25.96	1.94	0.75	19.56
763.00	7.21	262.27	761.37	-24.11	-25.73	32.51	2.18	1.63	13.14
855.00	8.89	276.15	852.47	-24.12	-38.52	37.75	2.78	1.83	15.09
949.00	10.91	286.52	945.08	-20.81	-54.27	41.16	2.86	2.15	11.03
1,043.00	13.28	293.20	1,036.99	-14.03	-72.73	42.51	2.92	2.52	7.11
1,102.00	14.60	298.30	1,094.25	-7.83	-85.50	42.07	3.05	2.24	8.64
Last SDI Gyro MWD Survey									
1,174.00	15.59	301.78	1,163.77	1.56	-101.72	40.12	1.86	1.38	4.83
First SDI Production MWD Survey									
1,269.00	18.81	301.33	1,254.51	16.26	-125.66	36.49	3.39	3.39	-0.47
1,364.00	21.31	299.01	1,343.74	32.59	-153.84	33.09	2.76	2.63	-2.44
1,458.00	23.97	301.28	1,430.49	50.79	-185.11	29.24	2.98	2.83	2.41
1,553.00	26.87	301.67	1,516.28	72.09	-219.88	24.01	3.06	3.05	0.41
1,648.00	29.81	302.47	1,599.89	96.04	-258.08	17.75	3.12	3.09	0.84
1,742.00	31.99	299.70	1,680.54	120.93	-299.43	11.92	2.77	2.32	-2.95
1,837.00	30.92	296.93	1,761.59	144.45	-343.05	8.27	1.89	-1.13	-2.92
1,931.00	32.73	299.05	1,841.45	167.73	-386.80	4.89	2.26	1.93	2.26
2,026.00	31.15	299.73	1,922.07	192.39	-430.59	0.27	1.71	-1.66	0.72
2,120.00	31.04	300.95	2,002.56	216.91	-472.49	-5.00	0.68	-0.12	1.30
2,215.00	32.34	304.68	2,083.41	243.97	-514.39	-12.58	2.47	1.37	3.93
2,309.00	32.02	303.26	2,162.97	271.94	-555.91	-21.16	0.87	-0.34	-1.51
2,404.00	31.21	302.21	2,243.87	298.87	-597.80	-28.64	1.03	-0.85	-1.11
2,498.00	30.86	301.99	2,324.41	324.63	-638.85	-35.37	0.39	-0.37	-0.23
2,593.00	32.55	303.59	2,405.23	351.68	-680.81	-42.93	1.99	1.78	1.68
2,687.00	31.33	303.40	2,485.00	379.12	-722.28	-51.04	1.30	-1.30	-0.20
2,782.00	30.78	302.60	2,566.38	405.81	-763.37	-58.62	0.72	-0.58	-0.84
2,876.00	32.16	302.91	2,646.56	432.37	-804.64	-66.00	1.48	1.47	0.33
2,971.00	31.25	302.60	2,727.38	459.38	-846.63	-73.51	0.97	-0.96	-0.33
3,065.00	30.17	302.40	2,808.19	485.17	-887.11	-80.51	1.15	-1.15	-0.21
3,160.00	29.85	302.28	2,890.46	510.59	-927.26	-87.32	0.34	-0.34	-0.13
3,254.00	28.46	301.34	2,972.55	534.74	-966.17	-93.46	1.56	-1.48	-1.00
3,348.00	29.43	300.83	3,054.80	558.22	-1,005.13	-98.99	1.06	1.03	-0.54
3,443.00	28.03	300.59	3,138.11	581.54	-1,044.39	-104.24	1.48	-1.47	-0.25
3,537.00	30.25	300.87	3,220.20	604.93	-1,083.73	-109.52	2.37	2.36	0.30
3,632.00	29.59	301.54	3,302.54	629.48	-1,124.26	-115.37	0.78	-0.69	0.71
3,727.00	28.88	302.02	3,385.44	653.92	-1,163.70	-121.56	0.79	-0.75	0.51
3,821.00	29.78	299.80	3,467.39	677.55	-1,203.21	-127.00	1.50	0.96	-2.36
3,916.00	30.07	299.61	3,549.73	701.04	-1,244.37	-131.63	0.32	0.31	-0.20
4,010.00	29.38	298.60	3,631.36	723.71	-1,285.09	-135.69	0.91	-0.73	-1.07
4,105.00	28.60	298.61	3,714.46	745.75	-1,325.51	-139.30	0.82	-0.82	0.01
4,199.00	30.05	300.04	3,796.41	768.31	-1,365.64	-143.50	1.71	1.54	1.52
4,293.00	29.55	299.53	3,877.98	791.52	-1,406.18	-148.12	0.60	-0.53	-0.54
4,387.00	29.42	299.57	3,959.80	814.34	-1,446.43	-152.51	0.14	-0.14	0.04
4,481.00	28.59	298.65	4,042.01	836.51	-1,486.25	-156.49	1.00	-0.88	-0.98

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Well:	PA 541-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

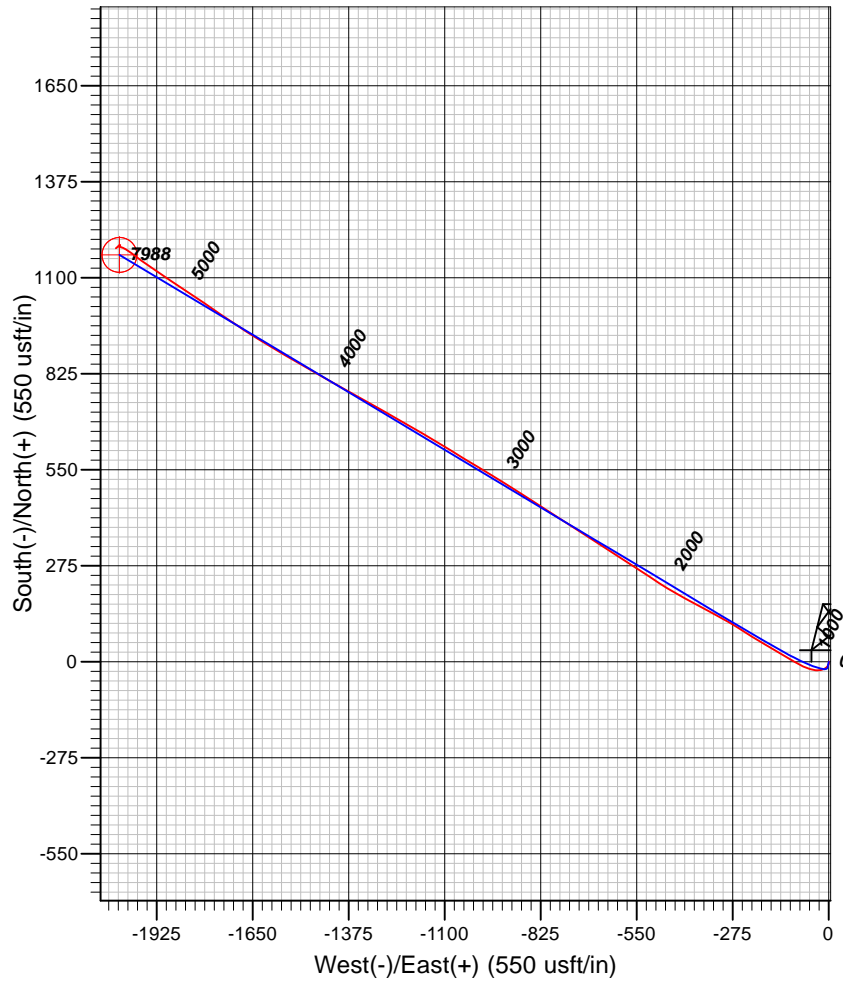
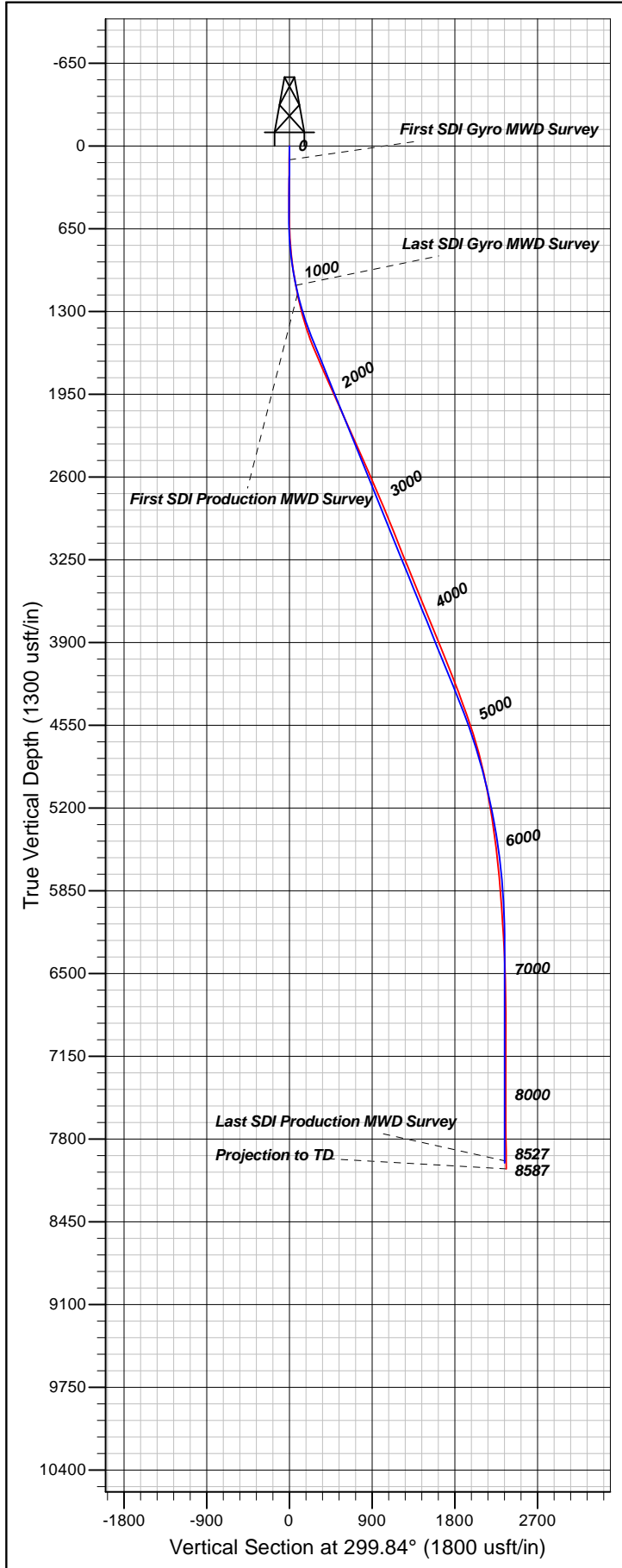
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,574.00	29.91	301.27	4,123.16	859.22	-1,525.60	-161.14	1.98	1.42	2.82
4,668.00	28.87	301.21	4,205.06	883.14	-1,565.04	-166.87	1.11	-1.11	-0.06
4,762.00	26.29	299.70	4,288.37	905.22	-1,602.54	-171.71	2.84	-2.74	-1.61
4,870.00	26.59	302.81	4,385.08	930.17	-1,643.63	-177.69	1.31	0.28	2.88
4,950.00	26.40	302.70	4,456.68	949.48	-1,673.64	-183.06	0.25	-0.24	-0.14
5,044.00	25.18	304.04	4,541.31	971.96	-1,707.80	-189.63	1.44	-1.30	1.43
5,054.54	25.12	304.00	4,550.85	974.47	-1,711.51	-190.40	0.61	-0.60	-0.34
PA 541-26 MVRD									
5,138.00	24.62	303.71	4,626.58	994.02	-1,740.66	-196.35	0.61	-0.60	-0.35
5,233.00	21.26	304.43	4,714.05	1,014.75	-1,771.34	-202.74	3.55	-3.54	0.76
5,326.00	18.57	304.62	4,801.48	1,032.70	-1,797.43	-208.46	2.89	-2.89	0.20
5,420.00	18.11	304.29	4,890.71	1,049.44	-1,821.82	-213.77	0.50	-0.49	-0.35
5,515.00	16.92	303.69	4,981.30	1,065.42	-1,845.53	-218.69	1.27	-1.25	-0.63
5,609.00	14.37	303.15	5,071.81	1,079.39	-1,866.68	-222.80	2.72	-2.71	-0.57
5,704.00	13.06	303.00	5,164.10	1,091.68	-1,885.55	-226.31	1.38	-1.38	-0.16
5,798.00	11.77	303.56	5,255.90	1,102.77	-1,902.45	-229.53	1.38	-1.37	0.60
5,893.00	11.95	305.79	5,348.87	1,113.88	-1,918.50	-233.11	0.52	0.19	2.35
5,987.00	11.28	304.83	5,440.95	1,124.82	-1,933.94	-236.79	0.74	-0.71	-1.02
6,081.00	9.69	304.44	5,533.37	1,134.54	-1,948.01	-239.92	1.69	-1.69	-0.41
6,176.00	8.00	305.57	5,627.24	1,142.91	-1,959.98	-242.67	1.79	-1.78	1.19
6,271.00	6.72	304.59	5,721.46	1,149.91	-1,969.94	-244.99	1.35	-1.35	-1.03
6,366.00	7.16	307.68	5,815.76	1,156.69	-1,979.20	-247.39	0.61	0.46	3.25
6,460.00	5.89	307.62	5,909.15	1,163.21	-1,987.65	-249.89	1.35	-1.35	-0.06
6,555.00	5.85	306.02	6,003.65	1,169.04	-1,995.43	-252.03	0.18	-0.04	-1.68
6,650.00	5.30	305.34	6,098.20	1,174.42	-2,002.93	-253.89	0.58	-0.58	-0.72
6,745.00	4.70	302.60	6,192.84	1,179.05	-2,009.78	-255.32	0.68	-0.63	-2.88
6,840.00	4.06	299.40	6,287.56	1,182.80	-2,015.99	-256.20	0.72	-0.67	-3.37
6,935.00	3.86	289.55	6,382.34	1,185.52	-2,021.94	-256.26	0.75	-0.21	-10.37
7,029.00	2.21	291.28	6,476.20	1,187.24	-2,026.61	-255.92	1.76	-1.76	1.84
7,124.00	1.85	282.14	6,571.14	1,188.23	-2,029.81	-255.51	0.51	-0.38	-9.62
7,218.00	0.87	306.78	6,665.11	1,188.97	-2,031.87	-255.35	1.19	-1.04	26.21
7,313.00	0.35	298.38	6,760.11	1,189.54	-2,032.70	-255.53	0.55	-0.55	-8.84
7,407.00	0.33	312.94	6,854.11	1,189.86	-2,033.15	-255.64	0.09	-0.02	15.49
7,502.00	0.62	319.65	6,949.10	1,190.44	-2,033.68	-255.95	0.31	0.31	7.06
7,596.00	0.35	7.20	7,043.10	1,191.12	-2,033.98	-256.44	0.49	-0.29	50.59
7,691.00	0.66	56.47	7,138.10	1,191.71	-2,033.49	-257.18	0.53	0.33	51.86
7,785.00	0.75	44.32	7,232.09	1,192.44	-2,032.60	-258.22	0.19	0.10	-12.93
7,879.00	1.04	55.02	7,326.08	1,193.37	-2,031.48	-259.53	0.35	0.31	11.38
7,973.00	0.64	104.96	7,420.07	1,193.73	-2,030.27	-260.34	0.85	-0.43	53.13
8,067.00	0.53	179.38	7,514.07	1,193.16	-2,029.76	-260.03	0.76	-0.12	79.17
8,161.00	0.55	245.19	7,608.06	1,192.53	-2,030.16	-259.29	0.62	0.02	70.01
8,255.00	1.23	256.90	7,702.05	1,192.12	-2,031.55	-258.34	0.75	0.72	12.46
8,350.00	2.04	232.36	7,797.01	1,190.85	-2,033.89	-256.24	1.11	0.85	-25.83

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 541-26 - Slot PA 541-26 (A7)
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Site:	PA 22-25 Pad	MD Reference:	GL 5224' RKB 24' @ 5248.00usft
Well:	PA 541-26	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)	
8,444.00	2.47	232.35	7,890.94	1,188.59	-2,036.82	-252.98	0.46	0.46	-0.01	
8,527.00	2.81	227.54	7,973.85	1,186.13	-2,039.73	-249.54	0.49	0.41	-5.80	
Last SDI Production MWD Survey - PBHL (PA 541-26) - PA 541-26 PBHL										
8,587.00	2.81	227.54	8,033.78	1,184.14	-2,041.90	-246.84	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	
108.00	108.00	0.28	0.42	First SDI Gyro MWD Survey	
1,102.00	1,094.25	-7.83	-85.50	Last SDI Gyro MWD Survey	
1,174.00	1,163.77	1.56	-101.72	First SDI Production MWD Survey	
8,527.00	7,973.85	1,186.13	-2,039.73	Last SDI Production MWD Survey	
8,587.00	8,033.78	1,184.14	-2,041.90	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: PA 541-26

+N/-S	+E/-W	TVD Reference: GL 5224' RKB 24' @ 5248.00usft	Ground Level: 5224.00	Slot
0.00	0.00	Northing	Easting	Latitude
		1615188.94	2308777.77	39.4968838
				-107.9497290

PA 541-26 (A7)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 541-26 - Slot PA 541-26 (A7), True North
Vertical (TVD) Reference: GL 5224' RKB 24' @ 5248.00usft
Section (VS) Reference: Slot - PA 541-26 (A7)(0.00N, 0.00E)
Measured Depth Reference: GL 5224' RKB 24' @ 5248.00usft
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: Plan #2 6Dec2017 mmsdi

18:08, January 18 2018
Created By: Mel Mireles Jr.