



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 11-26
County & State	Garfield County, CO
SDI Job No.	OP.010434
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 74 feet to a measured depth of 9,565 feet is true and correct as determined from all available records.

Signature

 07-Jun-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District



Scientific Drilling, Intl

Survey Report

Company: TEP Rocky Mountain LLC	Local Co-ordinate Reference: Well PA 11-26 - Slot PA 11-26 (A5)
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 11-26	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 11-26 - Slot PA 11-26 (A5), A5						
Well Position	+N/-S	0.00 usft	Northing:	1,614,399.90 usft	Latitude:	39.4943598
	+E/-W	0.00 usft	Easting:	2,303,951.10 usft	Longitude:	-107.9667508
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	5/26/2018	9.38	65.77	51,624

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		330.00

Survey Program		Date 6/7/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
74.00	673.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5
746.00	1,067.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM
1,174.00	9,565.00	Survey #3 - Production MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM

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	
74.00	0.09	225.70	74.00	-0.04	-0.04	-0.01	0.12	0.12	0.00	
First SDI Gyro MWD Survey										
123.00	1.06	324.93	123.00	0.30	-0.33	0.43	2.20	1.98	202.51	
216.00	3.34	323.00	215.92	3.17	-2.45	3.97	2.45	2.45	-2.08	
307.00	5.89	328.62	306.62	9.28	-6.48	11.27	2.84	2.80	6.18	
398.00	8.62	330.82	396.88	19.22	-12.24	22.76	3.01	3.00	2.42	
490.00	11.00	331.52	487.53	32.95	-19.79	38.43	2.59	2.59	0.76	
582.00	13.72	323.79	577.40	49.48	-30.42	58.06	3.45	2.96	-8.40	



Scientific Drilling, Intl Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 11-26 - Slot PA 11-26 (A5)
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 11-26	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)	
673.00	16.19	328.71	665.31	69.03	-43.39	81.47	3.05	2.71	5.41	
Last SDI Gyro MWD Survey										
746.00	18.93	327.26	734.90	87.69	-55.08	103.48	3.80	3.75	-1.99	
First SDI Surface MWD Survey										
837.00	21.91	327.59	820.18	114.44	-72.17	135.20	3.28	3.27	0.36	
931.00	24.04	327.22	906.71	145.35	-91.93	171.85	2.27	2.27	-0.39	
1,025.00	25.50	329.74	992.07	178.93	-112.50	211.21	1.92	1.55	2.68	
1,067.00	25.41	330.71	1,029.99	194.60	-121.46	229.26	1.02	-0.21	2.31	
Last SDI Surface MWD Survey										
1,174.00	27.42	333.19	1,125.82	236.61	-143.81	276.82	2.14	1.88	2.32	
First SDI Production MWD Survey										
1,268.00	29.36	329.65	1,208.51	275.82	-165.22	321.48	2.73	2.06	-3.77	
1,362.00	31.62	328.59	1,289.51	316.75	-189.71	369.16	2.47	2.40	-1.13	
1,457.00	34.08	330.32	1,369.31	361.13	-215.87	420.68	2.77	2.59	1.82	
1,551.00	37.08	329.46	1,445.76	408.43	-243.32	475.37	3.24	3.19	-0.91	
1,646.00	39.66	327.45	1,520.23	458.66	-274.19	534.31	3.02	2.72	-2.12	
1,740.00	42.57	330.56	1,591.05	511.65	-305.96	596.09	3.78	3.10	3.31	
1,834.00	41.12	329.27	1,661.08	565.92	-337.39	658.79	1.79	-1.54	-1.37	
1,929.00	41.38	332.21	1,732.51	620.55	-367.99	721.41	2.06	0.27	3.09	
2,023.00	42.46	332.60	1,802.45	676.21	-397.08	784.15	1.18	1.15	0.41	
2,117.00	41.76	332.49	1,872.19	732.14	-426.14	847.12	0.75	-0.74	-0.12	
2,212.00	40.43	332.36	1,943.78	787.49	-455.05	909.51	1.40	-1.40	-0.14	
2,306.00	41.08	331.72	2,014.98	841.69	-483.82	970.84	0.82	0.69	-0.68	
2,400.00	43.25	330.63	2,084.66	896.96	-514.25	1,033.92	2.44	2.31	-1.16	
2,495.00	41.29	330.28	2,154.95	952.55	-545.75	1,097.81	2.08	-2.06	-0.37	
2,589.00	43.16	327.86	2,224.56	1,006.72	-578.24	1,160.96	2.64	1.99	-2.57	
2,683.00	41.67	327.58	2,293.96	1,060.32	-612.10	1,224.31	1.60	-1.59	-0.30	
2,778.00	40.36	326.93	2,365.64	1,112.76	-645.81	1,286.58	1.45	-1.38	-0.68	
2,872.00	42.40	329.47	2,436.17	1,165.57	-678.53	1,348.68	2.81	2.17	2.70	
2,967.00	42.39	328.35	2,506.33	1,220.42	-711.60	1,412.72	0.79	-0.01	-1.18	
3,061.00	41.47	328.18	2,576.26	1,273.84	-744.64	1,475.50	0.99	-0.98	-0.18	
3,155.00	40.08	327.74	2,647.44	1,325.88	-777.20	1,536.85	1.51	-1.48	-0.47	
3,249.00	40.17	331.23	2,719.33	1,378.05	-807.95	1,597.41	2.39	0.10	3.71	
3,344.00	39.04	330.85	2,792.52	1,431.04	-837.27	1,657.96	1.22	-1.19	-0.40	
3,438.00	40.88	333.80	2,864.58	1,484.51	-865.28	1,718.26	2.81	1.96	3.14	
3,533.00	39.05	333.36	2,937.38	1,539.15	-892.42	1,779.16	1.95	-1.93	-0.46	
3,627.00	42.02	333.40	3,008.82	1,593.76	-919.79	1,840.14	3.16	3.16	0.04	
3,722.00	40.60	333.07	3,080.17	1,649.76	-948.03	1,902.75	1.51	-1.49	-0.35	
3,816.00	41.34	331.07	3,151.15	1,704.20	-976.90	1,964.33	1.60	0.79	-2.13	
3,910.00	39.76	331.01	3,222.57	1,757.67	-1,006.49	2,025.43	1.68	-1.68	-0.06	
4,005.00	40.35	330.57	3,295.29	1,811.03	-1,036.33	2,086.56	0.69	0.62	-0.46	
4,099.00	41.82	329.72	3,366.14	1,864.60	-1,067.08	2,148.33	1.67	1.56	-0.90	
4,193.00	40.94	328.81	3,436.67	1,918.01	-1,098.84	2,210.46	1.13	-0.94	-0.97	
4,288.00	40.96	329.56	3,508.42	1,971.48	-1,130.73	2,272.72	0.52	0.02	0.79	



Scientific Drilling, Intl Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 11-26 - Slot PA 11-26 (A5)
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 11-26	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)	
4,382.00	39.84	329.01	3,580.01	2,023.86	-1,161.85	2,333.64	1.25	-1.19	-0.59	
4,476.00	38.26	328.61	3,653.01	2,074.52	-1,192.51	2,392.84	1.70	-1.68	-0.43	
4,570.00	37.20	328.53	3,727.35	2,123.60	-1,222.50	2,450.34	1.13	-1.13	-0.09	
4,665.00	37.01	327.89	3,803.12	2,172.31	-1,252.70	2,507.63	0.45	-0.20	-0.67	
4,760.00	35.91	328.70	3,879.52	2,220.34	-1,282.37	2,564.05	1.26	-1.16	0.85	
4,854.00	34.57	328.14	3,956.29	2,266.55	-1,310.77	2,618.27	1.47	-1.43	-0.60	
4,949.00	33.00	327.03	4,035.25	2,311.15	-1,339.07	2,671.05	1.78	-1.65	-1.17	
5,043.00	31.68	326.25	4,114.67	2,353.15	-1,366.72	2,721.24	1.47	-1.40	-0.83	
5,137.00	30.91	325.30	4,194.99	2,393.52	-1,394.18	2,769.94	0.97	-0.82	-1.01	
5,231.00	29.58	328.35	4,276.20	2,433.12	-1,420.10	2,817.20	2.16	-1.41	3.24	
5,325.00	28.52	326.60	4,358.37	2,471.61	-1,444.63	2,862.79	1.45	-1.13	-1.86	
5,420.00	25.94	328.31	4,442.84	2,508.23	-1,468.03	2,906.21	2.84	-2.72	1.80	
5,514.00	24.80	330.81	4,527.77	2,542.94	-1,488.45	2,946.47	1.66	-1.21	2.66	
5,618.00	25.50	336.33	4,621.93	2,582.49	-1,508.08	2,990.54	2.35	0.67	5.31	
5,703.00	23.11	336.59	4,699.39	2,614.56	-1,522.05	3,025.30	2.81	-2.81	0.31	
5,797.00	22.60	333.98	4,786.01	2,647.72	-1,537.31	3,061.65	1.21	-0.54	-2.78	
5,891.00	23.71	334.24	4,872.44	2,680.97	-1,553.44	3,098.51	1.19	1.18	0.28	
5,985.00	23.57	333.41	4,958.55	2,714.80	-1,570.07	3,136.12	0.38	-0.15	-0.88	
6,080.00	21.76	333.85	5,046.21	2,747.59	-1,586.33	3,172.65	1.91	-1.91	0.46	
6,174.00	18.47	333.87	5,134.46	2,776.61	-1,600.57	3,204.90	3.50	-3.50	0.02	
6,269.00	16.25	333.46	5,225.13	2,802.02	-1,613.14	3,233.19	2.34	-2.34	-0.43	
6,363.00	15.43	329.61	5,315.56	2,824.57	-1,625.34	3,258.82	1.42	-0.87	-4.10	
6,457.00	14.63	330.02	5,406.35	2,845.64	-1,637.60	3,283.20	0.86	-0.85	0.44	
6,552.00	14.16	328.68	5,498.36	2,865.96	-1,649.64	3,306.81	0.61	-0.49	-1.41	
6,646.00	13.21	326.12	5,589.69	2,884.70	-1,661.60	3,329.02	1.20	-1.01	-2.72	
6,740.00	11.53	326.50	5,681.51	2,901.45	-1,672.78	3,349.12	1.79	-1.79	0.40	
6,834.00	12.25	322.55	5,773.49	2,917.20	-1,684.02	3,368.38	1.16	0.77	-4.20	
6,929.00	11.87	320.25	5,866.40	2,932.71	-1,696.40	3,388.01	0.64	-0.40	-2.42	
7,023.00	11.16	321.00	5,958.50	2,947.22	-1,708.31	3,406.52	0.77	-0.76	0.80	
7,118.00	10.76	320.79	6,051.77	2,961.23	-1,719.70	3,424.35	0.42	-0.42	-0.22	
7,212.00	9.63	319.48	6,144.29	2,974.01	-1,730.36	3,440.75	1.23	-1.20	-1.39	
7,306.00	8.81	318.91	6,237.07	2,985.41	-1,740.19	3,455.54	0.88	-0.87	-0.61	
7,400.00	8.16	315.56	6,330.04	2,995.60	-1,749.60	3,469.06	0.87	-0.69	-3.56	
7,495.00	6.99	321.99	6,424.21	3,004.97	-1,757.88	3,481.32	1.52	-1.23	6.77	
7,589.00	5.88	323.39	6,517.62	3,013.34	-1,764.27	3,491.77	1.19	-1.18	1.49	
7,684.00	6.16	330.13	6,612.10	3,021.67	-1,769.71	3,501.70	0.80	0.29	7.09	
7,778.00	6.03	341.42	6,705.57	3,030.72	-1,773.80	3,511.58	1.28	-0.14	12.01	
7,872.00	4.51	346.13	6,799.17	3,038.99	-1,776.26	3,519.97	1.68	-1.62	5.01	
7,967.00	3.76	349.26	6,893.92	3,045.68	-1,777.73	3,526.50	0.82	-0.79	3.29	
8,061.00	3.63	348.52	6,987.73	3,051.62	-1,778.90	3,532.23	0.15	-0.14	-0.79	
8,156.00	3.59	353.16	7,082.54	3,057.52	-1,779.85	3,537.82	0.31	-0.04	4.88	
8,250.00	2.68	359.33	7,176.40	3,062.64	-1,780.23	3,542.44	1.03	-0.97	6.56	
8,345.00	1.77	351.55	7,271.32	3,066.31	-1,780.47	3,545.74	1.01	-0.96	-8.19	



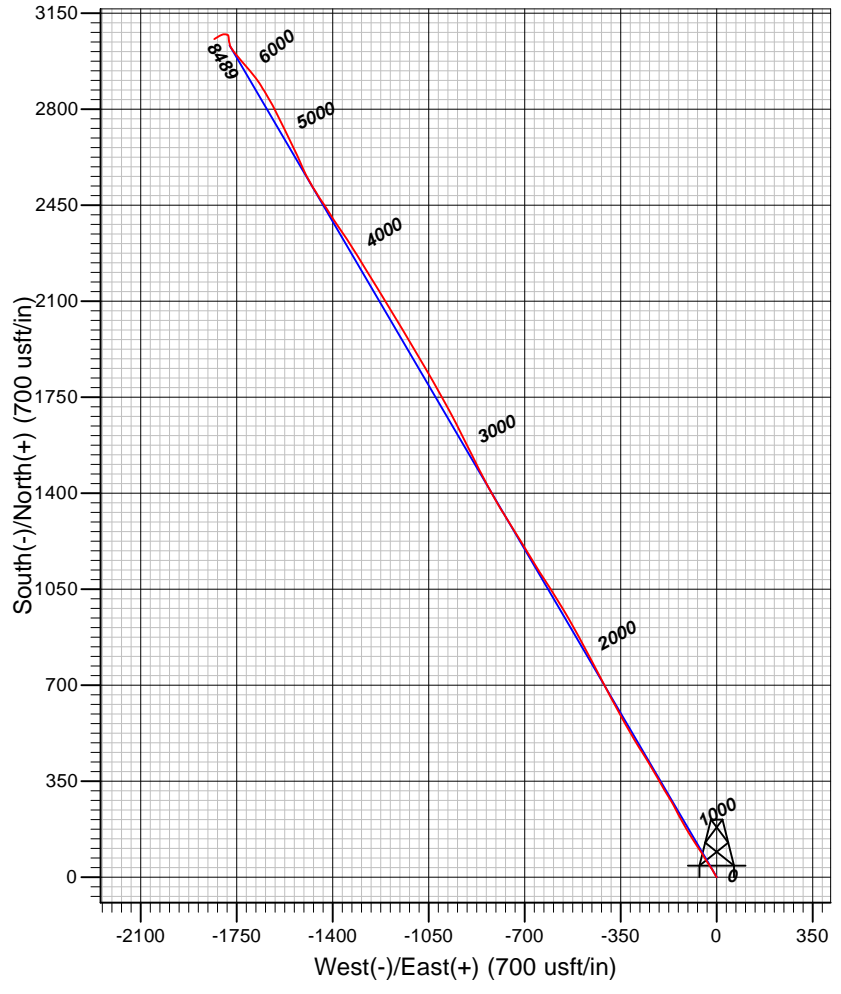
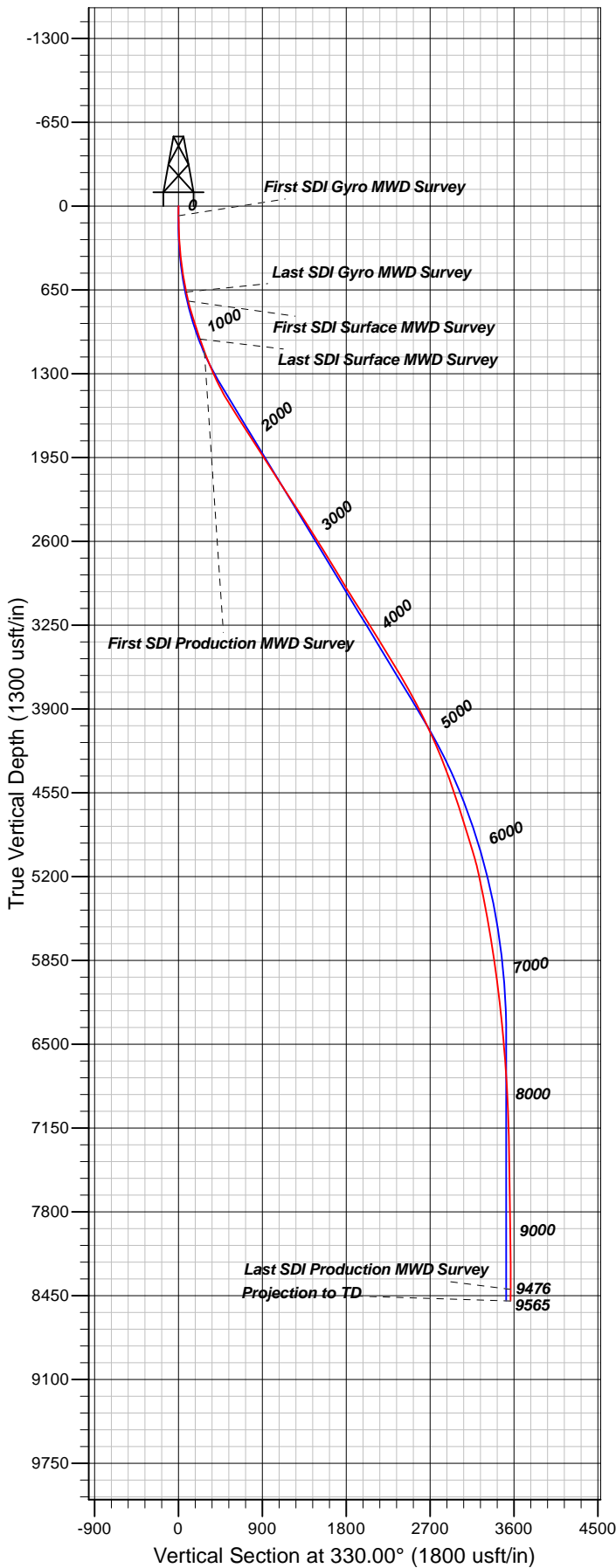
Scientific Drilling, Intl
Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 11-26 - Slot PA 11-26 (A5)
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 11-26	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)	
8,439.00	1.25	333.90	7,365.29	3,068.67	-1,781.13	3,548.11	0.74	-0.55	-18.78	
8,533.00	1.14	319.73	7,459.27	3,070.30	-1,782.19	3,550.05	0.33	-0.12	-15.07	
8,628.00	0.56	304.41	7,554.26	3,071.29	-1,783.18	3,551.40	0.65	-0.61	-16.13	
8,722.00	0.70	286.30	7,648.25	3,071.71	-1,784.11	3,552.23	0.26	0.15	-19.27	
8,816.00	1.28	282.78	7,742.24	3,072.10	-1,785.69	3,553.36	0.62	0.62	-3.74	
8,911.00	2.37	280.02	7,837.19	3,072.68	-1,788.66	3,555.35	1.15	1.15	-2.91	
9,005.00	3.54	277.01	7,931.06	3,073.37	-1,793.45	3,558.34	1.26	1.24	-3.20	
9,099.00	3.36	258.93	8,024.90	3,073.19	-1,799.04	3,560.98	1.17	-0.19	-19.23	
9,193.00	5.03	246.11	8,118.64	3,071.00	-1,805.51	3,562.31	2.03	1.78	-13.64	
9,288.00	4.92	240.82	8,213.29	3,067.32	-1,812.87	3,562.82	0.50	-0.12	-5.57	
9,382.00	4.76	239.77	8,306.95	3,063.39	-1,819.76	3,562.86	0.19	-0.17	-1.12	
9,476.00	4.58	236.94	8,400.64	3,059.38	-1,826.28	3,562.64	0.31	-0.19	-3.01	
Last SDI Production MWD Survey										
9,561.89	4.58	236.94	8,486.26	3,055.64	-1,832.02	3,562.28	0.00	0.00	0.00	
PBHL(PA 11-26)										
9,565.00	4.58	236.94	8,489.35	3,055.51	-1,832.23	3,562.26	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
74.00	74.00	-0.04	-0.04	First SDI Gyro MWD Survey	
673.00	665.31	69.03	-43.39	Last SDI Gyro MWD Survey	
746.00	734.90	87.69	-55.08	First SDI Surface MWD Survey	
1,067.00	1,029.99	194.60	-121.46	Last SDI Surface MWD Survey	
1,174.00	1,125.82	236.61	-143.81	First SDI Production MWD Survey	
9,476.00	8,400.64	3,059.38	-1,826.28	Last SDI Production MWD Survey	
9,565.00	8,489.35	3,055.51	-1,832.23	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: PA 11-26

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	1614399.90	2303951.10	39.4943598	-107.9667507	PA 11-26 (A5)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 11-26 - Slot PA 11-26 (A5), True North
 Vertical (TVD) Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271)
 Section (VS) Reference: Slot - PA 11-26 (A5)(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

13:28, June 07 2018
 Created By: Mel Mireles Jr.