



## 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 521-26
County & State	Garfield County, CO
SDI Job No.	OP.010565
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 124 feet to a measured depth of 8,871 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

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well PA 521-26 - Slot PA 521-26 (A6)
<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 521-26	<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 521-26 - Slot PA 521-26 (A6), A6					
Well Position	+N/-S	0.00 usft	Northing:	1,614,399.80 usft	Latitude:	39.4943590
	+E/-W	0.00 usft	Easting:	2,303,943.60 usft	Longitude:	-107.9667773
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	5/31/2018	9.38	65.77	51,623

<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	6.34	

<b>Survey Program</b>	<b>Date</b>	6/7/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
124.00	582.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
653.00	1,047.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,171.00	8,871.00	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	
124.00	0.26	37.27	124.00	0.22	0.17	0.24	0.21	0.21	0.00	
<b>First SDI Gyro MWD Survey</b>										
216.00	0.53	342.25	216.00	0.80	0.17	0.81	0.47	0.29	-59.80	
307.00	1.50	0.26	306.98	2.39	0.04	2.38	1.11	1.07	19.79	
398.00	2.82	8.96	397.92	5.79	0.40	5.80	1.49	1.45	9.56	
490.00	5.19	8.88	489.68	12.14	1.39	12.22	2.58	2.58	-0.09	
582.00	8.18	7.21	581.05	22.74	2.86	22.92	3.26	3.25	-1.82	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well PA 521-26 - Slot PA 521-26 (A6)
<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 521-26	<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>									
653.00	10.49	2.75	651.10	34.21	3.80	34.42	3.41	3.25	-6.28
<b>First SDI Surface MWD Survey</b>									
746.00	13.24	3.61	742.11	53.30	4.88	53.51	2.96	2.96	0.92
837.00	16.42	358.73	830.07	76.57	5.25	76.68	3.75	3.49	-5.36
931.00	19.67	355.28	919.44	105.63	3.65	105.38	3.64	3.46	-3.67
1,025.00	22.19	355.32	1,007.23	139.09	0.90	138.34	2.68	2.68	0.04
1,047.00	22.51	354.26	1,027.58	147.42	0.14	146.53	2.34	1.45	-4.82
<b>Last SDI Surface MWD Survey</b>									
1,171.00	23.06	353.66	1,141.90	195.17	-4.91	193.44	0.48	0.44	-0.48
<b>First SDI Production MWD Survey</b>									
1,265.00	25.36	353.22	1,227.63	233.47	-9.32	231.01	2.45	2.45	-0.47
1,360.00	26.49	350.46	1,313.07	274.56	-15.24	271.20	1.74	1.19	-2.91
1,454.00	25.59	350.13	1,397.52	315.24	-22.19	310.86	0.97	-0.96	-0.35
1,548.00	26.04	349.80	1,482.14	355.55	-29.33	350.13	0.50	0.48	-0.35
1,643.00	23.38	347.87	1,568.44	394.51	-36.98	388.01	2.93	-2.80	-2.03
1,737.00	23.29	352.49	1,654.76	431.17	-43.33	423.75	1.95	-0.10	4.91
1,831.00	25.29	355.01	1,740.43	469.60	-47.50	461.48	2.40	2.13	2.68
1,926.00	28.47	353.68	1,825.16	512.33	-51.76	503.48	3.41	3.35	-1.40
2,020.00	27.47	352.30	1,908.18	556.09	-57.13	546.37	1.27	-1.06	-1.47
2,114.00	28.40	352.65	1,991.23	599.74	-62.90	589.13	1.00	0.99	0.37
2,209.00	26.95	353.01	2,075.35	643.52	-68.41	632.03	1.54	-1.53	0.38
2,303.00	27.30	355.51	2,159.02	686.15	-72.69	673.93	1.27	0.37	2.66
2,397.00	25.70	354.81	2,243.14	727.94	-76.22	715.08	1.73	-1.70	-0.74
2,492.00	26.67	358.13	2,328.39	769.77	-78.78	756.36	1.85	1.02	3.49
2,586.00	25.19	357.81	2,412.93	810.85	-80.23	797.03	1.58	-1.57	-0.34
2,681.00	26.81	355.55	2,498.31	852.41	-82.67	838.07	2.00	1.71	-2.38
2,775.00	24.94	356.51	2,582.89	893.33	-85.52	878.43	2.04	-1.99	1.02
2,869.00	26.65	353.28	2,667.52	934.06	-89.19	918.49	2.35	1.82	-3.44
2,964.00	25.21	353.09	2,752.96	975.30	-94.12	958.94	1.52	-1.52	-0.20
3,058.00	26.53	354.83	2,837.53	1,016.09	-98.42	999.00	1.62	1.40	1.85
3,152.00	25.57	356.46	2,921.99	1,057.24	-101.57	1,039.56	1.27	-1.02	1.73
3,247.00	25.39	354.79	3,007.75	1,097.99	-104.68	1,079.71	0.78	-0.19	-1.76
3,341.00	24.49	354.78	3,092.98	1,137.46	-108.28	1,118.55	0.96	-0.96	-0.01
3,436.00	25.92	355.88	3,178.93	1,177.78	-111.57	1,158.26	1.58	1.51	1.16
3,530.00	24.92	355.85	3,263.83	1,218.03	-114.48	1,197.93	1.06	-1.06	-0.03
3,625.00	26.44	352.99	3,349.45	1,258.98	-118.51	1,238.20	2.06	1.60	-3.01
3,719.00	25.13	355.01	3,434.09	1,299.64	-122.80	1,278.13	1.68	-1.39	2.15
3,813.00	26.23	352.16	3,518.81	1,340.11	-127.37	1,317.85	1.76	1.17	-3.03
3,907.00	24.70	352.11	3,603.67	1,380.14	-132.90	1,357.02	1.63	-1.63	-0.05
4,002.00	26.41	354.06	3,689.38	1,420.82	-137.81	1,396.91	2.01	1.80	2.05
4,096.00	25.13	353.10	3,774.03	1,461.43	-142.37	1,436.77	1.43	-1.36	-1.02
4,190.00	26.71	353.91	3,858.57	1,502.25	-147.01	1,476.83	1.72	1.68	0.86
4,285.00	25.53	354.24	3,943.86	1,543.85	-151.33	1,517.70	1.25	-1.24	0.35

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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 521-26	<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

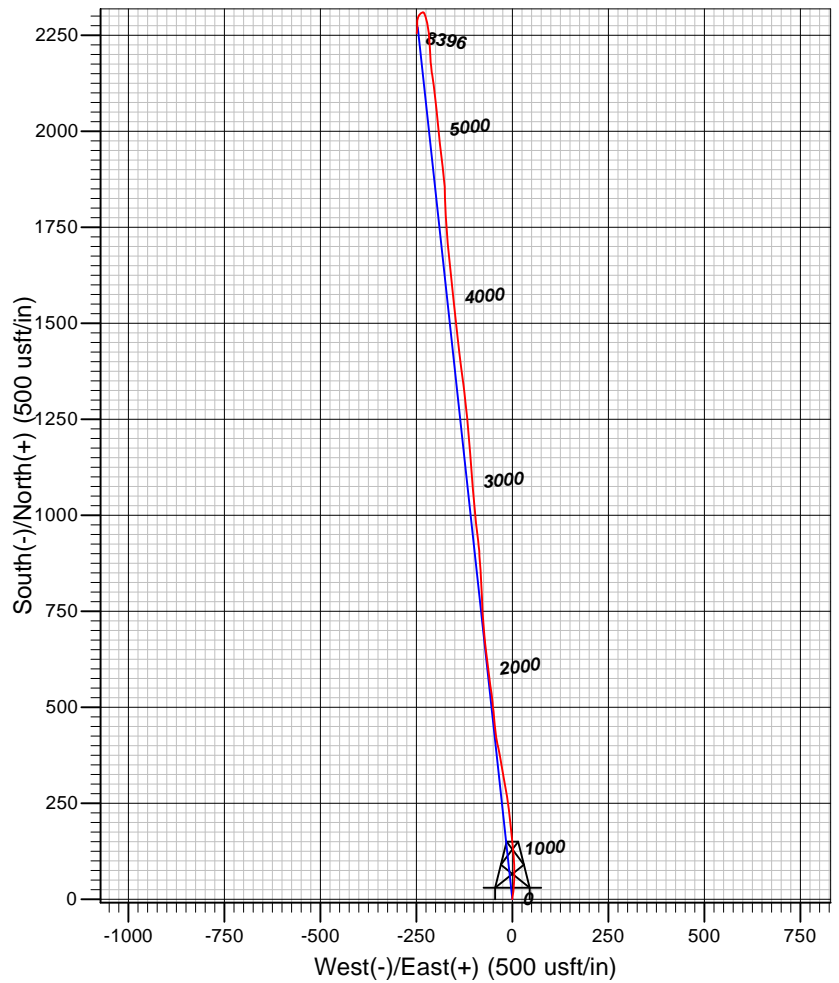
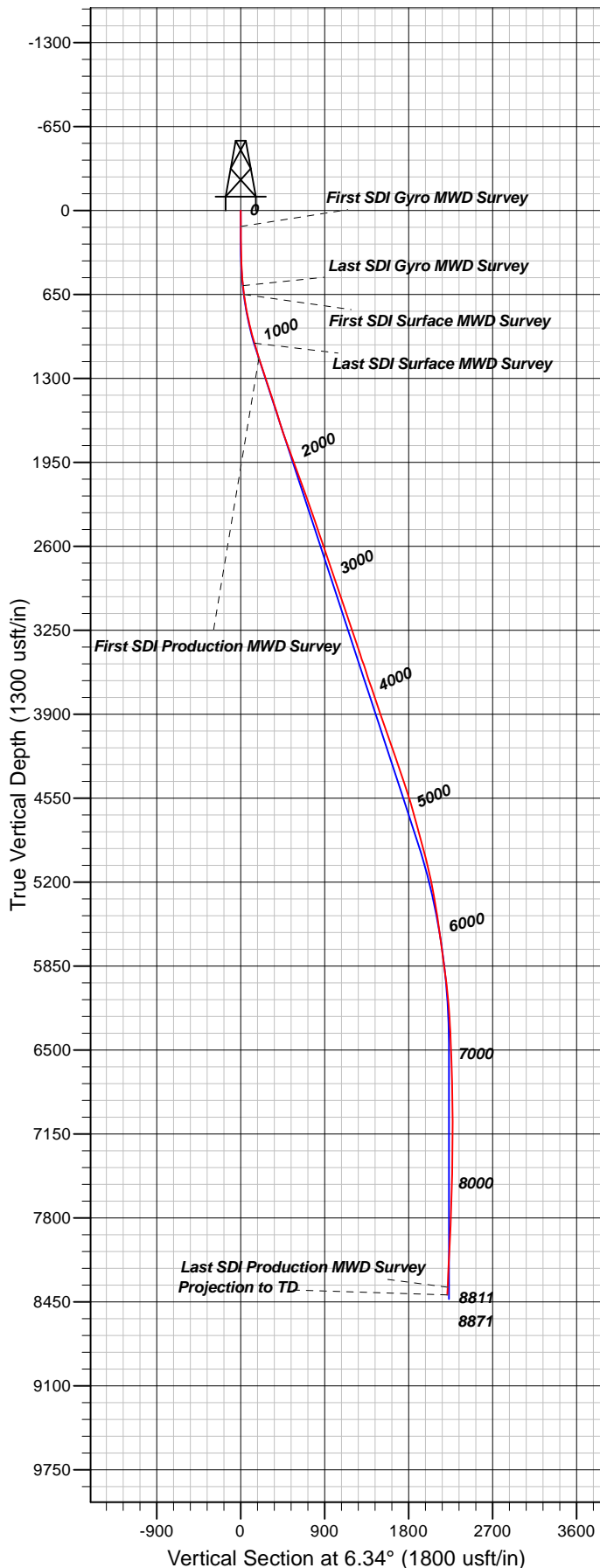
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,379.00	26.84	353.42	4,028.22	1,585.09	-155.79	1,558.19	1.45	1.39	-0.87
4,473.00	25.49	353.61	4,112.58	1,626.27	-160.48	1,598.61	1.44	-1.44	0.20
4,568.00	26.24	354.24	4,198.07	1,667.48	-164.86	1,639.08	0.84	0.79	0.66
4,662.00	26.90	355.32	4,282.14	1,709.35	-168.68	1,680.27	0.87	0.70	1.15
4,757.00	25.59	356.65	4,367.34	1,751.26	-171.63	1,721.59	1.51	-1.38	1.40
4,871.00	24.51	357.68	4,470.62	1,799.46	-174.03	1,769.24	1.02	-0.95	0.90
4,946.00	23.54	358.58	4,539.12	1,829.98	-175.03	1,799.46	1.38	-1.29	1.20
5,040.00	22.54	354.15	4,625.63	1,866.67	-177.33	1,835.67	2.13	-1.06	-4.71
5,154.00	20.01	353.98	4,731.85	1,907.81	-181.61	1,876.09	2.22	-2.22	-0.15
5,228.00	21.25	354.04	4,801.10	1,933.74	-184.33	1,901.56	1.68	1.68	0.08
5,322.00	21.03	353.23	4,888.78	1,967.43	-188.08	1,934.63	0.39	-0.23	-0.86
5,417.00	21.19	353.38	4,977.40	2,001.42	-192.07	1,967.96	0.18	0.17	0.16
5,511.00	19.19	353.76	5,065.62	2,033.65	-195.71	1,999.60	2.13	-2.13	0.40
5,605.00	17.12	354.49	5,154.94	2,062.78	-198.72	2,028.22	2.22	-2.20	0.78
5,699.00	15.40	356.32	5,245.18	2,089.01	-200.85	2,054.06	1.91	-1.83	1.95
5,794.00	13.63	349.51	5,337.15	2,112.61	-203.70	2,077.20	2.59	-1.86	-7.17
5,888.00	12.82	352.63	5,428.65	2,133.84	-207.05	2,097.93	1.15	-0.86	3.32
5,983.00	10.38	351.62	5,521.71	2,152.77	-209.65	2,116.45	2.58	-2.57	-1.06
6,077.00	11.22	354.38	5,614.04	2,170.25	-211.78	2,133.59	1.05	0.89	2.94
6,171.00	12.31	356.10	5,706.07	2,189.35	-213.36	2,152.39	1.22	1.16	1.83
6,266.00	11.32	356.92	5,799.05	2,208.76	-214.55	2,171.56	1.06	-1.04	0.86
6,360.00	10.01	356.22	5,891.43	2,226.12	-215.58	2,188.70	1.40	-1.39	-0.74
6,454.00	8.97	0.00	5,984.14	2,241.61	-216.12	2,204.03	1.29	-1.11	4.02
6,549.00	6.97	349.40	6,078.22	2,254.68	-217.18	2,216.91	2.60	-2.11	-11.16
6,643.00	6.67	347.26	6,171.56	2,265.61	-219.43	2,227.52	0.42	-0.32	-2.28
6,737.00	5.57	353.99	6,265.02	2,275.47	-221.11	2,237.14	1.40	-1.17	7.16
6,832.00	4.26	351.70	6,359.67	2,283.55	-222.11	2,245.05	1.39	-1.38	-2.41
6,926.00	3.67	344.41	6,453.44	2,289.90	-223.42	2,251.22	0.82	-0.63	-7.76
7,020.00	3.33	340.61	6,547.27	2,295.37	-225.13	2,256.47	0.44	-0.36	-4.04
7,115.00	2.69	339.50	6,642.14	2,300.07	-226.83	2,260.95	0.68	-0.67	-1.17
7,209.00	1.93	337.38	6,736.06	2,303.59	-228.21	2,264.30	0.81	-0.81	-2.26
7,304.00	1.57	337.03	6,831.02	2,306.27	-229.33	2,266.84	0.38	-0.38	-0.37
7,398.00	1.01	326.50	6,924.99	2,308.14	-230.29	2,268.59	0.64	-0.60	-11.20
7,493.00	0.70	325.43	7,019.98	2,309.32	-231.09	2,269.68	0.33	-0.33	-1.13
7,587.00	0.97	260.92	7,113.97	2,309.67	-232.20	2,269.90	0.98	0.29	-68.63
7,681.00	1.32	247.12	7,207.95	2,309.12	-233.98	2,269.16	0.47	0.37	-14.68
7,775.00	1.64	249.01	7,301.92	2,308.22	-236.23	2,268.01	0.34	0.34	2.01
7,870.00	1.85	224.36	7,396.88	2,306.63	-238.58	2,266.18	0.81	0.22	-25.95
7,964.00	1.81	220.73	7,490.83	2,304.42	-240.60	2,263.76	0.13	-0.04	-3.86
8,059.00	2.18	216.37	7,585.77	2,301.83	-242.66	2,260.96	0.42	0.39	-4.59
8,153.00	2.47	206.37	7,679.70	2,298.58	-244.62	2,257.51	0.53	0.31	-10.64
8,247.00	3.11	196.33	7,773.59	2,294.32	-246.23	2,253.09	0.85	0.68	-10.68
8,342.00	3.30	188.99	7,868.44	2,289.14	-247.38	2,247.82	0.48	0.20	-7.73

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<b>Well:</b>	PA 521-26	<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)	
8,436.00	3.65	177.86	7,962.27	2,283.48	-247.69	2,242.16	0.81	0.37	-11.84	
8,530.00	4.57	178.98	8,056.02	2,276.75	-247.52	2,235.49	0.98	0.98	1.19	
8,625.00	4.58	180.67	8,150.72	2,269.17	-247.49	2,227.96	0.14	0.01	1.78	
8,719.00	3.34	190.90	8,244.50	2,262.73	-248.05	2,221.49	1.51	-1.32	10.88	
8,811.00	2.99	187.44	8,336.36	2,257.72	-248.87	2,216.42	0.43	-0.38	-3.76	
Last SDI Production MWD Survey										
8,871.00	2.99	187.44	8,396.27	2,254.61	-249.28	2,213.30	0.00	0.00	0.00	
Projection to TD - PBHL(PA 521-26)										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
124.00	124.00	0.22	0.17	First SDI Gyro MWD Survey	
582.00	581.05	22.74	2.86	Last SDI Gyro MWD Survey	
653.00	651.10	34.21	3.80	First SDI Surface MWD Survey	
1,047.00	1,027.58	147.42	0.14	Last SDI Surface MWD Survey	
1,171.00	1,141.90	195.17	-4.91	First SDI Production MWD Survey	
8,811.00	8,336.36	2,257.72	-248.87	Last SDI Production MWD Survey	
8,871.00	8,396.27	2,254.61	-249.28	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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#### Well Details: PA 521-26

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 1614399.80 2303943.60 39.4943589 -107.966773PA 521-26 (A6)

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 521-26 - Slot PA 521-26 (A6), True North  
 Vertical (TVD) Reference: GL 5637' & RKB 24' @ 5661.00usft (H&P 271)  
 Section (VS) Reference: Slot - PA 521-26 (A6)(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

11:46, June 07 2018  
 Created By: Mel Mireles Jr.