



7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Survey Certification

Operator	TEP Rocky Mountain LLC
Well Name & No.	PA 21-24
API #	05-045-24202
County & State	Garfield County, CO
SDI Job #	OP.025251
Rig	H&P 318
Survey Date	31-May-2020

I, Seth M. Burstad, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 10002 feet is true and correct as determined from all available records.

Seth M. Burstad

Signature

1-Jun-2020

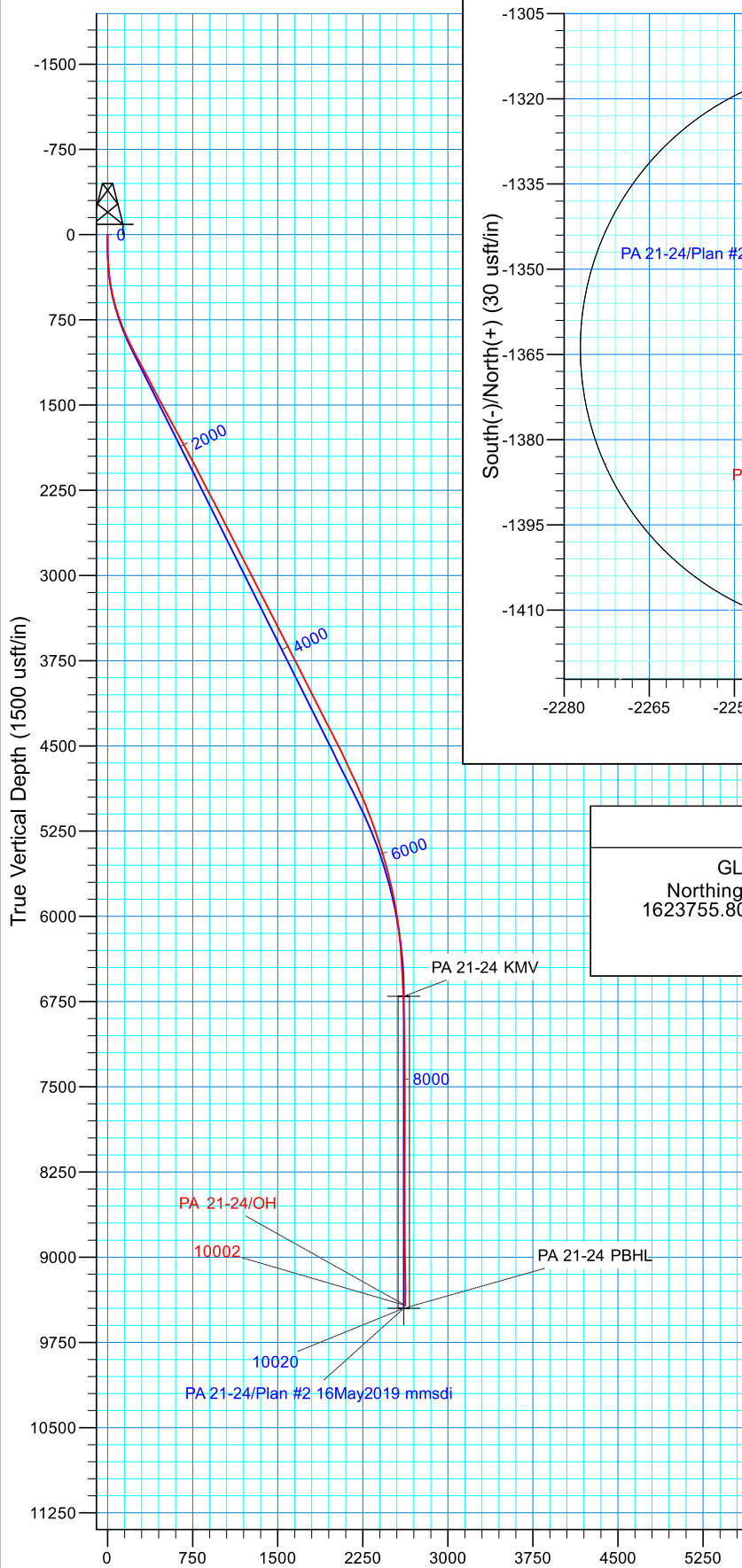
Date

Seth M. Burstad

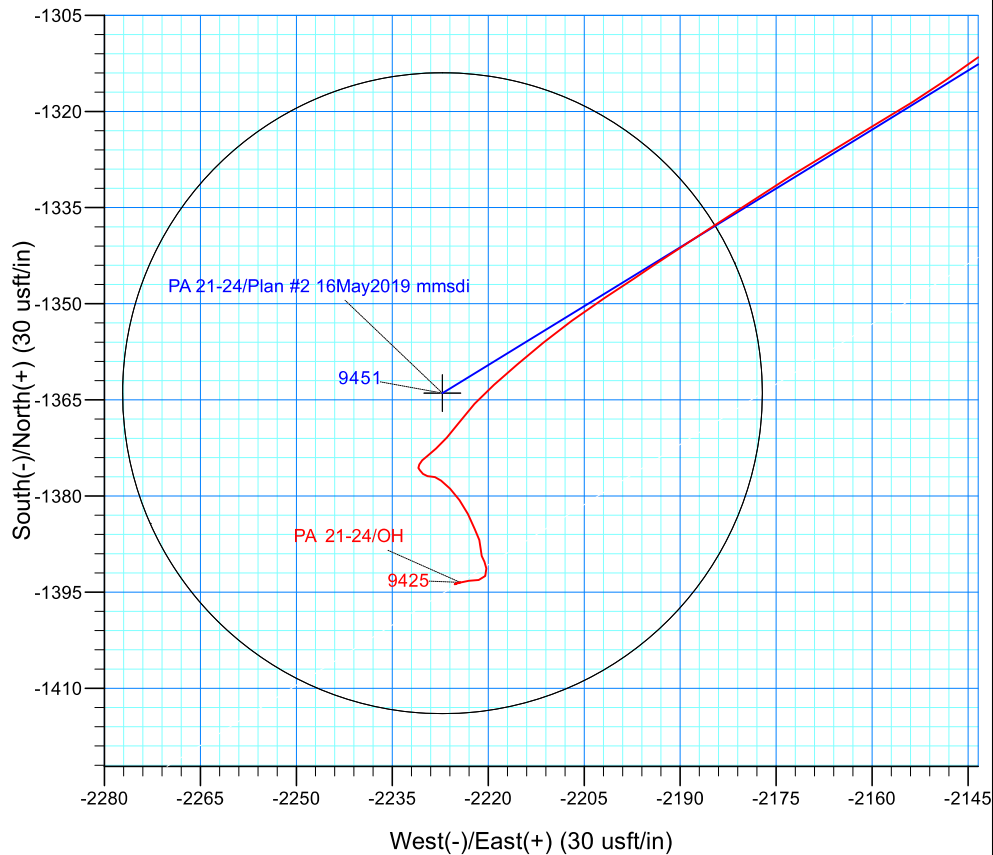
Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District



Project: Garfield County, CO NAD83
 Site: PA 44-13 Pad
 Well: PA 21-24
 Wellbore: OH
 Design: OH



Vertical Section at 237.93° (1500 usft/in)



WELL DETAILS: PA 21-24

GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
 Northing 1623755.8000 Easting 2311249.1000 Latitude 39.5205776 Longitude -107.9417906

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 21-24 - Slot PA 21-24 (A3), True North
 Vertical (TVD) Reference: GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
 Section (VS) Reference: Slot - PA 21-24 (A3)(0.00N, 0.00E)
 Measured Depth Reference: GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
 Calculation Method: Minimum Curvature
 Local North: True
 Location:



TEP Rocky Mountain LLC

Garfield County, CO NAD83

PA 44-13 Pad

PA 21-24 - Slot PA 21-24 (A3)

OH

Design: OH

Standard Survey Report

01 June, 2020



Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 21-24 - Slot PA 21-24 (A3)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	MD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Well:	PA 21-24	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction

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 44-13 Pad			
Site Position:		Northing:	1,623,813.7000 usft	Latitude:	39.5207354
From:	Map	Easting:	2,311,233.5000 usft	Longitude:	-107.9418514
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.54 °

Well	PA 21-24 - Slot PA 21-24 (A3)					
Well Position	+N/-S	0.00 usft	Northing:	1,623,755.8000 usft	Latitude:	39.5205777
	+E/-W	0.00 usft	Easting:	2,311,249.1000 usft	Longitude:	-107.9417906
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,571.10 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	5/26/2020	9.22	65.72	51,380.70000000

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	237.93	

Survey Program	Date	6/1/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
123.00	1,045.00	Survey #1 - Surface Gyro (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
1,067.00	1,067.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,167.00	10,002.00	Survey #3 - Production (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	
123.00	0.53	202.24	123.00	-0.53	-0.22	0.46	0.43	0.43	0.00	
First SDI GMWD Surface Survey										
215.00	2.46	220.34	214.96	-2.43	-1.65	2.69	2.13	2.10	19.67	
305.00	5.10	240.03	304.76	-5.90	-6.37	8.53	3.23	2.93	21.88	
397.00	7.83	239.33	396.17	-11.14	-15.31	18.88	2.97	2.97	-0.76	
488.00	11.00	237.39	485.93	-18.98	-27.95	33.77	3.50	3.48	-2.13	
578.00	14.52	238.54	573.70	-29.50	-44.82	53.64	3.92	3.91	1.28	
668.00	16.54	238.18	660.41	-42.14	-65.33	77.73	2.25	2.24	-0.40	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 21-24 - Slot PA 21-24 (A3)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Site:	PA 44-13 Pad	MD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Well:	PA 21-24	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction

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)
762.00	19.71	240.64	749.73	-56.97	-90.52	106.96	3.47	3.37	2.62
856.00	23.23	241.08	837.19	-73.72	-120.57	141.31	3.75	3.74	0.47
951.00	25.34	241.26	923.78	-92.55	-154.80	180.32	2.22	2.22	0.19
1,045.00	27.36	239.68	1,008.01	-113.13	-191.08	221.99	2.27	2.15	-1.68
Last SDI GMWD Surface Survey									
1,067.00	27.52	239.49	1,027.54	-118.26	-199.83	232.13	0.83	0.73	-0.86
First/Last SDI MWD Surface Survey									
1,167.00	27.80	240.57	1,116.11	-141.45	-240.04	278.52	0.57	0.28	1.08
First SDI MWD Production Survey									
1,261.00	27.65	240.16	1,199.32	-163.08	-278.05	322.21	0.26	-0.16	-0.44
1,356.00	28.02	239.88	1,283.33	-185.24	-316.48	366.54	0.41	0.39	-0.29
1,450.00	27.74	240.37	1,366.42	-207.14	-354.59	410.46	0.38	-0.30	0.52
1,544.00	27.85	240.89	1,449.57	-228.63	-392.79	454.24	0.28	0.12	0.55
1,638.00	28.72	242.57	1,532.35	-249.72	-432.02	498.68	1.25	0.93	1.79
1,733.00	27.76	241.59	1,616.04	-270.76	-471.74	543.52	1.12	-1.01	-1.03
1,827.00	28.92	241.99	1,698.77	-291.85	-511.06	588.04	1.25	1.23	0.43
1,921.00	29.03	242.57	1,781.01	-313.03	-551.37	633.44	0.32	0.12	0.62
2,016.00	28.88	238.94	1,864.14	-335.49	-591.48	679.36	1.86	-0.16	-3.82
2,110.00	28.61	239.13	1,946.55	-358.75	-630.25	724.55	0.30	-0.29	0.20
2,204.00	27.29	238.00	2,029.59	-381.72	-667.84	768.61	1.51	-1.40	-1.20
2,299.00	26.67	237.54	2,114.25	-404.70	-704.30	811.71	0.69	-0.65	-0.48
2,393.00	27.28	237.79	2,198.02	-427.51	-740.33	854.34	0.66	0.65	0.27
2,488.00	28.51	236.83	2,281.98	-451.52	-777.73	898.78	1.38	1.29	-1.01
2,582.00	28.27	237.52	2,364.68	-475.74	-815.28	943.47	0.43	-0.26	0.73
2,676.00	27.37	237.92	2,447.81	-499.17	-852.37	987.34	0.98	-0.96	0.43
2,770.00	26.29	237.21	2,531.69	-521.92	-888.18	1,029.77	1.20	-1.15	-0.76
2,865.00	27.17	236.71	2,616.54	-545.22	-924.00	1,072.49	0.96	0.93	-0.53
2,959.00	26.47	235.19	2,700.43	-568.96	-959.14	1,114.87	1.04	-0.74	-1.62
3,053.00	27.61	237.91	2,784.15	-592.50	-994.80	1,157.58	1.79	1.21	2.89
3,148.00	27.35	237.30	2,868.43	-615.98	-1,031.81	1,201.42	0.40	-0.27	-0.64
3,243.00	26.54	236.80	2,953.12	-639.39	-1,067.94	1,244.46	0.89	-0.85	-0.53
3,337.00	27.53	239.47	3,036.85	-661.93	-1,104.22	1,287.18	1.67	1.05	2.84
3,431.00	26.61	238.94	3,120.55	-683.83	-1,140.97	1,329.94	1.01	-0.98	-0.56
3,526.00	27.62	240.03	3,205.11	-705.80	-1,178.27	1,373.22	1.18	1.06	1.15
3,620.00	26.75	239.75	3,288.73	-727.35	-1,215.43	1,416.14	0.94	-0.93	-0.30
3,715.00	28.15	239.86	3,373.03	-749.37	-1,253.28	1,459.91	1.47	1.47	0.12
3,809.00	26.58	239.86	3,456.51	-771.06	-1,290.64	1,503.09	1.67	-1.67	0.00
3,903.00	27.36	239.24	3,540.28	-792.67	-1,327.39	1,545.71	0.88	0.83	-0.66
3,998.00	26.70	239.44	3,624.91	-814.69	-1,364.53	1,588.87	0.70	-0.69	0.21
4,091.00	27.87	238.97	3,707.56	-836.52	-1,401.15	1,631.49	1.28	1.26	-0.51
4,185.00	27.11	237.76	3,790.94	-859.27	-1,438.09	1,674.87	1.00	-0.81	-1.29
4,280.00	26.07	238.07	3,875.90	-881.86	-1,474.11	1,717.39	1.10	-1.09	0.33
4,374.00	27.00	238.97	3,959.99	-903.78	-1,509.93	1,759.38	1.08	0.99	0.96
4,468.00	26.15	238.66	4,044.06	-925.55	-1,545.91	1,801.43	0.92	-0.90	-0.33

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Site:	PA 44-13 Pad	MD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Well:	PA 21-24	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction

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)
4,562.00	27.51	239.09	4,127.94	-947.48	-1,582.23	1,843.85	1.46	1.45	0.46
4,657.00	26.23	238.73	4,212.68	-969.65	-1,619.00	1,886.78	1.36	-1.35	-0.38
4,751.00	28.04	238.11	4,296.33	-992.11	-1,655.51	1,929.65	1.95	1.93	-0.66
4,846.00	26.73	238.20	4,380.68	-1,015.16	-1,692.63	1,973.34	1.38	-1.38	0.09
4,940.00	27.35	236.98	4,464.41	-1,038.07	-1,728.70	2,016.08	0.88	0.66	-1.30
5,035.00	26.15	237.01	4,549.24	-1,061.36	-1,764.56	2,058.83	1.26	-1.26	0.03
5,129.00	24.80	237.42	4,634.10	-1,083.26	-1,798.55	2,099.25	1.45	-1.44	0.44
5,223.00	25.88	236.62	4,719.05	-1,105.16	-1,832.29	2,139.48	1.21	1.15	-0.85
5,318.00	24.90	236.63	4,804.88	-1,127.57	-1,866.31	2,180.20	1.03	-1.03	0.01
5,412.00	23.38	236.27	4,890.65	-1,148.81	-1,898.35	2,218.63	1.62	-1.62	-0.38
5,507.00	22.69	237.38	4,978.08	-1,169.15	-1,929.46	2,255.79	0.86	-0.73	1.17
5,601.00	21.82	237.33	5,065.08	-1,188.36	-1,959.44	2,291.39	0.93	-0.93	-0.05
5,695.00	20.37	237.44	5,152.78	-1,206.59	-1,987.93	2,325.22	1.54	-1.54	0.12
5,790.00	19.11	236.86	5,242.19	-1,223.99	-2,014.89	2,357.31	1.34	-1.33	-0.61
5,884.00	18.39	235.59	5,331.20	-1,240.78	-2,040.01	2,387.51	0.88	-0.77	-1.35
5,979.00	17.25	236.09	5,421.64	-1,257.11	-2,064.06	2,416.56	1.21	-1.20	0.53
6,074.00	15.97	235.85	5,512.68	-1,272.31	-2,086.57	2,443.70	1.35	-1.35	-0.25
6,168.00	14.41	234.98	5,603.39	-1,286.28	-2,106.85	2,468.30	1.68	-1.66	-0.93
6,263.00	13.67	236.13	5,695.55	-1,299.32	-2,125.85	2,491.33	0.83	-0.78	1.21
6,357.00	12.41	234.04	5,787.13	-1,311.44	-2,143.25	2,512.51	1.43	-1.34	-2.22
6,451.00	10.18	240.20	5,879.30	-1,321.50	-2,158.64	2,530.89	2.69	-2.37	6.55
6,546.00	9.76	236.97	5,972.87	-1,330.06	-2,172.67	2,547.33	0.74	-0.44	-3.40
6,640.00	7.47	237.70	6,065.80	-1,337.67	-2,184.52	2,561.41	2.44	-2.44	0.78
6,735.00	6.83	235.68	6,160.06	-1,344.16	-2,194.40	2,573.23	0.72	-0.67	-2.13
6,829.00	4.07	237.26	6,253.63	-1,349.11	-2,201.83	2,582.15	2.94	-2.94	1.68
6,924.00	3.44	232.65	6,348.42	-1,352.67	-2,206.93	2,588.36	0.73	-0.66	-4.85
7,018.00	3.40	232.13	6,442.26	-1,356.09	-2,211.37	2,593.94	0.05	-0.04	-0.55
7,113.00	3.07	228.43	6,537.11	-1,359.51	-2,215.50	2,599.25	0.41	-0.35	-3.89
7,207.00	2.73	229.47	6,630.99	-1,362.63	-2,219.08	2,603.95	0.37	-0.36	1.11
7,302.00	2.44	222.16	6,725.89	-1,365.60	-2,222.16	2,608.13	0.46	-0.31	-7.69
7,396.00	2.26	215.56	6,819.81	-1,368.59	-2,224.58	2,611.77	0.35	-0.19	-7.02
7,490.00	1.35	225.90	6,913.76	-1,370.87	-2,226.45	2,614.57	1.02	-0.97	11.00
7,584.00	1.58	224.29	7,007.73	-1,372.57	-2,228.15	2,616.91	0.25	0.24	-1.71
7,679.00	0.70	238.07	7,102.71	-1,373.81	-2,229.56	2,618.76	0.96	-0.93	14.51
7,772.00	0.48	219.97	7,195.71	-1,374.41	-2,230.29	2,619.70	0.31	-0.24	-19.46
7,867.00	0.50	209.64	7,290.70	-1,375.08	-2,230.75	2,620.45	0.10	0.02	-10.87
7,961.00	0.23	160.46	7,384.70	-1,375.61	-2,230.89	2,620.85	0.42	-0.29	-52.32
8,055.00	0.38	141.99	7,478.70	-1,376.03	-2,230.64	2,620.86	0.19	0.16	-19.65
8,150.00	0.45	133.59	7,573.70	-1,376.54	-2,230.17	2,620.73	0.10	0.07	-8.84
8,244.00	0.50	103.47	7,667.70	-1,376.89	-2,229.51	2,620.35	0.27	0.05	-32.04
8,339.00	0.28	80.26	7,762.69	-1,376.95	-2,228.88	2,619.85	0.28	-0.23	-24.43
8,433.00	0.41	111.20	7,856.69	-1,377.03	-2,228.34	2,619.43	0.24	0.14	32.91
8,527.00	0.96	122.92	7,950.68	-1,377.58	-2,227.36	2,618.90	0.60	0.59	12.47

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Site:	PA 44-13 Pad	MD Reference:	GL 6571.1 & RKB 24' @ 6595.10usft (H&P 318)
Well:	PA 21-24	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction

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)
8,622.00	1.35	138.42	8,045.67	-1,378.85	-2,225.95	2,618.38	0.52	0.41	16.32
8,716.00	1.49	143.24	8,139.64	-1,380.66	-2,224.48	2,618.10	0.20	0.15	5.13
8,811.00	1.58	153.54	8,234.60	-1,382.82	-2,223.16	2,618.12	0.31	0.09	10.84
8,905.00	1.49	157.58	8,328.57	-1,385.11	-2,222.12	2,618.45	0.15	-0.10	4.30
9,000.00	0.77	157.81	8,423.55	-1,386.84	-2,221.41	2,618.77	0.76	-0.76	0.24
9,094.00	0.88	180.87	8,517.54	-1,388.15	-2,221.18	2,619.27	0.37	0.12	24.53
9,189.00	0.62	159.57	8,612.53	-1,389.36	-2,221.01	2,619.77	0.40	-0.27	-22.42
9,283.00	0.60	149.10	8,706.53	-1,390.26	-2,220.58	2,619.88	0.12	-0.02	-11.14
9,378.00	0.73	175.65	8,801.52	-1,391.29	-2,220.28	2,620.18	0.35	0.14	27.95
9,473.00	0.74	203.21	8,896.51	-1,392.46	-2,220.47	2,620.96	0.37	0.01	29.01
9,567.00	0.93	263.18	8,990.50	-1,393.10	-2,221.47	2,622.15	0.90	0.20	63.80
9,662.00	0.97	268.40	9,085.49	-1,393.22	-2,223.04	2,623.54	0.10	0.04	5.49
9,756.00	0.87	246.30	9,179.48	-1,393.53	-2,224.49	2,624.93	0.39	-0.11	-23.51
9,851.00	0.14	310.20	9,274.48	-1,393.74	-2,225.24	2,625.68	0.86	-0.77	67.26
9,942.00	0.53	77.69	9,365.47	-1,393.58	-2,224.91	2,625.32	0.69	0.43	140.10
Last SDI MWD Production Survey									
10,002.00	0.53	77.69	9,425.47	-1,393.46	-2,224.37	2,624.80	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)	
123.00	123.00	-0.53	-0.22	First SDI GMWD Surface Survey
1,045.00	1,008.01	-113.13	-191.08	Last SDI GMWD Surface Survey
1,067.00	1,027.54	-118.26	-199.83	First/Last SDI MWD Surface Survey
1,167.00	1,116.11	-141.45	-240.04	First SDI MWD Production Survey
9,942.00	9,365.47	-1,393.58	-2,224.91	Last SDI MWD Production Survey
10,002.00	9,425.47	-1,393.46	-2,224.37	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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