



## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

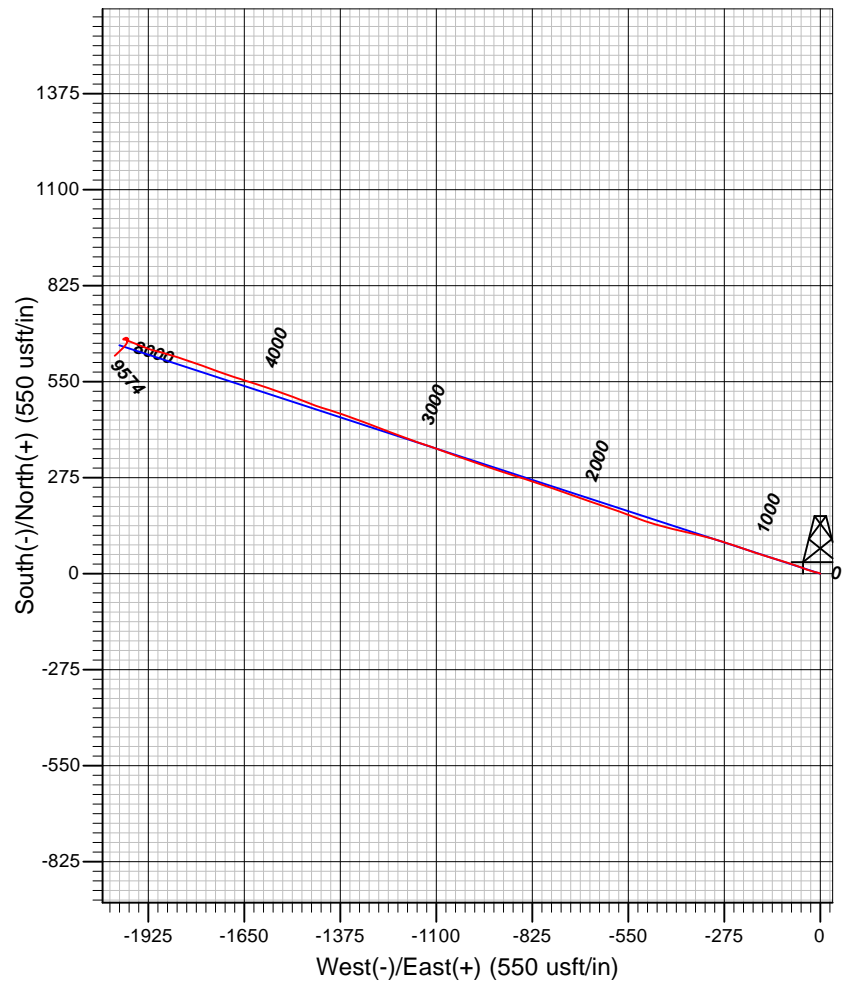
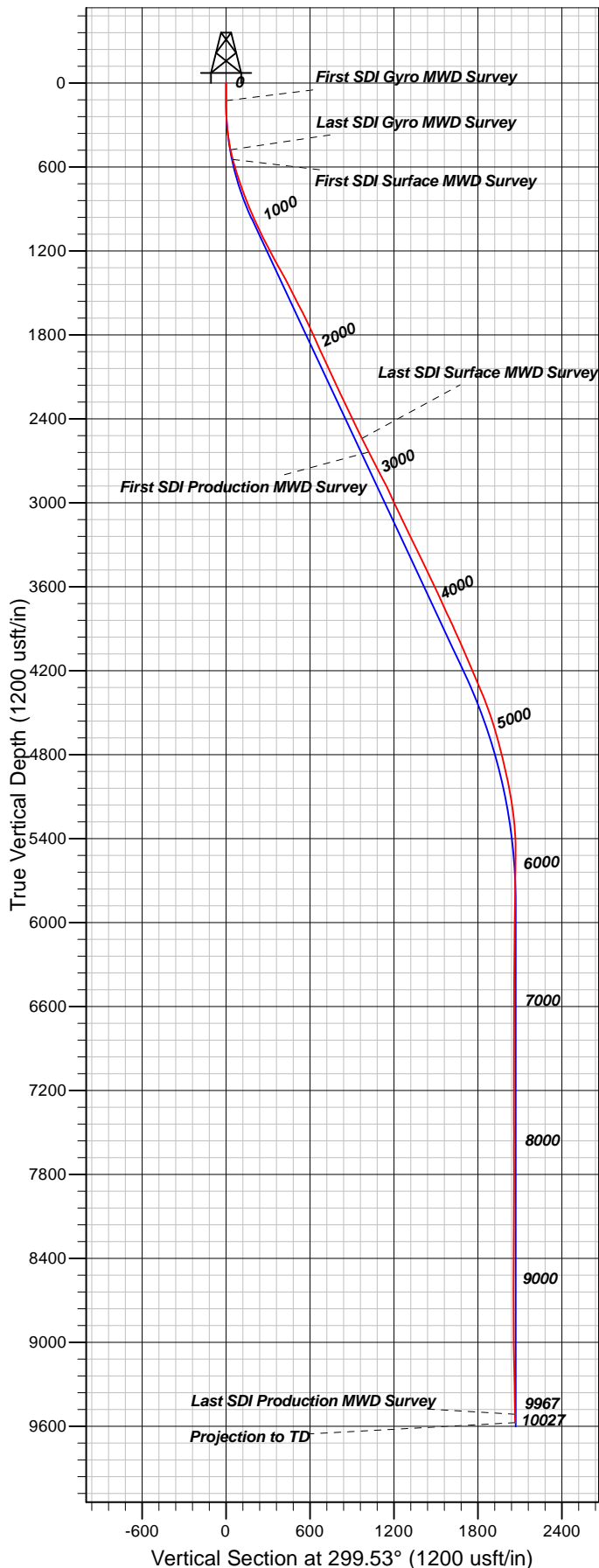
Operator	TEP Rocky Mountain, LLC.
Well Name & No.	TR 634-27-597
County & State	Garfield County, CO
SDI Job No.	OP.000885
Rig	H&P 318

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 126 feet to a measured depth of 10,027 feet is true and correct as determined from all available records.

  
Signature

08-May-17  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District



#### Well Details: TR 634-27-597

TVD Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318) Level: 8465.00						Slot
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	1647160.40	2223313.20	39.5779011	-108.2558810	

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well TR 634-27-597, True North  
 Vertical (TVD) Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318)  
 Section (VS) Reference: Slot - (0.00N, 0.00E)  
 Measured Depth Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318)  
 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

14:15, May 08 2017  
 Created By: Janie Collins

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well TR 634-27-597
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Site:</b>	TR 44-27-597 Pad	<b>MD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Well:</b>	TR 634-27-597	<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		

<b>Site</b>	TR 44-27-597 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,647,210.50 usft
<b>From:</b>	Map	<b>Easting:</b>	2,223,369.90 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39.5780433
		<b>Longitude:</b>	-108.2556853
		<b>Grid Convergence:</b>	-1.74 °

<b>Well</b>	TR 634-27-597		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft
		<b>Latitude:</b>	39.5779011
		<b>Longitude:</b>	-108.2558810
		<b>Ground Level:</b>	8,465.00 usft

<b>Wellbore</b>	OH		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	BGGM2016	3/26/2017	9.75
			<b>Dip Angle (°)</b>
			65.65
			<b>Field Strength (nT)</b>
			51,568

<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>
	0.00	0.00	0.00
			<b>Direction (°)</b>
			299.53

<b>Survey Program</b>	<b>Date</b>	5/8/2017		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
126.00	479.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
551.00	2,759.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1
2,869.00	10,027.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1

<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
126.00	0.18	271.67	126.00	0.01	-0.20	0.17	0.14	0.14	0.00
<b>First SDI Gyro MWD Survey</b>									
165.00	0.97	308.41	165.00	0.21	-0.52	0.56	2.14	2.03	94.21
207.00	1.58	301.03	206.99	0.73	-1.29	1.49	1.50	1.45	-17.57
296.00	4.31	282.83	295.86	2.11	-5.61	5.92	3.20	3.07	-20.45
389.00	8.27	285.47	388.28	4.67	-15.46	15.76	4.27	4.26	2.84
479.00	12.32	287.05	476.82	9.21	-30.89	31.42	4.51	4.50	1.76

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well TR 634-27-597
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Site:</b>	TR 44-27-597 Pad	<b>MD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Well:</b>	TR 634-27-597	<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>									
551.00	15.23	290.23	546.74	14.74	-47.11	48.25	4.17	4.04	4.42
<b>First SDI Surface MWD Survey</b>									
643.00	17.33	289.51	635.05	23.49	-71.37	73.67	2.29	2.28	-0.78
736.00	19.66	287.57	723.24	32.84	-99.34	102.62	2.59	2.51	-2.09
828.00	21.48	287.50	809.37	42.58	-130.16	134.24	1.98	1.98	-0.08
921.00	22.50	286.35	895.60	52.71	-163.48	168.22	1.19	1.10	-1.24
1,013.00	25.14	289.59	979.76	64.22	-198.79	204.62	3.20	2.87	3.52
1,107.00	26.07	288.82	1,064.53	77.58	-237.15	244.58	1.05	0.99	-0.82
1,202.00	28.02	287.03	1,149.14	90.85	-278.25	286.89	2.22	2.05	-1.88
1,296.00	29.34	285.39	1,231.61	103.43	-321.57	330.78	1.63	1.40	-1.74
1,391.00	30.17	283.08	1,314.08	115.01	-367.26	376.25	1.49	0.87	-2.43
1,485.00	29.13	282.98	1,395.77	125.49	-412.57	420.83	1.11	-1.11	-0.11
1,580.00	27.74	284.92	1,479.31	136.38	-456.46	464.40	1.76	-1.46	2.04
1,674.00	27.53	288.84	1,562.60	149.03	-498.17	506.92	1.95	-0.22	4.17
1,768.00	27.08	291.46	1,646.12	163.87	-538.64	549.45	1.37	-0.48	2.79
1,862.00	26.10	290.88	1,730.18	179.07	-577.87	591.08	1.08	-1.04	-0.62
1,956.00	24.11	287.37	1,815.30	192.17	-615.52	630.29	2.64	-2.12	-3.73
2,051.00	25.15	288.75	1,901.66	204.45	-653.16	669.10	1.25	1.09	1.45
2,145.00	24.97	288.48	1,986.81	217.16	-690.89	708.19	0.23	-0.19	-0.29
2,240.00	25.50	290.07	2,072.74	230.54	-729.12	748.04	0.91	0.56	1.67
2,334.00	25.44	290.56	2,157.61	244.57	-767.03	787.95	0.23	-0.06	0.52
2,429.00	25.24	288.66	2,243.47	258.22	-805.32	827.99	0.88	-0.21	-2.00
2,523.00	25.76	286.81	2,328.31	270.54	-843.86	867.60	1.01	0.55	-1.97
2,617.00	26.73	287.52	2,412.62	282.81	-883.58	908.21	1.08	1.03	0.76
2,712.00	27.00	288.40	2,497.37	296.05	-924.41	950.26	0.51	0.28	0.93
2,759.00	27.17	290.07	2,539.22	303.10	-944.62	971.32	1.66	0.36	3.55
<b>Last SDI Surface MWD Survey</b>									
2,869.00	26.92	289.22	2,637.19	319.91	-991.72	1,020.59	0.42	-0.23	-0.77
<b>First SDI Production MWD Survey</b>									
2,963.00	27.76	289.14	2,720.69	334.10	-1,032.49	1,063.06	0.89	0.89	-0.09
3,058.00	27.87	289.89	2,804.71	348.91	-1,074.28	1,106.71	0.39	0.12	0.79
3,152.00	27.31	289.14	2,888.02	363.45	-1,115.31	1,149.58	0.70	-0.60	-0.80
3,246.00	25.15	288.48	2,972.34	376.85	-1,154.63	1,190.40	2.32	-2.30	-0.70
3,341.00	24.74	290.22	3,058.48	390.12	-1,192.43	1,229.83	0.88	-0.43	1.83
3,435.00	24.88	291.86	3,143.80	404.28	-1,229.24	1,268.84	0.75	0.15	1.74
3,529.00	26.66	290.69	3,228.45	419.10	-1,267.32	1,309.28	1.97	1.89	-1.24
3,624.00	27.67	290.57	3,312.97	434.38	-1,307.91	1,352.13	1.06	1.06	-0.13
3,718.00	26.61	288.69	3,396.62	448.80	-1,348.29	1,394.37	1.45	-1.13	-2.00
3,812.00	25.67	288.06	3,481.00	461.85	-1,387.59	1,435.00	1.04	-1.00	-0.67
3,907.00	25.70	287.93	3,566.62	474.57	-1,426.75	1,475.35	0.07	0.03	-0.14
4,001.00	25.16	291.68	3,651.52	488.23	-1,464.72	1,515.11	1.81	-0.57	3.99
4,096.00	23.89	291.33	3,737.94	502.69	-1,501.40	1,554.16	1.35	-1.34	-0.37
4,190.00	26.53	289.77	3,822.98	516.72	-1,538.90	1,593.69	2.90	2.81	-1.66

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well TR 634-27-597
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<b>Site:</b>	TR 44-27-597 Pad	<b>MD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Well:</b>	TR 634-27-597	<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)
4,285.00	24.27	288.59	3,908.79	530.12	-1,577.37	1,633.78	2.44	-2.38	-1.24
4,379.00	24.89	288.57	3,994.28	542.58	-1,614.44	1,672.17	0.66	0.66	-0.02
4,473.00	22.33	286.79	4,080.40	554.04	-1,650.29	1,709.01	2.83	-2.72	-1.89
4,568.00	24.80	288.65	4,167.47	565.62	-1,686.45	1,746.19	2.71	2.60	1.96
4,662.00	24.09	289.89	4,253.05	578.46	-1,723.17	1,784.46	0.93	-0.76	1.32
4,757.00	22.83	290.18	4,340.19	591.41	-1,758.70	1,821.77	1.33	-1.33	0.31
4,851.00	20.40	289.36	4,427.58	603.13	-1,791.28	1,855.89	2.60	-2.59	-0.87
4,946.00	19.19	288.95	4,516.96	613.69	-1,821.67	1,887.54	1.28	-1.27	-0.43
5,040.00	17.59	287.25	4,606.16	622.92	-1,849.85	1,916.60	1.80	-1.70	-1.81
5,135.00	16.00	285.50	4,697.10	630.68	-1,876.17	1,943.34	1.76	-1.67	-1.84
5,229.00	14.39	282.83	4,787.82	636.73	-1,900.05	1,967.09	1.87	-1.71	-2.84
5,323.00	13.46	290.94	4,879.06	643.24	-1,921.66	1,989.10	2.30	-0.99	8.63
5,418.00	12.22	289.89	4,971.68	650.61	-1,941.44	2,009.95	1.33	-1.31	-1.11
5,512.00	9.94	292.09	5,063.93	657.05	-1,958.31	2,027.80	2.47	-2.43	2.34
5,607.00	8.96	294.84	5,157.64	663.24	-1,972.63	2,043.31	1.14	-1.03	2.89
5,701.00	6.77	287.69	5,250.75	668.00	-1,984.55	2,056.03	2.55	-2.33	-7.61
5,796.00	3.96	282.16	5,345.32	670.39	-1,993.09	2,064.64	3.00	-2.96	-5.82
5,890.00	1.23	272.32	5,439.22	671.12	-1,997.27	2,068.64	2.93	-2.90	-10.47
5,985.00	1.14	56.01	5,534.21	671.69	-1,997.51	2,069.12	2.37	-0.09	151.25
6,079.00	1.14	64.63	5,628.19	672.61	-1,995.89	2,068.17	0.18	0.00	9.17
6,174.00	1.32	58.65	5,723.17	673.58	-1,994.10	2,067.09	0.23	0.19	-6.29
6,268.00	1.14	58.47	5,817.15	674.64	-1,992.38	2,066.11	0.19	-0.19	-0.19
6,313.45	1.00	66.33	5,862.59	675.03	-1,991.63	2,065.65	0.44	-0.30	17.29
TR 334-27-597 MVRD									
6,315.45	1.00	66.72	5,864.59	675.05	-1,991.60	2,065.63	0.44	-0.28	19.72
TR 634-27-597 MVRD									
6,363.00	0.88	77.46	5,912.13	675.29	-1,990.86	2,065.11	0.44	-0.25	22.58
6,457.00	0.94	82.39	6,006.12	675.55	-1,989.39	2,063.96	0.10	0.06	5.24
6,551.00	1.06	94.33	6,100.11	675.58	-1,987.76	2,062.56	0.26	0.13	12.70
6,646.00	0.79	111.74	6,195.10	675.27	-1,986.28	2,061.12	0.41	-0.28	18.33
6,740.00	0.62	130.81	6,289.09	674.70	-1,985.29	2,059.98	0.31	-0.18	20.29
6,834.00	0.53	156.65	6,383.08	673.97	-1,984.73	2,059.13	0.29	-0.10	27.49
6,929.00	0.44	183.28	6,478.08	673.20	-1,984.58	2,058.62	0.25	-0.09	28.03
7,024.00	0.35	182.84	6,573.08	672.55	-1,984.61	2,058.33	0.09	-0.09	-0.46
7,118.00	0.53	207.01	6,667.08	671.88	-1,984.83	2,058.18	0.27	0.19	25.71
7,213.00	0.35	226.87	6,762.07	671.29	-1,985.24	2,058.25	0.25	-0.19	20.91
7,307.00	0.70	239.62	6,856.07	670.80	-1,985.94	2,058.62	0.39	0.37	13.56
7,402.00	1.06	73.94	6,951.06	670.75	-1,985.60	2,058.30	1.84	0.38	-174.40
7,496.00	0.97	54.87	7,045.05	671.45	-1,984.11	2,057.35	0.37	-0.10	-20.29
7,591.00	0.35	47.58	7,140.04	672.11	-1,983.24	2,056.91	0.66	-0.65	-7.67
7,685.00	0.00	143.11	7,234.04	672.30	-1,983.03	2,056.82	0.37	-0.37	0.00
7,780.00	0.44	231.79	7,329.04	672.07	-1,983.31	2,056.96	0.46	0.46	0.00
7,874.00	1.06	240.67	7,423.03	671.42	-1,984.36	2,057.55	0.67	0.66	9.45
7,969.00	0.70	57.68	7,518.03	671.30	-1,984.63	2,057.73	1.85	-0.38	186.33

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<b>Site:</b>	TR 44-27-597 Pad	<b>MD Reference:</b>	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
<b>Well:</b>	TR 634-27-597	<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)	
8,063.00	0.26	47.93	7,612.03	671.75	-1,983.99	2,057.39	0.47	-0.47	-10.37	
8,158.00	0.53	216.85	7,707.02	671.55	-1,984.09	2,057.38	0.83	0.28	177.81	
8,252.00	1.19	207.38	7,801.01	670.33	-1,984.80	2,057.40	0.72	0.70	-10.07	
8,346.00	1.49	202.79	7,894.99	668.34	-1,985.72	2,057.22	0.34	0.32	-4.88	
8,441.00	0.44	22.09	7,989.98	667.54	-1,986.07	2,057.12	2.03	-1.11	188.74	
8,535.00	0.35	317.31	8,083.98	668.08	-1,986.12	2,057.44	0.46	-0.10	-68.91	
8,630.00	0.11	353.65	8,178.98	668.39	-1,986.33	2,057.77	0.28	-0.25	38.25	
8,724.00	0.74	97.40	8,272.97	668.40	-1,985.74	2,057.26	0.82	0.67	110.37	
8,819.00	0.88	145.66	8,367.97	667.72	-1,984.72	2,056.04	0.71	0.15	50.80	
8,913.00	1.32	190.57	8,461.95	666.06	-1,984.51	2,055.04	0.99	0.47	47.78	
9,007.00	1.85	207.62	8,555.91	663.65	-1,985.41	2,054.64	0.75	0.56	18.14	
9,102.00	2.73	208.59	8,650.84	660.30	-1,987.21	2,054.55	0.93	0.93	1.02	
9,196.00	2.99	214.22	8,744.72	656.31	-1,989.66	2,054.71	0.41	0.28	5.99	
9,291.00	2.87	216.24	8,839.60	652.34	-1,992.46	2,055.19	0.17	-0.13	2.13	
9,385.00	2.90	224.85	8,933.48	648.76	-1,995.52	2,056.10	0.46	0.03	9.16	
9,480.00	3.08	225.99	9,028.35	645.28	-1,999.05	2,057.45	0.20	0.19	1.20	
9,574.00	3.08	223.62	9,122.21	641.70	-2,002.61	2,058.78	0.14	0.00	-2.52	
9,668.00	2.90	225.47	9,216.08	638.20	-2,006.05	2,060.05	0.22	-0.19	1.97	
9,762.00	3.17	230.74	9,309.95	634.89	-2,009.76	2,061.65	0.41	0.29	5.61	
9,856.00	3.43	227.14	9,403.80	631.33	-2,013.83	2,063.44	0.35	0.28	-3.83	
9,967.00	3.61	228.37	9,514.59	626.75	-2,018.88	2,065.57	0.18	0.16	1.11	
Last SDI Production MWD Survey										
10,027.00	3.61	228.37	9,574.47	624.24	-2,021.70	2,066.79	0.00	0.00	0.00	
Projection to TD - TR 634-27-597 PBHL - TR 334-27-597 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
126.00	126.00	0.01	-0.20	First SDI Gyro MWD Survey	
479.00	476.82	9.21	-30.89	Last SDI Gyro MWD Survey	
551.00	546.74	14.74	-47.11	First SDI Surface MWD Survey	
2,759.00	2,539.22	303.10	-944.62	Last SDI Surface MWD Survey	
2,869.00	2,637.19	319.91	-991.72	First SDI Production MWD Survey	
9,967.00	9,514.59	626.75	-2,018.88	Last SDI Production MWD Survey	
10,027.00	9,574.47	624.24	-2,021.70	Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_