



## Directional Survey Certification

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

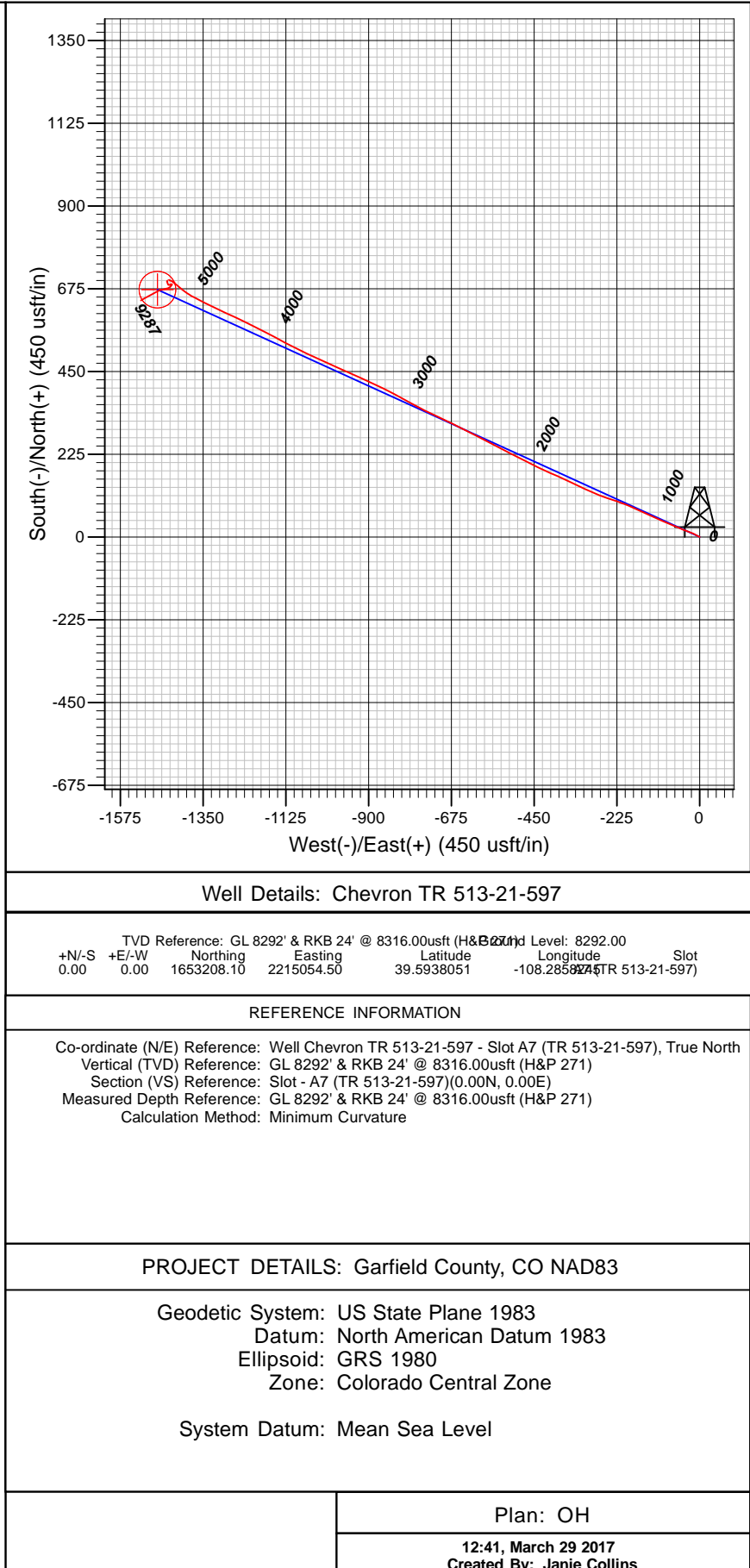
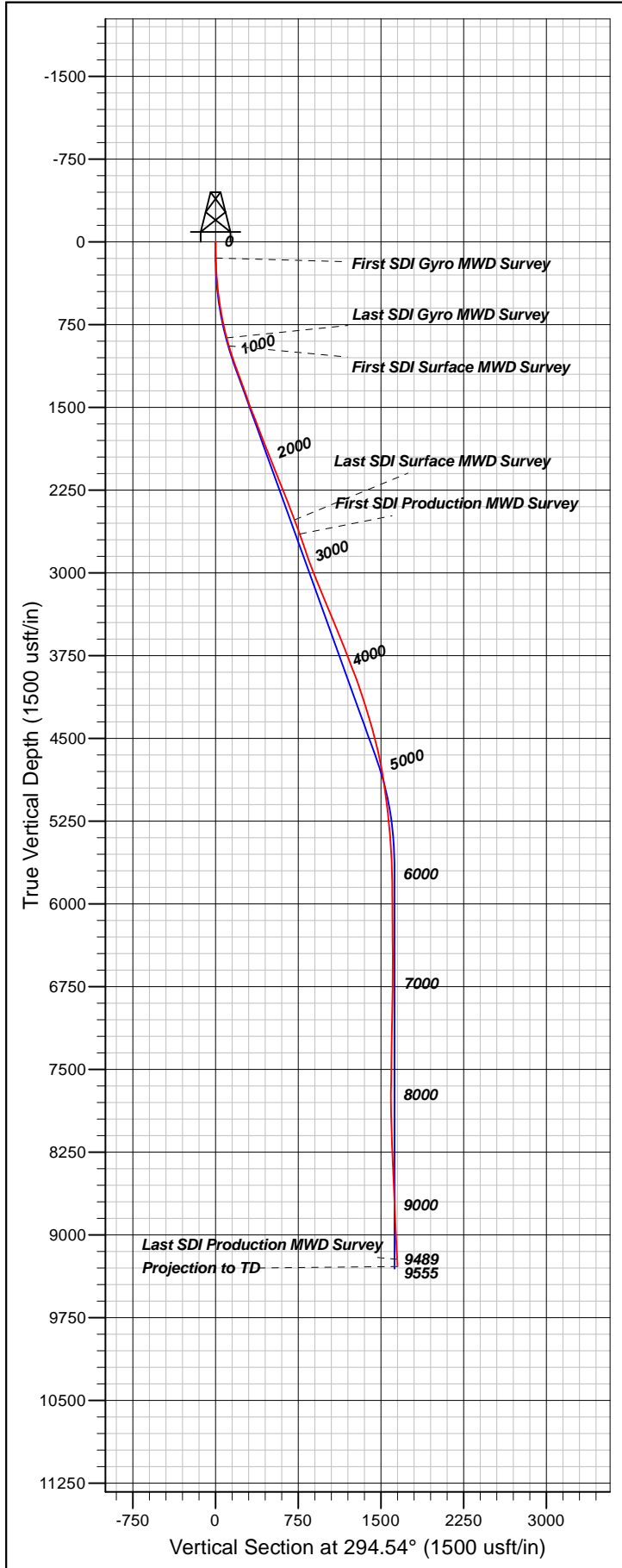
Operator	TEP Rocky Mountain, LLC.
Well Name & No.	TR 513-21-597
County & State	Garfield County, CO
SDI Job No.	420117DEFK414136 & OP.000159
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 147 feet to a measured depth of 9,555 feet is true and correct as determined from all available records.

  
Signature

29-Mar-17  
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 Chevron TR 513-21-597 - Slot A7 (TR 513-21-597)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
<b>Site:</b>	TR 24-21-597 Pad	<b>MD Reference:</b>	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
<b>Well:</b>	Chevron TR 513-21-597	<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		

Site		TR 24-21-597 Pad			
Site Position:		Northing:	1,653,248.80 usft	Latitude:	39.5939185
From:	Map	Easting:	2,215,073.70 usft	Longitude:	-108.2857609
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.76 °

Well	Chevron TR 513-21-597 - Slot A7 (TR 513-21-597)					
Well Position	+N/-S	0.00 usft	Northing:	1,653,208.10 usft	Latitude:	39.5938052
	+E/-W	0.00 usft	Easting:	2,215,054.50 usft	Longitude:	-108.2858245
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,292.00 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	1/27/2017	9.83	65.92	51,660
	HDGM	3/21/2017	9.82	65.92	51,643

<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		294.54

<b>Survey Program</b>	<b>Date</b>	3/29/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
147.00	879.00	Survey #1 - Gyro Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
952.00	2,640.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
2,778.00	9,555.00	Survey #3 - Production MWD (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	
147.00	1.06	296.72	146.99	0.61	-1.21	1.36	0.72	0.72	0.00	
<b>First SDI Gyro MWD Survey</b>										
239.00	2.90	297.77	238.93	2.08	-4.03	4.53	2.00	2.00	1.14	
330.00	4.40	298.21	329.75	4.80	-9.15	10.32	1.65	1.65	0.48	
421.00	5.72	292.41	420.39	8.18	-16.42	18.33	1.55	1.45	-6.37	
510.00	7.57	293.73	508.79	12.23	-25.88	28.63	2.09	2.08	1.48	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Chevron TR 513-21-597 - Slot A7 (TR 513-21-597)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
<b>Site:</b>	TR 24-21-597 Pad	<b>MD Reference:</b>	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
<b>Well:</b>	Chevron TR 513-21-597	<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)
600.00	9.68	290.21	597.77	17.23	-38.41	42.10	2.42	2.34	-3.91
694.00	11.09	293.29	690.22	23.54	-54.13	59.02	1.61	1.50	3.28
786.00	12.93	292.41	780.21	30.96	-71.78	78.15	2.01	2.00	-0.96
879.00	14.25	293.47	870.60	39.48	-91.90	100.00	1.44	1.42	1.14
Last SDI Gyro MWD Survey									
952.00	16.02	293.68	941.07	47.11	-109.37	119.05	2.43	2.42	0.29
953.00	16.04	293.68	942.03	47.22	-109.62	119.33	2.39	2.39	-0.05
First SDI Surface MWD Survey									
1,046.00	18.27	293.64	1,030.88	58.23	-134.74	146.76	2.39	2.39	-0.04
1,141.00	20.30	295.45	1,120.55	71.28	-163.27	178.13	2.23	2.14	1.91
1,236.00	20.41	293.12	1,209.62	84.87	-193.39	211.17	0.86	0.12	-2.45
1,330.00	19.10	288.39	1,298.09	96.16	-223.06	242.84	2.20	-1.39	-5.03
1,425.00	19.37	288.91	1,387.79	106.17	-252.71	273.98	0.34	0.28	0.55
1,519.00	20.28	292.13	1,476.22	117.36	-282.55	305.77	1.51	0.97	3.43
1,614.00	22.23	295.42	1,564.75	131.27	-314.03	340.19	2.41	2.05	3.46
1,708.00	20.83	295.68	1,652.19	146.15	-345.16	374.68	1.49	-1.49	0.28
1,803.00	21.26	293.45	1,740.86	160.32	-376.18	408.79	0.96	0.45	-2.35
1,897.00	21.60	294.14	1,828.36	174.18	-407.61	443.13	0.45	0.36	0.73
1,992.00	21.28	295.81	1,916.79	188.84	-439.08	477.85	0.73	-0.34	1.76
2,086.00	21.47	297.66	2,004.32	204.25	-469.68	512.08	0.75	0.20	1.97
2,181.00	21.02	296.56	2,092.86	219.94	-500.31	546.47	0.63	-0.47	-1.16
2,275.00	21.56	296.98	2,180.45	235.31	-530.79	580.57	0.60	0.57	0.45
2,370.00	22.44	297.50	2,268.53	251.61	-562.42	616.12	0.95	0.93	0.55
2,464.00	22.29	297.94	2,355.46	268.24	-594.09	651.83	0.24	-0.16	0.47
2,559.00	21.44	296.07	2,443.63	284.32	-625.60	687.17	1.16	-0.89	-1.97
2,640.00	20.49	298.02	2,519.26	297.48	-651.41	716.13	1.46	-1.17	2.41
Last SDI Surface MWD Survey									
2,778.00	19.57	293.63	2,648.92	318.09	-693.91	763.35	1.28	-0.67	-3.18
First SDI Production MWD Survey									
2,872.00	18.93	296.84	2,737.67	331.29	-721.94	794.32	1.32	-0.68	3.41
2,967.00	17.93	296.16	2,827.80	344.69	-748.82	824.34	1.08	-1.05	-0.72
3,061.00	19.90	297.98	2,916.72	358.58	-775.94	854.78	2.19	2.10	1.94
3,156.00	22.23	299.97	3,005.36	375.14	-805.79	888.81	2.57	2.45	2.09
3,250.00	22.29	296.23	3,092.36	391.91	-837.18	924.33	1.51	0.06	-3.98
3,345.00	22.86	295.47	3,180.08	407.81	-870.00	960.79	0.67	0.60	-0.80
3,439.00	23.78	295.46	3,266.40	423.80	-903.60	998.00	0.98	0.98	-0.01
3,534.00	22.16	294.14	3,353.87	439.37	-937.24	1,035.07	1.79	-1.71	-1.39
3,628.00	21.61	293.80	3,441.09	453.60	-969.26	1,070.10	0.60	-0.59	-0.36
3,723.00	21.81	294.17	3,529.35	467.89	-1,001.37	1,105.24	0.26	0.21	0.39
3,817.00	21.63	293.88	3,616.68	482.05	-1,033.14	1,140.03	0.22	-0.19	-0.31
3,912.00	21.98	295.55	3,704.88	496.81	-1,065.19	1,175.31	0.75	0.37	1.76
4,006.00	21.37	297.13	3,792.24	512.20	-1,096.30	1,210.01	0.90	-0.65	1.68
4,101.00	21.21	298.01	3,880.76	528.17	-1,126.88	1,244.45	0.38	-0.17	0.93

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Chevron TR 513-21-597 - Slot A7 (TR 513-21-597)
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<b>Site:</b>	TR 24-21-597 Pad	<b>MD Reference:</b>	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
<b>Well:</b>	Chevron TR 513-21-597	<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)
4,195.00	20.14	297.95	3,968.70	543.74	-1,156.19	1,277.58	1.14	-1.14	-0.06
4,290.00	18.89	297.11	4,058.24	558.41	-1,184.33	1,309.27	1.35	-1.32	-0.88
4,384.00	17.85	296.43	4,147.45	571.76	-1,210.77	1,338.87	1.13	-1.11	-0.72
4,479.00	17.32	296.16	4,238.01	584.47	-1,236.50	1,367.56	0.56	-0.56	-0.28
4,573.00	16.53	295.46	4,327.94	596.39	-1,261.14	1,394.92	0.87	-0.84	-0.74
4,668.00	15.83	293.70	4,419.18	607.41	-1,285.20	1,421.39	0.90	-0.74	-1.85
4,762.00	14.77	295.64	4,509.84	617.75	-1,307.75	1,446.19	1.25	-1.13	2.06
4,857.00	12.84	296.60	4,602.09	627.72	-1,328.10	1,468.85	2.05	-2.03	1.01
4,951.00	11.52	295.90	4,693.98	636.49	-1,345.89	1,488.67	1.41	-1.40	-0.74
5,046.00	9.94	298.19	4,787.31	644.51	-1,361.65	1,506.34	1.72	-1.66	2.41
5,140.00	9.15	296.78	4,880.01	651.71	-1,375.47	1,521.90	0.88	-0.84	-1.50
5,235.00	7.83	304.16	4,973.97	658.75	-1,387.57	1,535.83	1.80	-1.39	7.77
5,329.00	7.47	305.30	5,067.13	665.87	-1,397.86	1,548.15	0.42	-0.38	1.21
5,424.00	7.21	307.24	5,161.36	673.05	-1,407.64	1,560.03	0.38	-0.27	2.04
5,518.00	5.10	310.96	5,254.81	679.36	-1,415.49	1,569.79	2.28	-2.24	3.96
5,613.00	4.92	309.61	5,349.45	684.73	-1,421.82	1,577.78	0.23	-0.19	-1.42
5,708.00	4.84	308.73	5,444.10	689.83	-1,428.09	1,585.60	0.12	-0.08	-0.93
5,802.00	3.43	308.29	5,537.85	694.05	-1,433.39	1,592.17	1.50	-1.50	-0.47
5,897.00	1.94	291.80	5,632.75	696.41	-1,437.11	1,596.54	1.75	-1.57	-17.36
5,901.14	1.94	291.73	5,636.88	696.46	-1,437.24	1,596.68	0.06	-0.01	-1.61
TR 513-21-597 MVRD									
5,991.00	1.93	290.28	5,726.70	697.55	-1,440.07	1,599.71	0.06	-0.01	-1.62
6,086.00	0.26	281.49	5,821.67	698.15	-1,441.78	1,601.51	1.76	-1.76	-9.25
6,180.00	0.44	236.22	5,915.67	697.99	-1,442.29	1,601.91	0.34	0.19	-48.16
6,274.00	0.85	254.08	6,009.67	697.60	-1,443.26	1,602.63	0.48	0.44	19.00
6,369.00	1.23	255.65	6,104.65	697.15	-1,444.93	1,603.96	0.40	0.40	1.65
6,464.00	0.35	61.94	6,199.65	697.04	-1,445.66	1,604.58	1.65	-0.93	175.04
6,558.00	0.18	63.17	6,293.64	697.24	-1,445.28	1,604.31	0.18	-0.18	1.31
6,653.00	0.09	111.33	6,388.64	697.28	-1,445.07	1,604.14	0.14	-0.09	50.69
6,747.00	0.53	257.32	6,482.64	697.16	-1,445.43	1,604.42	0.65	0.47	155.31
6,842.00	0.79	242.90	6,577.64	696.76	-1,446.44	1,605.17	0.32	0.27	-15.18
6,936.00	1.41	234.20	6,671.62	695.79	-1,447.95	1,606.15	0.68	0.66	-9.26
7,031.00	0.97	151.94	6,766.60	694.40	-1,448.52	1,606.09	1.68	-0.46	-86.59
7,126.00	1.67	154.57	6,861.58	692.44	-1,447.55	1,604.39	0.74	0.74	2.77
7,220.00	1.76	176.11	6,955.54	689.76	-1,446.87	1,602.65	0.69	0.10	22.91
7,315.00	1.76	158.09	7,050.49	686.95	-1,446.22	1,600.90	0.58	0.00	-18.97
7,409.00	1.58	109.92	7,144.46	685.17	-1,444.47	1,598.56	1.46	-0.19	-51.24
7,504.00	1.67	69.23	7,239.42	685.21	-1,441.94	1,596.28	1.19	0.09	-42.83
7,598.00	1.58	65.19	7,333.38	686.24	-1,439.48	1,594.48	0.15	-0.10	-4.30
7,693.00	0.88	71.08	7,428.36	687.03	-1,437.60	1,593.09	0.75	-0.74	6.20
7,787.00	0.88	95.95	7,522.35	687.19	-1,436.20	1,591.88	0.40	0.00	26.46
7,882.00	0.44	115.55	7,617.34	686.96	-1,435.15	1,590.83	0.51	-0.46	20.63
7,977.00	0.44	179.45	7,712.34	686.43	-1,434.82	1,590.31	0.49	0.00	67.26

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<b>Well:</b>	Chevron TR 513-21-597	<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)
8,071.00	1.76	215.39	7,806.32	684.90	-1,435.65	1,590.43	1.52	1.40	38.23
8,166.00	2.81	220.58	7,901.25	681.94	-1,438.01	1,591.35	1.13	1.11	5.46
8,260.00	3.08	229.81	7,995.12	678.56	-1,441.44	1,593.06	0.58	0.29	9.82
8,355.00	2.20	256.53	8,090.03	676.49	-1,445.16	1,595.59	1.57	-0.93	28.13
8,449.00	2.90	256.26	8,183.93	675.50	-1,449.22	1,598.87	0.74	0.74	-0.29
8,544.00	3.17	255.73	8,278.80	674.28	-1,454.10	1,602.81	0.29	0.28	-0.56
8,638.00	3.69	255.73	8,372.63	672.90	-1,459.55	1,607.19	0.55	0.55	0.00
8,733.00	3.78	253.45	8,467.43	671.25	-1,465.52	1,611.93	0.18	0.09	-2.40
8,827.00	3.61	249.41	8,561.23	669.33	-1,471.26	1,616.35	0.33	-0.18	-4.30
8,922.00	3.78	240.97	8,656.04	666.76	-1,476.80	1,620.32	0.60	0.18	-8.88
9,016.00	3.96	238.95	8,749.82	663.58	-1,482.29	1,624.00	0.24	0.19	-2.15
9,111.00	4.22	241.50	8,844.58	660.22	-1,488.17	1,627.95	0.33	0.27	2.68
9,206.00	4.22	241.94	8,939.32	656.91	-1,494.33	1,632.18	0.03	0.00	0.46
9,300.00	4.48	243.17	9,033.05	653.62	-1,500.65	1,636.57	0.29	0.28	1.31
9,395.00	4.75	242.46	9,127.74	650.13	-1,507.45	1,641.30	0.29	0.28	-0.75
9,489.00	5.10	238.33	9,221.40	646.14	-1,514.46	1,646.02	0.53	0.37	-4.39
Last SDI Production MWD Survey									
9,555.00	5.10	238.33	9,287.13	643.06	-1,519.45	1,649.28	0.00	0.00	0.00
Projection to TD - TR 513-21-597 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
147.00	146.99	0.61	-1.21	First SDI Gyro MWD Survey
879.00	870.60	39.48	-91.90	Last SDI Gyro MWD Survey
953.00	942.03	47.22	-109.62	First SDI Surface MWD Survey
2,640.00	2,519.26	297.48	-651.41	Last SDI Surface MWD Survey
2,778.00	2,648.92	318.09	-693.91	First SDI Production MWD Survey
9,489.00	9,221.40	646.14	-1,514.46	Last SDI Production MWD Survey
9,555.00	9,287.13	643.06	-1,519.45	Projection to TD

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