



Directional Survey Certification

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

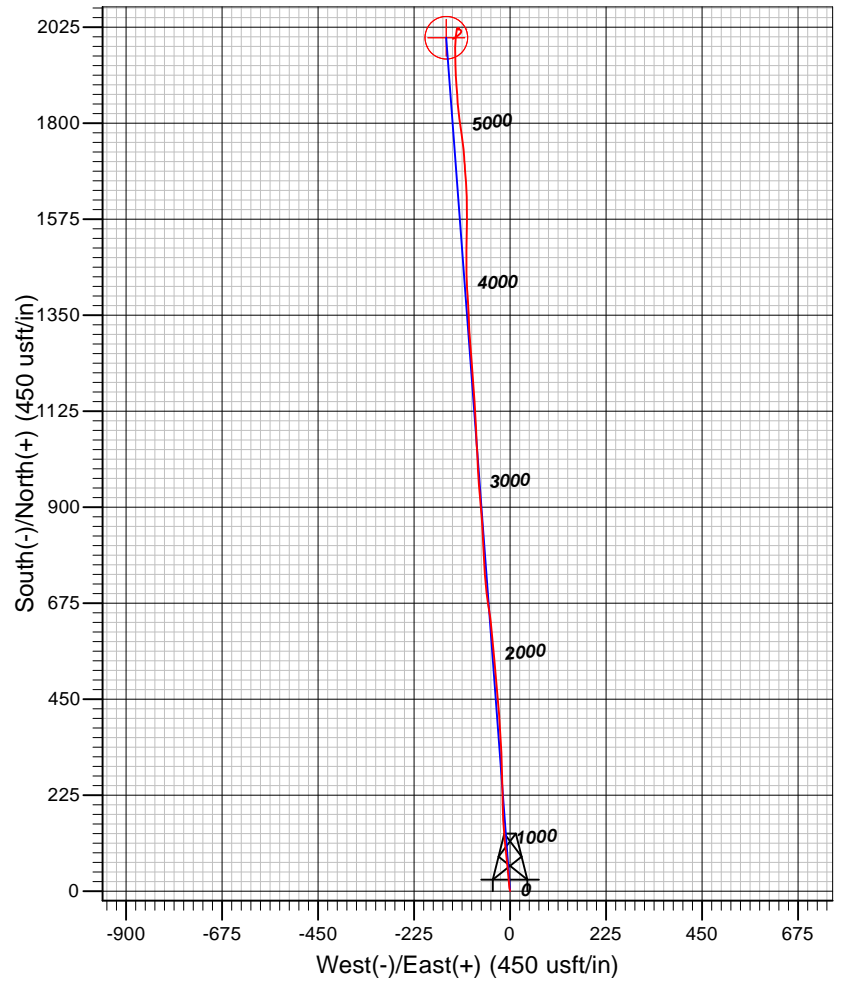
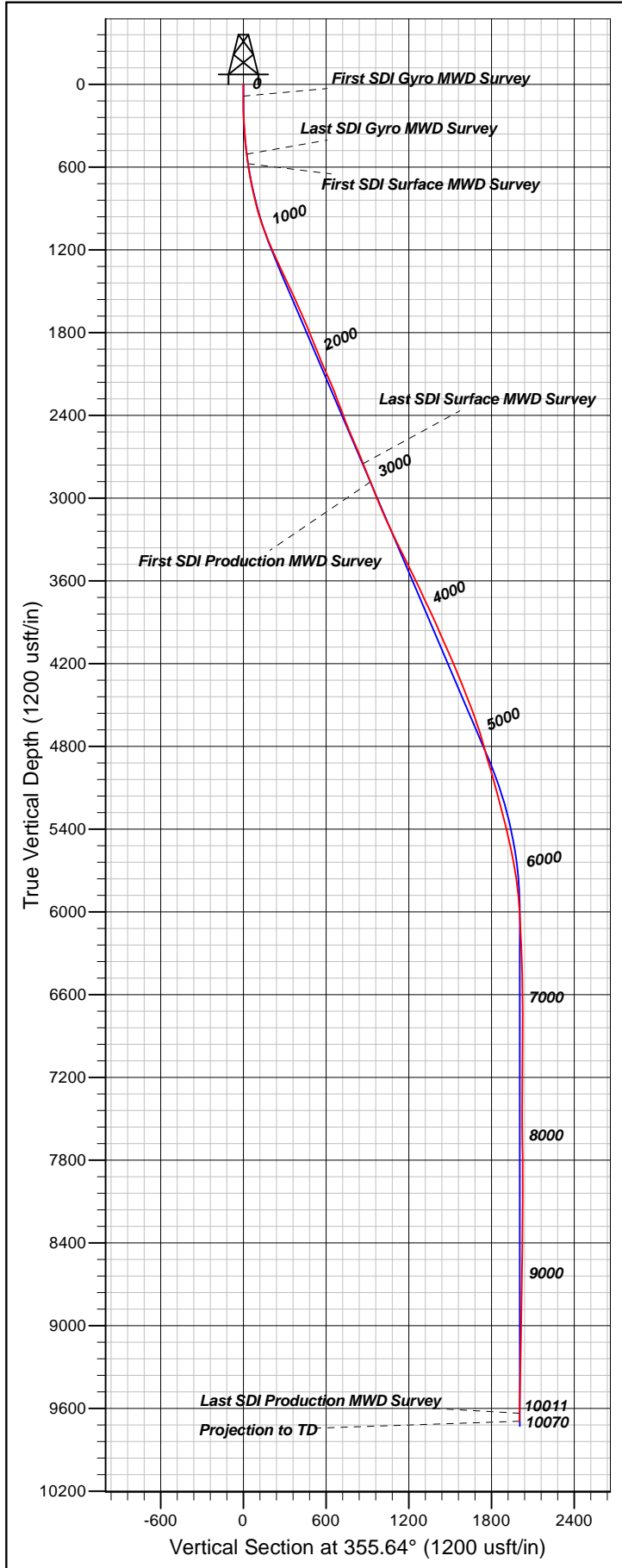
Operator	TEP Rocky Mountain, LLC.
Well Name & No.	TR 343-27-597
County & State	Garfield County, CO
SDI Job No.	420217DEFK417758 & OP.000640
Rig	H&P 318

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 85 feet to a measured depth of 10,070 feet is true and correct as determined from all available records.


Signature

04-May-17
Date

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



Well Details: Chevron TR 343-27-597

TVD Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318) Level: 8465.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1647204.80 2223365.00 39.5780273 -108.2557824 TR 343-10-597 (A10)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Chevron TR 343-27-597 - Slot TR 343-10-597 (A10), True North
 Vertical (TVD) Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
 Section (VS) Reference: Slot - TR 343-10-597 (A10)(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

17:30, May 04 2017
 Created By: Janie Collins

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 343-27-597 - Slot TR 343-10-597 (A10)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Site:	TR 44-27-597 Pad	MD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Well:	Chevron TR 343-27-597	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		TR 44-27-597 Pad			
Site Position:		Northing:	1,647,210.50 usft	Latitude:	39.5780433
From:	Map	Easting:	2,223,369.90 usft	Longitude:	-108.2556853
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.74 °

Well	Chevron TR 343-27-597 - Slot TR 343-10-597 (A10)					
Well Position	+N/-S	0.00 usft	Northing:	1,647,204.80 usft	Latitude:	39.5780273
	+E/-W	0.00 usft	Easting:	2,223,365.00 usft	Longitude:	-108.2557021
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	8,465.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/11/2017	9.82	65.92	51,670
	HDGM	4/13/2017	9.80	65.92	51,650

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		355.64

Survey Program	Date	5/4/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
85.00	507.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
576.00	2,913.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
3,056.00	10,070.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	
85.00	0.18	181.14	85.00	-0.13	0.00	-0.13	0.21	0.21	0.00	
First SDI Gyro MWD Survey										
238.00	2.11	350.24	237.97	2.40	-0.48	2.43	1.49	1.26	110.52	
328.00	3.96	350.95	327.84	7.10	-1.25	7.18	2.06	2.06	0.79	
418.00	5.37	353.23	417.54	14.36	-2.24	14.48	1.58	1.57	2.53	
507.00	6.69	355.08	506.04	23.66	-3.18	23.83	1.50	1.48	2.08	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 343-27-597 - Slot TR 343-10-597 (A10)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Site:	TR 44-27-597 Pad	MD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Well:	Chevron TR 343-27-597	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)
Last SDI Gyro MWD Survey									
576.00	8.69	357.75	574.42	32.87	-3.73	33.06	2.94	2.90	3.87
First SDI Surface MWD Survey									
665.00	10.03	355.21	662.23	47.31	-4.64	47.53	1.58	1.51	-2.85
754.00	11.53	352.04	749.66	63.85	-6.52	64.16	1.81	1.69	-3.56
844.00	13.64	353.20	837.49	83.29	-9.02	83.74	2.36	2.34	1.29
934.00	16.39	354.92	924.41	106.48	-11.40	107.04	3.10	3.06	1.91
1,024.00	18.84	356.09	1,010.19	133.63	-13.51	134.27	2.75	2.72	1.30
1,118.00	21.23	356.83	1,098.49	165.77	-15.49	166.47	2.56	2.54	0.79
1,213.00	23.81	358.54	1,186.24	202.12	-16.93	202.83	2.80	2.72	1.80
1,307.00	25.04	358.41	1,271.83	240.98	-17.97	241.65	1.31	1.31	-0.14
1,402.00	25.22	358.88	1,357.83	281.31	-18.92	281.94	0.28	0.19	0.49
1,496.00	24.46	357.55	1,443.14	320.78	-20.14	321.38	1.00	-0.81	-1.41
1,591.00	24.44	356.93	1,529.62	360.05	-22.04	360.69	0.27	-0.02	-0.65
1,685.00	24.61	355.98	1,615.14	398.99	-24.45	399.70	0.46	0.18	-1.01
1,780.00	23.96	354.36	1,701.73	437.92	-27.73	438.77	0.98	-0.68	-1.71
1,874.00	22.02	355.12	1,788.26	474.48	-31.11	475.47	2.09	-2.06	0.81
1,969.00	22.40	356.18	1,876.21	510.29	-33.83	511.38	0.58	0.40	1.12
2,063.00	22.17	354.37	1,963.19	545.81	-36.76	547.02	0.77	-0.24	-1.93
2,158.00	23.14	354.39	2,050.86	582.22	-40.35	583.60	1.02	1.02	0.02
2,252.00	23.79	354.30	2,137.09	619.47	-44.03	621.02	0.69	0.69	-0.10
2,346.00	21.90	351.90	2,223.71	655.69	-48.39	657.48	2.24	-2.01	-2.55
2,441.00	20.48	350.94	2,312.29	689.65	-53.50	691.72	1.54	-1.49	-1.01
2,535.00	20.32	355.21	2,400.40	722.15	-57.45	724.43	1.59	-0.17	4.54
2,630.00	22.51	357.06	2,488.83	756.76	-59.76	759.11	2.41	2.31	1.95
2,724.00	23.18	357.49	2,575.46	793.21	-61.50	795.59	0.73	0.71	0.46
2,818.00	22.46	355.99	2,662.10	829.61	-63.56	832.04	0.98	-0.77	-1.60
2,913.00	22.29	356.44	2,749.95	865.69	-65.95	868.20	0.25	-0.18	0.47
Last SDI Surface MWD Survey									
3,056.00	21.47	354.73	2,882.65	918.82	-70.04	921.48	0.73	-0.57	-1.20
First SDI Production MWD Survey									
3,150.00	22.14	356.04	2,969.93	953.62	-72.84	956.40	0.88	0.71	1.39
3,245.00	22.75	357.45	3,057.73	989.83	-74.90	992.66	0.86	0.64	1.48
3,339.00	24.08	356.16	3,143.99	1,027.12	-76.99	1,030.00	1.52	1.41	-1.37
3,433.00	25.71	357.75	3,229.25	1,066.63	-79.07	1,069.56	1.87	1.73	1.69
3,528.00	25.13	356.87	3,315.05	1,107.36	-80.98	1,110.32	0.73	-0.61	-0.93
3,622.00	27.27	356.55	3,399.39	1,148.79	-83.37	1,151.81	2.28	2.28	-0.34
3,716.00	26.83	355.96	3,483.11	1,191.45	-86.16	1,194.55	0.55	-0.47	-0.63
3,811.00	25.73	355.58	3,568.29	1,233.40	-89.26	1,236.61	1.17	-1.16	-0.40
3,905.00	24.27	354.77	3,653.48	1,272.98	-92.59	1,276.34	1.60	-1.55	-0.86
4,000.00	26.11	357.75	3,739.44	1,313.32	-95.19	1,316.76	2.35	1.94	3.14
4,094.00	24.86	357.01	3,824.30	1,353.72	-97.04	1,357.18	1.37	-1.33	-0.79
4,189.00	24.01	356.67	3,910.79	1,392.96	-99.20	1,396.47	0.91	-0.89	-0.36

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 343-27-597 - Slot TR 343-10-597 (A10)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Site:	TR 44-27-597 Pad	MD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Well:	Chevron TR 343-27-597	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)
4,283.00	23.44	356.82	3,996.84	1,430.72	-101.35	1,434.28	0.61	-0.61	0.16
4,377.00	24.35	0.30	4,082.79	1,468.77	-102.29	1,472.29	1.78	0.97	3.70
4,472.00	23.50	0.69	4,169.62	1,507.29	-101.95	1,510.68	0.91	-0.89	0.41
4,566.00	22.69	0.66	4,256.09	1,544.16	-101.52	1,547.41	0.86	-0.86	-0.03
4,661.00	21.68	1.62	4,344.06	1,580.02	-100.81	1,583.12	1.13	-1.06	1.01
4,755.00	21.95	357.14	4,431.33	1,614.93	-101.20	1,617.95	1.79	0.29	-4.77
4,850.00	20.50	356.43	4,519.88	1,649.27	-103.12	1,652.33	1.55	-1.53	-0.75
4,944.00	19.67	357.08	4,608.17	1,681.49	-104.95	1,684.61	0.91	-0.88	0.69
5,039.00	17.50	355.65	4,698.21	1,711.71	-106.85	1,714.88	2.33	-2.28	-1.51
5,133.00	15.39	353.80	4,788.36	1,738.20	-109.27	1,741.48	2.31	-2.24	-1.97
5,227.00	16.09	353.19	4,878.83	1,763.54	-112.16	1,766.96	0.77	0.74	-0.65
5,322.00	16.97	352.22	4,969.91	1,790.35	-115.60	1,793.96	0.97	0.93	-1.02
5,416.00	14.95	350.99	5,060.28	1,815.92	-119.35	1,819.74	2.18	-2.15	-1.31
5,511.00	15.44	355.67	5,151.96	1,840.63	-122.23	1,844.60	1.39	0.52	4.93
5,605.00	14.60	356.62	5,242.75	1,864.93	-123.87	1,868.96	0.93	-0.89	1.01
5,700.00	13.89	356.35	5,334.83	1,888.27	-125.30	1,892.33	0.75	-0.75	-0.28
5,794.00	13.54	356.79	5,426.15	1,910.51	-126.64	1,914.61	0.39	-0.37	0.47
5,889.00	11.61	357.50	5,518.86	1,931.17	-127.68	1,935.29	2.04	-2.03	0.75
5,983.00	11.43	357.54	5,610.97	1,949.92	-128.49	1,954.05	0.19	-0.19	0.04
6,078.00	9.41	2.15	5,704.40	1,967.09	-128.60	1,971.18	2.30	-2.13	4.85
6,172.00	7.47	1.27	5,797.38	1,980.88	-128.18	1,984.89	2.07	-2.06	-0.94
6,267.00	5.45	358.81	5,891.77	1,991.57	-128.14	1,995.54	2.15	-2.13	-2.59
6,361.00	3.43	10.33	5,985.48	1,998.80	-127.72	2,002.72	2.34	-2.15	12.26
6,384.32	3.39	10.74	6,008.76	2,000.16	-127.47	2,004.06	0.22	-0.19	1.78
TR 343-27-597 MVRD									
6,456.00	3.25	12.09	6,080.32	2,004.22	-126.65	2,008.05	0.22	-0.19	1.88
6,550.00	2.73	7.78	6,174.19	2,009.05	-125.79	2,012.80	0.60	-0.55	-4.59
6,644.00	2.29	6.02	6,268.10	2,013.13	-125.29	2,016.83	0.48	-0.47	-1.87
6,739.00	1.85	8.39	6,363.04	2,016.54	-124.87	2,020.20	0.47	-0.46	2.49
6,833.00	1.58	2.51	6,457.00	2,019.33	-124.59	2,022.96	0.34	-0.29	-6.26
6,927.00	1.14	50.76	6,550.98	2,021.22	-123.81	2,024.79	1.26	-0.47	51.33
7,022.00	0.88	64.29	6,645.96	2,022.13	-122.42	2,025.59	0.37	-0.27	14.24
7,117.00	0.44	77.56	6,740.95	2,022.53	-121.41	2,025.91	0.49	-0.46	13.97
7,211.00	0.26	154.64	6,834.95	2,022.41	-120.96	2,025.76	0.49	-0.19	82.00
7,306.00	0.44	195.60	6,929.95	2,021.87	-120.97	2,025.22	0.31	0.19	43.12
7,400.00	0.53	198.33	7,023.95	2,021.11	-121.20	2,024.48	0.10	0.10	2.90
7,495.00	0.97	190.33	7,118.94	2,019.90	-121.48	2,023.29	0.47	0.46	-8.42
7,589.00	0.79	38.89	7,212.94	2,019.62	-121.22	2,022.99	1.82	-0.19	-161.11
7,684.00	0.62	40.91	7,307.93	2,020.52	-120.47	2,023.83	0.18	-0.18	2.13
7,778.00	0.18	70.97	7,401.93	2,020.95	-120.00	2,024.23	0.50	-0.47	31.98
7,873.00	0.48	210.25	7,496.93	2,020.66	-120.06	2,023.94	0.66	0.32	146.61
7,967.00	0.79	22.46	7,590.92	2,020.92	-120.01	2,024.19	1.35	0.33	183.20
8,061.00	0.35	352.40	7,684.92	2,021.80	-119.80	2,025.06	0.55	-0.47	-31.98

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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)
8,156.00	0.53	299.22	7,779.92	2,022.30	-120.22	2,025.59	0.45	0.19	-55.98
8,250.00	0.79	272.77	7,873.91	2,022.55	-121.25	2,025.91	0.42	0.28	-28.14
8,345.00	0.95	254.60	7,968.90	2,022.37	-122.66	2,025.84	0.33	0.17	-19.13
8,439.00	0.97	91.54	8,062.89	2,022.14	-122.62	2,025.61	2.02	0.02	-173.47
8,534.00	0.50	86.52	8,157.89	2,022.14	-121.40	2,025.52	0.50	-0.49	-5.28
8,628.00	0.34	148.79	8,251.88	2,021.93	-120.85	2,025.27	0.48	-0.17	66.24
8,723.00	0.88	221.09	8,346.88	2,021.14	-121.18	2,024.50	0.89	0.57	76.11
8,817.00	1.67	106.74	8,440.87	2,020.20	-120.34	2,023.50	2.32	0.84	-121.65
8,912.00	1.76	114.30	8,535.82	2,019.20	-117.69	2,022.31	0.26	0.09	7.96
9,006.00	1.06	130.47	8,629.79	2,018.04	-115.71	2,021.00	0.85	-0.74	17.20
9,100.00	1.14	157.90	8,723.78	2,016.61	-114.70	2,019.50	0.56	0.09	29.18
9,195.00	0.88	184.88	8,818.76	2,015.01	-114.40	2,017.88	0.56	-0.27	28.40
9,289.00	0.79	198.41	8,912.75	2,013.68	-114.67	2,016.57	0.23	-0.10	14.39
9,384.00	1.06	193.23	9,007.74	2,012.20	-115.08	2,015.13	0.30	0.28	-5.45
9,478.00	1.41	220.91	9,101.72	2,010.48	-116.03	2,013.48	0.73	0.37	29.45
9,572.00	1.58	228.65	9,195.69	2,008.75	-117.76	2,011.89	0.28	0.18	8.23
9,666.00	2.02	229.26	9,289.64	2,006.81	-119.99	2,010.13	0.47	0.47	0.65
9,761.00	1.85	231.11	9,384.59	2,004.76	-122.45	2,008.26	0.19	-0.18	1.95
9,855.00	2.29	237.96	9,478.53	2,002.81	-125.23	2,006.53	0.54	0.47	7.29
9,949.00	2.64	239.37	9,572.44	2,000.71	-128.68	2,004.70	0.38	0.37	1.50
10,011.00	2.99	235.77	9,634.36	1,999.07	-131.25	2,003.26	0.63	0.56	-5.81
Last SDI Production MWD Survey									
10,070.00	2.99	235.77	9,693.28	1,997.34	-133.79	2,001.73	0.00	0.00	0.00
Projection to TD - TR 343-27-597 PBHL									

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
TR 343-27-597 MVRD	0.00	0.00	6,009.00	2,000.29	-149.24	1,649,208.70	2,223,276.50	39.5835188	-108.2562316
- actual wellpath misses target center by 21.77usft at 6384.32usft MD (6008.76 TVD, 2000.16 N, -127.47 E)									
- Circle (radius 50.00)									
TR 343-27-597 PBHL	0.00	0.00	9,728.00	2,000.29	-149.24	1,649,208.70	2,223,276.50	39.5835188	-108.2562316
- actual wellpath misses target center by 38.11usft at 10070.00usft MD (9693.28 TVD, 1997.34 N, -133.79 E)									
- Point									

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 343-27-597 - Slot TR 343-10-597 (A10)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Site:	TR 44-27-597 Pad	MD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Well:	Chevron TR 343-27-597	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
85.00	85.00	-0.13	0.00	First SDI Gyro MWD Survey
507.00	506.04	23.66	-3.18	Last SDI Gyro MWD Survey
576.00	574.42	32.87	-3.73	First SDI Surface MWD Survey
2,913.00	2,749.95	865.69	-65.95	Last SDI Surface MWD Survey
3,056.00	2,882.65	918.82	-70.04	First SDI Production MWD Survey
10,011.00	9,634.36	1,999.07	-131.25	Last SDI Production MWD Survey
10,070.00	9,693.28	1,997.34	-133.79	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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