



Directional Survey Certification

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

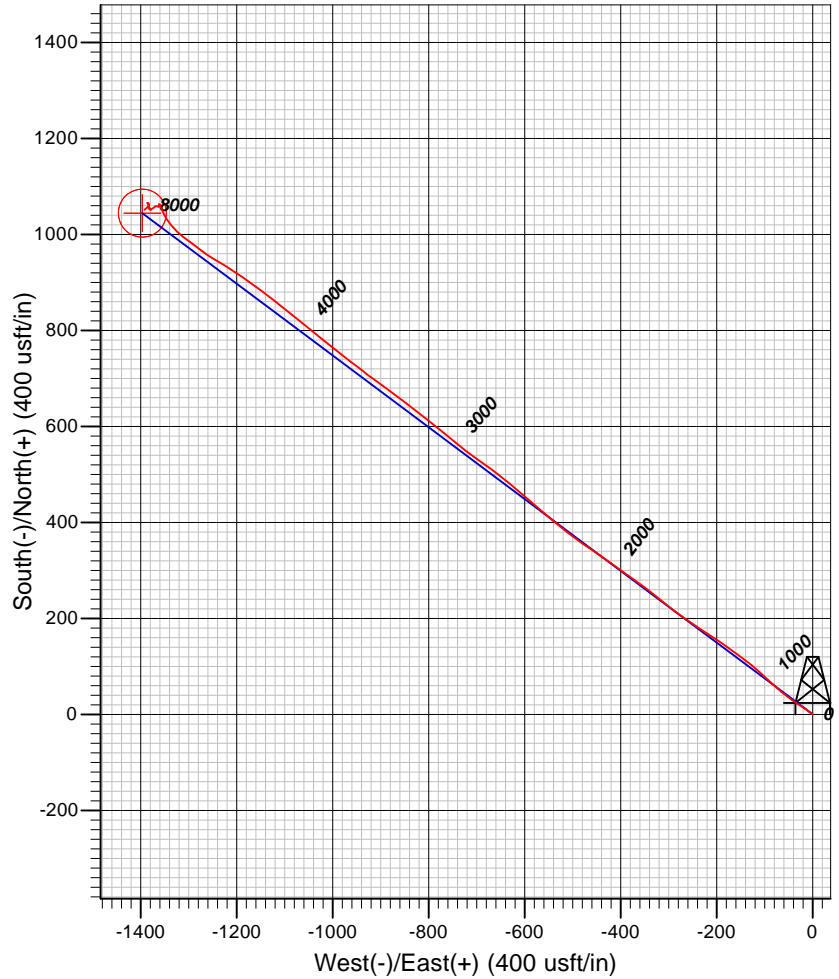
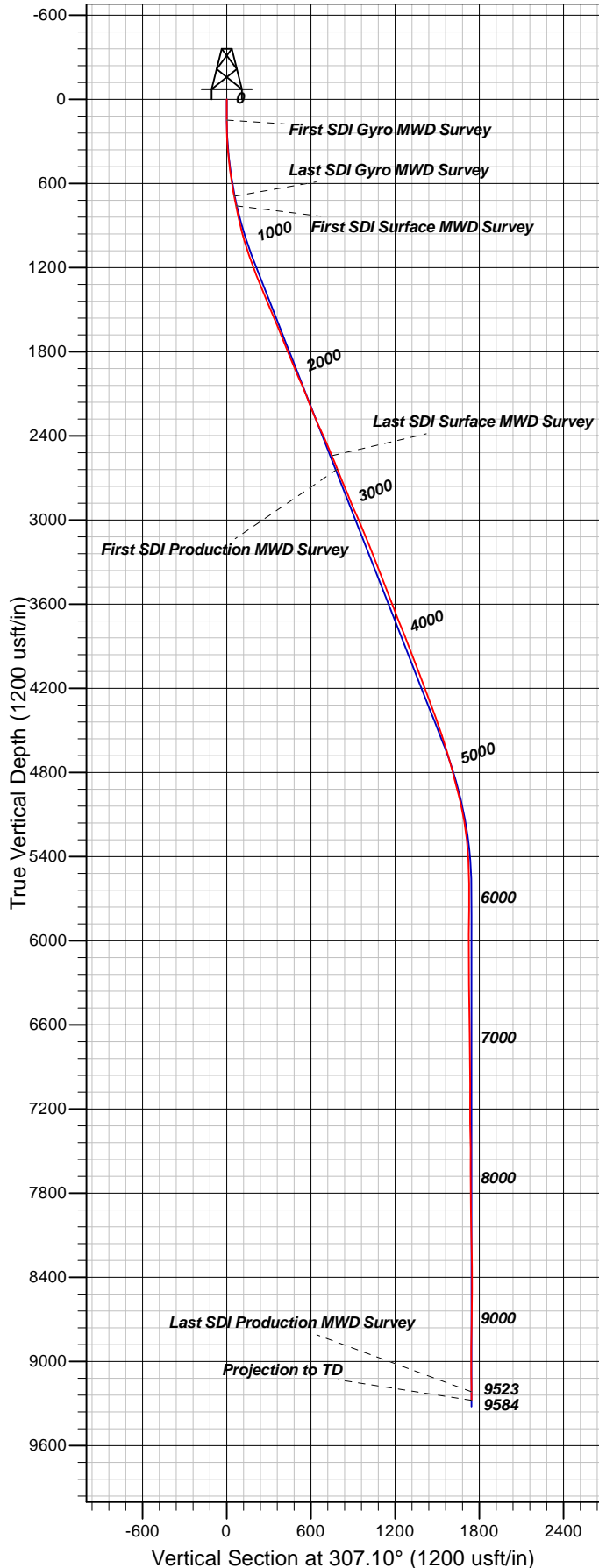
Operator	TEP Rocky Mountain, LLC.
Well Name & No.	TR 413-21-597
County & State	Garfield County, CO
SDI Job No.	420117DEFK412882 & OP.000682
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 149 feet to a measured depth of 9,584 feet is true and correct as determined from all available records.


Signature

01-May-17
Date

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



Well Details: Chevron TR 413-21-597

TVD Reference: GL 8292' & RKB 24' @ 8316.00usft (H&P 271) and Level: 8292.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1653214.90 2215057.70 39.5938240 -108.2859130 TR 413-21-597

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Chevron TR 413-21-597 - Slot A6 (TR 413-21-597), True North
 Vertical (TVD) Reference: GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
 Section (VS) Reference: Slot - A6 (TR 413-21-597) (0.00N, 0.00E)
 Measured Depth Reference: GL 8292' & RKB 24' @ 8316.00usft (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

12:37, May 01 2017
 Created By: Janie Collins

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 413-21-597 - Slot A6 (TR 413-21-597)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Site:	TR 24-21-597 Pad	MD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Well:	Chevron TR 413-21-597	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 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 413-21-597 - Slot A6 (TR 413-21-597)			
Well Position	+N/-S	0.00 usft	Northing:	1,653,214.89 usft
	+E/-W	0.00 usft	Easting:	2,215,057.70 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft
			Ground Level:	8,292.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/28/2017	9.83	65.92	51,660
	HDGM	4/11/2017	9.82	65.92	51,636

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	307.10

Survey Program	Date	5/1/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
149.00	694.00	Survey #1 - Gyro MWD (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
764.00	2,676.00	Survey #2 - Surface MWD (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1
2,779.00	9,584.00	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	
149.00	0.35	313.24	149.00	0.31	-0.33	0.45	0.23	0.23	0.00	
First SDI Gyro MWD Survey										
239.00	1.58	299.36	238.98	1.11	-1.61	1.96	1.38	1.37	-15.42	
330.00	3.61	309.99	329.89	3.56	-4.90	6.06	2.28	2.23	11.68	
421.00	6.16	307.00	420.55	8.35	-11.00	13.81	2.82	2.80	-3.29	
510.00	7.30	303.40	508.93	14.33	-19.53	24.22	1.37	1.28	-4.04	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 413-21-597 - Slot A6 (TR 413-21-597)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Site:	TR 24-21-597 Pad	MD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Well:	Chevron TR 413-21-597	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)
601.00	8.80	302.08	599.04	21.21	-30.26	36.93	1.66	1.65	-1.45
694.00	10.73	306.65	690.69	30.16	-43.23	52.67	2.23	2.08	4.91
Last SDI Gyro MWD Survey									
764.00	11.47	306.96	759.38	38.23	-54.02	66.15	1.06	1.06	0.44
First SDI Surface MWD Survey									
857.00	12.80	310.93	850.30	50.54	-69.19	85.68	1.69	1.43	4.27
951.00	14.21	312.13	941.70	65.10	-85.62	107.56	1.53	1.50	1.28
1,045.00	17.24	313.53	1,032.17	82.44	-104.28	132.90	3.25	3.22	1.49
1,139.00	19.44	308.54	1,121.39	101.79	-126.62	162.39	2.87	2.34	-5.31
1,234.00	20.50	305.88	1,210.68	121.39	-152.46	194.82	1.47	1.12	-2.80
1,328.00	22.77	306.46	1,298.05	141.85	-180.43	229.47	2.43	2.41	0.62
1,423.00	22.14	302.79	1,385.85	162.47	-210.27	265.71	1.62	-0.66	-3.86
1,518.00	22.68	303.33	1,473.68	182.23	-240.62	301.83	0.61	0.57	0.57
1,612.00	23.10	305.34	1,560.28	202.85	-270.80	338.35	0.94	0.45	2.14
1,707.00	21.90	308.92	1,648.05	224.76	-299.79	374.69	1.92	-1.26	3.77
1,801.00	21.51	308.75	1,735.38	246.56	-326.87	409.44	0.42	-0.41	-0.18
1,896.00	22.68	306.73	1,823.41	268.42	-355.14	445.16	1.47	1.23	-2.13
1,990.00	22.60	304.62	1,910.17	289.52	-384.52	481.33	0.87	-0.09	-2.24
2,085.00	23.74	306.29	1,997.50	311.21	-414.96	518.69	1.38	1.20	1.76
2,179.00	22.14	304.61	2,084.07	332.47	-444.79	555.31	1.84	-1.70	-1.79
2,274.00	21.52	303.69	2,172.25	352.30	-474.03	590.59	0.75	-0.65	-0.97
2,368.00	22.77	306.72	2,259.32	372.74	-502.95	625.99	1.80	1.33	3.22
2,463.00	24.64	310.49	2,346.31	396.60	-532.76	664.15	2.53	1.97	3.97
2,557.00	24.04	311.01	2,431.95	421.88	-562.11	702.81	0.68	-0.64	0.55
2,652.00	22.81	309.75	2,519.12	446.36	-590.87	740.51	1.40	-1.29	-1.33
2,676.00	22.77	309.98	2,541.25	452.32	-598.00	749.80	0.41	-0.17	0.96
Last SDI Surface MWD Survey									
2,779.00	21.45	310.17	2,636.67	477.27	-627.67	788.51	1.28	-1.28	0.18
First SDI Production MWD Survey									
2,873.00	22.71	308.04	2,723.78	499.54	-655.09	823.82	1.59	1.34	-2.27
2,968.00	22.27	305.45	2,811.55	521.28	-684.20	860.15	1.14	-0.46	-2.73
3,062.00	22.34	305.84	2,898.52	542.07	-713.19	895.82	0.17	0.07	0.41
3,157.00	24.31	310.05	2,985.76	565.23	-742.80	933.40	2.72	2.07	4.43
3,251.00	23.21	309.13	3,071.79	589.37	-771.98	971.24	1.23	-1.17	-0.98
3,346.00	21.63	308.03	3,159.61	611.97	-800.30	1,007.45	1.72	-1.66	-1.16
3,440.00	20.75	306.80	3,247.25	632.62	-827.28	1,041.43	1.05	-0.94	-1.31
3,535.00	22.51	308.47	3,335.56	654.02	-854.99	1,076.44	1.96	1.85	1.76
3,629.00	21.54	306.71	3,422.70	675.53	-882.92	1,111.69	1.25	-1.03	-1.87
3,724.00	19.96	305.04	3,511.53	695.26	-910.18	1,145.33	1.78	-1.66	-1.76
3,819.00	21.70	308.08	3,600.32	715.41	-937.28	1,179.10	2.16	1.83	3.20
3,913.00	20.66	307.24	3,687.97	736.16	-964.16	1,213.06	1.15	-1.11	-0.89
4,007.00	22.69	308.91	3,775.32	757.59	-991.47	1,247.77	2.26	2.16	1.78
4,102.00	21.40	308.55	3,863.38	779.90	-1,019.29	1,283.41	1.37	-1.36	-0.38

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 413-21-597 - Slot A6 (TR 413-21-597)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Site:	TR 24-21-597 Pad	MD Reference:	GL 8292' & RKB 24' @ 8316.00usft (H&P 271)
Well:	Chevron TR 413-21-597	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)
4,196.00	20.58	308.31	3,951.14	800.83	-1,045.66	1,317.07	0.88	-0.87	-0.26
4,291.00	21.54	309.44	4,039.79	822.26	-1,072.23	1,351.19	1.10	1.01	1.19
4,385.00	19.80	308.91	4,127.74	843.22	-1,097.95	1,384.35	1.86	-1.85	-0.56
4,480.00	21.46	307.68	4,216.64	863.95	-1,124.23	1,417.81	1.81	1.75	-1.29
4,575.00	20.84	306.63	4,305.24	884.66	-1,151.54	1,452.08	0.76	-0.65	-1.11
4,669.00	19.83	305.35	4,393.38	903.86	-1,177.96	1,484.74	1.17	-1.07	-1.36
4,763.00	18.47	303.64	4,482.18	921.33	-1,203.37	1,515.54	1.56	-1.45	-1.82
4,858.00	17.59	301.79	4,572.52	937.23	-1,228.10	1,544.86	1.11	-0.93	-1.95
4,952.00	16.09	300.30	4,662.48	951.29	-1,251.42	1,571.93	1.66	-1.60	-1.59
5,047.00	15.78	307.38	4,753.84	965.77	-1,273.05	1,597.93	2.07	-0.33	7.45
5,141.00	14.77	307.15	4,844.52	980.77	-1,292.76	1,622.69	1.08	-1.07	-0.24
5,236.00	13.72	306.80	4,936.60	994.83	-1,311.43	1,646.07	1.11	-1.11	-0.37
5,331.00	13.63	317.53	5,028.92	1,009.84	-1,328.01	1,668.34	2.67	-0.09	11.29
5,425.00	10.73	321.92	5,120.79	1,024.90	-1,340.89	1,687.70	3.24	-3.09	4.67
5,520.00	8.71	333.26	5,214.43	1,038.29	-1,349.58	1,702.71	2.92	-2.13	11.94
5,614.00	6.16	336.60	5,307.64	1,049.27	-1,354.79	1,713.49	2.75	-2.71	3.55
5,709.00	3.87	333.78	5,402.27	1,056.83	-1,358.23	1,720.79	2.42	-2.41	-2.97
5,803.00	1.26	326.30	5,496.17	1,060.53	-1,360.21	1,724.60	2.79	-2.78	-7.96
5,898.00	1.41	324.03	5,591.14	1,062.35	-1,361.47	1,726.71	0.17	0.16	-2.39
5,954.82	0.45	347.22	5,647.95	1,063.13	-1,361.93	1,727.55	1.79	-1.70	40.81
TR 413-21-597 MVRD									
5,992.00	0.38	94.29	5,685.13	1,063.26	-1,361.84	1,727.55	1.79	-0.18	287.99
6,087.00	0.70	122.76	5,780.13	1,062.92	-1,361.04	1,726.71	0.43	0.34	29.97
6,181.00	0.62	138.14	5,874.12	1,062.23	-1,360.22	1,725.64	0.21	-0.09	16.36
6,276.00	0.81	195.42	5,969.11	1,061.20	-1,360.05	1,724.88	0.74	0.20	60.29
6,370.00	1.06	205.20	6,063.10	1,059.78	-1,360.60	1,724.46	0.31	0.27	10.40
6,465.00	1.49	216.01	6,158.08	1,057.98	-1,361.70	1,724.26	0.52	0.45	11.38
6,559.00	0.94	298.13	6,252.06	1,057.36	-1,363.10	1,724.99	1.75	-0.59	87.36
6,654.00	1.31	294.17	6,347.04	1,058.17	-1,364.78	1,726.82	0.40	0.39	-4.17
6,748.00	1.76	279.03	6,441.01	1,058.84	-1,367.18	1,729.14	0.64	0.48	-16.11
6,843.00	0.70	238.95	6,535.99	1,058.77	-1,369.12	1,730.65	1.37	-1.12	-42.19
6,938.00	1.14	230.82	6,630.98	1,057.87	-1,370.35	1,731.09	0.48	0.46	-8.56
7,032.00	1.49	233.50	6,724.95	1,056.55	-1,372.06	1,731.65	0.38	0.37	2.85
7,127.00	1.93	231.04	6,819.91	1,054.81	-1,374.29	1,732.39	0.47	0.46	-2.59
7,222.00	0.35	277.71	6,914.89	1,053.84	-1,375.83	1,733.02	1.80	-1.66	49.13
7,316.00	0.44	237.81	7,008.89	1,053.69	-1,376.42	1,733.40	0.30	0.10	-42.45
7,411.00	1.06	222.08	7,103.88	1,052.84	-1,377.31	1,733.61	0.68	0.65	-16.56
7,505.00	1.32	218.30	7,197.86	1,051.35	-1,378.57	1,733.71	0.29	0.28	-4.02
7,600.00	1.23	327.19	7,292.84	1,051.35	-1,379.80	1,734.69	2.18	-0.09	114.62
7,694.00	1.58	308.65	7,386.82	1,053.01	-1,381.36	1,736.93	0.61	0.37	-19.72
7,789.00	0.62	29.24	7,481.80	1,054.27	-1,382.13	1,738.31	1.68	-1.01	84.83
7,883.00	0.35	86.46	7,575.80	1,054.73	-1,381.59	1,738.16	0.55	-0.29	60.87
7,978.00	0.35	206.52	7,670.80	1,054.49	-1,381.43	1,737.89	0.64	0.00	126.38

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8,072.00	0.79	224.10	7,764.79	1,053.77	-1,382.01	1,737.91	0.50	0.47	18.70
8,167.00	1.67	354.97	7,859.78	1,054.68	-1,382.59	1,738.92	2.39	0.93	137.76
8,261.00	2.37	3.05	7,953.72	1,057.98	-1,382.61	1,740.93	0.80	0.74	8.60
8,356.00	1.58	355.23	8,048.66	1,061.25	-1,382.61	1,742.90	0.88	-0.83	-8.23
8,450.00	0.88	340.64	8,142.64	1,063.22	-1,382.96	1,744.37	0.81	-0.74	-15.52
8,545.00	0.97	301.97	8,237.63	1,064.34	-1,383.88	1,745.78	0.65	0.09	-40.71
8,639.00	0.96	290.87	8,331.62	1,065.04	-1,385.29	1,747.33	0.20	-0.01	-11.81
8,734.00	1.06	292.30	8,426.60	1,065.66	-1,386.85	1,748.94	0.11	0.11	1.51
8,828.00	1.06	112.04	8,520.60	1,065.66	-1,386.85	1,748.94	2.26	0.00	191.21
8,923.00	1.32	133.39	8,615.58	1,064.58	-1,385.24	1,747.01	0.54	0.27	22.47
9,018.00	1.14	161.44	8,710.56	1,062.93	-1,384.14	1,745.14	0.65	-0.19	29.53
9,112.00	1.06	185.69	8,804.54	1,061.18	-1,383.93	1,743.91	0.50	-0.09	25.80
9,207.00	1.23	201.16	8,899.52	1,059.35	-1,384.39	1,743.17	0.37	0.18	16.28
9,301.00	1.37	220.39	8,993.50	1,057.56	-1,385.48	1,742.96	0.48	0.15	20.46
9,396.00	1.64	222.14	9,088.46	1,055.68	-1,387.13	1,743.15	0.29	0.28	1.84
9,490.00	2.20	225.77	9,182.41	1,053.43	-1,389.32	1,743.54	0.61	0.60	3.86
9,523.00	2.11	227.00	9,215.39	1,052.57	-1,390.22	1,743.74	0.31	-0.27	3.73
Last SDI Production MWD Survey									
9,584.00	2.11	227.00	9,276.35	1,051.04	-1,391.86	1,744.12	0.00	0.00	0.00
Projection to TD - TR 413-21-597 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,676.00	2,541.25	452.32	-598.00	Last SDI Surface MWD Survey
2,779.00	2,636.67	477.27	-627.67	First SDI Production MWD Survey
9,523.00	9,215.39	1,052.57	-1,390.22	Last SDI Production MWD Survey
9,584.00	9,276.35	1,051.04	-1,391.86	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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