



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 534-27-597
County & State	Garfield County, CO
SDI Job No.	420317DEFK423665
Rig	H&P 318

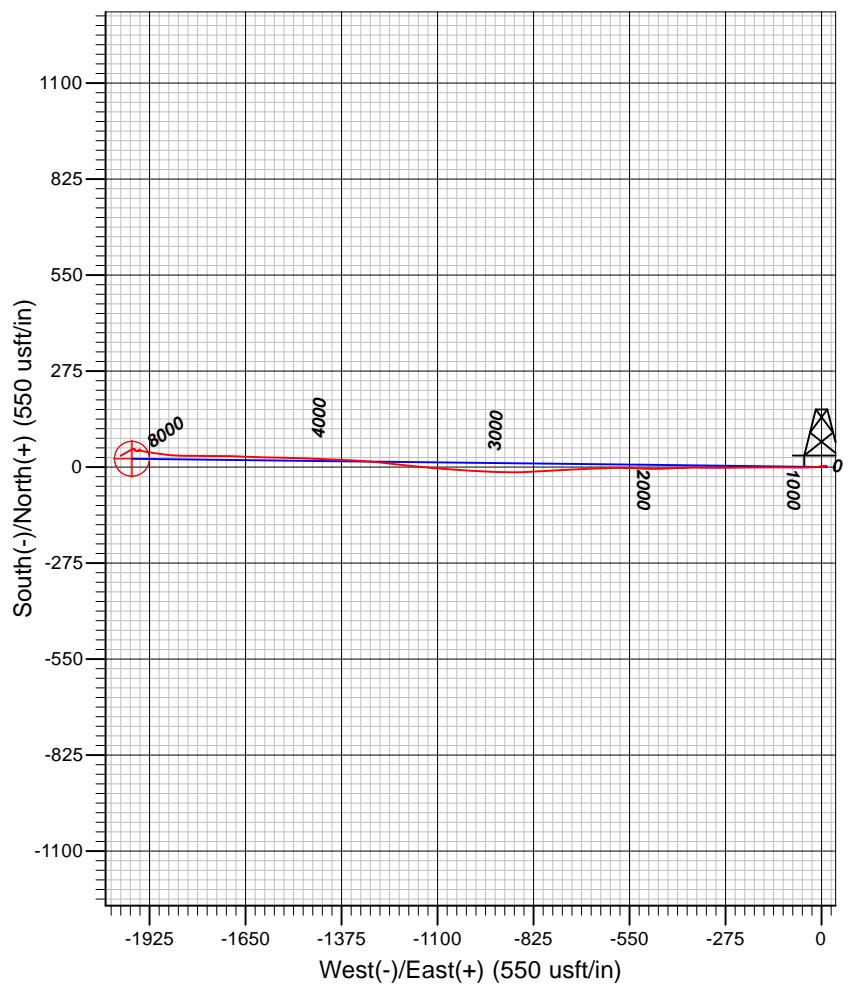
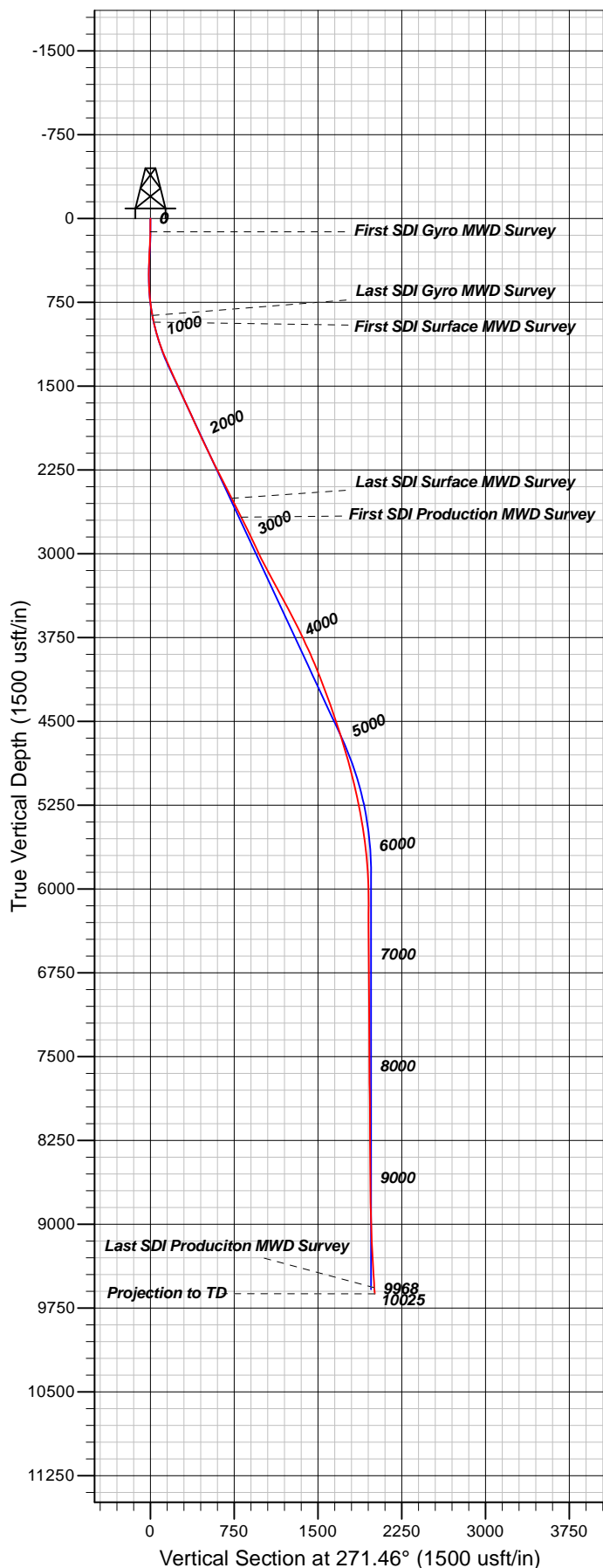
I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 119 feet to a measured depth of 10,025 feet is true and correct as determined from all available records.


Signature

13-Mar-17

Date

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



Well Details: Chevron TR 534-27-597

TVD Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318)		Datum Level: 8465.00		Slot	
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1647159.50	2223325.70	39.5778997	-108.2558365

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Chevron TR 534-27-597 - Slot TR 534-27-597 (A2), True North
 Vertical (TVD) Reference: GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
 Section (VS) Reference: Slot - TR 534-27-597 (A2)(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

16:58, March 13 2017
 Created By: Janie Collins

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 534-27-597 - Slot TR 534-27-597 (A2)
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 534-27-597	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 534-27-597 - Slot TR 534-27-597 (A2)					
Well Position	+N/-S	0.00 usft	Northing:	1,647,159.50 usft	Latitude:	39.5778997
	+E/-W	0.00 usft	Easting:	2,223,325.70 usft	Longitude:	-108.2558366
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	3/3/2017	9.80	65.92	51,663

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	271.46	

Survey Program	Date	3/13/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
119.00	870.00	Survey #1 - Gyro MWD (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
932.00	2,659.00	Survey #2 - Surface MWD (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
2,849.00	10,025.00	Survey #3 - Production MWD (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	
119.00	0.62	79.98	119.00	0.11	0.63	-0.63	0.52	0.52	0.00	
First SDI Gyro MWD Survey										
154.00	1.32	85.43	153.99	0.18	1.22	-1.22	2.02	2.00	15.57	
244.00	2.73	79.19	243.93	0.66	4.36	-4.34	1.58	1.57	-6.93	
334.00	3.34	76.55	333.81	1.67	9.02	-8.97	0.70	0.68	-2.93	
423.00	2.02	71.10	422.71	2.78	13.02	-12.95	1.51	-1.48	-6.12	
513.00	0.18	318.52	512.69	3.40	14.43	-14.34	2.33	-2.04	-125.09	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 534-27-597 - Slot TR 534-27-597 (A2)
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 534-27-597	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)
601.00	2.55	269.74	600.66	3.50	12.38	-12.29	2.77	2.69	-55.43
691.00	5.10	265.25	690.45	3.16	6.39	-6.31	2.85	2.83	-4.99
780.00	7.65	260.33	778.89	1.84	-3.39	3.44	2.93	2.87	-5.53
870.00	10.73	264.64	867.73	0.05	-17.64	17.64	3.50	3.42	4.79
Last SDI Gyro MWD Survey									
932.00	12.65	266.88	928.44	-0.86	-30.17	30.14	3.18	3.10	3.61
First SDI Surface MWD Survey									
1,022.00	15.29	269.26	1,015.77	-1.55	-51.88	51.82	3.00	2.93	2.64
1,117.00	18.22	271.00	1,106.73	-1.45	-79.26	79.20	3.13	3.08	1.83
1,211.00	21.43	269.74	1,195.15	-1.28	-111.13	111.07	3.44	3.41	-1.34
1,306.00	24.41	270.90	1,282.64	-1.05	-148.12	148.05	3.17	3.14	1.22
1,400.00	24.53	269.52	1,368.20	-0.90	-187.06	186.97	0.62	0.13	-1.47
1,495.00	24.48	268.59	1,454.64	-1.55	-226.46	226.34	0.41	-0.05	-0.98
1,589.00	24.39	269.38	1,540.22	-2.24	-265.33	265.19	0.36	-0.10	0.84
1,684.00	24.46	271.11	1,626.72	-2.07	-304.61	304.46	0.76	0.07	1.82
1,778.00	25.75	270.33	1,711.84	-1.58	-344.49	344.34	1.42	1.37	-0.83
1,873.00	24.14	267.78	1,797.97	-2.21	-384.54	384.36	2.04	-1.69	-2.68
1,967.00	24.32	268.03	1,883.69	-3.62	-423.09	422.86	0.22	0.19	0.27
2,062.00	24.79	268.39	1,970.10	-4.86	-462.55	462.28	0.52	0.49	0.38
2,156.00	25.42	271.65	2,055.23	-4.83	-502.42	502.13	1.62	0.67	3.47
2,251.00	26.46	272.63	2,140.65	-3.27	-543.94	543.68	1.18	1.09	1.03
2,345.00	26.80	269.79	2,224.69	-2.39	-586.06	585.80	1.40	0.36	-3.02
2,439.00	26.97	267.66	2,308.53	-3.33	-628.55	628.26	1.04	0.18	-2.27
2,534.00	27.32	267.06	2,393.06	-5.33	-671.84	671.49	0.47	0.37	-0.63
2,628.00	27.31	267.47	2,476.58	-7.39	-714.93	714.51	0.20	-0.01	0.44
2,659.00	26.91	267.67	2,504.18	-7.99	-729.04	728.60	1.32	-1.29	0.65
Last SDI Surface MWD Survey									
2,849.00	26.31	266.20	2,674.05	-12.53	-814.02	813.44	0.47	-0.32	-0.77
First SDI Production MWD Survey									
2,944.00	26.58	268.07	2,759.11	-14.64	-856.27	855.62	0.92	0.28	1.97
3,038.00	25.92	270.29	2,843.42	-15.24	-897.83	897.15	1.26	-0.70	2.36
3,133.00	25.25	273.06	2,929.11	-14.06	-938.83	938.17	1.44	-0.71	2.92
3,227.00	25.06	273.15	3,014.19	-11.89	-978.73	978.11	0.21	-0.20	0.10
3,322.00	27.38	272.57	3,099.41	-9.81	-1,020.64	1,020.06	2.46	2.44	-0.61
3,416.00	29.28	274.77	3,182.15	-6.93	-1,065.15	1,064.63	2.31	2.02	2.34
3,511.00	28.31	274.48	3,265.40	-3.24	-1,110.76	1,110.32	1.03	-1.02	-0.31
3,605.00	29.38	276.45	3,347.74	1.10	-1,155.90	1,155.55	1.52	1.14	2.10
3,699.00	28.50	276.22	3,430.00	6.12	-1,201.10	1,200.87	0.94	-0.94	-0.24
3,794.00	27.35	276.03	3,513.94	10.86	-1,245.34	1,245.21	1.21	-1.21	-0.20
3,888.00	25.93	274.95	3,597.96	14.91	-1,287.29	1,287.25	1.60	-1.51	-1.15
3,983.00	26.82	273.43	3,683.07	17.98	-1,329.38	1,329.40	1.18	0.94	-1.60
4,077.00	25.78	272.92	3,767.34	20.29	-1,370.96	1,371.03	1.13	-1.11	-0.54
4,172.00	24.69	272.47	3,853.27	22.20	-1,411.42	1,411.52	1.16	-1.15	-0.47

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well Chevron TR 534-27-597 - Slot TR 534-27-597 (A2)
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Site:	TR 44-27-597 Pad	MD Reference:	GL 8465' & RKB 24' @ 8489.00usft (H&P 318)
Well:	Chevron TR 534-27-597	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)
4,266.00	23.57	272.19	3,939.06	23.76	-1,449.81	1,449.95	1.20	-1.19	-0.30
4,361.00	22.47	271.56	4,026.49	24.98	-1,486.94	1,487.09	1.19	-1.16	-0.66
4,455.00	21.53	271.60	4,113.65	25.95	-1,522.14	1,522.31	1.00	-1.00	0.04
4,549.00	20.63	271.50	4,201.35	26.87	-1,555.94	1,556.12	0.96	-0.96	-0.11
4,644.00	19.32	271.20	4,290.64	27.64	-1,588.38	1,588.57	1.38	-1.38	-0.32
4,739.00	20.05	272.07	4,380.08	28.55	-1,620.37	1,620.57	0.83	0.77	0.92
4,833.00	18.85	271.89	4,468.72	29.64	-1,651.65	1,651.87	1.28	-1.28	-0.19
4,928.00	17.94	271.87	4,558.86	30.62	-1,681.61	1,681.84	0.96	-0.96	-0.02
5,022.00	17.18	270.66	4,648.48	31.25	-1,709.96	1,710.20	0.90	-0.81	-1.29
5,116.00	16.71	269.75	4,738.40	31.35	-1,737.36	1,737.59	0.57	-0.50	-0.97
5,211.00	15.45	271.00	4,829.68	31.51	-1,763.67	1,763.90	1.38	-1.33	1.32
5,305.00	14.97	270.12	4,920.39	31.76	-1,788.33	1,788.55	0.57	-0.51	-0.94
5,399.00	13.53	270.53	5,011.50	31.89	-1,811.46	1,811.69	1.54	-1.53	0.44
5,494.00	12.94	270.84	5,103.97	32.14	-1,833.21	1,833.44	0.63	-0.62	0.33
5,588.00	11.55	275.23	5,195.83	33.16	-1,853.11	1,853.35	1.78	-1.48	4.67
5,683.00	11.13	274.72	5,288.98	34.78	-1,871.72	1,872.00	0.45	-0.44	-0.54
5,777.00	9.86	278.19	5,381.41	36.67	-1,888.73	1,889.05	1.51	-1.35	3.69
5,872.00	9.61	278.51	5,475.04	39.00	-1,904.62	1,904.99	0.27	-0.26	0.34
5,966.00	7.78	278.28	5,567.95	41.08	-1,918.68	1,919.10	1.95	-1.95	-0.24
6,061.00	6.41	279.89	5,662.22	42.92	-1,930.26	1,930.73	1.46	-1.44	1.69
6,155.00	5.10	278.75	5,755.75	44.45	-1,939.56	1,940.07	1.40	-1.39	-1.21
6,249.00	3.23	287.04	5,849.50	45.87	-1,946.23	1,946.76	2.08	-1.99	8.82
6,343.00	1.67	277.51	5,943.41	46.82	-1,950.12	1,950.68	1.71	-1.66	-10.14
6,438.00	1.67	258.79	6,038.37	46.73	-1,952.85	1,953.40	0.57	0.00	-19.71
6,532.00	0.70	31.07	6,132.36	46.96	-1,953.89	1,954.46	2.34	-1.03	140.72
6,626.00	0.74	37.65	6,226.35	47.93	-1,953.23	1,953.81	0.10	0.04	7.00
6,720.00	0.51	33.29	6,320.34	48.76	-1,952.63	1,953.23	0.25	-0.24	-4.64
6,815.00	0.34	4.00	6,415.34	49.40	-1,952.37	1,953.00	0.28	-0.18	-30.83
6,909.00	0.30	297.69	6,509.34	49.79	-1,952.57	1,953.21	0.37	-0.04	-70.54
7,004.00	0.72	256.06	6,604.34	49.76	-1,953.37	1,954.01	0.56	0.44	-43.82
7,099.00	0.71	243.22	6,699.33	49.35	-1,954.48	1,955.10	0.17	-0.01	-13.52
7,193.00	1.07	219.60	6,793.32	48.41	-1,955.56	1,956.15	0.54	0.38	-25.13
7,287.00	1.34	229.39	6,887.30	47.02	-1,956.95	1,957.51	0.36	0.29	10.41
7,381.00	0.62	234.27	6,981.28	46.01	-1,958.20	1,958.73	0.77	-0.77	5.19
7,476.00	0.27	58.63	7,076.28	45.83	-1,958.42	1,958.96	0.94	-0.37	-184.88
7,570.00	0.26	60.25	7,170.28	46.05	-1,958.05	1,958.59	0.01	-0.01	1.72
7,664.00	0.10	192.49	7,264.28	46.07	-1,957.88	1,958.42	0.36	-0.17	140.68
7,758.00	0.69	259.69	7,358.28	45.89	-1,958.46	1,958.99	0.70	0.63	71.49
7,853.00	1.13	245.93	7,453.26	45.41	-1,959.87	1,960.39	0.51	0.46	-14.48
7,947.00	0.54	277.06	7,547.25	45.08	-1,961.16	1,961.67	0.77	-0.63	33.12
8,042.00	0.10	353.18	7,642.25	45.22	-1,961.61	1,962.13	0.55	-0.46	80.13
8,136.00	0.65	333.29	7,736.25	45.78	-1,961.86	1,962.39	0.59	0.59	-21.16
8,230.00	0.93	289.88	7,830.24	46.51	-1,962.82	1,963.37	0.68	0.30	-46.18

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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)	
8,325.00	1.51	276.52	7,925.22	46.92	-1,964.79	1,965.35	0.68	0.61	-14.06	
8,419.00	0.33	25.80	8,019.21	47.30	-1,965.90	1,966.47	1.75	-1.26	116.26	
8,513.00	0.45	29.01	8,113.21	47.87	-1,965.61	1,966.19	0.13	0.13	3.41	
8,608.00	0.31	289.43	8,208.21	48.28	-1,965.67	1,966.26	0.62	-0.15	-104.82	
8,702.00	0.71	318.28	8,302.20	48.80	-1,966.29	1,966.90	0.49	0.43	30.69	
8,797.00	1.05	304.67	8,397.19	49.73	-1,967.40	1,968.03	0.42	0.36	-14.33	
8,891.00	0.74	19.43	8,491.18	50.80	-1,967.91	1,968.56	1.19	-0.33	79.53	
8,986.00	0.09	1.06	8,586.18	51.45	-1,967.70	1,968.37	0.69	-0.68	-19.34	
9,080.00	0.68	274.55	8,680.18	51.57	-1,968.26	1,968.93	0.72	0.63	-92.03	
9,174.00	1.10	276.30	8,774.17	51.71	-1,969.71	1,970.39	0.45	0.45	1.86	
9,269.00	1.36	260.66	8,869.14	51.63	-1,971.73	1,972.40	0.44	0.27	-16.46	
9,363.00	2.09	244.28	8,963.10	50.70	-1,974.37	1,975.02	0.93	0.78	-17.43	
9,457.00	2.83	243.34	9,057.01	48.92	-1,977.99	1,978.60	0.79	0.79	-1.00	
9,552.00	3.13	243.16	9,151.89	46.69	-1,982.40	1,982.95	0.32	0.32	-0.19	
9,646.00	3.35	237.53	9,245.74	44.06	-1,987.01	1,987.49	0.41	0.23	-5.99	
9,740.00	3.41	239.56	9,339.57	41.17	-1,991.74	1,992.14	0.14	0.06	2.16	
9,835.00	3.66	240.75	9,434.39	38.26	-1,996.82	1,997.14	0.27	0.26	1.25	
9,929.00	3.85	240.84	9,528.19	35.25	-2,002.19	2,002.44	0.20	0.20	0.10	
9,968.00	3.96	238.76	9,567.10	33.92	-2,004.49	2,004.70	0.46	0.28	-5.33	
Last SDI Production MWD Survey										
10,025.00	3.96	238.76	9,623.96	31.88	-2,007.85	2,008.01	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
119.00	119.00	0.11	0.63	First SDI Gyro MWD Survey	
870.00	867.73	0.05	-17.64	Last SDI Gyro MWD Survey	
932.00	928.44	-0.86	-30.17	First SDI Surface MWD Survey	
2,659.00	2,504.18	-7.99	-729.04	Last SDI Surface MWD Survey	
2,849.00	2,674.05	-12.53	-814.02	First SDI Production MWD Survey	
9,968.00	9,567.10	33.92	-2,004.49	Last SDI Production MWD Survey	
10,025.00	9,623.96	31.88	-2,007.85	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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