



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.	RU 424-7
County & State	Garfield, CO
SDI Job No.	421216DEFK406793
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 77 feet to a measured depth of 9,971 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

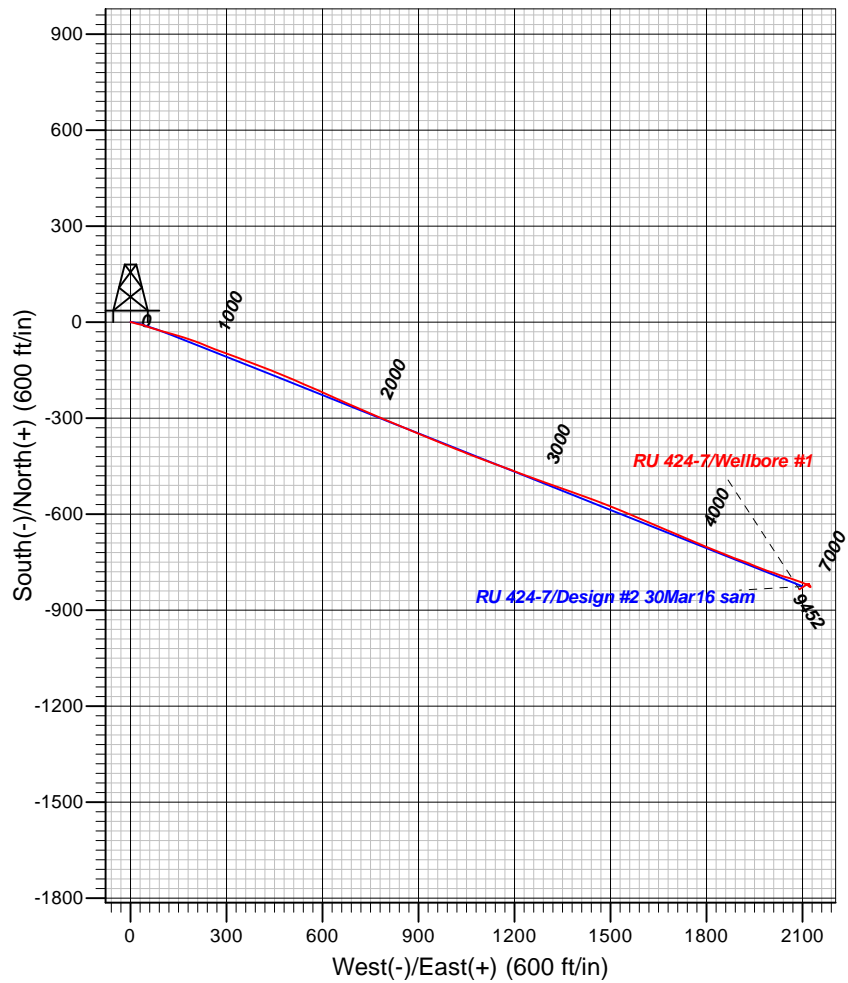
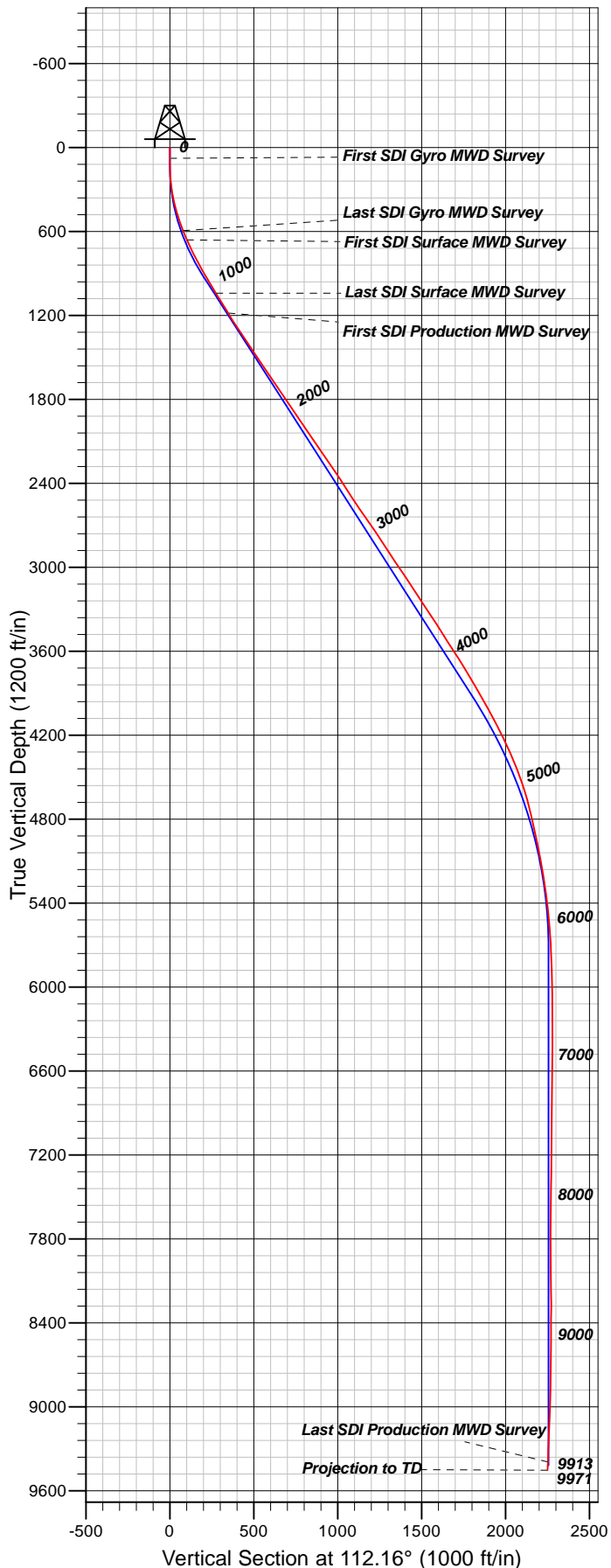
Signature

03-Jan-17

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District



Well Details: RU 424-7

TVD Reference: GL 7357' & RKB 24' @ 7381.01ft (H&P 318) and Level: 7357.01					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1597992.19	2343319.80	39.4521793	-107.8258052

RU 424-7 (A6)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RU 424-7 - Slot RU 424-7 (A6), True North
 Vertical (TVD) Reference: GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
 Section (VS) Reference: Slot - RU 424-7 (A6)(0.00N, 0.00E)
 Measured Depth Reference: GL 7357' & RKB 24' @ 7381.01ft (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: Wellbore #1

17:38, January 03 2017
 Created By: Janie Collins

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RU 424-7 - Slot RU 424-7 (A6)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Site:	SR 43-12 Pad	MD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Well:	RU 424-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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		SR 43-12 Pad					
Site Position:		Northing:	1,598,022.09	usft	Latitude:	39.4522607	
From:	Map	Easting:	2,343,309.20	usft	Longitude:	-107.8258454	
Position Uncertainty:	0.00	ft	Slot Radius:	0.000	in	Grid Convergence:	-1.47 °

Well	RU 424-7 - Slot RU 424-7 (A6)					
Well Position	+N/-S	0.00 ft	Northing:	1,597,992.19 usft	Latitude:	39.4521794
	+E/-W	0.00 ft	Easting:	2,343,319.80 usft	Longitude:	-107.8258052
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	7,357.01 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/23/2016	9.30	65.67	51,750

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	112.16	

Survey Program	Date	1/3/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
77.00	603.00	Survey #1 - Gyro Survey (Wellbore #1)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
673.00	1,091.00	Survey #2 - Surface MWD Survey (Wellbo	SDI MWD	SDI MWD - Standard ver 1.0.1
1,251.00	9,971.00	Survey #3 - Production MWD Survey (Wel	SDI MWD	SDI MWD - Standard ver 1.0.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77.00	0.09	51.33	77.00	0.04	0.05	0.03	0.12	0.12	0.00
First SDI Gyro MWD Survey									
147.00	1.58	104.24	146.99	-0.17	1.03	1.01	2.18	2.13	75.59
238.00	4.66	100.81	237.85	-1.17	5.87	5.88	3.39	3.38	-3.77
329.00	8.18	107.49	328.26	-3.81	15.68	15.96	3.95	3.87	7.34
421.00	11.35	101.60	418.92	-7.60	30.80	31.39	3.61	3.45	-6.40
512.00	15.04	108.37	507.51	-13.12	50.78	51.98	4.39	4.05	7.44
603.00	18.21	108.90	594.69	-21.45	75.45	77.96	3.49	3.48	0.58

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RU 424-7 - Slot RU 424-7 (A6)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Site:	SR 43-12 Pad	MD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Well:	RU 424-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Last SDI Gyro MWD Survey									
673.00	20.56	105.39	660.72	-28.25	97.65	101.09	3.75	3.36	-5.01
First SDI Surface MWD Survey									
763.00	22.82	105.08	744.34	-36.99	129.74	134.11	2.51	2.51	-0.34
854.00	24.63	107.86	827.65	-47.40	164.83	170.54	2.34	1.99	3.05
945.00	25.90	110.17	909.95	-60.07	201.54	209.31	1.77	1.40	2.54
1,036.00	27.59	112.44	991.21	-74.97	239.68	250.25	2.17	1.86	2.49
1,091.00	27.23	111.34	1,040.04	-84.41	263.17	275.57	1.13	-0.65	-2.00
Last SDI Surface MWD Survey									
1,251.00	26.22	109.47	1,182.95	-109.51	330.59	347.48	0.82	-0.63	-1.17
First SDI Production MWD Survey									
1,345.00	28.80	111.26	1,266.31	-124.64	371.28	390.87	2.88	2.74	1.90
1,440.00	28.97	111.89	1,349.49	-141.52	413.95	436.75	0.37	0.18	0.66
1,534.00	28.78	110.77	1,431.81	-158.03	456.23	482.14	0.61	-0.20	-1.19
1,629.00	29.84	113.51	1,514.65	-175.57	499.29	528.63	1.80	1.12	2.88
1,723.00	29.87	113.49	1,596.17	-194.23	542.20	575.42	0.03	0.03	-0.02
1,817.00	29.43	113.39	1,677.86	-212.73	584.87	621.91	0.47	-0.47	-0.11
1,912.00	28.65	114.41	1,760.92	-231.40	627.03	668.00	0.97	-0.82	1.07
2,006.00	30.46	114.08	1,842.69	-250.44	669.31	714.33	1.93	1.93	-0.35
2,100.00	29.51	113.65	1,924.10	-269.45	712.27	761.29	1.04	-1.01	-0.46
2,194.00	29.35	112.74	2,005.98	-287.64	754.72	807.47	0.51	-0.17	-0.97
2,289.00	28.89	113.64	2,088.97	-305.84	797.21	853.69	0.67	-0.48	0.95
2,384.00	30.44	112.06	2,171.52	-324.08	840.54	900.70	1.83	1.63	-1.66
2,478.00	29.84	112.45	2,252.81	-341.96	884.23	947.90	0.67	-0.64	0.41
2,572.00	29.33	112.24	2,334.55	-359.60	927.15	994.31	0.55	-0.54	-0.22
2,666.00	28.25	112.37	2,416.93	-376.78	969.03	1,039.58	1.15	-1.15	0.14
2,761.00	28.31	112.68	2,500.59	-394.03	1,010.61	1,084.58	0.17	0.06	0.33
2,855.00	30.12	110.52	2,582.63	-410.89	1,053.27	1,130.45	2.23	1.93	-2.30
2,949.00	30.09	111.15	2,663.95	-427.66	1,097.33	1,177.59	0.34	-0.03	0.67
3,044.00	29.63	110.66	2,746.34	-444.54	1,141.52	1,224.88	0.55	-0.48	-0.52
3,138.00	28.87	110.19	2,828.36	-460.57	1,184.56	1,270.78	0.84	-0.81	-0.50
3,232.00	27.93	110.00	2,911.04	-475.93	1,226.55	1,315.46	1.00	-1.00	-0.20
3,327.00	29.48	110.55	2,994.36	-491.75	1,269.34	1,361.07	1.66	1.63	0.58
3,422.00	29.41	109.16	3,077.09	-507.61	1,313.27	1,407.73	0.72	-0.07	-1.46
3,516.00	28.94	110.14	3,159.17	-523.01	1,356.42	1,453.50	0.71	-0.50	1.04
3,610.00	28.08	109.02	3,241.77	-538.05	1,398.69	1,498.32	1.08	-0.91	-1.19
3,705.00	29.16	110.26	3,325.16	-553.36	1,441.54	1,543.78	1.30	1.14	1.31
3,799.00	28.39	111.76	3,407.55	-569.57	1,483.78	1,589.02	1.12	-0.82	1.60
3,894.00	27.42	112.17	3,491.51	-586.20	1,525.01	1,633.48	1.04	-1.02	0.43
3,988.00	28.92	112.95	3,574.37	-603.23	1,565.99	1,677.85	1.64	1.60	0.83
4,082.00	27.89	112.71	3,657.05	-620.58	1,607.20	1,722.56	1.10	-1.10	-0.26
4,177.00	26.67	113.33	3,741.49	-637.60	1,647.28	1,766.10	1.32	-1.28	0.65
4,271.00	25.99	113.34	3,825.73	-654.12	1,685.56	1,807.78	0.72	-0.72	0.01
4,365.00	25.62	112.57	3,910.36	-670.08	1,723.24	1,848.70	0.53	-0.39	-0.82

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RU 424-7 - Slot RU 424-7 (A6)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Site:	SR 43-12 Pad	MD Reference:	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
Well:	RU 424-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,460.00	24.55	113.54	3,996.40	-685.84	1,760.30	1,888.97	1.21	-1.13	1.02
4,554.00	23.55	112.22	4,082.24	-700.74	1,795.58	1,927.27	1.21	-1.06	-1.40
4,649.00	23.08	112.06	4,169.48	-714.91	1,830.41	1,964.87	0.50	-0.49	-0.17
4,743.00	22.14	112.22	4,256.25	-728.53	1,863.89	2,001.01	1.00	-1.00	0.17
4,838.00	19.49	109.95	4,345.05	-740.71	1,895.36	2,034.75	2.92	-2.79	-2.39
4,932.00	18.50	109.94	4,433.93	-751.15	1,924.12	2,065.32	1.05	-1.05	-0.01
5,026.00	15.56	114.27	4,523.80	-761.42	1,949.64	2,092.83	3.40	-3.13	4.61
5,121.00	14.82	110.43	4,615.48	-770.90	1,972.64	2,117.71	1.31	-0.78	-4.04
5,215.00	11.74	108.59	4,706.96	-778.15	1,992.98	2,139.28	3.31	-3.28	-1.96
5,309.00	10.31	108.34	4,799.22	-783.84	2,010.03	2,157.21	1.52	-1.52	-0.27
5,404.00	10.08	111.97	4,892.72	-789.63	2,025.81	2,174.01	0.72	-0.24	3.82
5,498.00	10.25	107.10	4,985.25	-795.16	2,041.43	2,190.57	0.93	0.18	-5.18
5,592.00	9.93	103.99	5,077.79	-799.58	2,057.29	2,206.92	0.67	-0.34	-3.31
5,686.00	7.30	110.40	5,170.73	-803.62	2,070.75	2,220.92	2.97	-2.80	6.82
5,781.00	7.21	106.79	5,264.97	-807.45	2,082.12	2,232.88	0.49	-0.09	-3.80
5,875.00	5.73	114.74	5,358.37	-811.12	2,092.03	2,243.44	1.84	-1.57	8.46
5,969.00	5.16	115.06	5,451.94	-814.87	2,100.12	2,252.35	0.61	-0.61	0.34
6,063.00	4.35	111.84	5,545.62	-817.99	2,107.26	2,260.14	0.91	-0.86	-3.43
6,158.00	3.52	109.84	5,640.40	-820.32	2,113.34	2,266.66	0.89	-0.87	-2.11
6,249.00	1.97	133.64	5,731.29	-822.35	2,117.10	2,270.90	2.08	-1.70	26.15
6,340.00	2.19	150.52	5,822.23	-824.94	2,119.09	2,273.72	0.71	0.24	18.55
6,434.00	1.16	90.72	5,916.20	-826.52	2,120.93	2,276.02	2.01	-1.10	-63.62
6,528.00	0.92	120.24	6,010.18	-826.91	2,122.53	2,277.65	0.62	-0.26	31.40
6,623.00	1.13	130.42	6,105.17	-827.90	2,123.90	2,279.30	0.29	0.22	10.72
6,717.00	0.45	12.91	6,199.16	-828.14	2,124.69	2,280.12	1.49	-0.72	-125.01
6,811.00	0.78	358.24	6,293.15	-827.14	2,124.75	2,279.80	0.39	0.35	-15.61
6,906.00	0.56	338.13	6,388.15	-826.06	2,124.56	2,279.21	0.34	-0.23	-21.17
7,000.00	1.09	337.37	6,482.14	-824.81	2,124.04	2,278.26	0.56	0.56	-0.81
7,095.00	0.38	352.65	6,577.13	-823.67	2,123.66	2,277.47	0.77	-0.75	16.08
7,189.00	0.22	306.49	6,671.13	-823.25	2,123.47	2,277.14	0.30	-0.17	-49.11
7,284.00	0.24	280.72	6,766.13	-823.10	2,123.13	2,276.77	0.11	0.02	-27.13
7,378.00	0.15	315.00	6,860.13	-822.98	2,122.85	2,276.47	0.15	-0.10	36.47
7,472.00	0.47	273.03	6,954.13	-822.87	2,122.38	2,275.99	0.40	0.34	-44.65
7,566.00	0.40	322.08	7,048.12	-822.59	2,121.79	2,275.34	0.39	-0.07	52.18
7,661.00	0.54	281.45	7,143.12	-822.24	2,121.15	2,274.61	0.37	0.15	-42.77
7,755.00	0.73	290.60	7,237.11	-821.94	2,120.15	2,273.58	0.23	0.20	9.73
7,849.00	0.44	321.22	7,331.11	-821.45	2,119.37	2,272.66	0.44	-0.31	32.57
7,944.00	1.02	275.99	7,426.10	-821.08	2,118.30	2,271.53	0.82	0.61	-47.61
8,038.00	0.70	250.18	7,520.09	-821.19	2,116.93	2,270.30	0.53	-0.34	-27.46
8,133.00	1.11	249.01	7,615.08	-821.71	2,115.52	2,269.20	0.43	0.43	-1.23
8,227.00	0.18	241.77	7,709.07	-822.11	2,114.54	2,268.44	0.99	-0.99	-7.70
8,321.00	0.30	235.61	7,803.07	-822.32	2,114.21	2,268.21	0.13	0.13	-6.55
8,416.00	1.28	65.03	7,898.07	-822.01	2,114.96	2,268.80	1.66	1.03	-179.56

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Well:	RU 424-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,510.00	1.05	42.39	7,992.05	-820.93	2,116.50	2,269.81	0.54	-0.24	-24.09	
8,604.00	1.13	68.26	8,086.03	-819.95	2,117.94	2,270.77	0.53	0.09	27.52	
8,698.00	0.68	53.88	8,180.02	-819.28	2,119.25	2,271.74	0.53	-0.48	-15.30	
8,792.00	0.17	12.86	8,274.02	-818.82	2,119.73	2,272.01	0.60	-0.54	-43.64	
8,887.00	0.09	349.35	8,369.02	-818.60	2,119.75	2,271.94	0.10	-0.08	-24.75	
8,981.00	0.54	198.35	8,463.01	-818.95	2,119.60	2,271.93	0.66	0.48	-160.64	
9,076.00	0.62	242.12	8,558.01	-819.62	2,119.00	2,271.63	0.46	0.08	46.07	
9,170.00	0.93	273.14	8,652.00	-819.81	2,117.79	2,270.58	0.54	0.33	33.00	
9,264.00	0.62	286.83	8,745.99	-819.62	2,116.54	2,269.36	0.38	-0.33	14.56	
9,359.00	1.18	260.74	8,840.98	-819.63	2,115.08	2,268.01	0.72	0.59	-27.46	
9,453.00	1.52	240.74	8,934.96	-820.40	2,113.04	2,266.41	0.61	0.36	-21.28	
9,548.00	3.08	237.99	9,029.88	-822.37	2,109.78	2,264.13	1.65	1.64	-2.89	
9,642.00	3.14	240.29	9,123.74	-824.98	2,105.40	2,261.06	0.15	0.06	2.45	
9,736.00	3.47	236.70	9,217.58	-827.82	2,100.79	2,257.86	0.41	0.35	-3.82	
9,831.00	3.12	233.38	9,312.42	-830.94	2,096.31	2,254.89	0.42	-0.37	-3.49	
9,913.00	3.12	234.58	9,394.30	-833.56	2,092.70	2,252.53	0.08	0.00	1.46	
Last SDI Production MWD Survey										
9,971.00	3.12	234.58	9,452.22	-835.39	2,090.13	2,250.84	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
77.00	77.00	0.04	0.05	First SDI Gyro MWD Survey	
603.00	594.69	-21.45	75.45	Last SDI Gyro MWD Survey	
673.00	660.72	-28.25	97.65	First SDI Surface MWD Survey	
1,091.00	1,040.04	-84.41	263.17	Last SDI Surface MWD Survey	
1,251.00	1,182.95	-109.51	330.59	First SDI Production MWD Survey	
9,913.00	9,394.30	-833.56	2,092.70	Last SDI Production MWD Survey	
9,971.00	9,452.22	-835.39	2,090.13	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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