



## 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 324-7
County & State	Garfield County, CO
SDI Job No.	420117DEFK412965
Rig	H&P 318

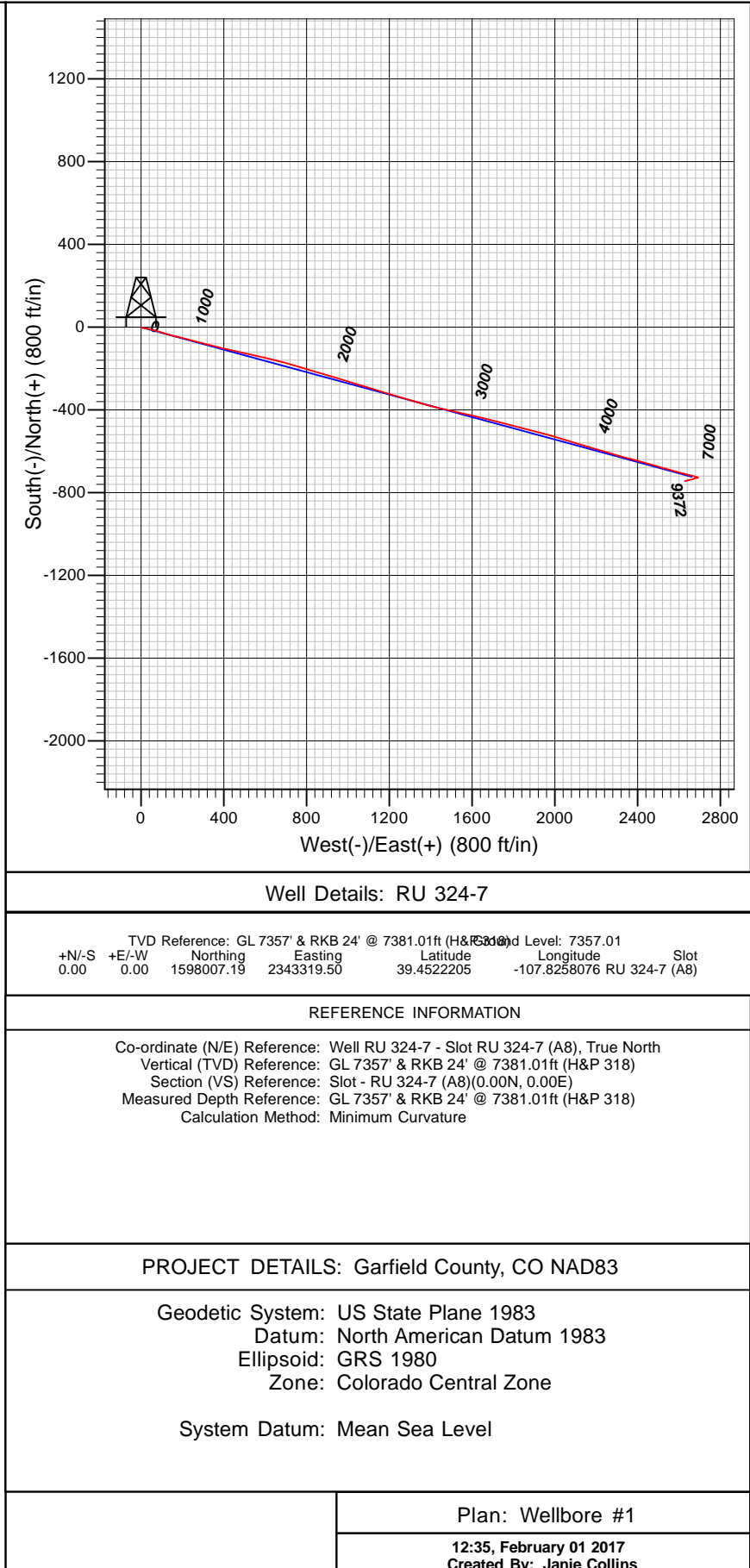
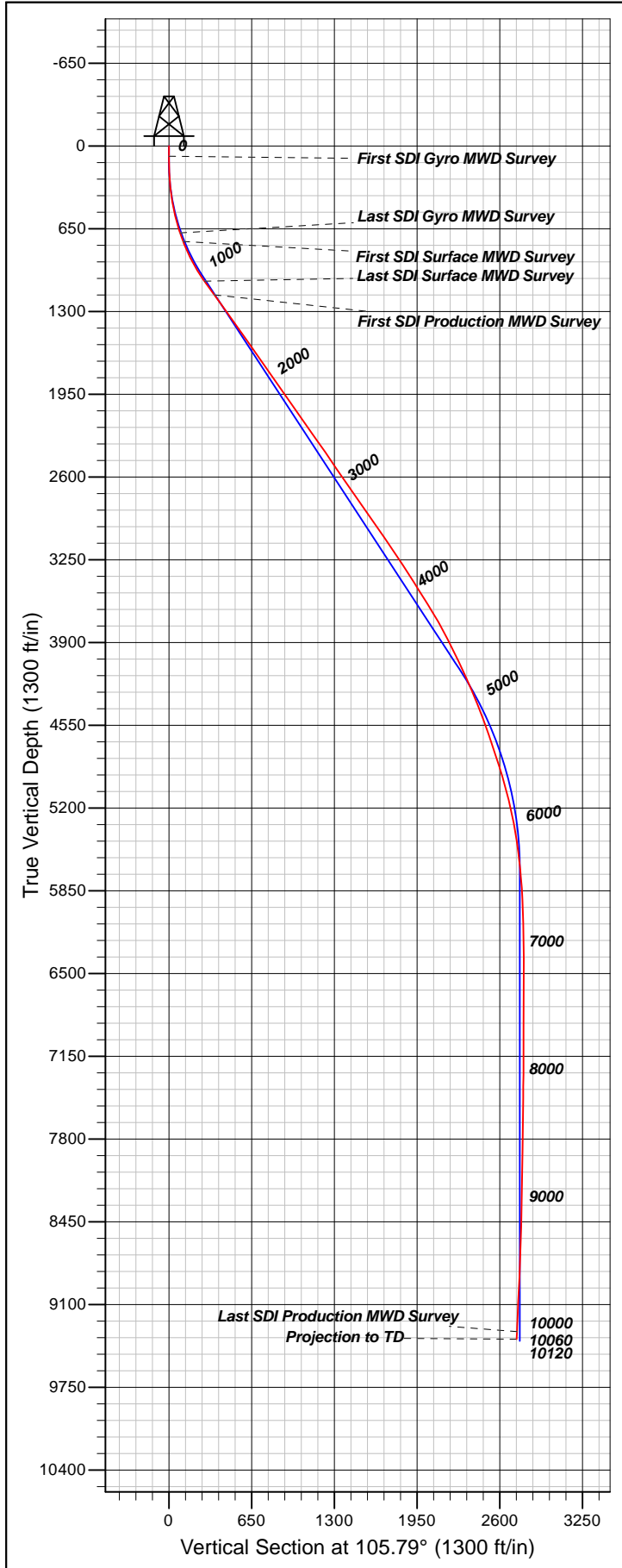
I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 79 feet to a measured depth of 10,120 feet is true and correct as determined from all available records.

  
Signature

01-Feb-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 RU 324-7 - Slot RU 324-7 (A8)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
<b>Well:</b>	RU 324-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<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		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 324-7 - Slot RU 324-7 (A8)					
Well Position	+N/-S	0.00 ft	Northing:	1,598,007.19 usft	Latitude:	39.4522205
	+E/-W	0.00 ft	Easting:	2,343,319.50 usft	Longitude:	-107.8258076
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	7,357.01 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	1/23/2017	9.30	65.67	51,740

<b>Design</b>	Wellbore #1				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		105.79

<b>Survey Program</b>	<b>Date</b>	2/1/2017			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
79.00	692.00	Survey #1 - Gyro MWD Survey (Wellbore)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
762.00	1,118.00	Survey #2 - Surface MWD Survey (Wellbo)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,251.00	10,120.00	Survey #3 - Production MWD Survey (Wel)	SDI MWD	SDI MWD - Standard ver 1.0.1	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79.00	0.18	244.25	79.00	-0.05	-0.11	-0.09	0.23	0.23	0.00
<b>First SDI Gyro MWD Survey</b>									
146.00	1.50	120.06	145.99	-0.54	0.55	0.68	2.40	1.97	-185.36
237.00	3.78	105.47	236.89	-1.94	4.47	4.83	2.59	2.51	-16.03
328.00	5.72	106.35	327.57	-4.01	11.72	12.37	2.13	2.13	0.97
420.00	8.18	98.17	418.89	-6.23	22.60	23.44	2.88	2.67	-8.89
511.00	11.61	99.40	508.53	-8.65	38.04	38.96	3.78	3.77	1.35
602.00	15.31	105.64	597.02	-13.39	58.66	60.08	4.36	4.07	6.86

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<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.01ft (H&P 318)
<b>Well:</b>	RU 324-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
692.00	18.65	106.79	683.08	-20.75	83.88	86.36	3.73	3.71	1.28	
Last SDI Gyro MWD Survey										
762.00	21.56	108.33	748.81	-28.03	106.81	110.41	4.22	4.16	2.20	
First SDI Surface MWD Survey										
853.00	25.18	104.34	832.33	-38.09	141.45	146.48	4.34	3.98	-4.38	
944.00	27.95	103.82	913.72	-47.98	180.92	187.15	3.05	3.04	-0.57	
1,035.00	31.98	104.61	992.54	-59.15	224.97	232.58	4.45	4.43	0.87	
1,118.00	35.17	104.13	1,061.68	-70.54	269.43	278.46	3.86	3.84	-0.58	
Last SDI Surface MWD Survey										
1,251.00	36.34	103.73	1,169.62	-89.24	344.86	356.13	0.90	0.88	-0.30	
First SDI Production MWD Survey										
1,346.00	36.22	103.40	1,246.20	-102.43	399.50	412.30	0.24	-0.13	-0.35	
1,440.00	35.54	103.74	1,322.36	-115.35	453.06	467.35	0.75	-0.72	0.36	
1,535.00	35.40	102.11	1,399.73	-127.68	506.78	522.41	1.01	-0.15	-1.72	
1,629.00	34.84	102.73	1,476.62	-139.31	559.60	576.39	0.71	-0.60	0.66	
1,724.00	35.21	102.62	1,554.41	-151.27	612.79	630.83	0.40	0.39	-0.12	
1,818.00	35.54	105.58	1,631.07	-164.53	665.55	685.21	1.86	0.35	3.15	
1,913.00	34.75	104.92	1,708.75	-178.92	718.31	739.90	0.92	-0.83	-0.69	
2,007.00	35.38	106.68	1,785.69	-193.63	770.27	793.89	1.27	0.67	1.87	
2,101.00	35.39	106.72	1,862.32	-209.27	822.41	848.32	0.03	0.01	0.04	
2,195.00	34.93	106.12	1,939.17	-224.57	874.33	902.45	0.61	-0.49	-0.64	
2,290.00	34.37	106.96	2,017.32	-239.95	926.11	956.45	0.77	-0.59	0.88	
2,384.00	33.80	106.82	2,095.18	-255.25	976.51	1,009.12	0.61	-0.61	-0.15	
2,478.00	35.68	107.25	2,172.42	-270.95	1,027.73	1,062.67	2.02	2.00	0.46	
2,572.00	35.74	106.99	2,248.74	-287.10	1,080.16	1,117.53	0.17	0.06	-0.28	
2,667.00	35.52	106.67	2,325.96	-303.12	1,133.13	1,172.86	0.30	-0.23	-0.34	
2,761.00	34.92	106.22	2,402.75	-318.47	1,185.13	1,227.07	0.70	-0.64	-0.48	
2,856.00	34.61	106.14	2,480.79	-333.57	1,237.15	1,281.23	0.33	-0.33	-0.08	
2,950.00	34.45	106.83	2,558.23	-348.69	1,288.24	1,334.51	0.45	-0.17	0.73	
3,044.00	33.65	106.81	2,636.12	-363.92	1,338.62	1,387.14	0.85	-0.85	-0.02	
3,139.00	33.64	105.03	2,715.20	-378.35	1,389.23	1,439.76	1.04	-0.01	-1.87	
3,233.00	35.83	103.13	2,792.45	-391.36	1,441.18	1,493.29	2.60	2.33	-2.02	
3,328.00	35.69	102.59	2,869.54	-403.71	1,495.30	1,548.73	0.36	-0.15	-0.57	
3,422.00	35.01	102.85	2,946.21	-415.69	1,548.35	1,603.04	0.74	-0.72	0.28	
3,516.00	34.95	103.03	3,023.23	-427.75	1,600.88	1,656.86	0.13	-0.06	0.19	
3,611.00	34.47	103.11	3,101.32	-439.99	1,653.57	1,710.90	0.51	-0.51	0.08	
3,705.00	34.06	104.26	3,179.01	-452.50	1,704.99	1,763.78	0.82	-0.44	1.22	
3,800.00	33.21	104.06	3,258.10	-465.38	1,756.01	1,816.38	0.90	-0.89	-0.21	
3,894.00	31.87	104.71	3,337.35	-477.93	1,804.99	1,866.93	1.47	-1.43	0.69	
3,988.00	32.11	104.57	3,417.07	-490.52	1,853.17	1,916.72	0.27	0.26	-0.15	
4,083.00	32.67	104.77	3,497.29	-503.41	1,902.40	1,967.60	0.60	0.59	0.21	
4,177.00	32.57	104.47	3,576.46	-516.20	1,951.43	2,018.26	0.20	-0.11	-0.32	
4,272.00	30.97	106.76	3,657.23	-529.64	1,999.60	2,068.27	2.11	-1.68	2.41	
4,366.00	30.14	106.92	3,738.18	-543.48	2,045.33	2,116.04	0.89	-0.88	0.17	

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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	27.90	106.18	3,820.37	-556.48	2,089.04	2,161.64	2.41	-2.38	-0.79
4,555.00	26.77	107.02	3,904.76	-568.93	2,130.85	2,205.25	1.26	-1.19	0.88
4,649.00	26.13	107.83	3,988.92	-581.47	2,170.79	2,247.10	0.78	-0.68	0.86
4,744.00	25.11	105.34	4,074.58	-593.21	2,210.15	2,288.17	1.56	-1.07	-2.62
4,838.00	24.18	105.81	4,160.02	-603.73	2,247.91	2,327.37	1.01	-0.99	0.50
4,933.00	23.78	106.36	4,246.82	-614.43	2,285.00	2,365.97	0.48	-0.42	0.58
5,027.00	22.84	106.77	4,333.15	-625.03	2,320.66	2,403.17	1.01	-1.00	0.44
5,121.00	20.87	103.71	4,420.39	-634.26	2,354.40	2,438.15	2.42	-2.10	-3.26
5,216.00	20.16	104.68	4,509.36	-642.42	2,386.67	2,471.42	0.83	-0.75	1.02
5,310.00	19.56	105.50	4,597.77	-650.73	2,417.51	2,503.35	0.70	-0.64	0.87
5,404.00	18.72	105.75	4,686.58	-659.03	2,447.19	2,534.17	0.90	-0.89	0.27
5,498.00	17.93	106.40	4,775.81	-667.21	2,475.59	2,563.73	0.87	-0.84	0.69
5,593.00	17.67	106.66	4,866.26	-675.47	2,503.43	2,592.77	0.29	-0.27	0.27
5,687.00	16.19	104.40	4,956.18	-682.82	2,529.79	2,620.13	1.72	-1.57	-2.40
5,778.00	16.09	105.05	5,043.60	-689.25	2,554.25	2,645.43	0.23	-0.11	0.71
5,869.00	13.55	105.61	5,131.56	-695.39	2,576.70	2,668.70	2.80	-2.79	0.62
5,963.00	12.22	104.22	5,223.19	-700.80	2,596.95	2,689.66	1.45	-1.41	-1.48
6,057.00	10.22	104.65	5,315.39	-705.36	2,614.67	2,707.94	2.13	-2.13	0.46
6,151.00	9.85	106.24	5,407.96	-709.71	2,630.45	2,724.32	0.49	-0.39	1.69
6,246.00	8.24	106.77	5,501.77	-713.95	2,644.77	2,739.25	1.70	-1.69	0.56
6,340.00	6.24	103.52	5,595.02	-717.09	2,656.19	2,751.09	2.17	-2.13	-3.46
6,434.00	5.70	98.67	5,688.51	-718.99	2,665.77	2,760.83	0.79	-0.57	-5.16
6,529.00	4.51	99.81	5,783.13	-720.33	2,674.12	2,769.22	1.26	-1.25	1.20
6,623.00	3.46	111.04	5,876.90	-721.98	2,680.41	2,775.73	1.39	-1.12	11.95
6,718.00	2.45	113.32	5,971.77	-723.81	2,684.95	2,780.59	1.07	-1.06	2.40
6,812.00	1.99	114.27	6,065.70	-725.28	2,688.28	2,784.20	0.49	-0.49	1.01
6,907.00	1.04	130.10	6,160.67	-726.51	2,690.44	2,786.62	1.08	-1.00	16.66
7,001.00	0.49	180.27	6,254.66	-727.47	2,691.10	2,787.50	0.87	-0.59	53.37
7,095.00	0.24	199.26	6,348.66	-728.05	2,691.03	2,787.60	0.29	-0.27	20.20
7,190.00	0.26	234.74	6,443.66	-728.37	2,690.79	2,787.45	0.16	0.02	37.35
7,284.00	0.03	229.99	6,537.66	-728.50	2,690.59	2,787.30	0.24	-0.24	-5.05
7,378.00	0.24	30.13	6,631.66	-728.35	2,690.67	2,787.34	0.29	0.22	170.36
7,473.00	0.33	27.66	6,726.66	-727.94	2,690.90	2,787.44	0.10	0.09	-2.60
7,567.00	0.17	5.99	6,820.66	-727.56	2,691.04	2,787.47	0.19	-0.17	-23.05
7,661.00	0.15	302.77	6,914.66	-727.35	2,690.95	2,787.33	0.18	-0.02	-67.26
7,756.00	0.27	271.48	7,009.66	-727.28	2,690.62	2,787.00	0.17	0.13	-32.94
7,850.00	0.24	235.33	7,103.65	-727.39	2,690.24	2,786.66	0.17	-0.03	-38.46
7,944.00	0.40	238.16	7,197.65	-727.67	2,689.80	2,786.31	0.17	0.17	3.01
8,039.00	0.56	245.71	7,292.65	-728.04	2,689.09	2,785.73	0.18	0.17	7.95
8,133.00	0.61	255.27	7,386.64	-728.35	2,688.19	2,784.95	0.12	0.05	10.17
8,227.00	0.69	258.94	7,480.64	-728.59	2,687.15	2,784.01	0.10	0.09	3.90
8,322.00	0.56	278.58	7,575.63	-728.63	2,686.13	2,783.04	0.26	-0.14	20.67
8,417.00	0.77	260.89	7,670.63	-728.66	2,685.04	2,782.00	0.31	0.22	-18.62

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<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
8,511.00	0.95	265.13	7,764.62	-728.83	2,683.64	2,780.70	0.20	0.19	4.51	
8,605.00	0.99	266.52	7,858.60	-728.94	2,682.06	2,779.20	0.05	0.04	1.48	
8,699.00	1.05	268.91	7,952.59	-729.01	2,680.38	2,777.61	0.08	0.06	2.54	
8,793.00	1.03	265.65	8,046.57	-729.09	2,678.68	2,776.00	0.07	-0.02	-3.47	
8,888.00	0.89	246.89	8,141.56	-729.44	2,677.15	2,774.62	0.36	-0.15	-19.75	
8,982.00	1.14	246.43	8,235.54	-730.10	2,675.62	2,773.33	0.27	0.27	-0.49	
9,077.00	1.45	241.73	8,330.52	-731.05	2,673.70	2,771.73	0.34	0.33	-4.95	
9,171.00	1.87	239.60	8,424.48	-732.39	2,671.33	2,769.82	0.45	0.45	-2.27	
9,265.00	2.07	246.54	8,518.43	-733.84	2,668.45	2,767.44	0.33	0.21	7.38	
9,360.00	2.36	250.51	8,613.35	-735.18	2,665.03	2,764.52	0.35	0.31	4.18	
9,454.00	2.81	253.64	8,707.26	-736.47	2,660.99	2,760.99	0.50	0.48	3.33	
9,549.00	2.61	268.60	8,802.15	-737.18	2,656.60	2,756.95	0.77	-0.21	15.75	
9,643.00	2.36	261.63	8,896.06	-737.52	2,652.54	2,753.14	0.42	-0.27	-7.41	
9,737.00	3.21	255.11	8,989.95	-738.47	2,648.08	2,749.11	0.96	0.90	-6.94	
9,832.00	3.26	249.04	9,084.80	-740.12	2,642.99	2,744.66	0.36	0.05	-6.39	
9,925.00	2.75	253.66	9,177.67	-741.70	2,638.38	2,740.65	0.61	-0.55	4.97	
10,020.00	2.55	258.29	9,272.57	-742.77	2,634.12	2,736.84	0.31	-0.21	4.87	
10,060.00	2.73	261.81	9,312.53	-743.08	2,632.31	2,735.18	0.61	0.45	8.80	
10,060.02	2.73	261.81	9,312.55	-743.08	2,632.31	2,735.18	0.00	0.00	0.00	
Last SDI Production MWD Survey										
10,120.00	2.73	261.81	9,372.46	-743.49	2,629.48	2,732.57	0.00	0.00	0.00	
Projection to TD										

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
79.00	79.00	-0.05	-0.11	First SDI Gyro MWD Survey
692.00	683.08	-20.75	83.88	Last SDI Gyro MWD Survey
762.00	748.81	-28.03	106.81	First SDI Surface MWD Survey
1,118.00	1,061.68	-70.54	269.43	Last SDI Surface MWD Survey
1,251.00	1,169.62	-89.24	344.86	First SDI Production MWD Survey
10,060.02	9,312.55	-743.08	2,632.31	Last SDI Production MWD Survey
10,120.00	9,372.46	-743.49	2,629.48	Projection to TD

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