



## Directional Survey Certification

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

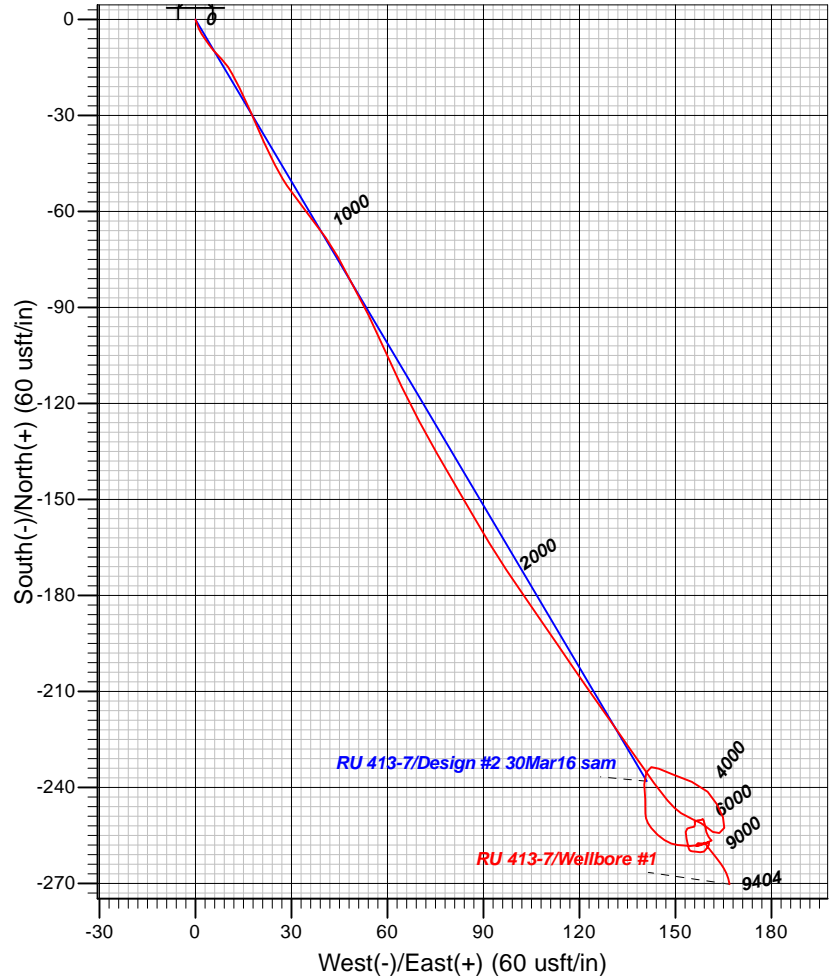
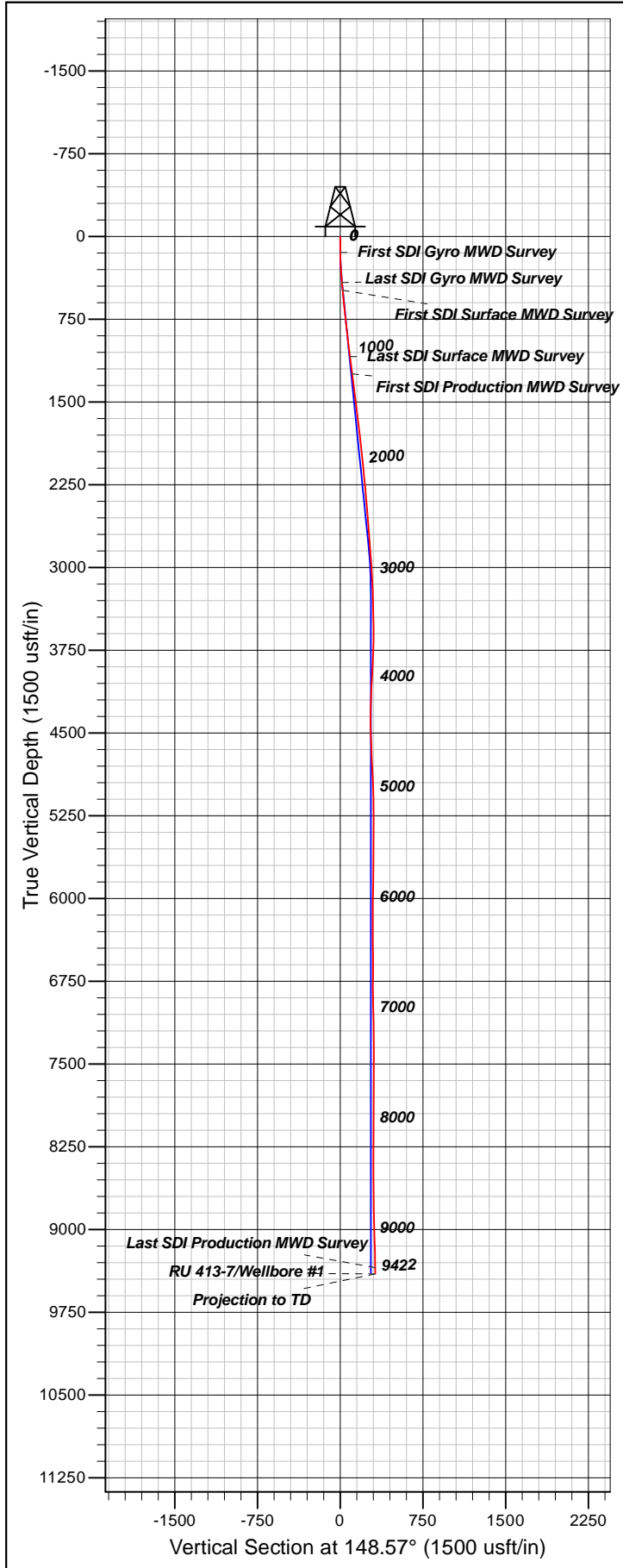
<b>Operator</b>	TEP Rocky Mountain, LLC
<b>Well Name &amp; No.</b>	RU 413-7
<b>County &amp; State</b>	Garfield, CO
<b>SDI Job No.</b>	421116DEFK400648
<b>Rig</b>	H&P 318

I, Janie Collins, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 146 feet to a measured depth of 9,422 feet is true and correct as determined from all available records.

  
\_\_\_\_\_  
Signature

1-Dec-16  
\_\_\_\_\_  
Date

**Janie Collins**  
Colorado District Well Planner  
Scientific Drilling International



#### Well Details: RU 413-7

TVD Reference: GL 7357' & RKB 24' @ 7381.00usft (H&P 318) and Level: 7357.00  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.00 0.00 1597969.69 2343320.30 39.4521176 -107.8258013 RU 413-7 (A3)

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RU 413-7 - Slot RU 413-7 (A3), True North  
 Vertical (TVD) Reference: GL 7357' & RKB 24' @ 7381.00usft (H&P 318)  
 Section (VS) Reference: Slot - RU 413-7 (A3)(0.00N, 0.00E)  
 Measured Depth Reference: GL 7357' & RKB 24' @ 7381.00usft (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: Wellbore #1

12:14, December 01 2016  
 Created By: Janie Collins

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RU 413-7 - Slot RU 413-7 (A3)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Well:</b>	RU 413-7	<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 usft	Slot Radius:	0.00 in	Grid Convergence:	-1.47 °

Well	RU 413-7 - Slot RU 413-7 (A3)					
Well Position	+N/-S	0.00 usft	Northing:	1,597,969.69 usft	Latitude:	39.4521177
	+E/-W	0.00 usft	Easting:	2,343,320.30 usft	Longitude:	-107.8258014
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,357.00 usft

<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	11/22/2016	9.32	65.67	51,760

<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	148.57	

<b>Survey Program</b>	<b>Date</b>	12/1/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
146.00	419.00	Survey #1 - Gyro MWD Survey (Wellbore)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
488.00	1,094.00	Survey #2 - Surface MWD Survey (Wellbo)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,251.00	9,422.00	Survey #3 - Production MWD Survey (Wel)	SDI MWD	SDI MWD - Standard ver 1.0.1	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
146.00	0.53	163.39	146.00	-0.65	0.19	0.65	0.36	0.36	0.00	
<b>First SDI Gyro MWD Survey</b>										
236.00	1.94	158.03	235.97	-2.46	0.88	2.56	1.57	1.57	-5.96	
328.00	4.31	146.16	327.83	-6.78	3.39	7.55	2.66	2.58	-12.90	
419.00	5.10	135.09	418.53	-12.48	8.15	14.90	1.32	0.87	-12.16	
<b>Last SDI Gyro MWD Survey</b>										
488.00	5.18	152.85	487.25	-17.42	11.74	20.99	2.30	0.12	25.74	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RU 413-7 - Slot RU 413-7 (A3)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Well:</b>	RU 413-7	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>First SDI Surface MWD Survey</b>									
578.00	5.71	155.38	576.85	-25.11	15.46	29.48	0.65	0.59	2.81
669.00	6.14	155.48	667.36	-33.65	19.36	38.81	0.47	0.47	0.11
759.00	6.75	155.75	756.79	-42.85	23.53	48.84	0.68	0.68	0.30
850.00	6.43	146.43	847.19	-51.98	28.55	59.24	1.23	-0.35	-10.24
941.00	6.33	139.93	937.63	-60.06	34.59	69.29	0.80	-0.11	-7.14
1,032.00	6.52	146.39	1,028.06	-68.20	40.68	79.41	0.82	0.21	7.10
1,094.00	7.12	149.07	1,089.62	-74.43	44.61	86.77	1.10	0.97	4.32
<b>Last SDI Surface MWD Survey</b>									
1,251.00	7.68	155.04	1,245.32	-92.29	54.03	106.92	0.61	0.36	3.80
<b>First SDI Production MWD Survey</b>									
1,345.00	7.53	155.50	1,338.49	-103.59	59.24	119.28	0.17	-0.16	0.49
1,439.00	7.47	154.73	1,431.68	-114.72	64.40	131.47	0.12	-0.06	-0.82
1,534.00	7.24	151.54	1,525.90	-125.56	69.89	143.59	0.49	-0.24	-3.36
1,628.00	6.94	150.51	1,619.18	-135.72	75.51	155.18	0.35	-0.32	-1.10
1,722.00	6.81	149.75	1,712.51	-145.47	81.11	166.42	0.17	-0.14	-0.81
1,817.00	6.31	149.24	1,806.89	-154.82	86.62	177.28	0.53	-0.53	-0.54
1,911.00	6.16	149.44	1,900.33	-163.61	91.83	187.48	0.16	-0.16	0.21
2,005.00	5.92	146.06	1,993.81	-171.97	97.10	197.37	0.46	-0.26	-3.60
2,099.00	5.69	145.81	2,087.33	-179.85	102.42	206.87	0.25	-0.24	-0.27
2,193.00	5.83	144.70	2,180.85	-187.60	107.80	216.29	0.19	0.15	-1.18
2,288.00	5.45	146.12	2,275.39	-195.28	113.10	225.61	0.43	-0.40	1.49
2,382.00	5.21	145.61	2,368.99	-202.51	118.00	234.33	0.26	-0.26	-0.54
2,476.00	4.60	145.37	2,462.64	-209.13	122.55	242.35	0.65	-0.65	-0.26
2,570.00	4.49	144.31	2,556.35	-215.22	126.84	249.79	0.15	-0.12	-1.13
2,665.00	4.43	145.44	2,651.06	-221.26	131.09	257.16	0.11	-0.06	1.19
2,759.00	4.31	145.12	2,744.78	-227.15	135.17	264.31	0.13	-0.13	-0.34
2,854.00	4.31	144.61	2,839.52	-232.99	139.28	271.43	0.04	0.00	-0.54
2,948.00	4.16	144.91	2,933.26	-238.66	143.29	278.36	0.16	-0.16	0.32
3,042.00	4.24	139.82	3,027.01	-244.10	147.49	285.20	0.41	0.09	-5.41
3,137.00	2.87	122.61	3,121.82	-248.07	151.76	290.81	1.81	-1.44	-18.12
3,231.00	2.10	110.35	3,215.74	-249.94	155.35	294.28	0.99	-0.82	-13.04
3,326.00	1.34	122.67	3,310.69	-251.14	157.92	296.64	0.89	-0.80	12.97
3,420.00	1.45	128.01	3,404.66	-252.47	159.78	298.74	0.18	0.12	5.68
3,514.00	1.43	128.60	3,498.64	-253.93	161.64	300.96	0.03	-0.02	0.63
3,609.00	1.41	70.49	3,593.61	-254.28	163.67	302.32	1.45	-0.02	-61.17
3,703.00	1.65	22.67	3,687.58	-252.65	165.28	301.76	1.34	0.26	-50.87
3,797.00	2.75	335.20	3,781.52	-249.35	164.85	298.73	2.17	1.17	-50.50
3,891.00	2.81	334.79	3,875.41	-245.22	162.93	294.20	0.07	0.06	-0.44
3,986.00	3.09	312.61	3,970.28	-241.38	160.05	289.42	1.23	0.29	-23.35
4,080.00	4.14	294.67	4,064.10	-238.25	155.10	284.17	1.63	1.12	-19.09
4,175.00	3.70	287.18	4,158.88	-235.91	149.06	279.02	0.71	-0.46	-7.88
4,269.00	1.97	301.07	4,252.76	-234.18	144.77	275.31	1.97	-1.84	14.78
4,364.00	1.13	252.58	4,347.73	-233.62	142.48	273.64	1.56	-0.88	-51.04

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<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Well:</b>	RU 413-7	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,458.00	1.93	207.51	4,441.70	-235.30	140.87	274.23	1.47	0.85	-47.95
4,553.00	2.84	177.10	4,536.62	-239.07	140.25	277.12	1.61	0.96	-32.01
4,647.00	2.77	176.11	4,630.50	-243.66	140.52	281.18	0.09	-0.07	-1.05
4,741.00	2.71	182.02	4,724.40	-248.15	140.59	285.05	0.31	-0.06	6.29
4,836.00	3.63	140.48	4,819.26	-252.71	142.43	289.90	2.53	0.97	-43.73
4,930.00	3.22	123.12	4,913.10	-256.45	146.53	295.23	1.18	-0.44	-18.47
5,025.00	2.30	93.59	5,007.99	-258.03	150.67	298.74	1.75	-0.97	-31.08
5,119.00	2.52	93.89	5,101.91	-258.28	154.62	301.01	0.23	0.23	0.32
5,213.00	1.50	65.81	5,195.85	-257.92	157.80	302.36	1.48	-1.09	-29.87
5,307.00	1.61	73.71	5,289.81	-257.05	160.19	302.86	0.26	0.12	8.40
5,402.00	0.23	286.74	5,384.80	-256.62	161.29	303.07	1.90	-1.45	-154.71
5,496.00	0.50	324.25	5,478.80	-256.23	160.87	302.52	0.37	0.29	39.90
5,590.00	0.70	327.40	5,572.80	-255.41	160.32	301.54	0.22	0.21	3.35
5,684.00	0.76	338.72	5,666.79	-254.35	159.78	300.35	0.17	0.06	12.04
5,778.00	0.76	347.96	5,760.78	-253.16	159.43	299.15	0.13	0.00	9.83
5,873.00	0.97	351.04	5,855.77	-251.75	159.17	297.81	0.23	0.22	3.24
5,967.00	0.85	335.42	5,949.76	-250.33	158.76	296.38	0.29	-0.13	-16.62
6,061.00	0.21	184.77	6,043.75	-249.87	158.45	295.83	1.10	-0.68	-160.27
6,156.00	0.44	250.44	6,138.75	-250.16	158.09	295.90	0.42	0.24	69.13
6,250.00	1.03	268.84	6,232.75	-250.30	156.91	295.40	0.67	0.63	19.57
6,344.00	0.43	188.40	6,326.74	-250.66	156.01	295.24	1.12	-0.64	-85.57
6,438.00	0.65	171.08	6,420.73	-251.54	156.04	296.00	0.29	0.23	-18.43
6,533.00	0.37	238.70	6,515.73	-252.23	155.87	296.50	0.65	-0.29	71.18
6,627.00	0.40	259.52	6,609.73	-252.45	155.28	296.38	0.15	0.03	22.15
6,721.00	0.51	264.73	6,703.73	-252.55	154.54	296.08	0.12	0.12	5.54
6,816.00	0.62	242.67	6,798.72	-252.82	153.67	295.86	0.25	0.12	-23.22
6,910.00	1.09	180.22	6,892.71	-253.95	153.21	296.58	1.04	0.50	-66.44
7,005.00	1.38	168.98	6,987.69	-255.98	153.43	298.42	0.40	0.31	-11.83
7,099.00	1.83	166.37	7,081.65	-258.55	154.00	300.91	0.48	0.48	-2.78
7,193.00	0.79	89.30	7,175.63	-260.00	155.00	302.67	1.94	-1.11	-81.99
7,288.00	0.73	96.27	7,270.63	-260.06	156.25	303.38	0.12	-0.06	7.34
7,382.00	1.05	102.19	7,364.61	-260.30	157.69	304.34	0.35	0.34	6.30
7,477.00	0.68	40.26	7,459.60	-260.06	158.91	304.76	0.99	-0.39	-65.19
7,571.00	0.87	39.84	7,553.60	-259.08	159.72	304.36	0.20	0.20	-0.45
7,665.00	0.71	20.77	7,647.59	-257.99	160.39	303.77	0.33	-0.17	-20.29
7,760.00	0.26	341.86	7,742.58	-257.23	160.53	303.20	0.56	-0.47	-40.96
7,854.00	0.31	236.51	7,836.58	-257.17	160.25	303.00	0.48	0.05	-112.07
7,948.00	0.71	251.50	7,930.58	-257.50	159.49	302.88	0.45	0.43	15.95
8,043.00	0.80	251.51	8,025.57	-257.89	158.30	302.60	0.09	0.09	0.01
8,137.00	0.81	252.48	8,119.56	-258.30	157.04	302.30	0.02	0.01	1.03
8,231.00	0.30	21.85	8,213.56	-258.27	156.50	301.99	1.09	-0.54	137.63
8,326.00	0.38	16.71	8,308.56	-257.74	156.68	301.63	0.09	0.08	-5.41
8,420.00	0.30	78.88	8,402.56	-257.40	157.02	301.51	0.38	-0.09	66.14

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RU 413-7 - Slot RU 413-7 (A3)
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<b>Site:</b>	SR 43-12 Pad	<b>MD Reference:</b>	GL 7357' & RKB 24' @ 7381.00usft (H&P 318)
<b>Well:</b>	RU 413-7	<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 (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,515.00	0.62	112.98	8,497.55	-257.55	157.73	302.01	0.43	0.34	35.89	
8,609.00	0.53	57.31	8,591.55	-257.51	158.57	302.42	0.58	-0.10	-59.22	
8,703.00	0.26	86.17	8,685.55	-257.26	159.15	302.50	0.35	-0.29	30.70	
8,797.00	0.47	167.09	8,779.55	-257.62	159.45	302.97	0.53	0.22	86.09	
8,892.00	0.87	143.31	8,874.54	-258.58	159.96	304.06	0.50	0.42	-25.03	
8,986.00	1.52	138.31	8,968.52	-260.09	161.22	305.99	0.70	0.69	-5.32	
9,081.00	2.64	141.86	9,063.45	-262.75	163.41	309.41	1.19	1.18	3.74	
9,175.00	2.02	155.39	9,157.38	-265.96	165.43	313.20	0.88	-0.66	14.39	
9,269.00	0.77	160.51	9,251.35	-268.06	166.34	315.46	1.34	-1.33	5.45	
9,363.00	0.88	167.96	9,345.34	-269.36	166.70	316.76	0.16	0.12	7.93	
Last SDI Production MWD Survey										
9,422.00	0.88	167.96	9,404.33	-270.25	166.89	317.62	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	
146.00	146.00	-0.65	0.19	First SDI Gyro MWD Survey	
419.00	418.53	-12.48	8.15	Last SDI Gyro MWD Survey	
488.00	487.25	-17.42	11.74	First SDI Surface MWD Survey	
1,094.00	1,089.62	-74.43	44.61	Last SDI Surface MWD Survey	
1,251.00	1,245.32	-92.29	54.03	First SDI Production MWD Survey	
9,363.00	9,345.34	-269.36	166.70	Last SDI Production MWD Survey	
9,422.00	9,404.33	-270.25	166.89	Projection to TD	

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