



Directional Survey Certification

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

Operator	Terra Energy Partners
Well Name & No.	RU 523-7
County & State	Garfield, CO
SDI Job No.	420816DEFK375741
Rig	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 114 feet to a measured depth of 9,660 feet is true and correct as determined from all available records.

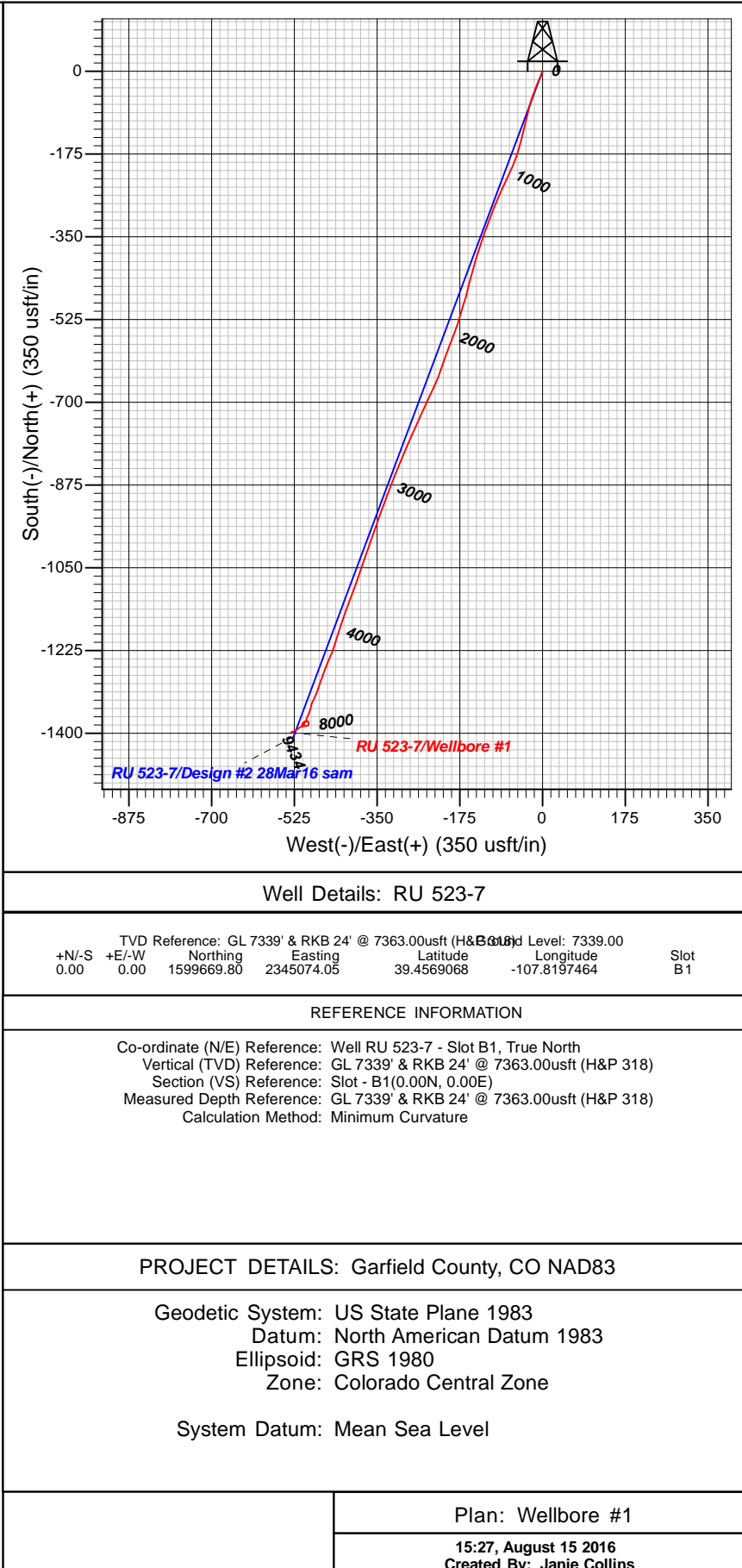
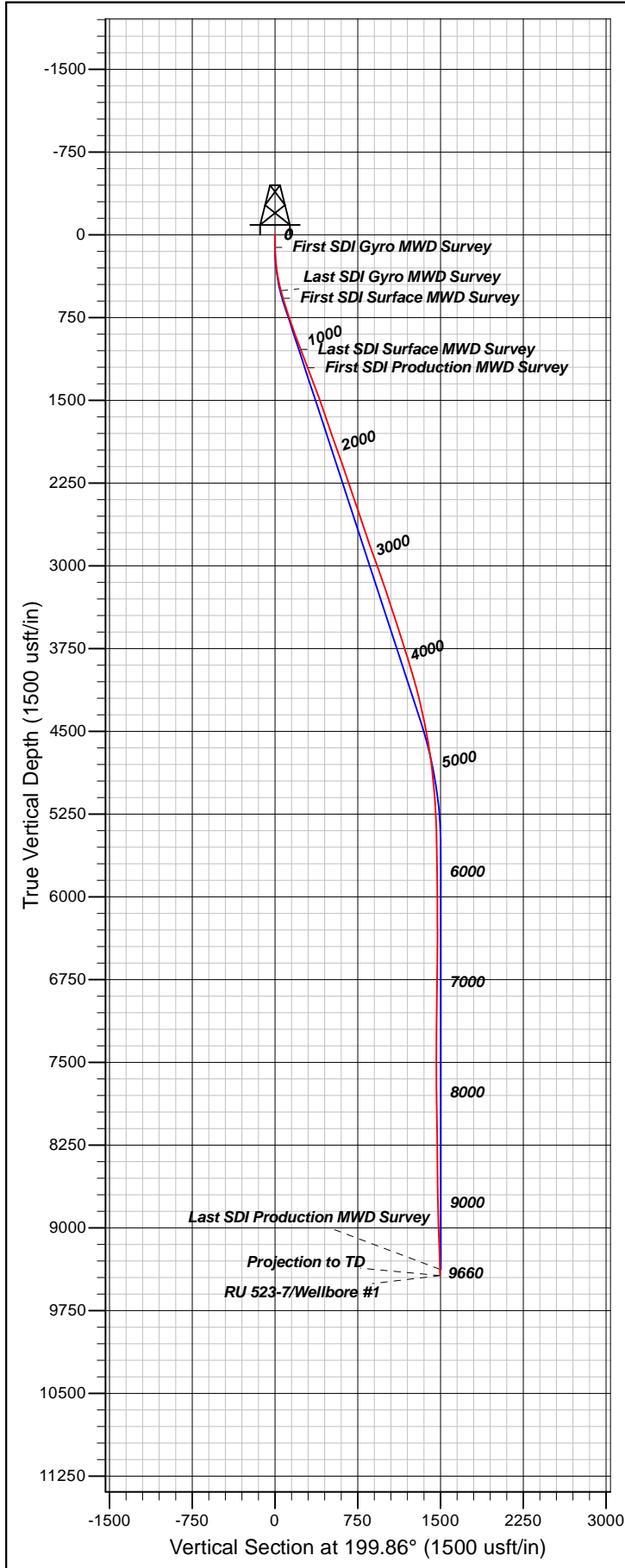


Signature

15-Aug-16

Date

Janie Collins
Colorado District Well Planner
Scientific Drilling International



Company:	Terra Energy Partners	Local Co-ordinate Reference:	Well RU 523-7 - Slot B1
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Site:	RU 22-7 Pad	MD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Well:	RU 523-7	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		RU 22-7 Pad			
Site Position:		Northing:	1,599,673.59 usft	Latitude:	39.4569181
From:	Map	Easting:	2,345,086.00 usft	Longitude:	-107.8197045
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.46 °

Well	RU 523-7 - Slot B1					
Well Position	+N/-S	0.00 usft	Northing:	1,599,669.79 usft	Latitude:	39.4569068
	+E/-W	0.00 usft	Easting:	2,345,074.05 usft	Longitude:	-107.8197465
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,339.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/31/2016	9.35	65.68	51,796

Design	Wellbore #1				
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	199.86	

Survey Program	Date	8/15/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
114.00	512.00	Survey #1 - Gyro Survey (Wellbore #1)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
583.00	1,251.00	Survey #2 - Surface MWD Survey (Wellbo	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,345.00	9,660.00	Survey #3 - Production MWD Survey (Wel	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	
114.00	0.79	179.47	114.00	-0.79	0.01	0.74	0.69	0.69	0.00	
First SDI Gyro MWD Survey										
149.00	1.85	191.60	148.99	-1.58	-0.10	1.52	3.12	3.03	34.66	
239.00	4.66	203.82	238.83	-6.35	-1.87	6.61	3.20	3.12	13.58	
330.00	8.53	204.26	329.21	-15.89	-6.14	17.03	4.25	4.25	0.48	
421.00	11.96	202.59	418.75	-30.75	-12.54	33.18	3.78	3.77	-1.84	
512.00	14.25	199.25	507.37	-50.03	-19.85	53.80	2.65	2.52	-3.67	

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Site:	RU 22-7 Pad	MD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Well:	RU 523-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
Last SDI Gyro MWD Survey									
583.00	16.14	195.12	575.89	-67.81	-25.31	72.38	3.07	2.66	-5.82
First SDI Surface MWD Survey									
673.00	17.61	195.09	662.01	-93.03	-32.12	98.41	1.63	1.63	-0.03
764.00	19.14	192.35	748.37	-120.90	-38.89	126.92	1.93	1.68	-3.01
855.00	19.79	195.32	834.17	-150.33	-46.15	157.07	1.30	0.71	3.26
946.00	20.20	198.88	919.69	-180.06	-55.31	188.14	1.41	0.45	3.91
1,036.00	20.05	204.70	1,004.20	-208.78	-66.78	219.05	2.23	-0.17	6.47
1,072.00	20.49	205.79	1,037.97	-220.06	-72.10	231.46	1.61	1.22	3.03
Last SDI Surface MWD Survey									
1,251.00	21.12	202.55	1,205.31	-278.05	-98.10	294.84	0.73	0.35	-1.81
First SDI Production MWD Survey									
1,345.00	21.47	200.92	1,292.89	-309.76	-110.73	328.95	0.73	0.38	-1.73
1,440.00	20.30	199.26	1,381.65	-341.55	-122.38	362.82	1.38	-1.23	-1.75
1,534.00	19.98	198.63	1,469.90	-372.17	-132.89	395.18	0.41	-0.34	-0.67
1,629.00	19.27	196.36	1,559.39	-402.59	-142.49	427.05	1.10	-0.75	-2.39
1,723.00	18.55	194.02	1,648.31	-431.98	-150.48	457.41	1.11	-0.77	-2.49
1,818.00	19.46	193.94	1,738.13	-462.00	-157.95	488.18	0.96	0.96	-0.08
1,912.00	19.72	198.04	1,826.70	-492.28	-166.64	519.61	1.49	0.28	4.36
2,007.00	19.44	195.41	1,916.21	-522.76	-175.80	551.39	0.97	-0.29	-2.77
2,101.00	19.15	201.83	2,004.94	-552.15	-185.69	582.40	2.28	-0.31	6.83
2,195.00	19.26	200.94	2,093.70	-580.95	-196.97	613.31	0.33	0.12	-0.95
2,290.00	19.36	199.80	2,183.36	-610.39	-207.90	644.72	0.41	0.11	-1.20
2,384.00	18.90	198.72	2,272.17	-639.47	-218.06	675.52	0.62	-0.49	-1.15
2,479.00	19.34	205.57	2,361.94	-668.24	-229.79	706.56	2.41	0.46	7.21
2,573.00	18.85	205.52	2,450.77	-695.98	-243.05	737.16	0.52	-0.52	-0.05
2,667.00	18.27	203.70	2,539.88	-723.18	-255.52	766.97	0.87	-0.62	-1.94
2,762.00	17.70	204.55	2,630.24	-749.95	-267.50	796.22	0.66	-0.60	0.89
2,856.00	19.44	203.80	2,719.34	-777.26	-279.75	826.07	1.87	1.85	-0.80
2,950.00	18.37	202.56	2,808.27	-805.25	-291.75	856.48	1.22	-1.14	-1.32
3,045.00	20.41	202.67	2,897.88	-834.37	-303.88	887.98	2.15	2.15	0.12
3,139.00	19.95	201.04	2,986.11	-864.46	-315.95	920.38	0.77	-0.49	-1.73
3,233.00	19.50	200.76	3,074.59	-894.10	-327.27	952.10	0.49	-0.48	-0.30
3,328.00	19.07	200.28	3,164.26	-923.48	-338.27	983.48	0.48	-0.45	-0.51
3,422.00	18.01	200.67	3,253.38	-951.48	-348.72	1,013.36	1.14	-1.13	0.41
3,517.00	18.54	198.53	3,343.59	-979.54	-358.71	1,043.15	0.90	0.56	-2.25
3,611.00	18.23	198.92	3,432.79	-1,007.62	-368.22	1,072.79	0.35	-0.33	0.41
3,706.00	17.03	198.44	3,523.33	-1,034.88	-377.44	1,101.55	1.27	-1.26	-0.51
3,800.00	18.70	199.43	3,612.79	-1,062.15	-386.81	1,130.39	1.81	1.78	1.05
3,894.00	18.04	200.16	3,702.00	-1,090.02	-396.84	1,160.01	0.74	-0.70	0.78
3,988.00	17.13	200.76	3,791.61	-1,116.63	-406.76	1,188.41	0.99	-0.97	0.64
4,083.00	16.06	200.38	3,882.65	-1,142.03	-416.30	1,215.54	1.13	-1.13	-0.40
4,177.00	16.73	197.82	3,972.83	-1,167.10	-424.97	1,242.06	1.05	0.71	-2.72
4,271.00	16.00	198.16	4,063.02	-1,192.29	-433.15	1,268.53	0.78	-0.78	0.36

Company:	Terra Energy Partners	Local Co-ordinate Reference:	Well RU 523-7 - Slot B1
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Site:	RU 22-7 Pad	MD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Well:	RU 523-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
4,365.00	14.26	196.76	4,153.76	-1,215.69	-440.52	1,293.04	1.89	-1.85	-1.49
4,460.00	13.36	204.28	4,246.02	-1,236.90	-448.41	1,315.67	2.11	-0.95	7.92
4,554.00	12.07	202.27	4,337.71	-1,255.89	-456.60	1,336.32	1.45	-1.37	-2.14
4,649.00	11.67	198.76	4,430.68	-1,274.18	-463.46	1,355.85	0.87	-0.42	-3.69
4,743.00	10.18	200.34	4,522.97	-1,290.98	-469.40	1,373.66	1.62	-1.59	1.68
4,837.00	10.11	198.48	4,615.50	-1,306.59	-474.90	1,390.22	0.36	-0.07	-1.98
4,932.00	7.67	203.68	4,709.36	-1,320.31	-480.09	1,404.88	2.70	-2.57	5.47
5,026.00	7.55	205.91	4,802.53	-1,331.60	-485.31	1,417.28	0.34	-0.13	2.37
5,120.00	5.66	196.38	4,895.90	-1,341.61	-489.32	1,428.05	2.32	-2.01	-10.14
5,214.00	5.75	193.14	4,989.44	-1,350.64	-491.69	1,437.35	0.36	0.10	-3.45
5,308.00	4.31	202.81	5,083.08	-1,358.48	-494.13	1,445.56	1.77	-1.53	10.29
5,403.00	4.21	205.54	5,177.81	-1,364.92	-497.02	1,452.59	0.24	-0.11	2.87
5,497.00	2.22	195.78	5,271.66	-1,369.79	-499.01	1,457.84	2.19	-2.12	-10.38
5,591.00	2.02	209.57	5,365.60	-1,372.98	-500.32	1,461.29	0.58	-0.21	14.67
5,686.00	1.19	221.64	5,460.56	-1,375.17	-501.80	1,463.86	0.94	-0.87	12.71
5,780.00	1.06	209.04	5,554.54	-1,376.66	-502.87	1,465.62	0.30	-0.14	-13.40
5,874.00	0.79	189.70	5,648.53	-1,378.06	-503.40	1,467.12	0.44	-0.29	-20.57
5,969.00	0.62	193.92	5,743.52	-1,379.20	-503.64	1,468.27	0.19	-0.18	4.44
6,063.00	0.79	185.66	5,837.52	-1,380.34	-503.82	1,469.41	0.21	0.18	-8.79
6,158.00	0.54	245.36	5,932.51	-1,381.18	-504.29	1,470.36	0.73	-0.26	62.84
6,252.00	0.69	248.78	6,026.51	-1,381.57	-505.22	1,471.04	0.16	0.16	3.64
6,347.00	0.46	252.91	6,121.50	-1,381.89	-506.12	1,471.64	0.25	-0.24	4.35
6,441.00	0.48	243.03	6,215.50	-1,382.18	-506.83	1,472.16	0.09	0.02	-10.51
6,536.00	0.34	255.44	6,310.50	-1,382.43	-507.46	1,472.61	0.17	-0.15	13.06
6,630.00	0.91	267.51	6,404.49	-1,382.53	-508.48	1,473.05	0.62	0.61	12.84
6,724.00	0.93	38.17	6,498.48	-1,381.97	-508.75	1,472.61	1.78	0.02	139.00
6,818.00	1.42	21.67	6,592.46	-1,380.28	-507.85	1,470.72	0.63	0.52	-17.55
6,913.00	1.02	39.00	6,687.44	-1,378.53	-506.88	1,468.75	0.57	-0.42	18.24
7,008.00	0.51	39.67	6,782.43	-1,377.55	-506.08	1,467.55	0.54	-0.54	0.71
7,102.00	0.60	48.74	6,876.43	-1,376.90	-505.44	1,466.72	0.13	0.10	9.65
7,197.00	0.88	46.83	6,971.42	-1,376.08	-504.54	1,465.64	0.30	0.29	-2.01
7,292.00	0.95	85.13	7,066.41	-1,375.51	-503.22	1,464.66	0.64	0.07	40.32
7,386.00	0.69	86.91	7,160.40	-1,375.41	-501.88	1,464.11	0.28	-0.28	1.89
7,480.00	1.42	80.97	7,254.38	-1,375.20	-500.16	1,463.33	0.78	0.78	-6.32
7,575.00	1.30	65.56	7,349.36	-1,374.57	-498.02	1,462.01	0.40	-0.13	-16.22
7,669.00	0.52	84.75	7,443.34	-1,374.09	-496.62	1,461.08	0.88	-0.83	20.41
7,764.00	0.84	145.62	7,538.34	-1,374.63	-495.80	1,461.31	0.78	0.34	64.07
7,858.00	0.75	164.35	7,632.33	-1,375.79	-495.25	1,462.21	0.29	-0.10	19.93
7,953.00	0.62	169.00	7,727.32	-1,376.89	-494.98	1,463.16	0.15	-0.14	4.89
8,047.00	0.75	165.76	7,821.32	-1,377.99	-494.73	1,464.10	0.14	0.14	-3.45
8,141.00	0.77	192.80	7,915.31	-1,379.20	-494.72	1,465.24	0.38	0.02	28.77
8,236.00	1.03	168.90	8,010.30	-1,380.66	-494.70	1,466.60	0.47	0.27	-25.16
8,330.00	0.84	191.31	8,104.29	-1,382.16	-494.67	1,468.01	0.43	-0.20	23.84

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Site:	RU 22-7 Pad	MD Reference:	GL 7339' & RKB 24' @ 7363.00usft (H&P 318)
Well:	RU 523-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
8,425.00	0.60	247.13	8,199.28	-1,383.04	-495.27	1,469.04	0.74	-0.25	58.76
8,519.00	1.06	244.98	8,293.27	-1,383.60	-496.51	1,469.98	0.49	0.49	-2.29
8,613.00	1.49	255.97	8,387.25	-1,384.26	-498.48	1,471.28	0.52	0.46	11.69
8,708.00	1.36	267.15	8,482.22	-1,384.62	-500.80	1,472.40	0.32	-0.14	11.77
8,802.00	1.61	260.35	8,576.18	-1,384.89	-503.22	1,473.48	0.32	0.27	-7.23
8,896.00	1.46	260.46	8,670.15	-1,385.31	-505.70	1,474.72	0.16	-0.16	0.12
8,991.00	1.71	266.73	8,765.11	-1,385.60	-508.31	1,475.87	0.32	0.26	6.60
9,085.00	2.36	246.26	8,859.06	-1,386.45	-511.48	1,477.76	1.03	0.69	-21.78
9,179.00	2.82	231.45	8,952.96	-1,388.67	-515.06	1,481.06	0.86	0.49	-15.76
9,274.00	2.59	229.28	9,047.85	-1,391.53	-518.52	1,484.92	0.26	-0.24	-2.28
9,368.00	2.61	242.27	9,141.76	-1,393.91	-522.02	1,488.35	0.63	0.02	13.82
9,463.00	1.97	247.52	9,236.68	-1,395.54	-525.45	1,491.05	0.71	-0.67	5.53
9,557.00	2.20	251.75	9,330.62	-1,396.73	-528.65	1,493.25	0.29	0.24	4.50
9,601.00	2.02	245.34	9,374.59	-1,397.31	-530.16	1,494.32	0.67	-0.41	-14.57
Last SDI Production MWD Survey									
9,660.00	2.02	245.34	9,433.55	-1,398.18	-532.05	1,495.78	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
114.00	114.00	-0.79	0.01	First SDI Gyro MWD Survey
512.00	507.37	-50.03	-19.85	Last SDI Gyro MWD Survey
583.00	575.89	-67.81	-25.31	First SDI Surface MWD Survey
1,072.00	1,037.97	-220.06	-72.10	Last SDI Surface MWD Survey
1,251.00	1,205.31	-278.05	-98.10	First SDI Production MWD Survey
9,601.00	9,374.59	-1,397.31	-530.16	Last SDI Production MWD Survey
9,660.00	9,433.55	-1,398.18	-532.05	Projection to TD

Checked By: _____ Approved By: _____ Date: _____