

Sec 8, T6S, R94W
RWF 22-8
Q200976 & RM-200775
Plan #1

Company Name: Terra Energy Partners, LLP
RWF 22-8
Garfield County, CO
Rig: KB=24' @ 6003.6usft (H&P #318)
Created by: Chase Chambers
Date: 11:10, November 03 2020

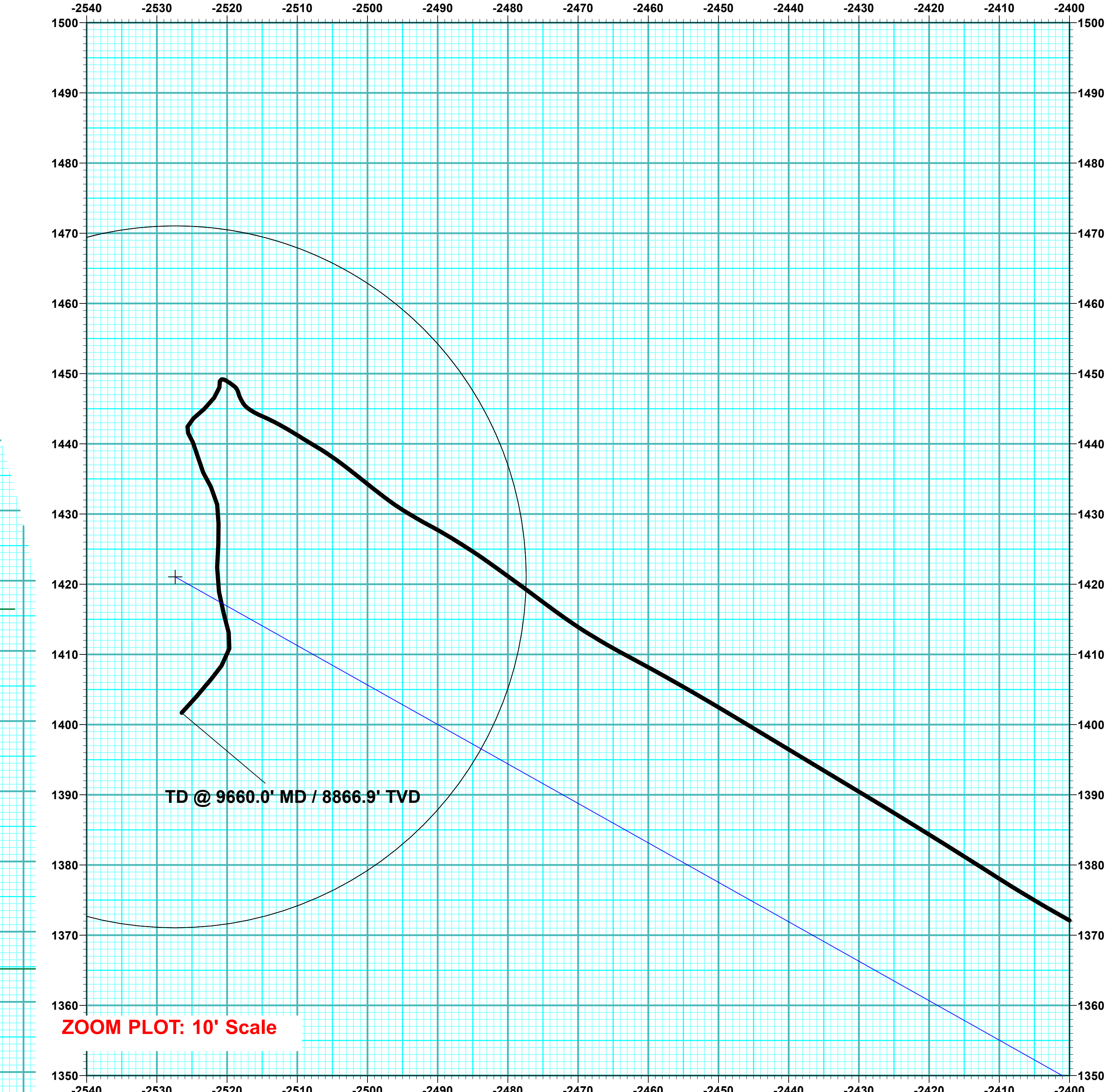
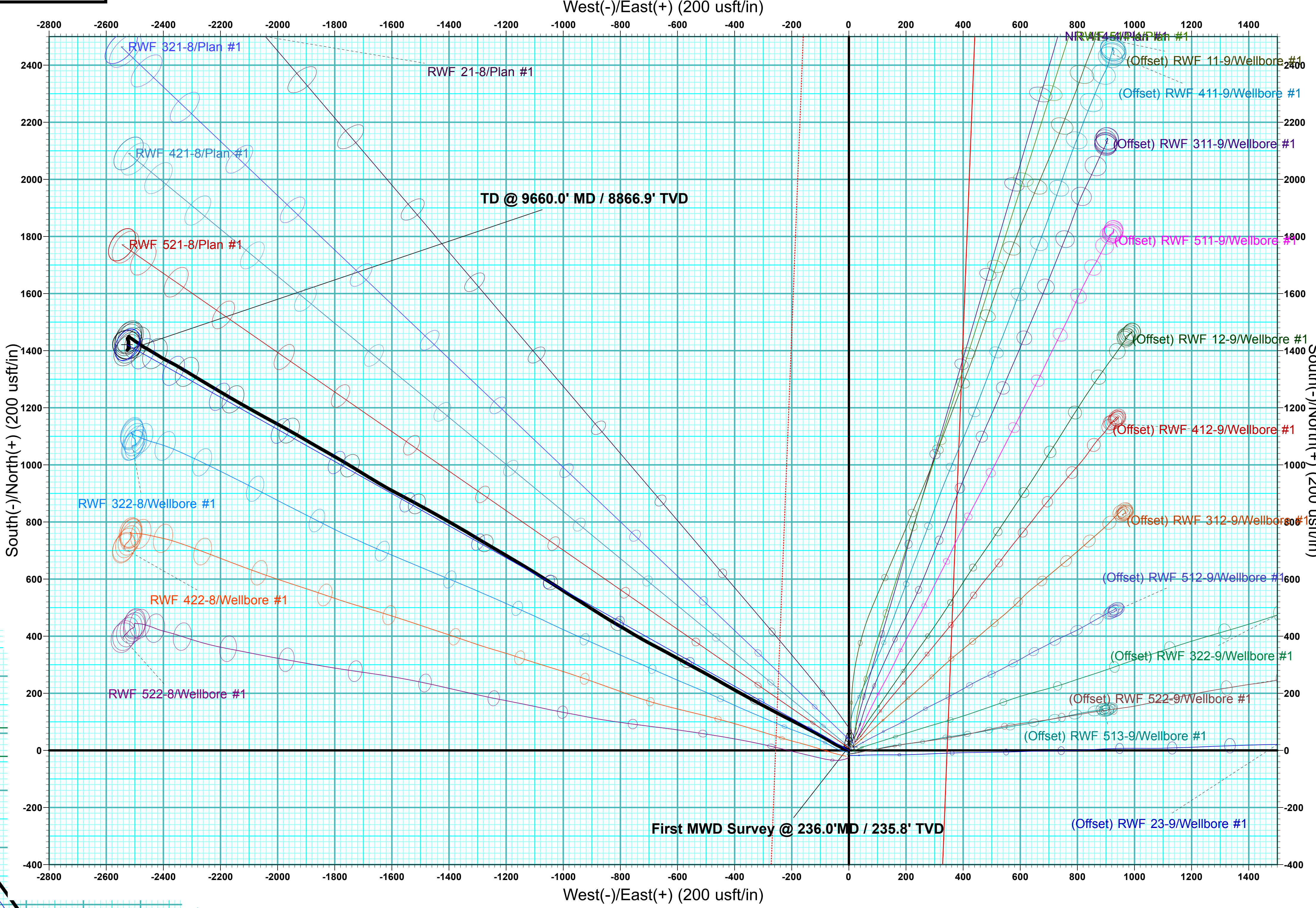
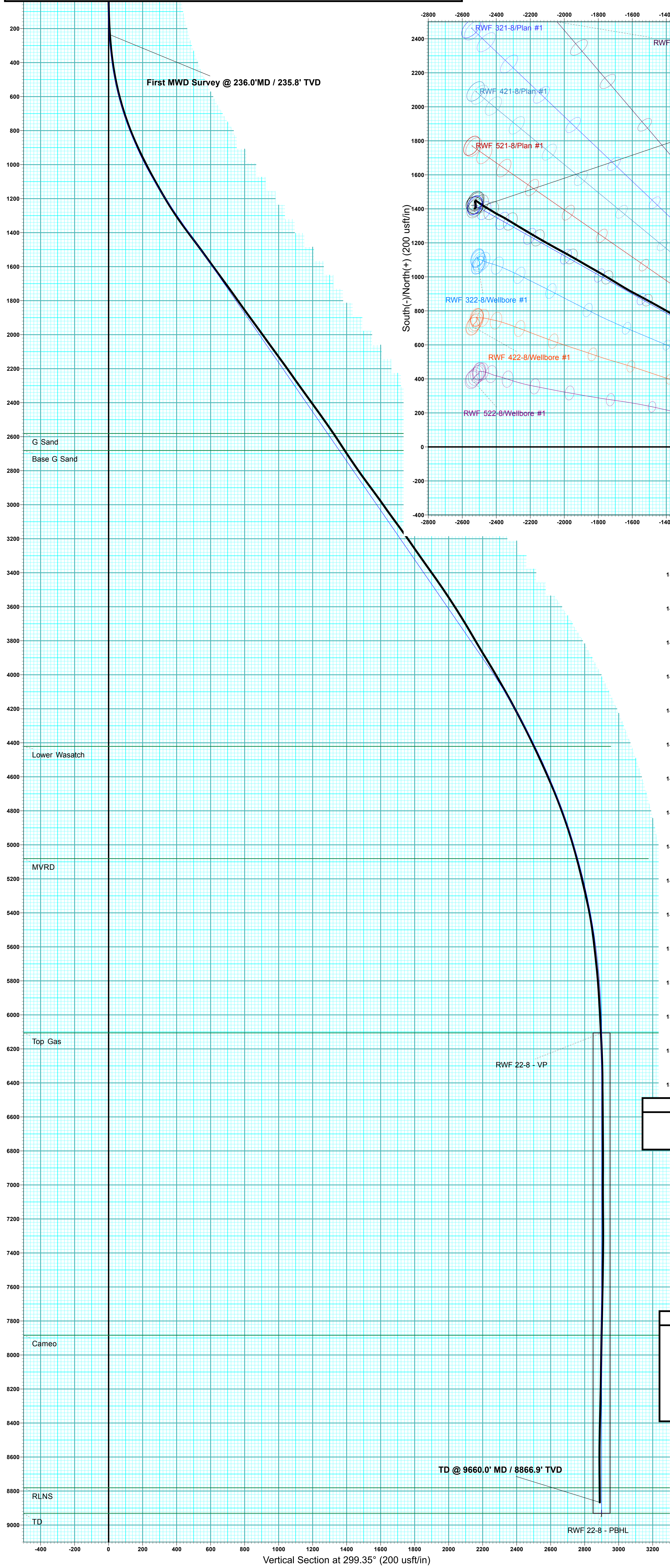
PROJECT DETAILS: Garfield County, CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Central Zone
System Datum: Mean Sea Level



DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
RWF 22-8 - VP	6106.0	1421.1	-2527.4	1631742.78	2319642.47	39.543113	-107.912800
RWF 22-8 - PBHL	8931.0	1421.1	-2527.4	1631742.78	2319642.47	39.543113	-107.912800

WELL DETAILS: RWF 22-8					
Ground Elevation:		5979.6			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1630255.35	2322131.37	39.539212	-107.903838



ANNOTATIONS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSecDeparture	Annotation
236.0	3.77	294.82	235.8	3.3	-7.0	7.7	First MWD Survey @ 236.0' MD / 235.8' TVD
9660.0	2.42	222.42	8866.9	1401.7	-2526.5	2889.2	TD @ 9660.0' MD / 8866.9' TVD

Azimuths to True North
Magnetic North: 9.20°

Magnetic Field
Strength: 51331.5nT
Dip Angle: 65.72°
Date: 10/25/2020
Model: HDGM2020

DESIGN ANNOTATIONS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSecDeparture	Annotation
120.0	0.00	0.00	120.0	0.0	0.0	0.0	Start Build 3.00
1273.9	34.62	299.35	1204.9	165.7	-294.7	338.1	EOB @ 34.62° Inc / 299.35° Azm
4592.5	34.62	299.35	3936.1	1089.7	-1938.0	2223.3	Start Drop -1.50
6900.3	0.00	0.00	6106.0	1421.1	-2527.4	2899.5	EOD @ Vertical
9725.3	0.00	0.00	8931.0	1421.1	-2527.4	2899.5	TD @ 9725.3' MD / 8931.0' TVD



Terra Energy Partners, LLP

Garfield County, CO

Sec 8, T6S, R94W

RWF 22-8

Wellbore #1

Design: Wellbore #1

QES Survey Report

03 November, 2020



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 22-8
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Well:	RWF 22-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Sec 8, T6S, R94W						
Site Position:		Northing:	1,630,278.47	usft	Latitude:	39.539277		
From:	Lat/Long	Easting:	2,322,152.86	usft	Longitude:	-107.903764		
Position Uncertainty:	0.0	usft	Slot Radius:	13-3/16	"	Grid Convergence:	-1.52	°

Well	RWF 22-8					
Well Position	+N/-S	0.0 usft	Northing:	1,630,255.35 usft	Latitude:	39.539212
	+E/-W	0.0 usft	Easting:	2,322,131.37 usft	Longitude:	-107.903838
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	5,979.6 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	10/25/2020	9.20	65.72	51,331.50000000

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	299.35	

Survey Program	Date	11/3/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
236.0	9,660.0	QES MWD Surveys (Wellbore #1)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
First MWD Survey @ 236.0'MD / 235.8' TVD									
236.0	3.77	294.82	235.8	3.3	-7.0	7.7	1.60	1.60	0.00
326.0	6.02	286.88	325.5	5.9	-14.2	15.3	2.60	2.50	-8.82
416.0	8.65	295.20	414.8	10.1	-24.9	26.7	3.14	2.92	9.24
506.0	11.19	296.00	503.4	16.8	-38.9	42.1	2.83	2.82	0.89
597.0	14.39	301.36	592.1	26.6	-56.5	62.2	3.75	3.52	5.89
688.0	17.35	300.31	679.7	39.3	-77.8	87.1	3.27	3.25	-1.15
778.0	20.33	299.05	764.8	53.7	-103.1	116.2	3.34	3.31	-1.40
868.0	23.31	298.41	848.4	69.8	-132.4	149.6	3.32	3.31	-0.71
959.0	25.91	296.67	931.1	87.3	-166.0	187.5	2.97	2.86	-1.91

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 22-8
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Well:	RWF 22-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
1,337.0	32.30	298.54	1,261.2	172.7	-328.7	371.2	1.71	1.69	0.49
1,431.0	35.55	298.45	1,339.2	197.7	-374.8	423.6	3.46	3.46	-0.10
1,526.0	37.09	300.12	1,415.7	225.2	-423.9	479.9	1.93	1.62	1.76
1,620.0	36.39	299.50	1,491.1	253.2	-472.7	536.1	0.84	-0.74	-0.66
1,714.0	35.68	298.10	1,567.1	279.8	-521.1	591.4	1.16	-0.76	-1.49
1,809.0	36.60	298.62	1,643.8	306.4	-570.4	647.4	1.02	0.97	0.55
1,903.0	35.82	298.98	1,719.6	333.2	-619.1	702.9	0.86	-0.83	0.38
1,997.0	35.46	297.48	1,796.0	359.1	-667.4	757.7	1.01	-0.38	-1.60
2,090.0	35.86	299.06	1,871.6	384.8	-715.1	811.9	1.08	0.43	1.70
2,185.0	36.34	301.00	1,948.4	412.8	-763.5	867.9	1.30	0.51	2.04
2,279.0	35.55	299.94	2,024.5	440.8	-811.1	923.0	1.07	-0.84	-1.13
2,373.0	36.61	302.40	2,100.4	469.4	-858.4	978.4	1.91	1.13	2.62
2,467.0	35.82	302.40	2,176.3	499.2	-905.3	1,033.8	0.84	-0.84	0.00
2,562.0	34.94	301.96	2,253.7	528.5	-951.9	1,088.7	0.96	-0.93	-0.46
2,656.0	36.30	303.19	2,330.1	558.0	-998.0	1,143.4	1.64	1.45	1.31
2,749.0	36.04	302.32	2,405.2	587.7	-1,044.2	1,198.2	0.62	-0.28	-0.94
2,844.0	35.20	302.14	2,482.4	617.2	-1,091.0	1,253.4	0.89	-0.88	-0.19
2,938.0	35.02	301.17	2,559.3	645.5	-1,137.0	1,307.5	0.62	-0.19	-1.03
3,032.0	32.92	300.38	2,637.3	672.4	-1,182.1	1,360.0	2.28	-2.23	-0.84
3,126.0	33.93	300.38	2,715.7	698.6	-1,226.8	1,411.7	1.07	1.07	0.00
3,220.0	34.80	300.91	2,793.3	725.7	-1,272.4	1,464.8	0.98	0.93	0.56
3,314.0	36.74	300.91	2,869.6	753.9	-1,319.6	1,519.7	2.06	2.06	0.00
3,408.0	36.08	300.03	2,945.3	782.2	-1,367.7	1,575.5	0.90	-0.70	-0.94
3,503.0	35.11	299.50	3,022.5	809.6	-1,415.7	1,630.8	1.07	-1.02	-0.56
3,597.0	36.56	299.24	3,098.7	836.6	-1,463.6	1,685.8	1.55	1.54	-0.28
3,691.0	35.64	298.18	3,174.7	863.2	-1,512.2	1,741.2	1.18	-0.98	-1.13
3,786.0	34.54	297.83	3,252.4	888.9	-1,560.4	1,795.8	1.18	-1.16	-0.37
3,880.0	35.51	298.54	3,329.4	914.4	-1,608.0	1,849.7	1.12	1.03	0.76
3,974.0	35.38	301.52	3,405.9	941.6	-1,655.1	1,904.2	1.84	-0.14	3.17
4,068.0	34.67	301.35	3,482.9	969.8	-1,701.2	1,958.1	0.76	-0.76	-0.18
4,163.0	33.13	301.09	3,561.8	997.2	-1,746.5	2,011.1	1.63	-1.62	-0.27
4,257.0	32.17	300.21	3,640.9	1,023.1	-1,790.1	2,061.8	1.14	-1.02	-0.94
4,351.0	30.94	299.33	3,721.0	1,047.5	-1,832.8	2,111.0	1.40	-1.31	-0.94
4,445.0	30.06	300.29	3,802.0	1,071.2	-1,874.2	2,158.7	1.07	-0.94	1.02
4,540.0	31.73	300.03	3,883.5	1,095.7	-1,916.4	2,207.5	1.76	1.76	-0.27
4,635.0	30.72	299.41	3,964.8	1,120.2	-1,959.1	2,256.7	1.12	-1.06	-0.65
4,729.0	29.88	298.27	4,045.9	1,143.0	-2,000.7	2,304.1	1.08	-0.89	-1.21
4,824.0	29.22	298.80	4,128.6	1,165.4	-2,041.8	2,351.0	0.75	-0.69	0.56
4,918.0	27.73	299.15	4,211.2	1,187.1	-2,081.0	2,395.8	1.60	-1.59	0.37
5,012.0	27.38	299.41	4,294.5	1,208.4	-2,119.0	2,439.3	0.39	-0.37	0.28
5,107.0	25.88	300.65	4,379.5	1,229.7	-2,155.8	2,481.8	1.68	-1.58	1.31
5,201.0	25.22	300.38	4,464.3	1,250.3	-2,190.8	2,522.4	0.71	-0.70	-0.29
5,296.0	23.99	300.65	4,550.6	1,270.4	-2,224.8	2,561.9	1.30	-1.29	0.28

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Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Well:	RWF 22-8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)	
5,390.0	23.60	300.82	4,636.6	1,289.7	-2,257.4	2,599.8	0.42	-0.41	0.18	
5,484.0	21.45	301.52	4,723.5	1,308.4	-2,288.3	2,635.8	2.30	-2.29	0.74	
5,578.0	20.26	301.00	4,811.3	1,325.7	-2,316.9	2,669.3	1.28	-1.27	-0.55	
5,673.0	18.24	300.47	4,901.0	1,341.7	-2,343.8	2,700.6	2.13	-2.13	-0.56	
5,767.0	16.26	298.10	4,990.8	1,355.4	-2,368.1	2,728.4	2.23	-2.11	-2.52	
5,861.0	15.12	296.78	5,081.3	1,367.1	-2,390.6	2,753.9	1.27	-1.21	-1.40	
5,955.0	13.54	302.58	5,172.3	1,378.6	-2,410.8	2,777.1	2.27	-1.68	6.17	
6,049.0	13.01	301.00	5,263.8	1,390.0	-2,429.2	2,798.6	0.68	-0.56	-1.68	
6,144.0	12.35	301.08	5,356.5	1,400.7	-2,447.0	2,819.5	0.69	-0.69	0.08	
6,238.0	9.23	297.92	5,448.8	1,409.4	-2,462.3	2,837.1	3.38	-3.32	-3.36	
6,332.0	7.12	306.89	5,541.9	1,416.5	-2,473.6	2,850.4	2.62	-2.24	9.54	
6,426.0	6.42	305.48	5,635.2	1,423.0	-2,482.6	2,861.4	0.77	-0.74	-1.50	
6,520.0	5.89	298.27	5,728.7	1,428.3	-2,491.1	2,871.4	1.00	-0.56	-7.67	
6,614.0	4.22	308.38	5,822.3	1,432.8	-2,498.1	2,879.7	2.01	-1.78	10.76	
6,709.0	3.30	307.94	5,917.1	1,436.6	-2,503.0	2,885.8	0.97	-0.97	-0.46	
6,803.0	2.86	300.91	6,011.0	1,439.5	-2,507.1	2,890.9	0.62	-0.47	-7.48	
6,897.0	2.68	301.52	6,104.9	1,441.8	-2,511.0	2,895.4	0.19	-0.19	0.65	
6,991.0	2.81	293.88	6,198.8	1,443.9	-2,515.0	2,899.9	0.41	0.14	-8.13	
7,085.0	1.23	326.66	6,292.7	1,445.7	-2,517.6	2,903.1	2.02	-1.68	34.87	
7,179.0	0.79	345.29	6,386.7	1,447.2	-2,518.4	2,904.4	0.58	-0.47	19.82	
7,274.0	0.53	312.33	6,481.7	1,448.1	-2,518.8	2,905.3	0.47	-0.27	-34.69	
7,368.0	0.53	303.11	6,575.7	1,448.6	-2,519.5	2,906.2	0.09	0.00	-9.81	
7,462.0	0.40	301.17	6,669.7	1,449.0	-2,520.2	2,906.9	0.14	-0.14	-2.06	
7,556.0	0.40	266.37	6,763.7	1,449.2	-2,520.8	2,907.5	0.25	0.00	-37.02	
7,650.0	0.31	157.38	6,857.7	1,448.9	-2,521.0	2,907.6	0.62	-0.10	-115.95	
7,745.0	0.83	194.56	6,952.7	1,448.0	-2,521.1	2,907.2	0.64	0.55	39.14	
7,838.0	1.23	215.92	7,045.6	1,446.6	-2,521.8	2,907.2	0.59	0.43	22.97	
7,932.0	1.36	226.20	7,139.6	1,445.0	-2,523.2	2,907.6	0.28	0.14	10.94	
8,027.0	1.10	231.74	7,234.6	1,443.6	-2,524.8	2,908.3	0.30	-0.27	5.83	
8,120.0	0.79	193.57	7,327.6	1,442.5	-2,525.6	2,908.4	0.74	-0.33	-41.04	
8,215.0	0.44	139.81	7,422.6	1,441.5	-2,525.5	2,907.9	0.67	-0.37	-56.59	
8,309.0	1.41	156.59	7,516.6	1,440.2	-2,524.9	2,906.7	1.06	1.03	17.85	
8,403.0	1.54	165.29	7,610.5	1,437.9	-2,524.1	2,904.9	0.28	0.14	9.26	
8,497.0	1.05	155.36	7,704.5	1,435.9	-2,523.4	2,903.3	0.57	-0.52	-10.56	
8,591.0	1.80	150.00	7,798.5	1,433.9	-2,522.3	2,901.3	0.81	0.80	-5.70	
8,685.0	1.49	172.76	7,892.4	1,431.4	-2,521.4	2,899.3	0.76	-0.33	24.21	
8,779.0	1.85	178.39	7,986.4	1,428.6	-2,521.2	2,897.8	0.42	0.38	5.99	
8,873.0	1.80	183.40	8,080.4	1,425.6	-2,521.2	2,896.4	0.18	-0.05	5.33	
8,968.0	2.11	182.08	8,175.3	1,422.4	-2,521.4	2,894.9	0.33	0.33	-1.39	
9,062.0	2.20	169.95	8,269.2	1,418.9	-2,521.1	2,893.0	0.49	0.10	-12.90	
9,156.0	1.89	164.68	8,363.2	1,415.6	-2,520.4	2,890.8	0.39	-0.33	-5.61	
9,250.0	1.32	165.91	8,457.1	1,413.1	-2,519.8	2,888.9	0.61	-0.61	1.31	
9,344.0	1.49	188.58	8,551.1	1,410.8	-2,519.7	2,887.8	0.61	0.18	24.12	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
9,439.0	1.85	217.50	8,646.1	1,408.4	-2,520.8	2,887.5	0.95	0.38	30.44
9,502.0	2.24	217.59	8,709.0	1,406.6	-2,522.2	2,887.9	0.62	0.62	0.14
9,588.0	2.42	222.42	8,795.0	1,403.9	-2,524.4	2,888.5	0.31	0.21	5.62
TD @ 9660.0' MD / 8866.9' TVD									
9,660.0	2.42	222.42	8,866.9	1,401.7	-2,526.5	2,889.2	0.00	0.00	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
236.0	235.8	3.3	-7.0	First MWD Survey @ 236.0'MD / 235.8' TVD
9,660.0	8,866.9	1,401.7	-2,526.5	TD @ 9660.0' MD / 8866.9' TVD

Checked By: _____ Approved By: _____ Date: _____