

Project: Garfield County, CO
Site: Sec 8, T6S, R94W
Well: RWF 514-4
Wellbore: Wellbore #1
Design: Plan #2
Latitude: 39.539326
Longitude: -107.903776
Ground Level: 5979.60
KB=24' @ 6003.60usft (H&P #318)

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

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RWF 514-4, True North
Vertical (TVD) Reference: KB=24' @ 6003.60usft (H&P #318)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: KB=24' @ 6003.60usft (H&P #318)
Calculation Method: Minimum Curvature

WELL DETAILS: RWF 514-4

0.00 +N/-S 0.00 +E/-W Northing 1630296.40 Easting 2322149.95 5979.60 Latitude 39.539326 Longitude -107.903776

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

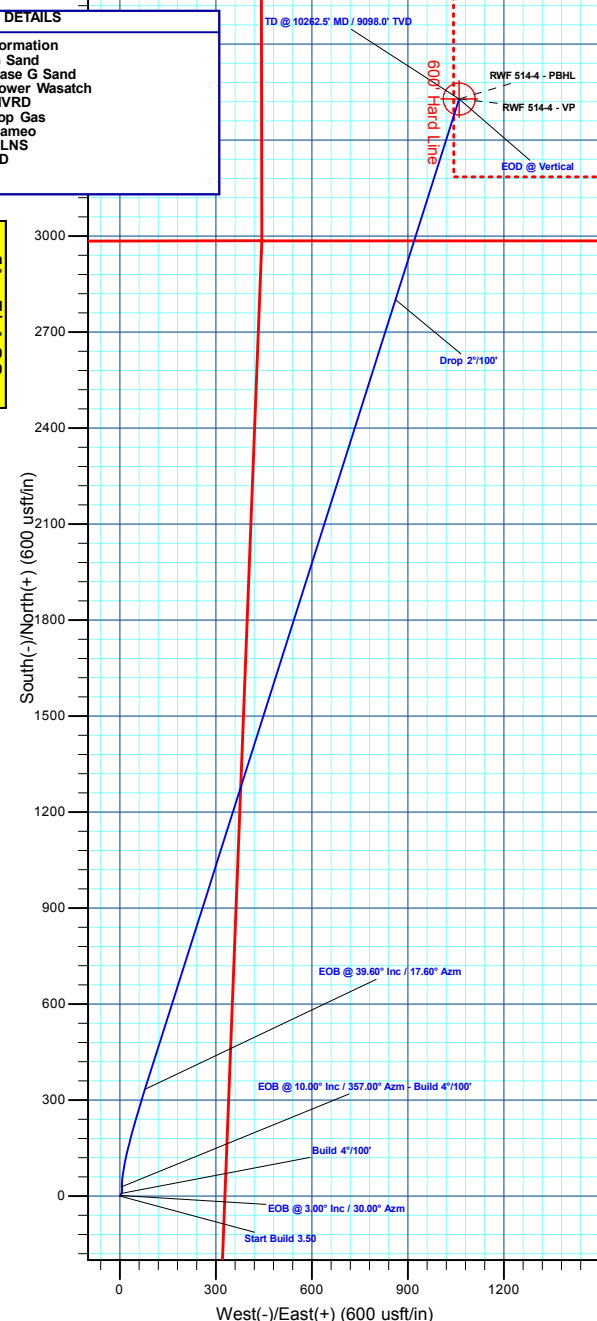
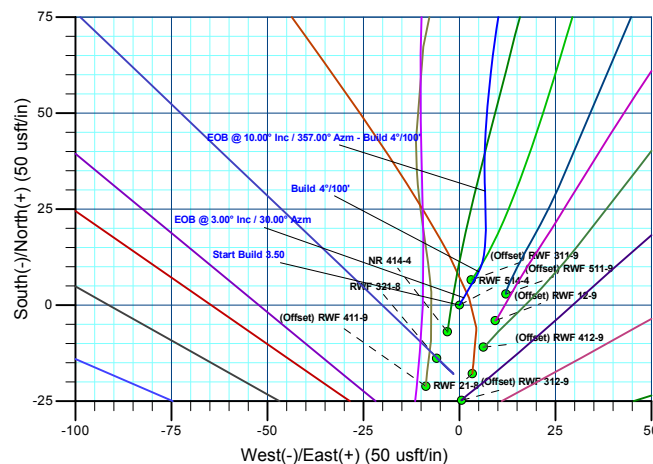
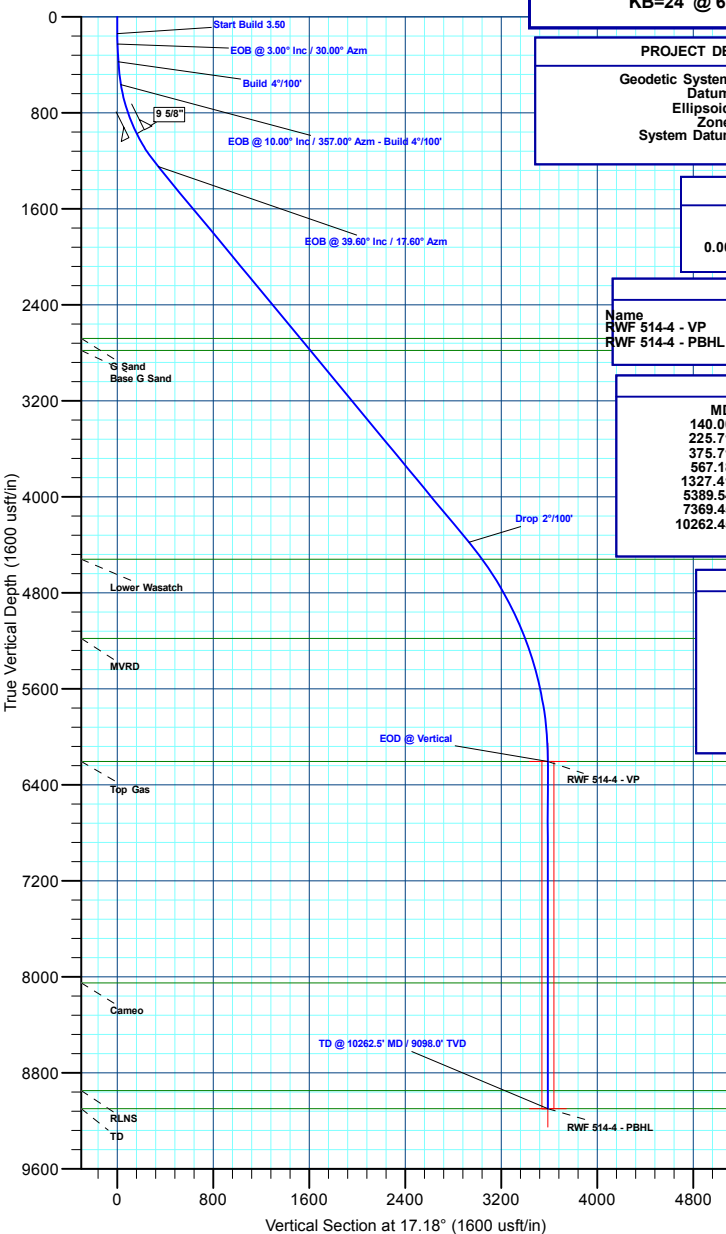
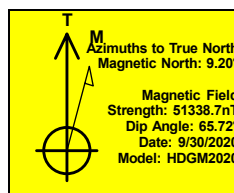
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
RWF 514-4 - VP	6205.00	3428.30	1060.00	1633695.46	2323300.28	39.548738	-107.900017	Circle (Radius: 50.00)
RWF 514-4 - PBHL	9098.00	3428.30	1060.00	1633695.46	2323300.28	39.548738	-107.900017	

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	Start Build 3.50
225.71	3.00	30.00	225.68	1.94	1.12	2.19	2.24	EOB @ 3.00° Inc / 30.00° Azm
375.71	3.00	30.00	375.47	8.74	5.05	9.84	10.09	Build 4°/100'
567.18	10.00	357.00	565.63	29.71	6.68	30.36	31.39	EOB @ 10.00° Inc / 357.00° Azm - Build 4°/100'
1327.41	39.60	17.60	1248.98	333.74	78.19	341.94	344.69	EOB @ 39.60° Inc / 17.60° Azm
5389.54	39.60	17.60	4378.98	2801.71	861.20	2931.08	2933.89	Drop 2°/100'
7369.45	0.00	0.00	6205.00	3428.30	1060.00	3568.43	3591.27	EOB @ Vertical
10262.45	0.00	0.00	9098.00	3428.30	1060.00	3568.43	3591.27	TD @ 10262.5' MD / 9098.0' TVD

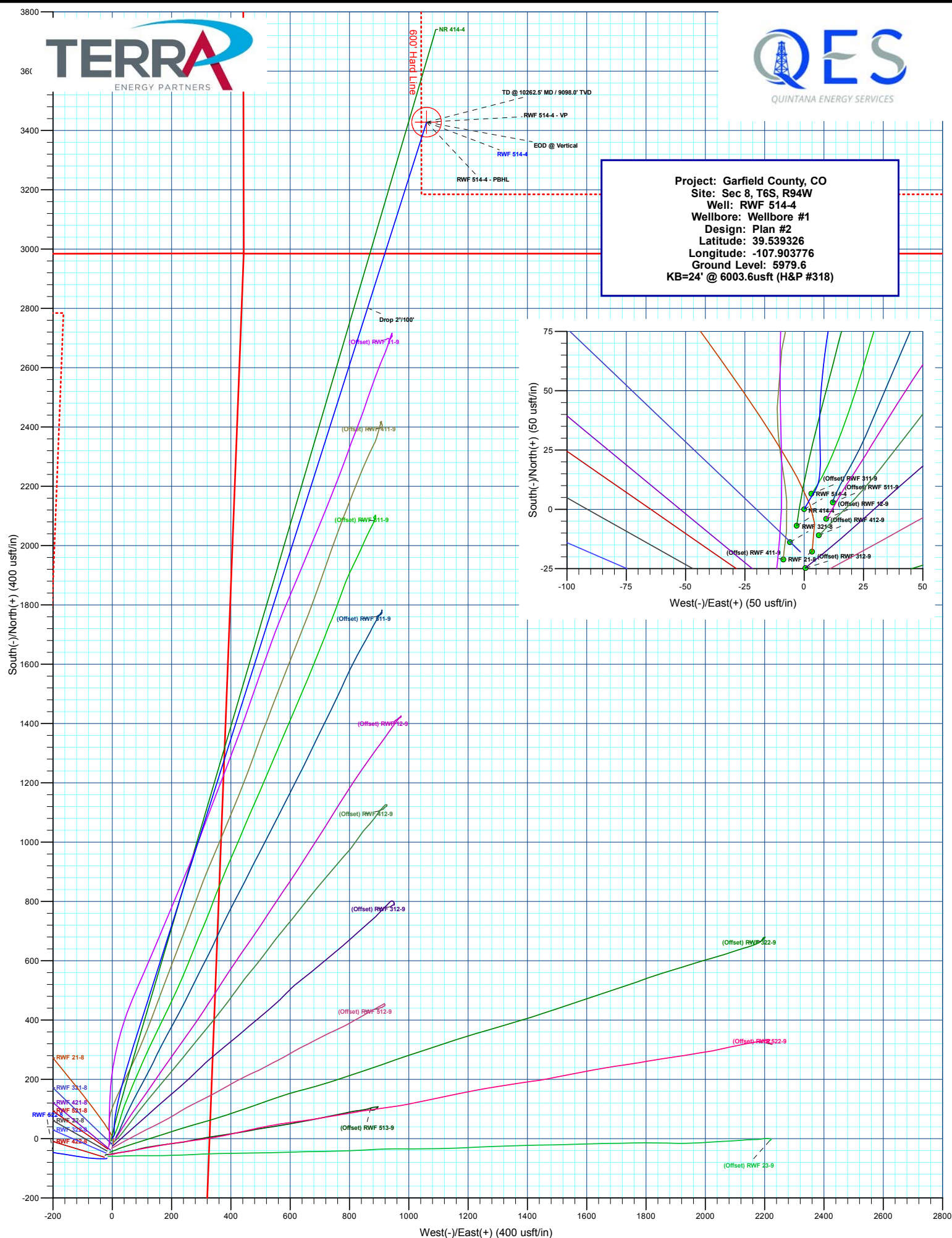
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2680.00	3184.59	G Sand
2780.00	3314.37	Base G Sand
4520.00	5568.07	Lower Wasatch
5180.00	6321.22	MVRD
6205.00	7369.45	Top Gas
8051.00	9215.45	Cameo
8948.00	10112.45	RLNS
9098.00	10262.45	TD

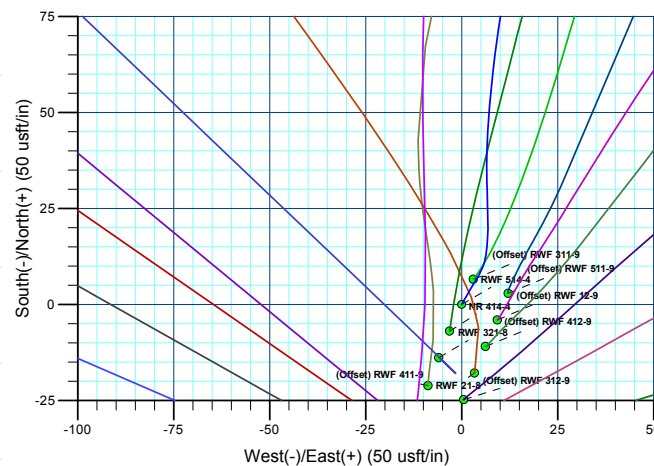


Plan: Plan #2 (RWF 514-4/Wellbore #1)

Created By: Chase Chambers Date: 10:36, November 10 2020



Project: Garfield County, CO
Site: Sec 8, T6S, R94W
Well: RWF 514-4
Wellbore: Wellbore #1
Design: Plan #2
Latitude: 39.5393226
Longitude: -107.903776
Ground Level: 5979.6
KB=24' @ 6003.6usft (H&P #318)



Plan: Plan #2 (RWF 514-4/Wellbore #1)

Chase Chambers Date: 14:53, November 09 2020



Terra Energy Partners, LLP

Garfield County, CO

Sec 8, T6S, R94W

RWF 514-4

Wellbore #1

Plan: Plan #2

QES Well Planning Report

10 November, 2020



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well RWF 514-4
Company:	Terra Energy Partners, LLP	TVD Reference:	KB=24' @ 6003.60usft (H&P #318)
Project:	Garfield County, CO	MD Reference:	KB=24' @ 6003.60usft (H&P #318)
Site:	Sec 8, T6S, R94W	North Reference:	True
Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

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:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.52 °

Well	RWF 514-4					
Well Position	+N/-S	17.84 usft	Northing:	1,630,296.40 usft	Latitude:	39.539326
	+E/-W	-3.38 usft	Easting:	2,322,149.95 usft	Longitude:	-107.903776
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,979.60 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	9/30/2020	9.20	65.72	51,338.70000000

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	17.18

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	0.00	0.00	
225.71	3.00	30.00	225.68	1.94	1.12	3.50	3.50	0.00	30.00	
375.71	3.00	30.00	375.47	8.74	5.05	0.00	0.00	0.00	0.00	
567.18	10.00	357.00	565.63	29.71	6.68	4.00	3.66	-17.24	-45.21	
1,327.41	39.60	17.60	1,248.98	333.74	78.19	4.00	3.89	2.71	26.30	
5,389.54	39.60	17.60	4,378.98	2,801.71	861.20	0.00	0.00	0.00	0.00	
7,369.45	0.00	0.00	6,205.00	3,428.30	1,060.00	2.00	-2.00	0.00	180.00	RWF 514-4 - VP
10,262.45	0.00	0.00	9,098.00	3,428.30	1,060.00	0.00	0.00	0.00	0.00	RWF 514-4 - PBHL

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well RWF 514-4
Company:	Terra Energy Partners, LLP	TVD Reference:	KB=24' @ 6003.60usft (H&P #318)
Project:	Garfield County, CO	MD Reference:	KB=24' @ 6003.60usft (H&P #318)
Site:	Sec 8, T6S, R94W	North Reference:	True
Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 3.50									
140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.10	30.00	199.99	0.95	0.55	1.07	3.50	3.50	0.00
EOB @ 3.00° Inc / 30.00° Azm									
225.71	3.00	30.00	225.68	1.94	1.12	2.19	3.50	3.50	0.00
300.00	3.00	30.00	299.86	5.31	3.07	5.98	0.00	0.00	0.00
Build 4°/100'									
375.71	3.00	30.00	375.47	8.74	5.05	9.84	0.00	0.00	0.00
400.00	3.75	19.39	399.71	10.04	5.63	11.26	4.00	3.08	-43.67
500.00	7.40	1.47	499.23	19.56	6.88	20.72	4.00	3.65	-17.93
EOB @ 10.00° Inc / 357.00° Azm - Build 4°/100'									
567.18	10.00	357.00	565.63	29.71	6.68	30.36	4.00	3.87	-6.65
600.00	11.19	360.00	597.89	35.74	6.54	36.08	4.00	3.63	9.14
700.00	14.95	6.15	695.29	58.28	7.92	58.02	4.00	3.76	6.15
800.00	18.80	9.85	790.97	86.99	12.06	86.67	4.00	3.85	3.70
900.00	22.71	12.33	884.46	121.74	18.94	121.90	4.00	3.90	2.47
9 5/8"									
1,000.00	26.64	14.10	975.32	162.35	28.53	163.53	4.00	3.93	1.78
1,100.00	30.58	15.45	1,063.09	208.63	40.78	211.37	4.00	3.95	1.35
1,200.00	34.54	16.52	1,147.35	260.36	55.62	265.17	4.00	3.96	1.07
1,300.00	38.51	17.39	1,227.70	317.27	72.99	324.67	4.00	3.97	0.87
EOB @ 39.60° Inc / 17.60° Azm									
1,327.41	39.60	17.60	1,248.98	333.74	78.19	341.94	4.00	3.97	0.78
1,400.00	39.60	17.60	1,304.91	377.84	92.18	388.21	0.00	0.00	0.00
1,500.00	39.60	17.60	1,381.97	438.60	111.46	451.95	0.00	0.00	0.00
1,600.00	39.60	17.60	1,459.02	499.35	130.73	515.69	0.00	0.00	0.00
1,700.00	39.60	17.60	1,536.07	560.11	150.01	579.43	0.00	0.00	0.00
1,800.00	39.60	17.60	1,613.13	620.87	169.28	643.16	0.00	0.00	0.00
1,900.00	39.60	17.60	1,690.18	681.62	188.56	706.90	0.00	0.00	0.00
2,000.00	39.60	17.60	1,767.23	742.38	207.83	770.64	0.00	0.00	0.00
2,100.00	39.60	17.60	1,844.29	803.13	227.11	834.38	0.00	0.00	0.00
2,200.00	39.60	17.60	1,921.34	863.89	246.39	898.12	0.00	0.00	0.00
2,300.00	39.60	17.60	1,998.39	924.64	265.66	961.86	0.00	0.00	0.00
2,400.00	39.60	17.60	2,075.45	985.40	284.94	1,025.59	0.00	0.00	0.00
2,500.00	39.60	17.60	2,152.50	1,046.15	304.21	1,089.33	0.00	0.00	0.00
2,600.00	39.60	17.60	2,229.55	1,106.91	323.49	1,153.07	0.00	0.00	0.00
2,700.00	39.60	17.60	2,306.61	1,167.67	342.77	1,216.81	0.00	0.00	0.00
2,800.00	39.60	17.60	2,383.66	1,228.42	362.04	1,280.55	0.00	0.00	0.00
2,900.00	39.60	17.60	2,460.71	1,289.18	381.32	1,344.29	0.00	0.00	0.00
3,000.00	39.60	17.60	2,537.77	1,349.93	400.59	1,408.03	0.00	0.00	0.00
3,100.00	39.60	17.60	2,614.82	1,410.69	419.87	1,471.76	0.00	0.00	0.00
G Sand									
3,184.59	39.60	17.60	2,680.00	1,462.08	436.18	1,525.68	0.00	0.00	0.00
3,200.00	39.60	17.60	2,691.87	1,471.44	439.15	1,535.50	0.00	0.00	0.00
3,300.00	39.60	17.60	2,768.93	1,532.20	458.42	1,599.24	0.00	0.00	0.00
Base G Sand									
3,314.37	39.60	17.60	2,780.00	1,540.93	461.19	1,608.40	0.00	0.00	0.00
3,400.00	39.60	17.60	2,845.98	1,592.95	477.70	1,662.98	0.00	0.00	0.00
3,500.00	39.60	17.60	2,923.03	1,653.71	496.97	1,726.72	0.00	0.00	0.00
3,600.00	39.60	17.60	3,000.09	1,714.47	516.25	1,790.46	0.00	0.00	0.00
3,700.00	39.60	17.60	3,077.14	1,775.22	535.52	1,854.19	0.00	0.00	0.00

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Site:	Sec 8, T6S, R94W	North Reference:	True
Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Planned 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)
3,800.00	39.60	17.60	3,154.19	1,835.98	554.80	1,917.93	0.00	0.00	0.00
3,900.00	39.60	17.60	3,231.24	1,896.73	574.08	1,981.67	0.00	0.00	0.00
4,000.00	39.60	17.60	3,308.30	1,957.49	593.35	2,045.41	0.00	0.00	0.00
4,100.00	39.60	17.60	3,385.35	2,018.24	612.63	2,109.15	0.00	0.00	0.00
4,200.00	39.60	17.60	3,462.40	2,079.00	631.90	2,172.89	0.00	0.00	0.00
4,300.00	39.60	17.60	3,539.46	2,139.75	651.18	2,236.62	0.00	0.00	0.00
4,400.00	39.60	17.60	3,616.51	2,200.51	670.46	2,300.36	0.00	0.00	0.00
4,500.00	39.60	17.60	3,693.56	2,261.27	689.73	2,364.10	0.00	0.00	0.00
4,600.00	39.60	17.60	3,770.62	2,322.02	709.01	2,427.84	0.00	0.00	0.00
4,700.00	39.60	17.60	3,847.67	2,382.78	728.28	2,491.58	0.00	0.00	0.00
4,800.00	39.60	17.60	3,924.72	2,443.53	747.56	2,555.32	0.00	0.00	0.00
4,900.00	39.60	17.60	4,001.78	2,504.29	766.83	2,619.05	0.00	0.00	0.00
5,000.00	39.60	17.60	4,078.83	2,565.04	786.11	2,682.79	0.00	0.00	0.00
5,100.00	39.60	17.60	4,155.88	2,625.80	805.39	2,746.53	0.00	0.00	0.00
5,200.00	39.60	17.60	4,232.94	2,686.55	824.66	2,810.27	0.00	0.00	0.00
5,300.00	39.60	17.60	4,309.99	2,747.31	843.94	2,874.01	0.00	0.00	0.00
Drop 2°/100'									
5,389.54	39.60	17.60	4,378.98	2,801.71	861.20	2,931.08	0.00	0.00	0.00
5,400.00	39.39	17.60	4,387.06	2,808.05	863.21	2,937.73	2.00	-2.00	0.00
5,500.00	37.39	17.60	4,465.43	2,867.24	881.99	2,999.83	2.00	-2.00	0.00
Lower Wasatch									
5,568.07	36.03	17.60	4,520.00	2,906.02	894.29	3,040.51	2.00	-2.00	0.00
5,600.00	35.39	17.60	4,545.93	2,923.79	899.93	3,059.15	2.00	-2.00	0.00
5,700.00	33.39	17.60	4,628.45	2,977.62	917.01	3,115.62	2.00	-2.00	0.00
5,800.00	31.39	17.60	4,712.89	3,028.68	933.21	3,169.19	2.00	-2.00	0.00
5,900.00	29.39	17.60	4,799.14	3,076.89	948.50	3,219.77	2.00	-2.00	0.00
6,000.00	27.39	17.60	4,887.11	3,122.21	962.88	3,267.31	2.00	-2.00	0.00
6,100.00	25.39	17.60	4,976.69	3,164.57	976.32	3,311.75	2.00	-2.00	0.00
6,200.00	23.39	17.60	5,067.76	3,203.93	988.81	3,353.04	2.00	-2.00	0.00
6,300.00	21.39	17.60	5,160.22	3,240.23	1,000.33	3,391.13	2.00	-2.00	0.00
MVRD									
6,321.22	20.96	17.60	5,180.00	3,247.54	1,002.65	3,398.79	2.00	-2.00	0.00
6,400.00	19.39	17.60	5,253.95	3,273.44	1,010.86	3,425.97	2.00	-2.00	0.00
6,500.00	17.39	17.60	5,348.84	3,303.51	1,020.40	3,457.51	2.00	-2.00	0.00
6,600.00	15.39	17.60	5,444.77	3,330.40	1,028.93	3,485.72	2.00	-2.00	0.00
6,700.00	13.39	17.60	5,541.63	3,354.09	1,036.45	3,510.57	2.00	-2.00	0.00
6,800.00	11.39	17.60	5,639.29	3,374.54	1,042.94	3,532.03	2.00	-2.00	0.00
6,900.00	9.39	17.60	5,737.65	3,391.72	1,048.39	3,550.06	2.00	-2.00	0.00
7,000.00	7.39	17.60	5,836.57	3,405.63	1,052.80	3,564.65	2.00	-2.00	0.00
7,100.00	5.39	17.60	5,935.95	3,416.23	1,056.17	3,575.77	2.00	-2.00	0.00
7,200.00	3.39	17.60	6,035.65	3,423.53	1,058.48	3,583.42	2.00	-2.00	0.00
7,300.00	1.39	17.60	6,135.56	3,427.50	1,059.74	3,587.59	2.00	-2.00	0.00
EOD @ Vertical - Top Gas									
7,369.45	0.00	0.00	6,205.00	3,428.30	1,060.00	3,588.43	2.00	-2.00	0.00
7,400.00	0.00	0.00	6,235.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
7,500.00	0.00	0.00	6,335.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
7,600.00	0.00	0.00	6,435.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
7,700.00	0.00	0.00	6,535.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
7,800.00	0.00	0.00	6,635.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
7,900.00	0.00	0.00	6,735.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,000.00	0.00	0.00	6,835.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,100.00	0.00	0.00	6,935.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,200.00	0.00	0.00	7,035.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,300.00	0.00	0.00	7,135.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well RWF 514-4
Company:	Terra Energy Partners, LLP	TVD Reference:	KB=24' @ 6003.60usft (H&P #318)
Project:	Garfield County, CO	MD Reference:	KB=24' @ 6003.60usft (H&P #318)
Site:	Sec 8, T6S, R94W	North Reference:	True
Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Planned 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)
8,400.00	0.00	0.00	7,235.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,500.00	0.00	0.00	7,335.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,600.00	0.00	0.00	7,435.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,700.00	0.00	0.00	7,535.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,800.00	0.00	0.00	7,635.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
8,900.00	0.00	0.00	7,735.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,000.00	0.00	0.00	7,835.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,100.00	0.00	0.00	7,935.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,200.00	0.00	0.00	8,035.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
Cameo									
9,215.45	0.00	0.00	8,051.00	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,300.00	0.00	0.00	8,135.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,400.00	0.00	0.00	8,235.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,500.00	0.00	0.00	8,335.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,600.00	0.00	0.00	8,435.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,700.00	0.00	0.00	8,535.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,800.00	0.00	0.00	8,635.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
9,900.00	0.00	0.00	8,735.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
10,000.00	0.00	0.00	8,835.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
10,100.00	0.00	0.00	8,935.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
RLNS									
10,112.45	0.00	0.00	8,948.00	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
10,200.00	0.00	0.00	9,035.55	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00
TD @ 10262.5' MD / 9098.0' TVD - TD									
10,262.45	0.00	0.00	9,098.00	3,428.30	1,060.00	3,588.43	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
RWF 514-4 - VP	0.00	0.00	6,205.00	3,428.30	1,060.00	1,633,695.46	2,323,300.28	39.548738	-107.900017
- hit/miss target									
- Shape									
- Point									
RWF 514-4 - PBHL	0.00	0.00	9,098.00	3,428.30	1,060.00	1,633,695.46	2,323,300.28	39.548738	-107.900017
- plan hits target center									
- Circle (radius 50.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,000.00	975.32	9 5/8"	9-5/8	12-1/4	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well RWF 514-4
Company:	Terra Energy Partners, LLP	TVD Reference:	KB=24' @ 6003.60usft (H&P #318)
Project:	Garfield County, CO	MD Reference:	KB=24' @ 6003.60usft (H&P #318)
Site:	Sec 8, T6S, R94W	North Reference:	True
Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,184.59	2,680.00	G Sand				
3,314.37	2,780.00	Base G Sand				
5,568.07	4,520.00	Lower Wasatch				
6,321.22	5,180.00	MVRD				
7,369.45	6,205.00	Top Gas				
9,215.45	8,051.00	Cameo				
10,112.45	8,948.00	RLNS				
10,262.45	9,098.00	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
140.00	140.00	0.00	0.00	Start Build 3.50	
225.71	225.68	1.94	1.12	EOB @ 3.00° Inc / 30.00° Azm	
375.71	375.47	8.74	5.05	Build 4°/100'	
567.18	565.63	29.71	6.68	EOB @ 10.00° Inc / 357.00° Azm - Build 4°/100'	
1,327.41	1,248.98	333.74	78.19	EOB @ 39.60° Inc / 17.60° Azm	
5,389.54	4,378.98	2,801.71	861.20	Drop 2°/100'	
7,369.45	6,205.00	3,428.30	1,060.00	EOD @ Vertical	
10,262.45	9,098.00	3,428.30	1,060.00	TD @ 10262.5' MD / 9098.0' TVD	



Terra Energy Partners, LLP

**Garfield County, CO
Sec 8, T6S, R94W
RWF 514-4**

**Wellbore #1
Plan #2**

QES Anticollision Report

09 November, 2020



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum separation factor of 6.00	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/9/2020	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	10,262.5	Plan #2 (Wellbore #1)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 8, T6S, R94W						
(Offset) RWF 11-9 - Wellbore #1 - Wellbore #1	600.0	603.4	16.6	11.1	3.062	CC, ES
(Offset) RWF 11-9 - Wellbore #1 - Wellbore #1	700.0	703.2	19.4	12.5	2.782	SF
(Offset) RWF 12-9 - Wellbore #1 - Wellbore #1	300.0	300.3	10.6	8.3	4.775	CC, ES
(Offset) RWF 12-9 - Wellbore #1 - Wellbore #1	400.0	399.9	12.2	9.1	3.988	SF
(Offset) RWF 23-9 - Wellbore #1 - Wellbore #1						Out of range
(Offset) RWF 311-9 - Wellbore #1 - Wellbore #1	200.0	200.0	9.7	6.9	3.433	CC, ES
(Offset) RWF 311-9 - Wellbore #1 - Wellbore #1	300.0	299.4	12.2	7.2	2.438	SF
(Offset) RWF 312-9 - Wellbore #1 - Wellbore #1						Out of range
(Offset) RWF 322-9 - Wellbore #1 - Wellbore #1						Out of range
(Offset) RWF 411-9 - Wellbore #1 - Wellbore #1	342.6	344.6	12.2	9.1	3.937	CC
(Offset) RWF 411-9 - Wellbore #1 - Wellbore #1	1,200.0	1,193.8	25.2	8.6	1.518	Collision Risk Procedures R
(Offset) RWF 411-9 - Wellbore #1 - Wellbore #1	1,279.0	1,271.8	22.5	8.0	1.555	Collision Risk Procedures R
(Offset) RWF 412-9 - Wellbore #1 - Wellbore #1	300.0	300.5	13.6	11.4	5.994	CC, ES
(Offset) RWF 412-9 - Wellbore #1 - Wellbore #1	500.0	499.6	24.4	19.8	5.286	SF
(Offset) RWF 511-9 - Wellbore #1 - Wellbore #1	1,300.0	1,278.2	84.7	70.4	5.916	CC, ES
(Offset) RWF 511-9 - Wellbore #1 - Wellbore #1	1,400.0	1,371.2	98.2	81.5	5.861	SF
(Offset) RWF 512-9 - Wellbore #1 - Wellbore #1						Out of range
(Offset) RWF 513-9 - Wellbore #1 - Wellbore #1						Out of range
(Offset) RWF 522-9 - Wellbore #1 - Wellbore #1						Out of range
NR 414-4 - Wellbore #1 - Plan #3	300.0	300.6	4.6	1.5	1.502	Collision Risk Procedures R
NR 414-4 - Wellbore #1 - Plan #3	312.0	312.6	4.5	1.7	1.588	Collision Risk Procedures R
RWF 21-8 - Wellbore #1 - Plan #2	400.0	400.9	15.9	11.7	3.764	CC
RWF 21-8 - Wellbore #1 - Plan #2	500.0	501.4	18.1	11.6	2.764	ES, SF
RWF 22-8 - Wellbore #1 - Plan #1						Out of range
RWF 321-8 - Wellbore #1 - Plan #2	400.0	400.3	28.7	23.7	5.744	CC, ES
RWF 321-8 - Wellbore #1 - Plan #2	500.0	500.7	35.7	27.8	4.485	SF
RWF 322-8 - Wellbore #1 - Plan #1						Out of range
RWF 421-8 - Wellbore #1 - Plan #2						Out of range
RWF 422-8 - Wellbore #1 - Plan #1						Out of range
RWF 521-8 - Wellbore #1 - Plan #1						Out of range
RWF 522-8 - Wellbore #1 - Plan #1						Out of range

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 11-9 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 usft
Survey Program: 68-GYRO-NS, 427-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Reference (usft)	Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
400.0	399.7	403.7	402.5	2.0	1.7	-151.87	-3.9	-9.7	20.9	17.3	5.890		
500.0	499.2	503.7	500.6	3.5	3.3	-108.58	14.6	-9.4	17.0	12.1	3.472		
566.2	564.7	569.7	565.0	4.2	4.2	-90.39	29.5	-9.7	16.7	11.6	3.282		
600.0	597.9	603.4	597.6	4.5	4.5	-82.45	37.8	-9.9	16.6	11.1	3.062	CC, ES	
700.0	695.3	703.2	693.6	5.6	5.4	-74.15	65.2	-10.1	19.4	12.5	2.782	SF	
800.0	791.0	803.0	788.4	7.2	6.0	-75.03	96.2	-9.4	23.5	15.1	2.795		
900.0	884.5	902.4	881.5	8.6	6.7	-81.28	131.1	-8.2	28.9	19.8	3.175		
1,000.0	975.3	1,002.3	973.5	9.8	7.4	-89.65	170.1	-5.9	35.4	25.7	3.647		
1,100.0	1,063.1	1,102.7	1,064.3	10.8	8.0	-99.24	212.6	-1.4	42.4	31.5	3.896		
1,200.0	1,147.4	1,203.4	1,153.3	11.7	8.6	-108.55	259.0	5.8	50.2	37.3	3.890		
1,300.0	1,227.7	1,304.1	1,240.7	12.5	9.1	-118.40	308.1	15.6	59.4	43.9	3.817		
1,400.0	1,304.9	1,404.2	1,327.4	12.8	9.5	-129.29	356.6	28.3	70.8	52.5	3.869		
1,500.0	1,382.0	1,505.1	1,414.2	13.1	9.9	-137.71	405.7	43.4	82.0	61.5	3.999		
1,600.0	1,459.0	1,606.0	1,500.5	13.3	10.3	-145.30	454.5	61.9	91.9	69.4	4.096		
1,700.0	1,536.1	1,705.9	1,585.6	13.6	10.8	-152.09	502.7	82.2	101.6	77.5	4.218		
1,800.0	1,613.1	1,804.7	1,669.7	14.0	11.4	-157.81	550.5	102.9	111.9	86.4	4.384		
1,900.0	1,690.2	1,903.2	1,753.6	14.3	12.1	-162.51	597.8	123.3	123.5	96.7	4.606		
2,000.0	1,767.2	2,001.8	1,837.7	14.7	12.9	-166.28	645.2	143.5	136.0	108.0	4.860		
2,100.0	1,844.3	2,100.5	1,921.9	15.4	13.7	-169.46	692.5	163.7	149.1	120.0	5.125		
2,200.0	1,921.3	2,198.7	2,005.9	16.3	14.5	-172.05	739.4	183.5	162.8	132.7	5.395		
2,300.0	1,998.4	2,295.7	2,089.1	17.3	15.2	-174.06	785.5	202.5	177.5	146.2	5.677		
2,400.0	2,075.4	2,392.7	2,172.8	18.4	16.0	-175.89	830.6	221.5	193.3	161.0	5.978		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 12-9 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 usft
Survey Program: 99-GYRO-NS, 713-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
300.0	299.9	300.3	300.1	1.7	0.9	75.88	2.4	13.2	10.6	8.3	4.775	CC, ES	
400.0	399.7	399.9	399.4	2.0	1.4	69.77	10.2	17.8	12.2	9.1	3.988	SF	
500.0	499.2	499.2	497.6	3.5	2.0	80.39	22.0	25.3	18.7	14.1	4.096		
600.0	597.9	597.4	593.7	4.5	2.7	82.02	39.0	35.9	29.9	24.3	5.344		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 311-9 - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 usft
Survey Program: 149-OWSG (REV5) MWD HDGM Standard											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
200.0	200.0	200.0	199.9	1.2	1.6	-2.09	9.5	5.1	9.7	6.9	3.433	CC, ES
300.0	299.9	299.4	299.0	1.7	3.3	-2.01	16.0	8.8	12.2	7.2	2.438	SF
400.0	399.7	398.2	397.1	2.0	4.8	5.56	27.6	13.8	19.6	12.8	2.876	
500.0	499.2	496.6	493.8	3.5	5.9	25.77	44.4	19.9	28.6	19.3	3.059	
600.0	597.9	594.7	589.2	4.5	6.8	32.69	66.0	26.7	37.5	26.5	3.420	
700.0	695.3	692.8	683.7	5.6	7.4	31.07	91.5	34.4	44.2	31.9	3.586	
800.0	791.0	790.1	776.1	7.2	8.1	32.57	120.2	44.5	48.9	34.8	3.476	
900.0	884.5	888.0	867.4	8.6	8.8	36.51	152.8	57.8	52.7	37.4	3.428	
1,000.0	975.3	987.8	960.0	9.8	9.2	43.54	187.2	72.2	52.6	36.8	3.331	
1,100.0	1,063.1	1,086.4	1,051.4	10.8	9.5	56.78	220.9	86.7	49.0	34.3	3.317	
1,197.5	1,145.3	1,182.1	1,140.1	11.7	9.8	77.67	254.0	101.2	46.5	33.5	3.580	
1,200.0	1,147.4	1,184.5	1,142.3	11.7	9.8	78.29	254.8	101.5	46.5	33.6	3.587	
1,300.0	1,227.7	1,281.0	1,231.6	12.5	10.1	105.14	288.3	116.5	52.4	37.2	3.458	
1,400.0	1,304.9	1,376.7	1,319.6	12.8	10.4	126.47	322.3	132.2	69.9	50.3	3.567	
1,500.0	1,382.0	1,472.4	1,407.4	13.1	10.8	138.26	356.6	148.7	93.5	71.2	4.189	
1,600.0	1,459.0	1,568.8	1,495.7	13.3	11.2	145.09	391.5	165.5	119.0	94.9	4.944	
1,700.0	1,536.1	1,665.3	1,583.8	13.6	11.5	149.32	426.9	182.7	145.1	119.7	5.708	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 411-9 - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 usft
Survey Program: 99-GYRO-NS, 698-OWSG (REV5) MWD HDGM Standard											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
300.0	299.9	302.3	301.4	1.7	1.2	-159.57	-3.0	-7.0	13.1	10.4	4.849	
342.6	342.4	344.6	343.3	1.8	1.5	-134.18	3.4	-7.3	12.2	9.1	3.937	CC
400.0	399.7	401.3	399.0	2.0	1.9	-95.20	13.5	-8.5	14.6	11.1	4.196	
500.0	499.2	500.1	495.3	3.5	2.7	-49.12	35.5	-11.1	24.4	19.4	4.849	
600.0	597.9	599.9	591.6	4.5	3.4	-32.25	61.6	-10.3	31.6	25.1	4.900	
700.0	695.3	699.8	687.5	5.6	3.9	-27.62	89.3	-4.8	34.5	26.7	4.430	
800.0	791.0	799.4	782.1	7.2	4.8	-20.27	118.4	5.8	33.4	22.9	3.183	
900.0	884.5	897.0	872.8	8.6	5.5	-9.17	151.4	20.2	32.0	18.4	2.358	
1,000.0	975.3	995.3	961.8	9.8	6.2	4.20	189.2	37.7	31.6	15.4	1.944	Collision Risk Procedures Req.
1,100.0	1,063.1	1,094.3	1,050.1	10.8	6.7	20.68	229.4	57.4	29.8	12.4	1.710	Collision Risk Procedures Req.
1,200.0	1,147.4	1,193.8	1,138.7	11.7	7.0	44.64	270.2	77.0	25.2	8.6	1.518	Collision Risk Procedures Req., SF
1,279.0	1,211.1	1,271.8	1,208.4	12.4	7.3	76.74	302.3	91.2	22.5	8.0	1.555	Collision Risk Procedures Req., ES
1,300.0	1,227.7	1,292.5	1,226.9	12.5	7.4	87.41	310.8	94.8	22.8	8.3	1.577	Collision Risk Procedures Req.
1,400.0	1,304.9	1,389.9	1,314.3	12.8	7.8	128.82	350.7	111.2	34.4	15.4	1.814	Collision Risk Procedures Req.
1,500.0	1,382.0	1,487.9	1,401.7	13.1	8.4	145.60	391.6	127.5	53.3	32.0	2.500	
1,600.0	1,459.0	1,586.3	1,489.3	13.3	8.9	153.84	433.7	143.1	73.2	50.4	3.221	
1,700.0	1,536.1	1,685.5	1,576.9	13.6	9.6	158.06	477.4	159.4	92.6	68.8	3.891	
1,800.0	1,613.1	1,784.5	1,663.4	14.0	10.3	160.34	522.4	176.4	110.7	85.8	4.458	
1,900.0	1,690.2	1,881.8	1,748.7	14.3	11.0	162.17	566.4	192.7	129.1	103.3	4.998	
2,000.0	1,767.2	1,978.4	1,833.7	14.7	11.6	163.54	609.3	208.9	148.6	121.8	5.538	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 412-9 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 usft
Survey Program: 100-GYRO-NS, 980-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
300.0	299.9	300.5	300.2	1.7	1.0	103.84	-4.1	12.9	13.6	11.4	5.994	CC, ES	
400.0	399.7	400.3	399.4	2.0	1.5	93.22	3.7	20.7	16.4	13.3	5.345		
500.0	499.2	499.6	497.5	3.5	2.1	97.63	15.4	30.8	24.4	19.8	5.286	SF	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - (Offset) RWF 511-9 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 usft
Survey Program: 67-GYRO-NS, 888-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
1,300.0	1,227.7	1,278.2	1,227.7	12.5	6.7	95.25	282.5	150.2	84.7	70.4	5.916	CC, ES	
1,400.0	1,304.9	1,371.2	1,314.0	12.8	7.2	111.63	313.5	166.0	98.2	81.5	5.861	SF	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
200.0	200.0	200.4	200.3	1.2	1.8	-179.40	-4.7	-2.8	6.6	3.6	2.237		
300.0	299.9	300.6	300.1	1.7	2.9	-132.69	4.3	-1.4	4.6	1.5	1.502	Collision Risk Procedures Req., ES, SF	
312.0	311.9	312.6	312.0	1.7	3.1	-118.90	5.8	-1.1	4.5	1.7	1.588	Collision Risk Procedures Req., CC	
400.0	399.7	400.0	398.2	2.0	4.6	-40.29	19.8	1.8	10.6	4.8	1.826	Collision Risk Procedures Req.	
500.0	499.2	497.9	493.5	3.5	6.6	-1.04	41.4	7.0	22.6	12.6	2.270		
600.0	597.9	594.8	586.2	4.5	8.1	12.31	68.9	14.1	35.9	23.3	2.854		
700.0	695.3	690.9	676.0	5.6	9.3	12.03	101.9	23.0	50.0	35.2	3.377		
800.0	791.0	786.1	762.4	7.2	10.3	11.00	140.2	33.6	64.1	46.6	3.659		
900.0	884.5	880.4	845.4	8.6	11.3	9.75	183.5	45.8	77.8	58.0	3.923		
1,000.0	975.3	974.0	924.6	9.8	12.1	8.43	231.4	59.5	91.2	69.3	4.160		
1,100.0	1,063.1	1,066.9	999.7	10.8	12.8	7.07	283.8	74.7	104.0	80.2	4.372		
1,200.0	1,147.4	1,160.0	1,071.4	11.7	13.2	5.69	340.8	91.4	116.3	91.1	4.612		
1,300.0	1,227.7	1,259.7	1,146.6	12.5	13.5	4.36	403.6	109.9	124.1	97.4	4.648		
1,400.0	1,304.9	1,359.6	1,221.9	12.8	13.7	3.49	466.5	128.4	126.7	99.4	4.628		
1,500.0	1,382.0	1,459.6	1,297.3	13.1	14.0	2.80	529.5	146.9	129.2	101.1	4.596		
1,600.0	1,459.0	1,559.5	1,372.7	13.3	14.2	2.14	592.5	165.4	131.6	102.7	4.560		
1,700.0	1,536.1	1,659.5	1,448.1	13.6	14.5	1.51	655.4	184.0	134.1	104.4	4.520		
1,800.0	1,613.1	1,759.4	1,523.5	14.0	14.8	0.90	718.4	202.5	136.5	106.0	4.477		
1,900.0	1,690.2	1,859.4	1,598.9	14.3	15.1	0.31	781.4	221.0	139.0	107.7	4.433		
2,000.0	1,767.2	1,959.4	1,674.3	14.7	15.7	-0.26	844.3	239.5	141.5	109.3	4.385		
2,100.0	1,844.3	2,059.3	1,749.7	15.4	16.8	-0.81	907.3	258.0	144.1	110.9	4.339		
2,200.0	1,921.3	2,159.3	1,825.1	16.3	17.9	-1.35	970.3	276.5	146.6	112.4	4.291		
2,300.0	1,998.4	2,259.2	1,900.5	17.3	19.0	-1.86	1,033.2	295.0	149.1	114.0	4.244		
2,400.0	2,075.4	2,359.2	1,975.9	18.4	20.1	-2.35	1,096.2	313.6	151.7	115.6	4.196		
2,500.0	2,152.5	2,459.2	2,051.3	19.4	21.2	-2.83	1,159.2	332.1	154.3	117.1	4.149		
2,600.0	2,229.6	2,559.1	2,126.7	20.5	22.3	-3.30	1,222.1	350.6	156.9	118.6	4.102		
2,700.0	2,306.6	2,659.1	2,202.0	21.5	23.4	-3.75	1,285.1	369.1	159.4	120.1	4.056		
2,800.0	2,383.7	2,759.0	2,277.4	22.6	24.5	-4.18	1,348.1	387.6	162.0	121.6	4.010		
2,900.0	2,460.7	2,859.0	2,352.8	23.7	25.6	-4.60	1,411.1	406.1	164.6	123.1	3.966		
3,000.0	2,537.8	2,958.9	2,428.2	24.7	26.7	-5.01	1,474.0	424.6	167.3	124.6	3.922		
3,100.0	2,614.8	3,058.9	2,503.6	25.8	27.8	-5.40	1,537.0	443.2	169.9	126.1	3.880		
3,200.0	2,691.9	3,158.9	2,579.0	26.9	28.9	-5.79	1,600.0	461.7	172.5	127.6	3.838		
3,300.0	2,768.9	3,258.8	2,654.4	27.9	30.0	-6.16	1,662.9	480.2	175.2	129.0	3.797		
3,400.0	2,846.0	3,358.8	2,729.8	29.0	31.2	-6.52	1,725.9	498.7	177.8	130.5	3.758		
3,500.0	2,923.0	3,458.7	2,805.2	30.1	32.3	-6.87	1,788.9	517.2	180.5	131.9	3.719		
3,600.0	3,000.1	3,558.7	2,880.6	31.1	33.4	-7.21	1,851.8	535.7	183.1	133.4	3.682		
3,700.0	3,077.1	3,658.7	2,956.0	32.2	34.5	-7.54	1,914.8	554.3	185.8	134.8	3.645		
3,800.0	3,154.2	3,758.6	3,031.4	33.3	35.6	-7.86	1,977.8	572.8	188.5	136.2	3.610		
3,900.0	3,231.2	3,858.6	3,106.7	34.4	36.7	-8.17	2,040.7	591.3	191.1	137.7	3.575		
4,000.0	3,308.3	3,958.5	3,182.1	35.4	37.8	-8.47	2,103.7	609.8	193.8	139.1	3.542		
4,100.0	3,385.4	4,058.5	3,257.5	36.5	38.9	-8.77	2,166.7	628.3	196.5	140.5	3.509		
4,200.0	3,462.4	4,158.5	3,332.9	37.6	40.0	-9.05	2,229.6	646.8	199.2	141.9	3.478		
4,300.0	3,539.5	4,258.4	3,408.3	38.7	41.2	-9.33	2,292.6	665.3	201.9	143.3	3.447		
4,400.0	3,616.5	4,358.4	3,483.7	39.7	42.3	-9.60	2,355.6	683.9	204.6	144.7	3.418		
4,500.0	3,693.6	4,458.3	3,559.1	40.8	43.4	-9.87	2,418.5	702.4	207.3	146.1	3.389		
4,600.0	3,770.6	4,558.3	3,634.5	41.9	44.5	-10.12	2,481.5	720.9	210.0	147.5	3.361		
4,700.0	3,847.7	4,658.2	3,709.9	43.0	45.6	-10.38	2,544.5	739.4	212.7	148.9	3.334		
4,800.0	3,924.7	4,758.2	3,785.3	44.1	46.7	-10.62	2,607.4	757.9	215.5	150.3	3.307		
4,900.0	4,001.8	4,858.2	3,860.7	45.1	47.8	-10.86	2,670.4	776.4	218.2	151.7	3.282		
5,000.0	4,078.8	4,958.1	3,936.1	46.2	48.9	-11.09	2,733.4	795.0	220.9	153.1	3.257		
5,100.0	4,155.9	5,058.1	4,011.5	47.3	50.1	-11.32	2,796.4	813.5	223.6	154.5	3.232		
5,200.0	4,232.9	5,158.0	4,086.8	48.4	51.2	-11.54	2,859.3	832.0	226.4	155.8	3.209		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program:												Offset Well Error:	0.0 usft
Sec 8, T6S, R94W - NR 414-4 - Wellbore #1 - Plan #3													
0-OWSG (REV5) MWD HDGM Standard													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
5,300.0	4,310.0	5,258.0	4,162.2	49.5	52.3	-11.76	2,922.3	850.5	229.1	157.2	3.186		
5,400.0	4,387.1	5,358.0	4,237.6	50.5	53.4	-11.97	2,985.3	869.0	231.9	158.6	3.164		
5,500.0	4,465.4	5,457.8	4,313.0	51.6	54.5	-12.09	3,048.2	887.5	236.7	162.0	3.171		
5,600.0	4,545.9	5,564.1	4,393.8	52.6	55.7	-12.08	3,114.3	907.0	243.9	167.8	3.202		
5,700.0	4,628.4	5,673.0	4,479.2	53.5	56.8	-12.07	3,179.2	926.0	251.0	173.3	3.229		
5,800.0	4,712.9	5,782.3	4,567.4	54.4	57.9	-12.06	3,241.2	944.3	257.8	178.6	3.256		
5,900.0	4,799.1	5,891.9	4,658.2	55.3	58.9	-12.05	3,300.0	961.5	264.2	183.7	3.282		
6,000.0	4,887.1	6,001.8	4,751.6	56.1	59.9	-12.04	3,355.5	977.9	270.3	188.6	3.309		
6,100.0	4,976.7	6,112.0	4,847.3	56.9	60.8	-12.03	3,407.8	993.2	276.0	193.3	3.336		
6,200.0	5,067.8	6,222.4	4,945.3	57.5	61.7	-12.02	3,456.5	1,007.6	281.3	197.7	3.364		
6,300.0	5,160.2	6,333.0	5,045.4	58.2	62.5	-12.01	3,501.7	1,020.9	286.3	201.9	3.392		
6,400.0	5,253.9	6,443.9	5,147.5	58.8	63.2	-12.00	3,543.2	1,033.1	290.9	205.9	3.421		
6,500.0	5,348.8	6,554.9	5,251.3	59.3	63.9	-11.99	3,581.0	1,044.2	295.1	209.6	3.451		
6,600.0	5,444.8	6,666.2	5,356.8	59.8	64.5	-11.98	3,615.0	1,054.2	298.9	213.1	3.483		
6,700.0	5,541.6	6,777.6	5,463.7	60.2	65.0	-11.97	3,645.0	1,063.0	302.3	216.3	3.515		
6,800.0	5,639.3	6,889.2	5,572.0	60.6	65.5	-11.96	3,671.1	1,070.7	305.3	219.3	3.549		
6,900.0	5,737.6	7,000.9	5,681.3	60.9	65.9	-11.95	3,693.1	1,077.1	307.9	222.0	3.585		
7,000.0	5,836.6	7,112.7	5,791.5	61.1	66.2	-11.94	3,711.0	1,082.4	310.1	224.5	3.624		
7,100.0	5,935.9	7,224.7	5,902.5	61.3	66.4	-11.93	3,724.8	1,086.5	311.8	226.7	3.665		
7,200.0	6,035.6	7,336.7	6,014.1	61.5	66.6	-11.91	3,734.4	1,089.3	313.2	228.7	3.709		
7,300.0	6,135.6	7,448.7	6,126.0	61.5	66.7	-11.90	3,739.9	1,090.9	314.1	230.5	3.759		
7,400.0	6,235.5	7,558.3	6,235.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.9	3.810		
7,500.0	6,335.5	7,658.3	6,335.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.9	3.808		
7,600.0	6,435.5	7,758.3	6,435.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.8	3.806		
7,700.0	6,535.5	7,858.3	6,535.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.8	3.803		
7,800.0	6,635.5	7,958.3	6,635.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.7	3.801		
7,900.0	6,735.5	8,058.3	6,735.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.7	3.799		
8,000.0	6,835.5	8,158.3	6,835.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.6	3.796		
8,100.0	6,935.5	8,258.3	6,935.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.6	3.794		
8,200.0	7,035.5	8,358.3	7,035.5	61.6	66.8	5.71	3,741.2	1,091.3	314.4	231.5	3.791		
8,300.0	7,135.5	8,458.3	7,135.5	61.7	66.8	5.71	3,741.2	1,091.3	314.4	231.4	3.789		
8,400.0	7,235.5	8,558.3	7,235.5	61.7	66.8	5.71	3,741.2	1,091.3	314.4	231.4	3.786		
8,500.0	7,335.5	8,658.3	7,335.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.3	3.784		
8,600.0	7,435.5	8,758.3	7,435.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.3	3.781		
8,700.0	7,535.5	8,858.3	7,535.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.2	3.778		
8,800.0	7,635.5	8,958.3	7,635.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.2	3.776		
8,900.0	7,735.5	9,058.3	7,735.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.1	3.773		
9,000.0	7,835.5	9,158.3	7,835.5	61.7	66.9	5.71	3,741.2	1,091.3	314.4	231.1	3.771		
9,100.0	7,935.5	9,258.3	7,935.5	61.8	66.9	5.71	3,741.2	1,091.3	314.4	231.0	3.768		
9,200.0	8,035.5	9,358.3	8,035.5	61.8	66.9	5.71	3,741.2	1,091.3	314.4	230.9	3.766		
9,300.0	8,135.5	9,458.3	8,135.5	61.8	66.9	5.71	3,741.2	1,091.3	314.4	230.9	3.763		
9,400.0	8,235.5	9,558.3	8,235.5	61.8	66.9	5.71	3,741.2	1,091.3	314.4	230.8	3.760		
9,500.0	8,335.5	9,658.3	8,335.5	61.8	67.0	5.71	3,741.2	1,091.3	314.4	230.8	3.758		
9,600.0	8,435.5	9,758.3	8,435.5	61.8	67.0	5.71	3,741.2	1,091.3	314.4	230.7	3.755		
9,700.0	8,535.5	9,858.3	8,535.5	61.8	67.0	5.71	3,741.2	1,091.3	314.4	230.7	3.753		
9,800.0	8,635.5	9,958.3	8,635.5	61.8	67.0	5.71	3,741.2	1,091.3	314.4	230.6	3.750		
9,900.0	8,735.5	10,058.3	8,735.5	61.9	67.0	5.71	3,741.2	1,091.3	314.4	230.5	3.747		
10,000.0	8,835.5	10,158.3	8,835.5	61.9	67.0	5.71	3,741.2	1,091.3	314.4	230.5	3.745		
10,100.0	8,935.5	10,258.3	8,935.5	61.9	67.0	5.71	3,741.2	1,091.3	314.4	230.4	3.742		
10,200.0	9,035.5	10,358.3	9,035.5	61.9	67.0	5.71	3,741.2	1,091.3	314.4	230.4	3.739		
10,262.5	9,098.0	10,420.8	9,098.0	61.9	67.0	5.71	3,741.2	1,091.3	314.4	230.3	3.738		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - RWF 21-8 - Wellbore #1 - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
300.0	299.9	300.9	300.7	1.7	1.9	146.84	-11.0	4.0	16.4	12.9	4.715		
383.5	383.3	384.4	384.1	2.0	2.2	161.76	-6.7	4.4	16.4	12.3	3.978		
400.0	399.7	400.9	400.6	2.0	2.3	165.10	-5.8	4.4	15.9	11.7	3.764	CC	
500.0	499.2	501.4	500.8	3.5	3.1	-167.42	2.0	2.5	18.1	11.6	2.764	ES, SF	
600.0	597.9	601.7	600.2	4.5	4.6	-156.69	13.6	-3.0	24.2	15.6	2.826		
700.0	695.3	701.3	698.3	5.6	5.9	-151.80	28.9	-12.0	35.6	25.9	3.670		
800.0	791.0	799.8	794.1	7.2	7.0	-146.29	47.6	-24.3	53.7	42.7	4.896		

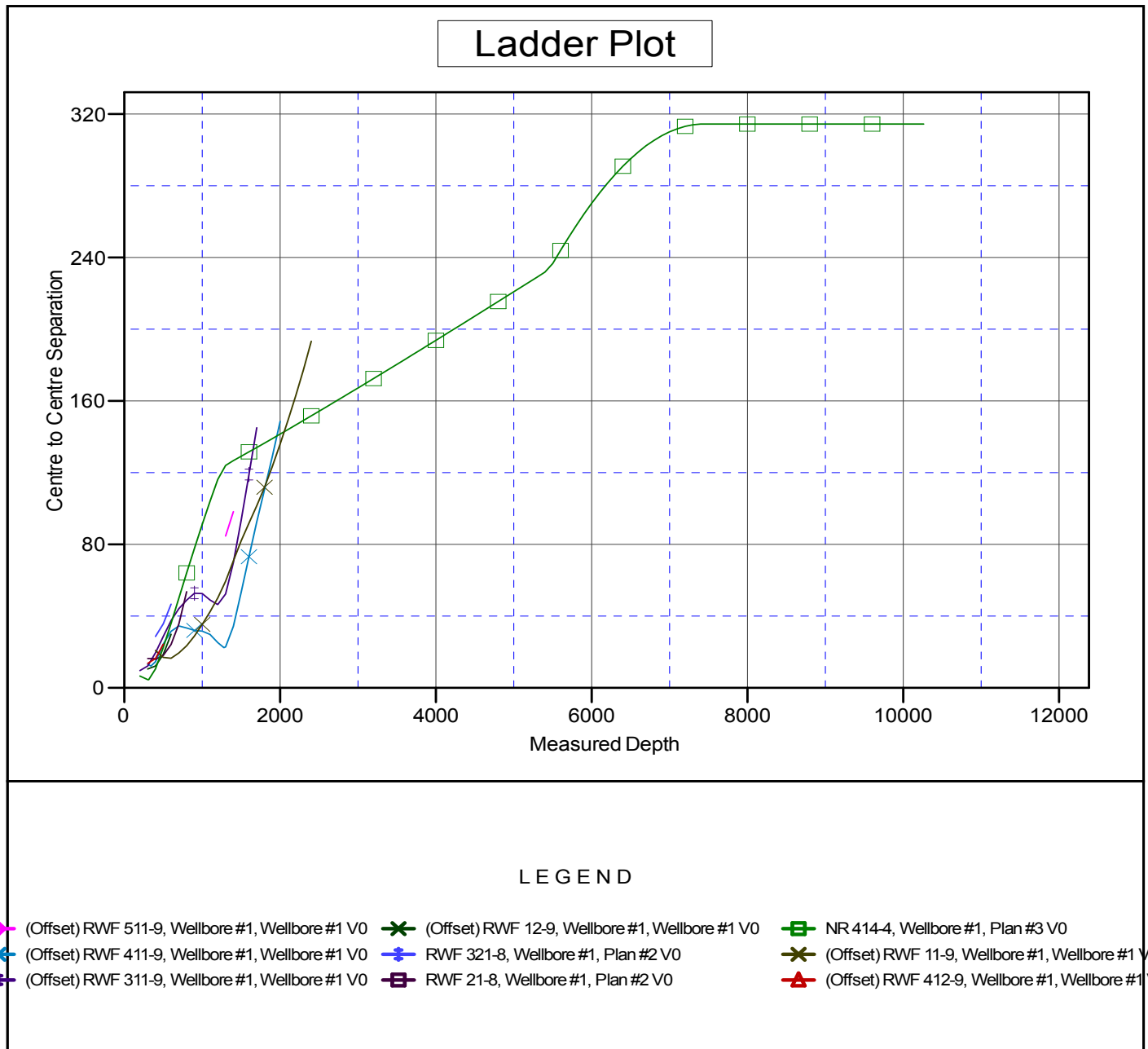
Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design Sec 8, T6S, R94W - RWF 321-8 - Wellbore #1 - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-OWSG (REV5) MWD HDGM Standard												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
400.0	399.7	400.3	400.1	2.0	3.2	175.35	-17.7	-1.7	28.7	23.7	5.744	CC, ES	
500.0	499.2	500.7	500.4	3.5	4.7	-160.83	-13.9	-5.7	35.7	27.8	4.485	SF	
600.0	597.9	600.8	599.9	4.5	4.9	-154.44	-6.4	-13.4	46.7	37.4	5.050		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=24' @ 6003.6usft (H&P #318)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: RWF 514-4
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.52°



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well RWF 514-4
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 6003.6usft (H&P #318)
Reference Site:	Sec 8, T6S, R94W	MD Reference:	KB=24' @ 6003.6usft (H&P #318)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	RWF 514-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1 Single User Db
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=24' @ 6003.6usft (H&P #318)

Offset Depths are relative to Offset Datum

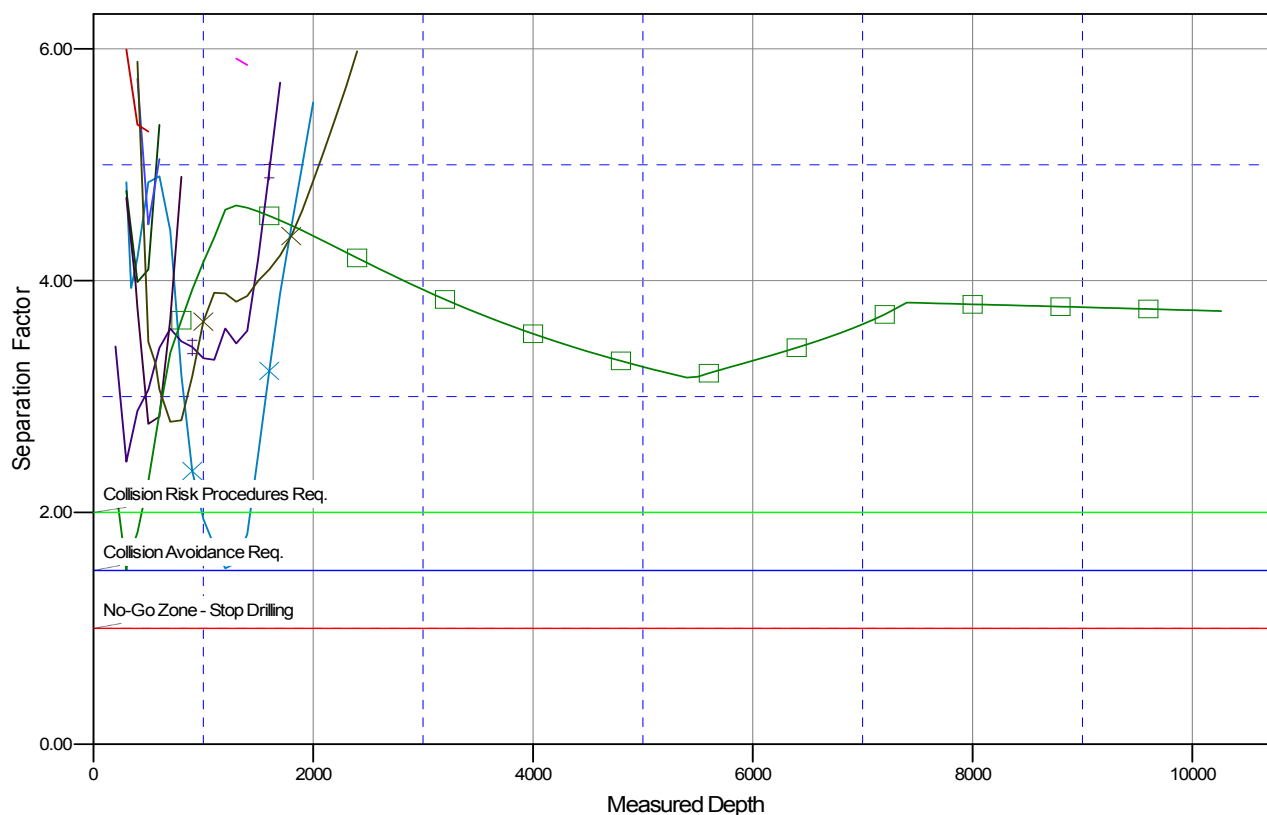
Central Meridian is -105.500000

Coordinates are relative to: RWF 514-4

Coordinate System is US State Plane 1983, Colorado Central Zone

Grid Convergence at Surface is: -1.52°

Separation Factor Plot



LEGEND

- (Offset) RWF 511-9, Wellbore #1, Wellbore #1 V0
- (Offset) RWF 12-9, Wellbore #1, Wellbore #1 V0
- NR 414-4, Wellbore #1, Plan #3 V0
- (Offset) RWF 411-9, Wellbore #1, Wellbore #1 V0
- RWF 321-8, Wellbore #1, Plan #2 V0
- (Offset) RWF 11-9, Wellbore #1, Wellbore #1 V0
- (Offset) RWF 311-9, Wellbore #1, Wellbore #1 V0
- RWF 21-8, Wellbore #1, Plan #2 V0
- (Offset) RWF 412-9, Wellbore #1, Wellbore #1 V0