Honea 19-05 Pad
WMC 344-24-794
Well WMC 344-24-794 - Slot WMC 344-24-794, True North
Surveys

Terra Energy Partners, LLP
WMC 344-24-794
Garfield County, CO (Nad 83)
KB @ 8593.0ft

PROJECT DETAILS: Garfield County, CO (Nad 83)

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

System Datum: Mean Sea Level

WELL DETAILS: WMC 344-24-794

Ground Level: 8563.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1588561.791	2343951.000	39.426341	-107.822717	WMC 344-24-794

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7488.0	-2609.4	-1634.2	1585995.000	2342250.600	39.419177	-107.828501
PBHL	10763.0	-2609.4	-1634.2	1585995.000	2342250.600	39.419177	-107.828501

SLOTS

Slot Name	+N/-S	+E/-W	Northing	Easting
HONEA 19-05B	59.7	60.5	1588619.891	2344013.000
Honea 24-01C	45.7	46.4	1588606.291	2343998.600
HONEA 24-09C	31.6	32.0	1588592.591	2343983.800
WMC 11-19-793	65.0	51.8	1588625.491	2344004.400
WMC 311-19-793	59.8	46.4	1588620.391	2343998.900
WMC 32-19-793	80.9	67.8	1588640.891	2344020.800
WMC 33-19-793	68.5	69.5	1588628.491	2344022.200
WMC 332-19-793	75.6	62.4	1588635.791	2344015.300
WMC 333-19-793	52.7	53.4	1588613.091	2344005.700
WMC 343-24-794	22.9	9.0	1588584.491	2343960.600
WMC 344-24-794	0.0	0.0	1588561.791	2343951.000
WMC 411-19-793	54.6	41.0	1588615.291	2343993.400
WMC 412-19-793	49.2	35.7	1588610.091	2343987.900
WMC 432-19-793	70.3	57.0	1588630.591	2344009.800
WMC 433-19-793	44.0	30.4	1588604.991	2343982.500
WMC 44-24-794	12.4	-1.7	1588574.191	2343949.600
WMC 444-24-794	5.2	5.4	1588566.891	2343956.500
WMC 512-19-793	17.7	3.6	1588579.391	2343955.100
WMC 532-19-793	73.7	74.7	1588633.591	2344027.600
WMC 533-19-793	36.9	37.4	1588597.691	2343989.300
WMC 543-24-794	7.1	-7.0	1588569.091	2343944.200

Azimuths to True North
Magnetic North: 8.85°

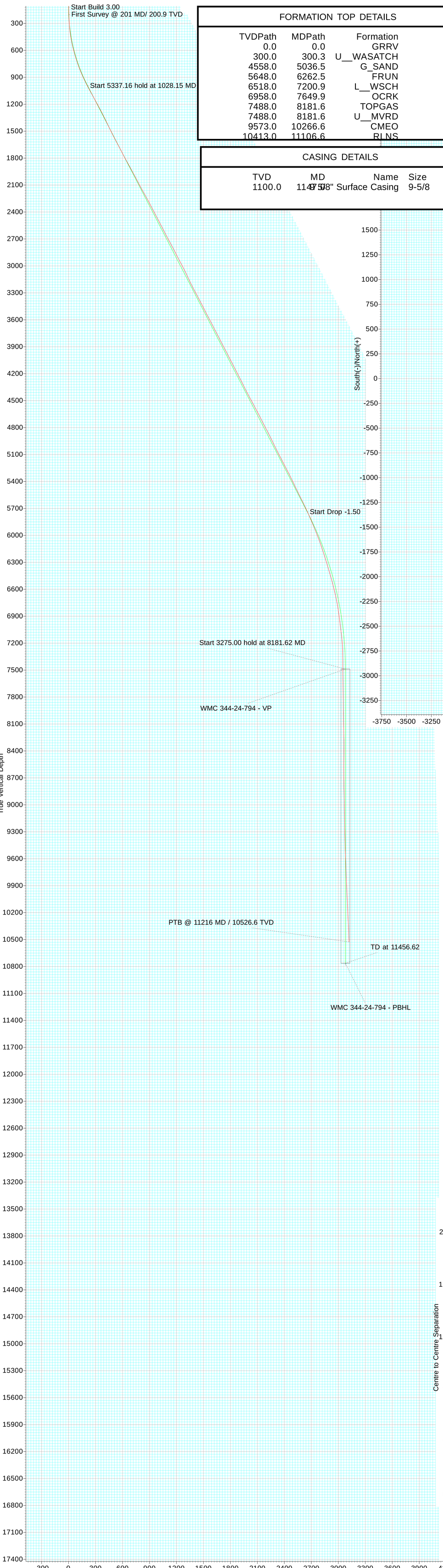
Magnetic Field
Strength: 51015.2snT
Dip Angle: 65.35°
Date: 12/23/2022
Model: HDGM

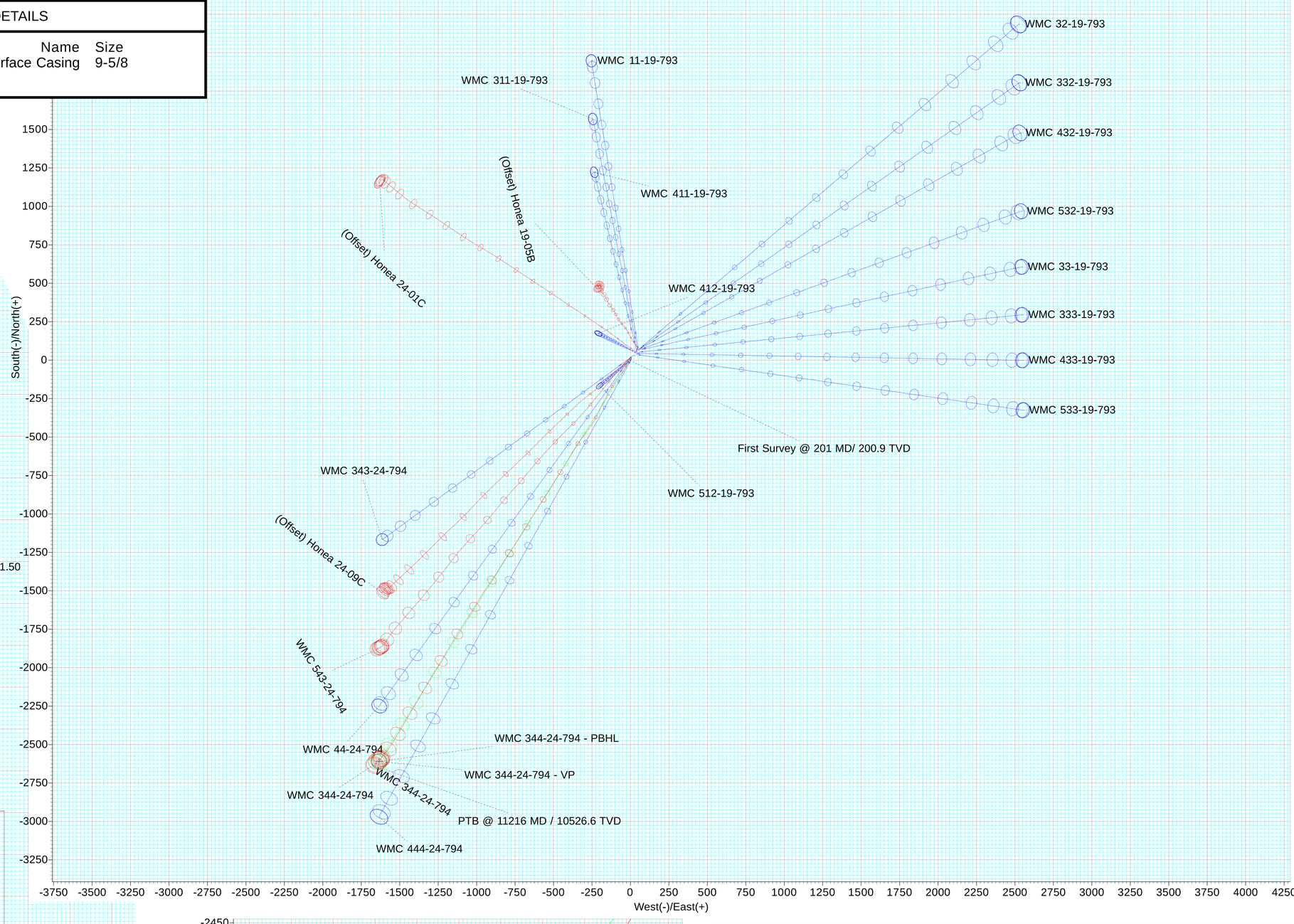
FORMATION TOP DETAILS

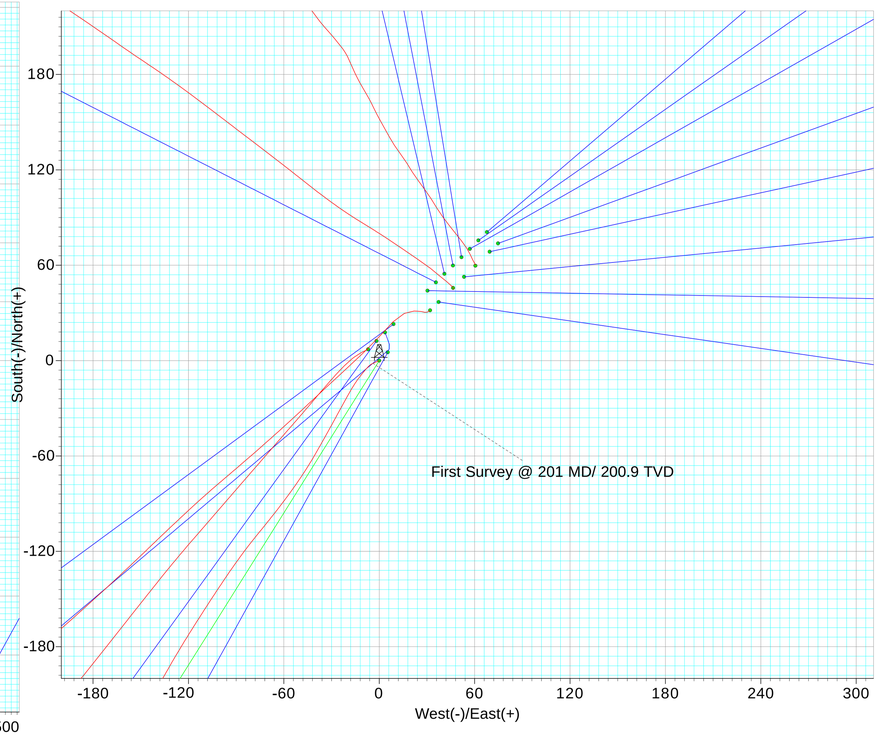
TVDPath	MDPath	Formation
0.0	0.0	GRRV
300.0	300.3	U__WASATCH
4558.0	5036.5	G_SAND
5648.0	6262.5	FRUN
6518.0	7200.9	L__WSCH
6958.0	7649.9	OCRK
7488.0	8181.6	TOPGAS
7488.0	8181.6	U__MVRD
9573.0	10266.6	CMEO
10413.0	11106.6	RLNS

CASING DETAILS

TVD	MD	Name	Size
1100.0	1149.0	9 5/8" Surface Casing	9-5/8







NATIVE NAVIGATION

DIRECTIONAL DRILLING SPECIALISTS

Directional Survey Certification

Survey Company: Native Navigation **Survey Company Job** 23012692

Well Name WMC 344-24-794 **A.P.I.#** 05-045-24537 **Operator:** Terra Energy Partners

Latitude: 39.426341 **Longitude:** -107.822717 **County, State:** Garfield County, CO

Legal Description Sec 19 T7S R93W

Final Report 1/25/2023 **Date of First Survey:** 1/15/2023 **Date of Last Survey:** 1/21/2023

Datum: NAD 83 **Survey MD From:** 201.00 **To:** 11154 FT. **Tool Type:** MWD + HRGM

Bit to Sensor: 62 FT. **Rig (Company & Number):** H&P 329 **RKB Height:** 30.00

Ground Elevation: 8563.00 **Northings:** 1588561.791 **Eastings:** 2343951.000

Surveyor Jeremy Harwood **Depth of Final Projection:** 11216 FT.

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Native Navigation. I am authorized and qualified to review the data, calculations and this report, and that the report represents a true and correct Directional Survey of this well, based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using the minimum curvature method.

Signature	Title	Company	Date
	Well Planner	Native Navigation	1/25/23

Terra Energy Partners, LLP

Garfield County, CO (Nad 83)
Honea 19-05 Pad
WMC 344-24-794 - Slot WMC 344-24-794
Wellbore #1

Design: Surveys

Survey Certification Report

25 January, 2023

NATIVE NAVIGATION
DIRECTIONAL DRILLING SPECIALISTS

Survey Certification Report

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 344-24-794 - Slot WMC 344-24-794
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 344-24-794	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys	**Database:**	NN

Project Garfield County, CO (Nad 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site Honea 19-05 Pad

Site Position:		**Northing:**	1,588,561.791 usft	**Latitude:**	39.426341
From:	Map	**Easting:**	2,343,951.000 usft	**Longitude:**	-107.822717
Position Uncertainty:	0.0 ft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	-1.46 °

Well WMC 344-24-794 - Slot WMC 344-24-794

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,588,561.791 usft	**Latitude:**	39.426341
	+E/-W	0.0 ft	**Easting:**	2,343,951.000 usft	**Longitude:**	-107.822717
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	0.0 ft	**Ground Level:**	8,563.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/23/2022	8.85	65.35	51,015

Design Surveys

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	212.27

Survey Program **Date** 1/21/2023

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
201.0	11,216.0	Surveys (Wellbore #1)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
201.0	2.46	246.42	200.9	-1.7	-4.0	4.3	246.42
First Survey @ 201 MD/ 200.9 TVD							
295.0	3.60	222.07	294.8	-4.7	-7.8	9.1	238.74
386.0	6.42	217.41	385.5	-10.9	-12.8	16.8	229.59
478.0	9.89	208.98	476.5	-21.9	-19.7	29.5	222.05
570.0	13.84	208.54	566.5	-38.5	-28.8	48.1	216.85
661.0	16.30	209.86	654.4	-59.1	-40.4	71.6	214.34
753.0	18.72	215.92	742.1	-82.3	-55.5	99.2	214.00
844.0	22.54	219.44	827.3	-107.6	-75.1	131.2	214.93
936.0	24.92	213.90	911.5	-137.3	-97.2	168.2	215.29
1,027.0	27.47	212.14	993.2	-171.0	-119.0	208.3	214.84

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 344-24-794 - Slot WMC 344-24-794
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 344-24-794	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys	**Database:**	NN

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
1,105.0	28.70	208.89	1,062.0	-202.6	-137.6	244.9	214.19
1,242.0	28.74	206.60	1,182.1	-260.9	-168.3	310.4	212.83
1,333.0	27.99	206.43	1,262.2	-299.6	-187.6	353.4	212.06
1,423.0	26.41	206.61	1,342.2	-336.4	-205.9	394.4	211.48
1,514.0	25.75	208.01	1,424.0	-371.9	-224.3	434.3	211.09
1,604.0	26.46	211.70	1,504.8	-406.2	-244.0	473.9	210.99
1,695.0	27.47	215.57	1,585.9	-440.6	-266.9	515.1	211.21
1,785.0	28.30	216.89	1,665.5	-474.5	-291.8	557.0	211.59
1,876.0	27.29	216.89	1,746.0	-508.4	-317.2	599.3	211.96
1,967.0	28.78	213.20	1,826.3	-543.5	-341.8	642.0	212.16
2,059.0	28.83	212.23	1,906.9	-580.8	-365.7	686.3	212.20
2,150.0	28.34	210.73	1,986.8	-617.9	-388.5	729.8	212.16
2,240.0	27.25	210.73	2,066.4	-654.0	-409.9	771.8	212.08
2,331.0	29.05	211.88	2,146.7	-690.6	-432.2	814.7	212.04
2,421.0	28.83	211.26	2,225.4	-727.7	-455.0	858.3	212.02
2,512.0	28.08	211.17	2,305.4	-764.8	-477.5	901.6	211.98
2,602.0	27.03	210.82	2,385.2	-800.5	-498.9	943.3	211.93
2,693.0	28.04	213.99	2,465.9	-836.0	-521.5	985.3	211.96
2,783.0	27.29	213.20	2,545.6	-870.8	-544.6	1,027.1	212.02
2,874.0	26.76	213.11	2,626.7	-905.4	-567.2	1,068.4	212.07
2,964.0	28.65	212.23	2,706.4	-940.6	-589.8	1,110.3	212.09
3,056.0	28.13	211.79	2,787.3	-977.7	-613.0	1,154.0	212.09
3,146.0	26.30	211.00	2,867.3	-1,012.9	-634.4	1,195.2	212.06
3,236.0	28.43	211.44	2,947.3	-1,048.2	-655.9	1,236.5	212.03
3,327.0	27.07	211.26	3,027.8	-1,084.4	-677.9	1,278.9	212.01
3,418.0	24.96	211.70	3,109.6	-1,118.5	-698.8	1,318.8	212.00
3,508.0	26.02	212.76	3,190.8	-1,151.2	-719.4	1,357.5	212.00
3,599.0	27.82	213.20	3,271.9	-1,185.8	-741.8	1,398.7	212.03
3,689.0	27.95	213.99	3,351.5	-1,220.8	-765.1	1,440.8	212.08
3,780.0	27.38	212.93	3,432.1	-1,256.1	-788.4	1,483.0	212.12
3,870.0	26.46	213.99	3,512.3	-1,290.1	-810.9	1,523.8	212.15
3,961.0	28.39	211.35	3,593.1	-1,325.4	-833.5	1,565.7	212.16
4,051.0	26.72	211.17	3,672.9	-1,361.0	-855.1	1,607.3	212.14
4,142.0	27.82	213.37	3,753.8	-1,396.2	-877.4	1,649.0	212.15
4,232.0	26.76	214.34	3,833.8	-1,430.5	-900.3	1,690.2	212.19
4,322.0	27.99	214.69	3,913.7	-1,464.6	-923.8	1,731.6	212.24
4,413.0	26.89	214.34	3,994.4	-1,499.1	-947.6	1,773.5	212.30
4,503.0	27.47	211.00	4,074.5	-1,533.7	-969.7	1,814.6	212.30
4,594.0	26.85	210.30	4,155.5	-1,569.4	-990.9	1,856.1	212.27
4,684.0	27.55	212.32	4,235.5	-1,604.6	-1,012.3	1,897.2	212.25
4,775.0	25.93	211.88	4,316.8	-1,639.3	-1,034.1	1,938.2	212.24
4,865.0	27.25	213.81	4,397.3	-1,673.1	-1,055.9	1,978.4	212.26
4,956.0	28.65	212.32	4,477.7	-1,708.8	-1,079.2	2,021.1	212.27
5,046.0	27.64	213.28	4,557.0	-1,744.5	-1,102.2	2,063.5	212.28

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 344-24-794 - Slot WMC 344-24-794
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 344-24-794	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys	**Database:**	NN

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
5,137.0	27.91	211.70	4,637.5	-1,780.3	-1,124.9	2,105.9	212.29
5,227.0	26.37	212.05	4,717.6	-1,815.2	-1,146.6	2,147.0	212.28
5,318.0	27.95	210.12	4,798.6	-1,850.7	-1,168.0	2,188.5	212.26
5,408.0	26.76	210.21	4,878.5	-1,886.5	-1,188.8	2,229.8	212.22
5,499.0	25.79	210.38	4,960.1	-1,921.3	-1,209.1	2,270.1	212.18
5,589.0	26.41	210.73	5,040.9	-1,955.4	-1,229.3	2,309.7	212.16
5,680.0	27.82	212.05	5,121.9	-1,990.8	-1,250.9	2,351.1	212.14
5,770.0	26.85	212.32	5,201.9	-2,025.7	-1,272.9	2,392.5	212.14
5,861.0	27.60	210.91	5,282.8	-2,061.2	-1,294.7	2,434.1	212.13
5,951.0	26.28	209.41	5,363.0	-2,096.4	-1,315.2	2,474.8	212.10
6,042.0	25.31	208.89	5,445.0	-2,131.0	-1,334.5	2,514.4	212.06
6,133.0	26.37	211.00	5,526.9	-2,165.4	-1,354.3	2,554.0	212.02
6,223.0	26.50	211.26	5,607.5	-2,199.7	-1,375.0	2,594.1	212.01
6,313.0	25.18	211.09	5,688.5	-2,233.2	-1,395.3	2,633.3	212.00
6,404.0	23.82	210.47	5,771.3	-2,265.7	-1,414.6	2,671.0	211.98
6,495.0	23.16	210.65	5,854.7	-2,296.9	-1,433.1	2,707.3	211.96
6,585.0	21.93	210.03	5,937.8	-2,326.7	-1,450.5	2,741.8	211.94
6,676.0	21.23	210.12	6,022.5	-2,355.6	-1,467.3	2,775.2	211.92
6,766.0	18.90	210.70	6,107.0	-2,382.3	-1,482.9	2,806.1	211.90
6,857.0	18.02	210.56	6,193.3	-2,407.1	-1,497.6	2,834.9	211.89
6,947.0	17.18	212.23	6,279.1	-2,430.3	-1,511.8	2,862.1	211.88
7,038.0	16.44	210.47	6,366.2	-2,452.8	-1,525.5	2,888.4	211.88
7,128.0	16.17	209.77	6,452.6	-2,474.6	-1,538.1	2,913.7	211.86
7,218.0	14.55	213.28	6,539.4	-2,494.9	-1,550.6	2,937.5	211.86
7,309.0	13.45	215.31	6,627.7	-2,513.1	-1,562.9	2,959.5	211.88
7,399.0	11.34	216.89	6,715.6	-2,528.8	-1,574.3	2,978.8	211.90
7,490.0	9.36	212.76	6,805.1	-2,542.1	-1,583.7	2,995.1	211.92
7,580.0	7.43	220.75	6,894.1	-2,552.7	-1,591.4	3,008.2	211.94
7,671.0	7.12	221.98	6,984.4	-2,561.4	-1,599.1	3,019.5	211.98
7,761.0	7.38	221.89	7,073.7	-2,569.8	-1,606.7	3,030.7	212.01
7,852.0	5.19	214.78	7,164.1	-2,577.5	-1,612.9	3,040.6	212.04
7,942.0	2.81	208.27	7,253.9	-2,582.8	-1,616.3	3,046.9	212.04
8,033.0	0.70	212.32	7,344.8	-2,585.3	-1,617.6	3,049.6	212.03
8,124.0	0.40	242.55	7,435.8	-2,585.9	-1,618.2	3,050.5	212.04
8,214.0	0.48	181.29	7,525.8	-2,586.4	-1,618.5	3,051.1	212.04
8,304.0	0.75	235.17	7,615.8	-2,587.1	-1,619.0	3,051.9	212.04
8,395.0	0.75	192.27	7,706.8	-2,588.0	-1,619.6	3,053.0	212.04
8,485.0	0.75	208.80	7,796.8	-2,589.1	-1,620.0	3,054.2	212.03
8,576.0	0.66	183.14	7,887.8	-2,590.2	-1,620.3	3,055.2	212.03
8,667.0	0.79	195.18	7,978.8	-2,591.3	-1,620.5	3,056.3	212.02
8,758.0	1.14	174.44	8,069.8	-2,592.8	-1,620.6	3,057.6	212.01
8,848.0	1.32	201.86	8,159.8	-2,594.7	-1,620.9	3,059.3	211.99
8,939.0	1.36	191.57	8,250.7	-2,596.7	-1,621.5	3,061.4	211.98
9,029.0	0.83	308.56	8,340.7	-2,597.3	-1,622.2	3,062.3	211.99
9,120.0	1.19	331.41	8,431.7	-2,596.1	-1,623.2	3,061.8	212.02

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 344-24-794 - Slot WMC 344-24-794
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 344-24-794	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys	**Database:**	NN

Survey

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
9,211.0	0.75	328.24	8,522.7	-2,594.8	-1,624.0	3,061.0	212.04
9,301.0	0.13	250.64	8,612.7	-2,594.3	-1,624.4	3,060.9	212.05
9,392.0	0.66	245.28	8,703.7	-2,594.5	-1,624.9	3,061.4	212.06
9,482.0	1.23	264.26	8,793.7	-2,594.8	-1,626.4	3,062.4	212.08
9,572.0	1.71	240.00	8,883.7	-2,595.6	-1,628.5	3,064.2	212.10
9,663.0	1.45	268.30	8,974.6	-2,596.3	-1,630.8	3,066.0	212.13
9,755.0	1.27	252.48	9,066.6	-2,596.7	-1,633.0	3,067.4	212.16
9,845.0	1.36	251.25	9,156.6	-2,597.3	-1,634.9	3,069.0	212.19
9,936.0	1.27	252.75	9,247.6	-2,598.0	-1,636.9	3,070.6	212.21
10,026.0	1.41	233.15	9,337.5	-2,598.9	-1,638.7	3,072.4	212.23
10,117.0	1.80	210.21	9,428.5	-2,600.8	-1,640.4	3,074.9	212.24
10,207.0	1.85	211.79	9,518.5	-2,603.3	-1,641.8	3,077.8	212.24
10,298.0	2.02	215.48	9,609.4	-2,605.8	-1,643.5	3,080.8	212.24
10,388.0	1.98	218.64	9,699.3	-2,608.3	-1,645.4	3,084.0	212.25
10,479.0	2.24	220.75	9,790.3	-2,610.9	-1,647.6	3,087.3	212.25
10,569.0	2.72	215.83	9,880.2	-2,614.0	-1,650.0	3,091.2	212.26
10,660.0	2.64	210.21	9,971.1	-2,617.5	-1,652.3	3,095.4	212.26
10,751.0	2.64	205.73	10,062.0	-2,621.2	-1,654.3	3,099.6	212.26
10,841.0	2.55	216.89	10,151.9	-2,624.7	-1,656.4	3,103.6	212.25
10,932.0	2.29	217.50	10,242.8	-2,627.8	-1,658.7	3,107.5	212.26
11,022.0	2.86	212.67	10,332.7	-2,631.1	-1,661.0	3,111.5	212.26
11,113.0	2.15	216.62	10,423.7	-2,634.4	-1,663.2	3,115.5	212.27
11,154.0	2.29	210.21	10,464.6	-2,635.7	-1,664.1	3,117.1	212.27
11,216.0	2.29	210.21	10,526.6	-2,637.8	-1,665.3	3,119.5	212.27

PTB @ 11216 MD / 10526.6 TVD

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
201.0	200.9	-1.7	-4.0	First Survey @ 201 MD/ 200.9 TVD
11,216.0	10,526.6	-2,637.8	-1,665.3	PTB @ 11216 MD / 10526.6 TVD

Checked By: _____ Approved By: _____ Date: _____