WMC 24-17 Pad
WMC 331-20
Well WMC 331-20 - Slot WMC 331-20, True North Surveys

Terra Energy Partners, LLP
WMC 331-20
Garfield County, CO (Nad 83)
KB=30' @ 8898.0ft

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 331-20

Ground Level: 8868.0

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1593019.300 | 2350652.600 | 39.439043 | -107.799400 | WMC 331-20 |

## DESIGN TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| KMV | 8838.0 | -617.8 | 1344.8 | 1592367.700 | 2351981.300 | 39.437347 | -107.794638 |
| PBHL | 10988.0 | -617.8 | 1344.8 | 1592367.700 | 2351981.300 | 39.437347 | -107.794638 |

## ANNOTATIONS

| TVD | MD | Inc | Azi | +N/-S | +E/-W | VSect | Departure | Annotation |
|---|---|---|---|---|---|---|---|---|
| 297.7 | 298.0 | 4.30 | 55.01 | 6.4 | 9.2 | 5.3 | 11.2 | First Survey @ 298 MD/ 297.7 TVD |
| 10940.6 | 1107.0 | 3.47 | 229.91 | -658.1 | 1315.6 | 1471.0 | 1565.8 | PTB @ 11075 MD / 10940.6 TVD |

## SLOTS

| Slot Name | +N/-S | +E/-W | Northing | Easting |
|---|---|---|---|---|
| WMC 11-20 | 21.3 | -56.2 | 1593042.000 | 2350597.000 |
| WMC 12-20 | 15.9 | -42.1 | 1593036.300 | 2350610.900 |
| WMC 13-20 | 10.6 | -28.1 | 1593030.600 | 2350624.800 |
| WMC 311-20 | 11.9 | -59.7 | 1593032.700 | 2350593.200 |
| WMC 312-20 | 6.5 | -45.7 | 1593027.000 | 2350607.100 |
| WMC 32-20 | 8.0 | -21.1 | 1593027.800 | 2350631.700 |
| WMC 331-20 | 0.0 | 0.0 | 1593019.300 | 2350652.600 |
| WMC 33-20 | 1.3 | -31.6 | 1593021.400 | 2350621.000 |
| WMC 332-20 | -6.7 | -10.6 | 1593012.900 | 2350641.800 |
| WMC 411-20 | 18.6 | -49.1 | 1593039.100 | 2350604.000 |
| WMC 412-20 | 13.3 | -35.1 | 1593033.500 | 2350617.800 |
| WMC 431-20 | 2.6 | -7.1 | 1593022.100 | 2350645.600 |
| WMC 432-20 | -4.0 | -17.6 | 1593015.700 | 2350634.900 |
| WMC 511-20 | 9.3 | -52.7 | 1593029.900 | 2350600.200 |
| WMC 512-20 | 3.9 | -38.6 | 1593024.200 | 2350614.100 |
| WMC 531-20 | 5.3 | -14.0 | 1593025.000 | 2350638.700 |
| WMC 532-20 | -1.4 | -24.6 | 1593018.500 | 2350628.000 |

Azimuths to True North
Magnetic North: 8.87°

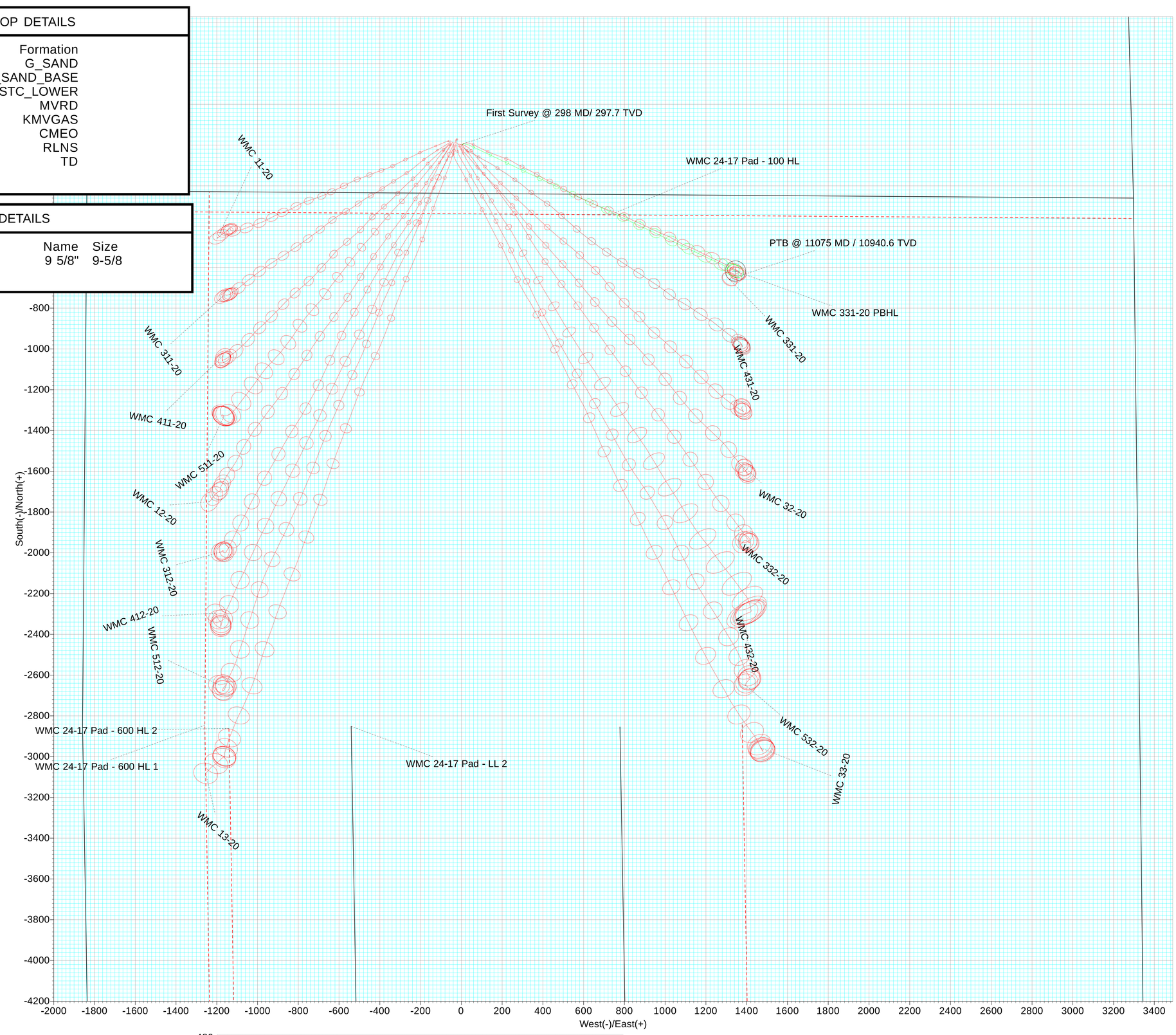
Magnetic Field
Strength: 51017.7snT
Dip Angle: 65.37°
Date: 12/19/2022
Model: HDGM

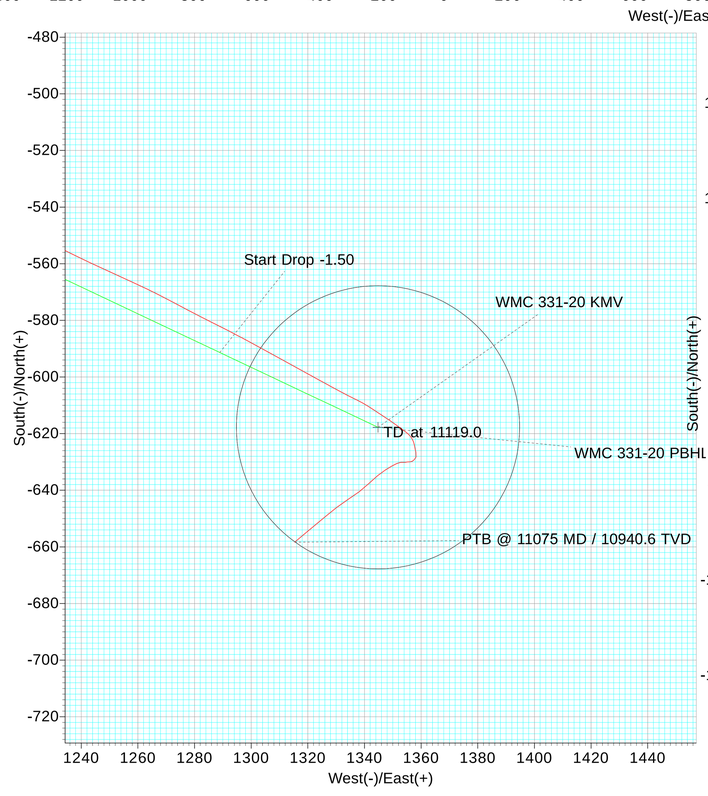
## FORMATION TOP DETAILS

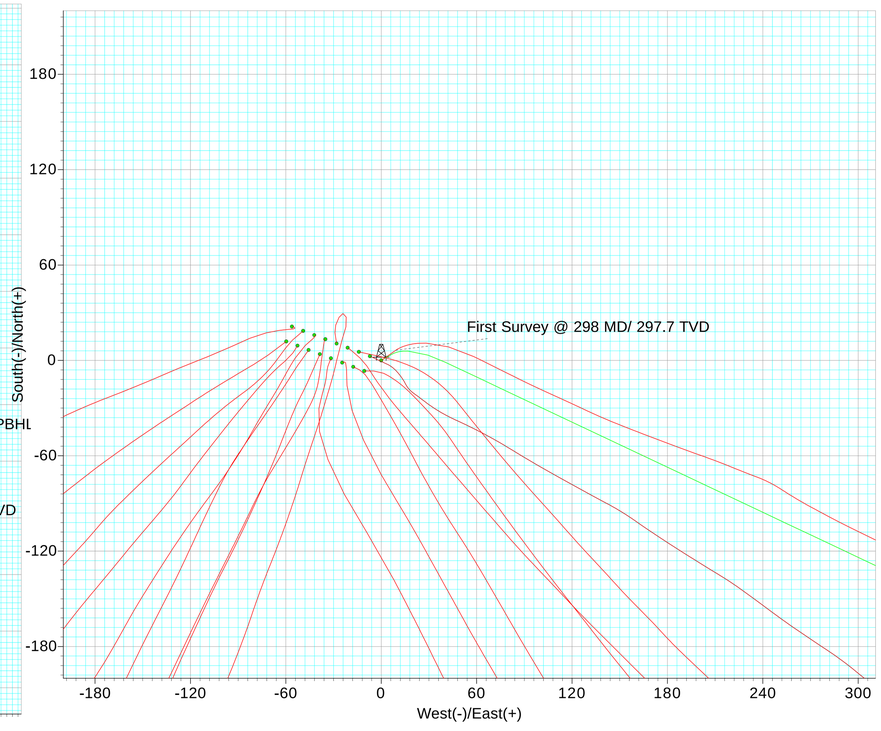
| TVDPath | MDPath | Formation |
|---|---|---|
| 4848.0 | 4920.9 | G_SAND |
| 4884.0 | 4957.5 | G_SAND_BASE |
| 6858.0 | 6964.0 | WSTC_LOWER |
| 7318.0 | 7431.5 | MVRD |
| 8838.0 | 8969.0 | KMVGAS |
| 10068.0 | 10199.0 | CMEO |
| 10838.0 | 10969.0 | RLNS |
| 10988.0 | 11119.0 | TD |

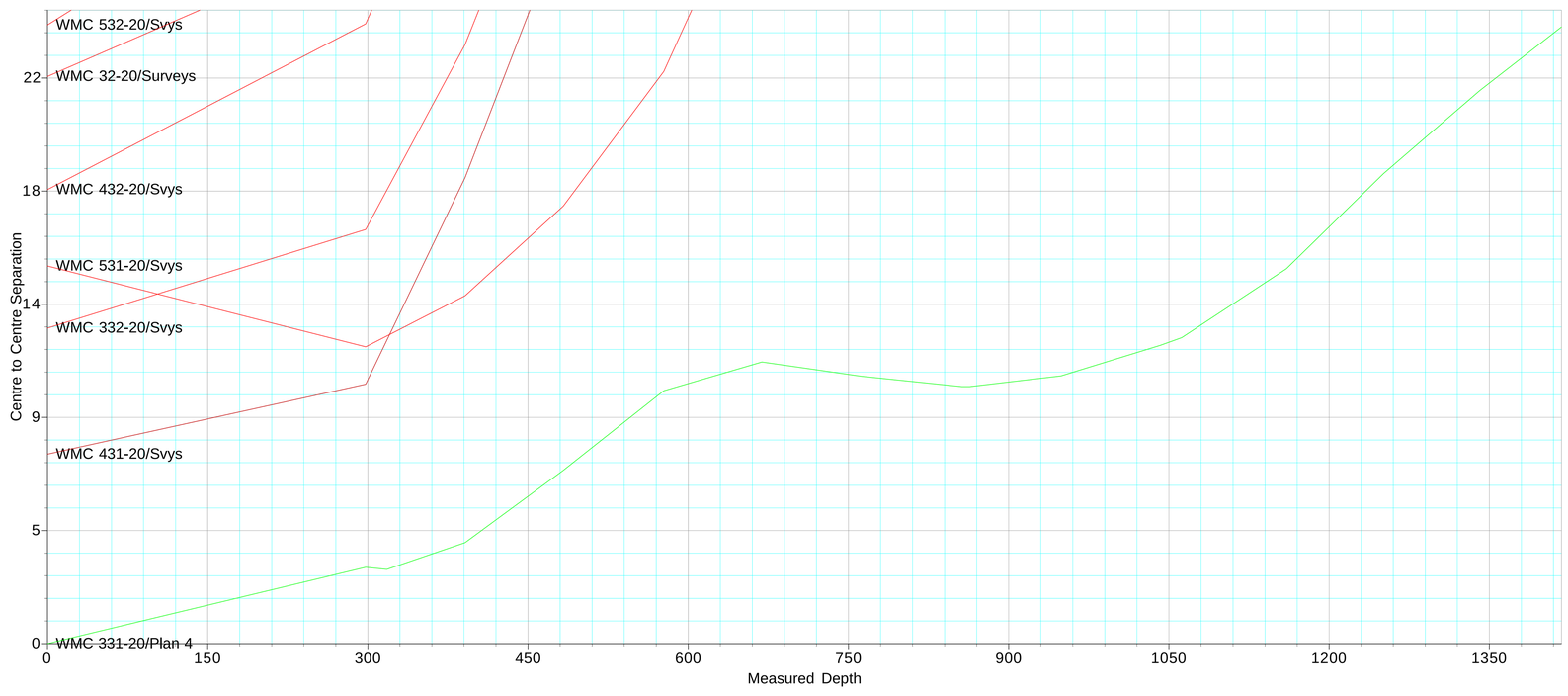
## CASING DETAILS

| TVD | MD | Name | Size |
|---|---|---|---|
| 1100.0 | 1111.3 | 9 5/8" | 9-5/8 |



NATIVE NAVIGATION

DIRECTIONAL DRILLING SPECIALISTS

# Directional Survey Certification

**Survey Company:** Native Navigation **Survey Company Job** 22122686

**Well Name** WMC 331-20 **A.P.I.#** 05-045-24500 **Operator:** Terra Energy Partners

**Latitude:** 39.439043 **Longitude:** -107.799400 **County, State:** Garfield County, CO

**Legal Description** Sec 17, T7S, R93W

**Final Report** 12/30/2022 **Date of First Survey:** 12/21/2022 **Date of Last Survey:** 12/25/2022

**Datum:** NAD 83 **Survey MD From:** 298.00 **To:** 11018 FT. **Tool Type:** MWD + HRGM

**Bit to Sensor:** 57 FT. **Rig (Company & Number):** H&P 329 **RKB Height:** 30.00

**Ground Elevation:** 8868.00 **Northings:** 1593019.300 **Eastings:** 2350652.600

**Surveyor** Jeremy Harwood **Depth of Final Projection:** 11075 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 | 12/30/22 |

# Terra Energy Partners, LLP

**Garfield County, CO (Nad 83)**
**WMC 24-17 Pad**
**WMC 331-20 - Slot WMC 331-20**
**OH**

**Survey: Surveys**

# Survey Certification Report

**20 February, 2023**

| | | | |
|---|---|---|---|
| **Company:** | Terra Energy Partners, LLP | **Local Co-ordinate Reference:** | Well WMC 331-20 - Slot WMC 331-20 |
| **Project:** | Garfield County, CO (Nad 83) | **TVD Reference:** | KB=30' @ 8898.0ft |
| **Site:** | WMC 24-17 Pad | **MD Reference:** | KB=30' @ 8898.0ft |
| **Well:** | WMC 331-20 | **North Reference:** | True |
| **Wellbore:** | OH | **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** WMC 24-17 Pad

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 1,593,032.700 usft | **Latitude:** | 39.439076 |
| **From:** | Map | **Easting:** | 2,350,593.200 usft | **Longitude:** | -107.799611 |
| **Position Uncertainty:** | 0.0 ft | **Slot Radius:** | 13-3/16" | **Grid Convergence:** | -1.45 ° |

**Well** WMC 331-20 - Slot WMC 331-20

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 ft | **Northing:** | 1,593,019.300 usft | **Latitude:** | 39.439043 |
| | **+E/-W** | 0.0 ft | **Easting:** | 2,350,652.600 usft | **Longitude:** | -107.799400 |
| **Position Uncertainty** | | 0.0 ft | **Wellhead Elevation:** | 0.0 ft | **Ground Level:** | 8,868.0 ft |

**Wellbore** OH

| **Magnetics** | **Model Name** | **Sample Date** | **Declination (°)** | **Dip Angle (°)** | **Field Strength (nT)** |
|---|---|---|---|---|---|
| | HDGM | 12/19/2022 | 8.87 | 65.37 | 51,018 |

**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 | 116.58 |

**Survey Program** **Date** 2/20/2023

| **From (ft)** | **To (ft)** | **Survey (Wellbore)** | **Tool Name** | **Description** |
|---|---|---|---|---|
| 298.0 | 11,075.0 | Surveys (OH) | 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 |
| 298.0 | 4.30 | 55.01 | 297.7 | 6.4 | 9.2 | 11.2 | 55.01 |
| **First Survey @ 298 MD/ 297.7 TVD** | | | | | | | |
| 391.0 | 6.37 | 75.22 | 390.3 | 9.7 | 17.0 | 19.6 | 60.23 |
| 483.0 | 7.91 | 91.92 | 481.6 | 10.8 | 28.3 | 30.3 | 69.06 |
| 577.0 | 9.66 | 105.81 | 574.5 | 8.4 | 42.3 | 43.2 | 78.71 |
| 669.0 | 11.46 | 115.30 | 665.0 | 2.4 | 58.0 | 58.1 | 87.59 |
| 762.0 | 11.20 | 116.97 | 756.2 | -5.6 | 74.4 | 74.6 | 94.31 |
| 856.0 | 11.55 | 115.83 | 848.3 | -13.8 | 91.0 | 92.1 | 98.65 |
| 949.0 | 11.86 | 114.33 | 939.4 | -21.8 | 108.1 | 110.3 | 101.42 |
| 1,042.0 | 12.26 | 115.13 | 1,030.3 | -30.0 | 125.8 | 129.3 | 103.40 |
| 1,062.0 | 11.86 | 115.13 | 1,049.9 | -31.7 | 129.5 | 133.4 | 103.77 |

| | | | |
|---|---|---|---|
| **Company:** | Terra Energy Partners, LLP | **Local Co-ordinate Reference:** | Well WMC 331-20 - Slot WMC 331-20 |
| **Project:** | Garfield County, CO (Nad 83) | **TVD Reference:** | KB=30' @ 8898.0ft |
| **Site:** | WMC 24-17 Pad | **MD Reference:** | KB=30' @ 8898.0ft |
| **Well:** | WMC 331-20 | **North Reference:** | True |
| **Wellbore:** | OH | **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 (°) |
|---|---|---|---|---|---|---|---|
| 1,160.0 | 13.10 | 111.79 | 1,145.6 | -40.1 | 149.0 | 154.3 | 105.08 |
| 1,251.0 | 12.57 | 110.65 | 1,234.3 | -47.5 | 167.8 | 174.4 | 105.79 |
| 1,341.0 | 12.00 | 110.65 | 1,322.2 | -54.2 | 185.7 | 193.5 | 106.27 |
| 1,431.0 | 11.87 | 109.42 | 1,410.3 | -60.6 | 203.2 | 212.1 | 106.60 |
| 1,522.0 | 11.34 | 112.41 | 1,499.4 | -67.1 | 220.3 | 230.3 | 106.94 |
| 1,613.0 | 10.77 | 110.47 | 1,588.7 | -73.5 | 236.6 | 247.7 | 107.26 |
| 1,703.0 | 11.78 | 123.13 | 1,677.0 | -81.5 | 252.1 | 265.0 | 107.91 |
| 1,794.0 | 11.34 | 118.91 | 1,766.2 | -90.9 | 267.7 | 282.7 | 108.75 |
| 1,884.0 | 10.63 | 117.59 | 1,854.5 | -99.0 | 282.8 | 299.7 | 109.29 |
| 1,975.0 | 10.63 | 116.18 | 1,944.0 | -106.6 | 297.8 | 316.3 | 109.69 |
| 2,065.0 | 10.77 | 115.83 | 2,032.4 | -113.9 | 312.8 | 332.9 | 110.01 |
| 2,156.0 | 10.50 | 116.27 | 2,121.8 | -121.3 | 327.9 | 349.6 | 110.30 |
| 2,246.0 | 10.20 | 116.62 | 2,210.4 | -128.5 | 342.4 | 365.7 | 110.57 |
| 2,337.0 | 9.98 | 118.12 | 2,300.0 | -135.8 | 356.6 | 381.5 | 110.85 |
| 2,428.0 | 10.11 | 121.11 | 2,389.6 | -143.7 | 370.3 | 397.2 | 111.20 |
| 2,518.0 | 9.67 | 119.88 | 2,478.2 | -151.5 | 383.7 | 412.5 | 111.55 |
| 2,608.0 | 9.36 | 119.52 | 2,567.0 | -158.9 | 396.6 | 427.2 | 111.83 |
| 2,699.0 | 8.92 | 117.59 | 2,656.8 | -165.8 | 409.3 | 441.6 | 112.05 |
| 2,789.0 | 8.88 | 117.50 | 2,745.7 | -172.2 | 421.6 | 455.4 | 112.22 |
| 2,880.0 | 8.35 | 114.43 | 2,835.7 | -178.2 | 433.9 | 469.0 | 112.33 |
| 2,970.0 | 9.32 | 116.54 | 2,924.6 | -184.2 | 446.3 | 482.8 | 112.42 |
| 3,061.0 | 9.18 | 116.10 | 3,014.5 | -190.6 | 459.5 | 497.4 | 112.54 |
| 3,151.0 | 10.81 | 120.58 | 3,103.1 | -198.1 | 473.2 | 513.0 | 112.72 |
| 3,242.0 | 10.77 | 120.49 | 3,192.5 | -206.8 | 487.8 | 529.8 | 112.97 |
| 3,332.0 | 10.37 | 120.58 | 3,281.0 | -215.1 | 502.1 | 546.2 | 113.20 |
| 3,423.0 | 10.06 | 119.17 | 3,370.5 | -223.2 | 516.1 | 562.2 | 113.39 |
| 3,513.0 | 9.98 | 119.88 | 3,459.1 | -230.9 | 529.7 | 577.8 | 113.55 |
| 3,603.0 | 9.67 | 121.28 | 3,547.8 | -238.7 | 542.9 | 593.1 | 113.73 |
| 3,694.0 | 11.03 | 117.06 | 3,637.3 | -246.6 | 557.2 | 609.3 | 113.88 |
| 3,784.0 | 10.72 | 116.45 | 3,725.7 | -254.3 | 572.3 | 626.3 | 113.95 |
| 3,875.0 | 10.28 | 114.08 | 3,815.2 | -261.4 | 587.3 | 642.9 | 113.99 |
| 3,966.0 | 9.93 | 113.81 | 3,904.8 | -267.8 | 601.9 | 658.8 | 113.99 |
| 4,056.0 | 11.43 | 113.90 | 3,993.2 | -274.6 | 617.2 | 675.5 | 113.98 |
| 4,147.0 | 11.34 | 114.16 | 4,082.4 | -281.9 | 633.6 | 693.5 | 113.99 |
| 4,237.0 | 11.21 | 113.72 | 4,170.7 | -289.0 | 649.7 | 711.1 | 113.98 |
| 4,328.0 | 10.99 | 112.14 | 4,260.0 | -295.9 | 665.8 | 728.6 | 113.96 |
| 4,418.0 | 10.55 | 111.97 | 4,348.4 | -302.2 | 681.4 | 745.4 | 113.92 |
| 4,509.0 | 10.02 | 113.37 | 4,438.0 | -308.4 | 696.4 | 761.6 | 113.89 |
| 4,599.0 | 9.89 | 111.53 | 4,526.6 | -314.4 | 710.8 | 777.2 | 113.86 |
| 4,690.0 | 9.45 | 111.00 | 4,616.3 | -319.9 | 725.0 | 792.5 | 113.81 |
| 4,780.0 | 9.27 | 109.68 | 4,705.1 | -325.0 | 738.7 | 807.1 | 113.75 |
| 4,871.0 | 11.34 | 113.02 | 4,794.6 | -331.0 | 753.9 | 823.3 | 113.70 |
| 4,961.0 | 10.81 | 112.67 | 4,883.0 | -337.7 | 769.8 | 840.6 | 113.69 |
| 5,052.0 | 10.72 | 112.84 | 4,972.4 | -344.3 | 785.5 | 857.6 | 113.67 |

| | | | |
|---|---|---|---|
| **Company:** | Terra Energy Partners, LLP | **Local Co-ordinate Reference:** | Well WMC 331-20 - Slot WMC 331-20 |
| **Project:** | Garfield County, CO (Nad 83) | **TVD Reference:** | KB=30' @ 8898.0ft |
| **Site:** | WMC 24-17 Pad | **MD Reference:** | KB=30' @ 8898.0ft |
| **Well:** | WMC 331-20 | **North Reference:** | True |
| **Wellbore:** | OH | **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 (°) |
|---|---|---|---|---|---|---|---|
| 5,142.0 | 10.46 | 112.41 | 5,060.8 | -350.6 | 800.7 | 874.1 | 113.65 |
| 5,233.0 | 11.51 | 114.25 | 5,150.2 | -357.5 | 816.7 | 891.5 | 113.64 |
| 5,323.0 | 11.03 | 115.04 | 5,238.4 | -364.9 | 832.6 | 909.1 | 113.66 |
| 5,414.0 | 10.33 | 113.55 | 5,327.8 | -371.8 | 848.0 | 925.9 | 113.67 |
| 5,504.0 | 10.37 | 114.16 | 5,416.4 | -378.3 | 862.8 | 942.1 | 113.68 |
| 5,595.0 | 9.93 | 114.16 | 5,506.0 | -384.9 | 877.4 | 958.1 | 113.69 |
| 5,685.0 | 10.72 | 115.57 | 5,594.5 | -391.7 | 892.1 | 974.3 | 113.71 |
| 5,776.0 | 10.85 | 114.34 | 5,683.9 | -398.9 | 907.5 | 991.3 | 113.73 |
| 5,866.0 | 10.81 | 114.95 | 5,772.3 | -405.9 | 922.9 | 1,008.2 | 113.74 |
| 5,957.0 | 10.46 | 115.83 | 5,861.7 | -413.1 | 938.0 | 1,025.0 | 113.77 |
| 6,047.0 | 10.24 | 115.39 | 5,950.3 | -420.1 | 952.6 | 1,041.1 | 113.80 |
| 6,138.0 | 9.93 | 114.43 | 6,039.9 | -426.8 | 967.1 | 1,057.1 | 113.81 |
| 6,228.0 | 9.85 | 113.90 | 6,128.5 | -433.2 | 981.2 | 1,072.5 | 113.82 |
| 6,319.0 | 9.62 | 112.14 | 6,218.2 | -439.2 | 995.3 | 1,087.9 | 113.81 |
| 6,410.0 | 8.96 | 109.86 | 6,308.0 | -444.4 | 1,009.0 | 1,102.6 | 113.77 |
| 6,500.0 | 10.46 | 119.88 | 6,396.7 | -450.9 | 1,022.7 | 1,117.7 | 113.79 |
| 6,591.0 | 10.20 | 118.47 | 6,486.2 | -458.9 | 1,037.0 | 1,133.9 | 113.87 |
| 6,681.0 | 10.06 | 119.52 | 6,574.8 | -466.5 | 1,050.8 | 1,149.7 | 113.94 |
| 6,772.0 | 9.40 | 119.61 | 6,664.5 | -474.1 | 1,064.2 | 1,165.0 | 114.01 |
| 6,862.0 | 8.79 | 121.19 | 6,753.4 | -481.3 | 1,076.5 | 1,179.2 | 114.09 |
| 6,953.0 | 10.02 | 112.84 | 6,843.2 | -488.0 | 1,089.7 | 1,194.0 | 114.12 |
| 7,044.0 | 10.11 | 113.37 | 6,932.8 | -494.2 | 1,104.3 | 1,209.9 | 114.11 |
| 7,134.0 | 9.76 | 113.02 | 7,021.4 | -500.3 | 1,118.6 | 1,225.4 | 114.10 |
| 7,225.0 | 9.10 | 111.26 | 7,111.2 | -506.0 | 1,132.4 | 1,240.3 | 114.08 |
| 7,315.0 | 10.68 | 115.66 | 7,199.9 | -512.2 | 1,146.6 | 1,255.7 | 114.07 |
| 7,406.0 | 10.06 | 117.15 | 7,289.4 | -519.4 | 1,161.2 | 1,272.1 | 114.10 |
| 7,496.0 | 9.67 | 116.71 | 7,378.0 | -526.4 | 1,175.0 | 1,287.5 | 114.13 |
| 7,587.0 | 10.77 | 116.71 | 7,467.6 | -533.7 | 1,189.4 | 1,303.6 | 114.17 |
| 7,677.0 | 11.07 | 115.04 | 7,556.0 | -541.1 | 1,204.7 | 1,320.7 | 114.19 |
| 7,768.0 | 10.11 | 115.66 | 7,645.4 | -548.3 | 1,219.9 | 1,337.4 | 114.20 |
| 7,858.0 | 9.10 | 116.71 | 7,734.2 | -554.9 | 1,233.3 | 1,352.4 | 114.22 |
| 7,949.0 | 9.67 | 114.69 | 7,823.9 | -561.3 | 1,246.7 | 1,367.2 | 114.24 |
| 8,039.0 | 8.70 | 114.69 | 7,912.8 | -567.3 | 1,259.8 | 1,381.6 | 114.24 |
| 8,130.0 | 10.42 | 118.12 | 8,002.5 | -574.1 | 1,273.3 | 1,396.7 | 114.27 |
| 8,220.0 | 9.10 | 116.45 | 8,091.2 | -581.1 | 1,286.8 | 1,411.9 | 114.30 |
| 8,311.0 | 7.95 | 118.47 | 8,181.2 | -587.3 | 1,298.8 | 1,425.4 | 114.33 |
| 8,401.0 | 7.95 | 118.82 | 8,270.3 | -593.2 | 1,309.7 | 1,437.8 | 114.37 |
| 8,491.0 | 7.43 | 118.82 | 8,359.5 | -599.1 | 1,320.3 | 1,449.8 | 114.41 |
| 8,582.0 | 5.93 | 118.38 | 8,449.9 | -604.1 | 1,329.6 | 1,460.4 | 114.44 |
| 8,673.0 | 4.04 | 116.01 | 8,540.6 | -607.8 | 1,336.6 | 1,468.3 | 114.45 |
| 8,763.0 | 3.56 | 122.86 | 8,630.4 | -610.7 | 1,341.8 | 1,474.2 | 114.47 |
| 8,853.0 | 3.30 | 123.39 | 8,720.2 | -613.6 | 1,346.3 | 1,479.5 | 114.50 |
| 8,944.0 | 2.86 | 124.97 | 8,811.1 | -616.4 | 1,350.3 | 1,484.4 | 114.53 |
| 9,034.0 | 3.08 | 126.73 | 8,901.0 | -619.1 | 1,354.1 | 1,488.9 | 114.57 |
| 9,124.0 | 1.80 | 150.81 | 8,990.9 | -621.8 | 1,356.7 | 1,492.4 | 114.62 |

| | | | |
|---|---|---|---|
| **Company:** | Terra Energy Partners, LLP | **Local Co-ordinate Reference:** | Well WMC 331-20 - Slot WMC 331-20 |
| **Project:** | Garfield County, CO (Nad 83) | **TVD Reference:** | KB=30' @ 8898.0ft |
| **Site:** | WMC 24-17 Pad | **MD Reference:** | KB=30' @ 8898.0ft |
| **Well:** | WMC 331-20 | **North Reference:** | True |
| **Wellbore:** | OH | **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 (°) |
|---|---|---|---|---|---|---|---|
| 9,215.0 | 1.45 | 170.06 | 9,081.8 | -624.1 | 1,357.6 | 1,494.2 | 114.69 |
| 9,305.0 | 1.63 | 165.93 | 9,171.8 | -626.5 | 1,358.1 | 1,495.7 | 114.76 |
| 9,395.0 | 0.75 | 208.21 | 9,261.8 | -628.3 | 1,358.2 | 1,496.5 | 114.82 |
| 9,486.0 | 0.66 | 218.49 | 9,352.8 | -629.2 | 1,357.6 | 1,496.3 | 114.87 |
| 9,576.0 | 0.61 | 244.24 | 9,442.8 | -629.8 | 1,356.8 | 1,495.9 | 114.90 |
| 9,667.0 | 0.44 | 278.87 | 9,533.8 | -630.0 | 1,356.0 | 1,495.2 | 114.92 |
| 9,757.0 | 0.62 | 262.52 | 9,623.8 | -630.0 | 1,355.2 | 1,494.5 | 114.93 |
| 9,848.0 | 0.44 | 259.01 | 9,714.8 | -630.1 | 1,354.4 | 1,493.8 | 114.95 |
| 9,939.0 | 0.40 | 278.87 | 9,805.8 | -630.1 | 1,353.7 | 1,493.2 | 114.96 |
| 10,029.0 | 0.75 | 264.98 | 9,895.8 | -630.1 | 1,352.8 | 1,492.4 | 114.98 |
| 10,120.0 | 1.19 | 245.65 | 9,986.7 | -630.6 | 1,351.4 | 1,491.3 | 115.01 |
| 10,210.0 | 1.36 | 240.99 | 10,076.7 | -631.5 | 1,349.6 | 1,490.0 | 115.08 |
| 10,301.0 | 1.93 | 237.03 | 10,167.7 | -632.8 | 1,347.4 | 1,488.6 | 115.16 |
| 10,391.0 | 2.42 | 230.62 | 10,257.6 | -634.9 | 1,344.6 | 1,487.0 | 115.27 |
| 10,482.0 | 2.72 | 225.87 | 10,348.5 | -637.6 | 1,341.6 | 1,485.4 | 115.42 |
| 10,573.0 | 2.99 | 233.17 | 10,439.4 | -640.5 | 1,338.1 | 1,483.5 | 115.58 |
| 10,664.0 | 3.16 | 237.47 | 10,530.3 | -643.3 | 1,334.1 | 1,481.1 | 115.74 |
| 10,754.0 | 3.12 | 232.20 | 10,620.1 | -646.1 | 1,330.1 | 1,478.7 | 115.91 |
| 10,844.0 | 3.43 | 229.39 | 10,710.0 | -649.4 | 1,326.1 | 1,476.6 | 116.09 |
| 10,935.0 | 3.30 | 231.15 | 10,800.8 | -652.8 | 1,322.0 | 1,474.4 | 116.28 |
| 11,018.0 | 3.47 | 229.91 | 10,883.7 | -655.9 | 1,318.2 | 1,472.4 | 116.45 |
| 11,075.0 | 3.47 | 229.91 | 10,940.6 | -658.1 | 1,315.6 | 1,471.0 | 116.58 |

**PTB @ 11075 MD / 10940.6 TVD**

**Survey Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 298.0 | 297.7 | 6.4 | 9.2 | First Survey @ 298 MD/ 297.7 TVD |
| 11,075.0 | 10,940.6 | -658.1 | 1,315.6 | PTB @ 11075 MD / 10940.6 TVD |

Checked By: _____ Approved By: _____ Date: _____