Honea 19-05 Pad
WMC 333-19-793
Well WMC 333-19-793 - Slot WMC 333-19-793, True North
Surveys

Terra Energy Partners, LLP
WMC 333-19-793
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 333-19-793

Ground Level: 8563.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1588613.091	2344005.700	39.426486	-107.822528	WMC 333-19-793

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7588.0	242.2	2493.9	1588791.500	2346505.000	39.427150	-107.813699
PBHL	10863.0	242.2	2493.9	1588791.500	2346505.000	39.427150	-107.813699

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
199.0	199.0	1.49	86.46	0.2	2.6	2.6	2.6	First Survey @ 199 MD/ 199 TVD
10588.6	11050.0	2.02	246.51	270.7	2531.7	2536.3	2643.8	PTB @ 11050 MD/ 10588.6 TVD

SLOTS

Slot Name	+N/-S	+E/-W	Northing	Easting
HONEA 19-05B	7.0	7.1	1588619.891	2344013.000
Honea 24-01C	-7.0	-6.9	1588606.291	2343998.600
HONEA 24-09C	-21.1	-21.4	1588592.591	2343983.800
WMC 11-19-793	12.4	-1.6	1588625.491	2344004.400
WMC 311-19-793	7.1	-7.0	1588620.391	2343998.900
WMC 32-19-793	28.2	14.4	1588640.891	2344020.800
WMC 33-19-793	15.8	16.1	1588628.491	2344022.200
WMC 332-19-793	22.9	9.0	1588635.791	2344015.300
WMC 333-19-793	0.0	0.0	1588613.091	2344005.700
WMC 343-24-794	-29.7	-44.4	1588584.491	2343960.600
WMC 344-24-794	-52.7	-53.4	1588561.791	2343951.000
WMC 411-19-793	1.9	-12.4	1588615.291	2343993.400
WMC 412-19-793	-3.5	-17.7	1588610.091	2343987.900
WMC 432-19-793	17.6	3.7	1588630.591	2344009.800
WMC 433-19-793	-8.7	-23.0	1588604.991	2343982.500
WMC 44-24-794	-40.3	-55.1	1588574.191	2343949.600
WMC 444-24-794	-47.4	-48.0	1588566.891	2343956.500
WMC 512-19-793	-35.0	-49.7	1588579.391	2343955.100
WMC 532-19-793	21.1	21.4	1588633.591	2344027.600
WMC 533-19-793	-15.8	-16.0	1588597.691	2343989.300
WMC 543-24-794	-45.6	-60.4	1588569.091	2343944.200

Azimuths to True North
Magnetic North: 8.85°

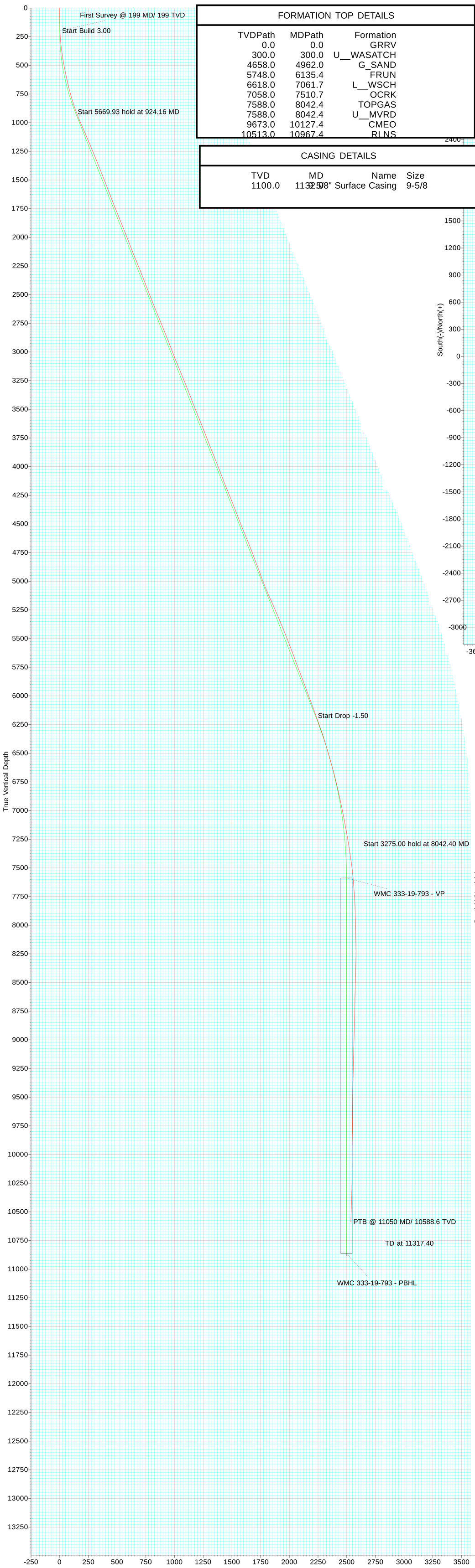
Magnetic Field
Strength: 51015.2snT
Dip Angle: 65.35°
Date: 12/23/2022
Model: HDGM

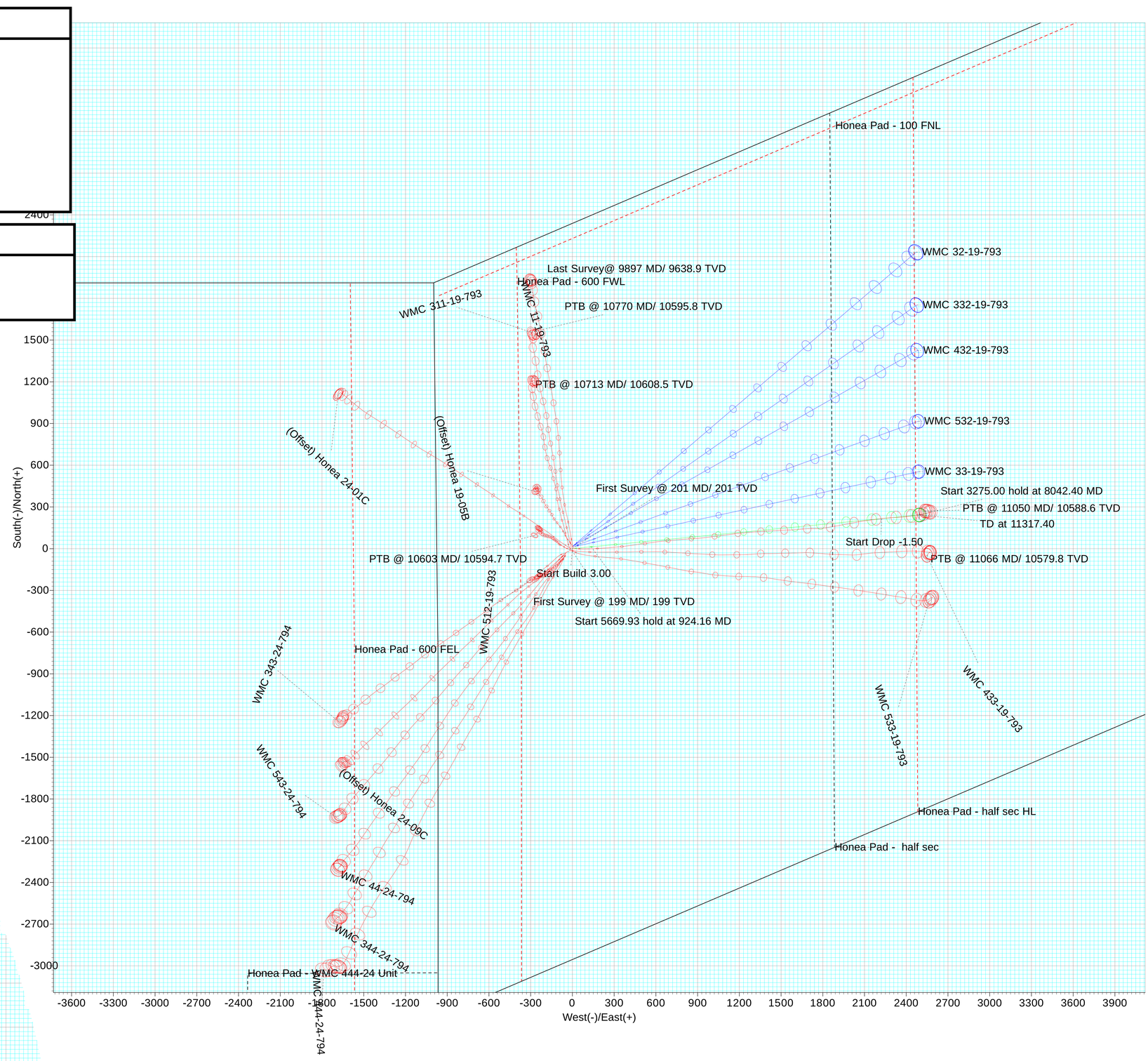
FORMATION TOP DETAILS

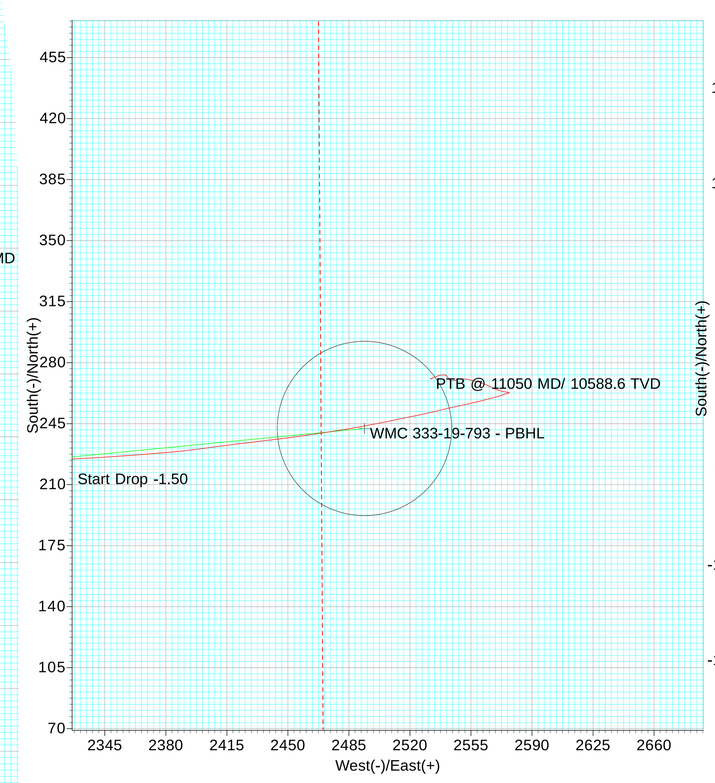
TVDPath	MDPath	Formation
0.0	0.0	GRRV
300.0	300.0	U__WASATCH
4658.0	4962.0	G_SAND
5748.0	6135.4	FRUN
6618.0	7061.7	L__WSCH
7058.0	7510.7	OCRK
7588.0	8042.4	TOPGAS
7588.0	8042.4	U__MVRD
9673.0	10127.4	CMEO
10513.0	10967.4	RLNS

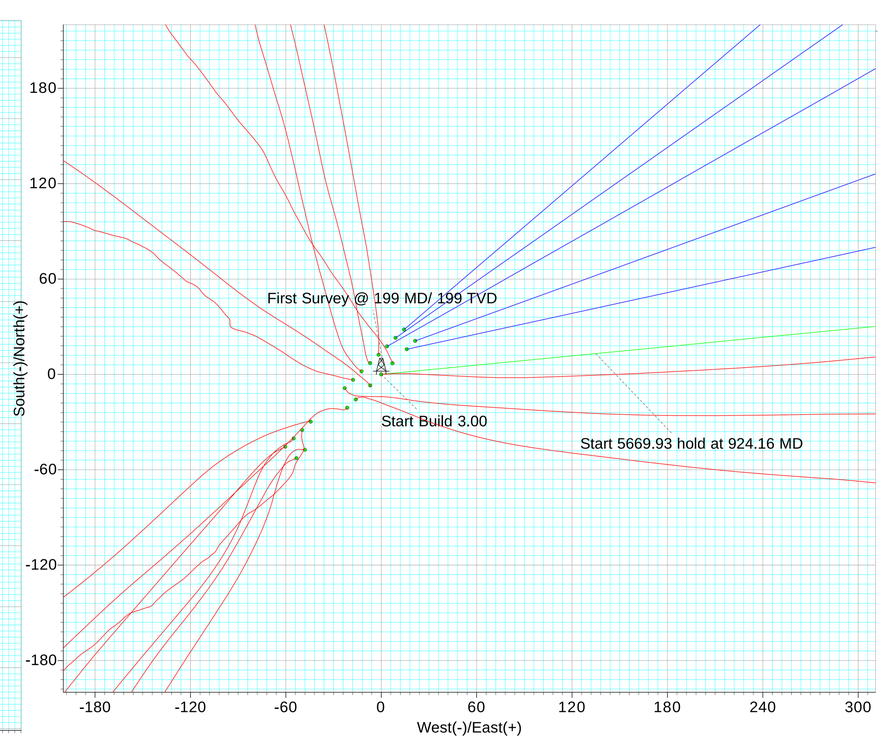
CASING DETAILS

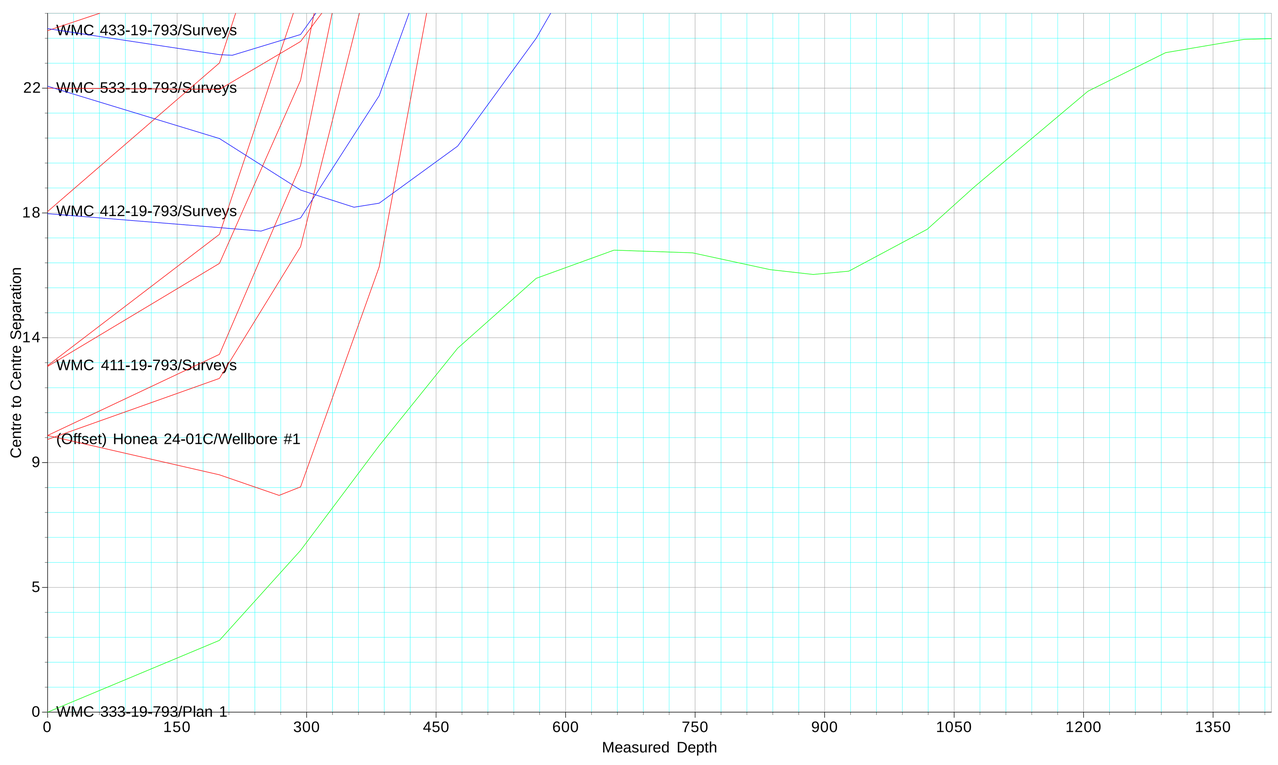
TVD	MD	Name	Size
1100.0	1132.5	9 5/8" Surface Casing	9-5/8











NATIVE NAVIGATION

DIRECTIONAL DRILLING SPECIALISTS

Directional Survey Certification

Survey Company: Native Navigation **Survey Company Job #:** 23032716

Well Name: WMC 333-19-793 **A.P.I.#** 05-045-24541 **Operator** Terra Energy Partners

Latitude: 40.217433 **Longitude:** -107.822528 **County, State:** Garfield County, CO

Legal Description (S,TS,R): Sec 19, T7S, R93W

Final Report 3/27/2023 **Date of First Survey** 3/13/2023 **Date of Last Survey:** 3/17/2023

Datum: NAD83 **Survey MD From:** 199.00 **To:** 10987 FT. **Tool Type:** MWD + HRGM

Bit to Sensor: 63 FT. **Rig (Company & Number):** HP 329 **RKB Height:** 30.00 FT.

Ground Elevation: 8563.00 **Northings:** 1588613.091 **Eastings:** 2344005.7

Surveyor Kyle Temple **Depth of Final Projection:** 11050 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	3/27/23

Terra Energy Partners, LLP

Garfield County, CO (Nad 83)
Honea 19-05 Pad
WMC 333-19-793 - Slot WMC 333-19-793
Wellbore #1

Design: Surveys

Survey Certification Report

27 March, 2023

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 333-19-793 - Slot WMC 333-19-793
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 333-19-793	**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 333-19-793 - Slot WMC 333-19-793

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,588,613.091 usft	**Latitude:**	39.426486
	+E/-W	0.0 ft	**Easting:**	2,344,005.700 usft	**Longitude:**	-107.822528
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	88.93

Survey Program **Date** 3/27/2023

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
199.0	11,050.0	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
199.0	1.49	86.46	199.0	0.2	2.6	2.6	86.46
First Survey @ 199 MD/ 199 TVD							
293.0	5.23	86.81	292.8	0.5	8.1	8.1	86.65
384.0	7.82	92.61	383.2	0.4	18.4	18.4	88.68
475.0	10.15	92.96	473.1	-0.3	32.6	32.6	90.48
566.0	11.65	92.79	562.4	-1.1	49.8	49.8	91.31
656.0	13.10	91.91	650.3	-1.9	69.1	69.1	91.59
747.0	15.07	88.92	738.6	-2.0	91.2	91.2	91.28
837.0	17.36	87.69	825.0	-1.3	116.3	116.3	90.63
928.0	20.43	87.69	911.1	-0.1	145.8	145.8	90.03
1,019.0	23.12	86.90	995.6	1.5	179.5	179.5	89.52

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 333-19-793 - Slot WMC 333-19-793
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 333-19-793	**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 (°)
1,073.0	23.64	86.98	1,045.2	2.7	200.9	200.9	89.24
1,205.0	23.03	85.93	1,166.4	5.9	253.1	253.1	88.67
1,295.0	22.59	84.61	1,249.3	8.8	287.8	288.0	88.26
1,386.0	21.75	84.52	1,333.6	12.0	322.0	322.2	87.86
1,477.0	21.84	84.35	1,418.1	15.3	355.6	356.0	87.54
1,569.0	21.67	82.41	1,503.5	19.2	389.5	390.0	87.18
1,660.0	21.23	82.77	1,588.2	23.5	422.5	423.2	86.81
1,750.0	21.05	81.71	1,672.2	27.9	454.7	455.5	86.49
1,841.0	22.15	83.29	1,756.8	32.3	487.9	488.9	86.22
1,931.0	22.19	81.80	1,840.1	36.7	521.5	522.8	85.98
2,022.0	21.88	82.24	1,924.5	41.4	555.4	556.9	85.74
2,112.0	21.67	81.01	2,008.1	46.3	588.4	590.2	85.50
2,204.0	20.87	81.80	2,093.8	51.3	621.4	623.5	85.28
2,294.0	22.68	85.75	2,177.4	54.8	654.6	656.9	85.21
2,385.0	21.97	85.93	2,261.6	57.3	689.0	691.4	85.24
2,475.0	21.23	84.26	2,345.2	60.2	722.0	724.5	85.24
2,566.0	20.96	84.52	2,430.1	63.4	754.6	757.3	85.20
2,656.0	21.93	85.31	2,513.9	66.3	787.4	790.2	85.19
2,747.0	21.45	84.96	2,598.5	69.1	820.9	823.8	85.19
2,837.0	22.90	86.72	2,681.8	71.6	854.8	857.8	85.21
2,928.0	21.71	87.25	2,766.0	73.4	889.3	892.3	85.28
3,018.0	21.97	83.47	2,849.6	76.1	922.6	925.8	85.28
3,109.0	21.36	82.94	2,934.1	80.1	956.0	959.3	85.21
3,199.0	20.92	82.41	3,018.1	84.2	988.2	991.8	85.13
3,291.0	22.68	82.85	3,103.5	88.6	1,022.1	1,025.9	85.05
3,381.0	22.54	83.38	3,186.6	92.7	1,056.4	1,060.5	84.98
3,471.0	22.02	82.77	3,269.8	96.9	1,090.3	1,094.6	84.92
3,562.0	21.36	82.50	3,354.4	101.2	1,123.7	1,128.2	84.86
3,652.0	20.96	81.80	3,438.3	105.6	1,155.8	1,160.7	84.78
3,743.0	22.50	84.61	3,522.9	109.6	1,189.3	1,194.3	84.74
3,833.0	21.84	84.00	3,606.2	112.9	1,223.1	1,228.3	84.72
3,923.0	21.58	85.14	3,689.8	116.1	1,256.2	1,261.6	84.72
4,014.0	20.65	85.75	3,774.7	118.7	1,288.9	1,294.4	84.74
4,104.0	22.02	86.19	3,858.5	121.0	1,321.6	1,327.1	84.77
4,195.0	21.84	86.37	3,943.0	123.2	1,355.5	1,361.1	84.81
4,286.0	21.01	86.81	4,027.7	125.2	1,388.7	1,394.3	84.85
4,376.0	20.83	87.16	4,111.7	126.9	1,420.7	1,426.4	84.90
4,466.0	22.54	85.93	4,195.4	128.9	1,453.9	1,459.6	84.93
4,557.0	21.88	86.72	4,279.6	131.1	1,488.3	1,494.0	84.97
4,648.0	21.57	87.34	4,364.2	132.8	1,521.9	1,527.7	85.01
4,738.0	20.65	88.92	4,448.1	133.9	1,554.3	1,560.1	85.08
4,829.0	22.50	85.75	4,532.7	135.5	1,587.7	1,593.5	85.12
4,919.0	22.02	85.31	4,616.0	138.1	1,621.7	1,627.6	85.13
5,010.0	21.93	85.05	4,700.4	141.0	1,655.6	1,661.6	85.13

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 333-19-793 - Slot WMC 333-19-793
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 333-19-793	**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 (°)
5,100.0	19.95	86.63	4,784.5	143.4	1,687.7	1,693.8	85.14
5,191.0	21.23	87.42	4,869.7	145.0	1,719.7	1,725.8	85.18
5,281.0	19.69	91.47	4,954.0	145.4	1,751.1	1,757.1	85.25
5,372.0	21.62	86.55	5,039.1	146.0	1,783.2	1,789.1	85.32
5,462.0	24.26	81.18	5,122.0	149.8	1,818.0	1,824.2	85.29
5,553.0	24.21	80.13	5,205.0	155.9	1,854.9	1,861.4	85.20
5,643.0	23.42	80.48	5,287.3	162.0	1,890.7	1,897.6	85.10
5,734.0	22.72	79.69	5,371.1	168.1	1,925.8	1,933.1	85.01
5,825.0	22.19	79.34	5,455.2	174.5	1,960.0	1,967.7	84.91
5,915.0	21.27	79.51	5,538.8	180.6	1,992.7	2,000.9	84.82
6,006.0	21.09	78.55	5,623.6	186.8	2,025.0	2,033.6	84.73
6,096.0	20.00	78.64	5,707.9	193.1	2,056.0	2,065.0	84.64
6,186.0	21.53	81.80	5,792.0	198.5	2,087.4	2,096.8	84.57
6,277.0	20.65	82.68	5,876.9	202.9	2,119.8	2,129.5	84.53
6,367.0	19.95	83.03	5,961.4	206.8	2,150.8	2,160.7	84.51
6,458.0	21.14	83.29	6,046.6	210.6	2,182.5	2,192.7	84.49
6,548.0	19.82	82.59	6,130.9	214.4	2,213.8	2,224.2	84.47
6,639.0	19.82	83.73	6,216.5	218.1	2,244.4	2,255.0	84.45
6,729.0	19.20	83.64	6,301.3	221.4	2,274.3	2,285.1	84.44
6,820.0	16.74	87.78	6,387.9	223.6	2,302.3	2,313.1	84.45
6,910.0	16.57	86.90	6,474.1	224.8	2,328.0	2,338.9	84.49
7,001.0	15.73	86.02	6,561.5	226.3	2,353.3	2,364.2	84.51
7,091.0	15.64	85.31	6,648.2	228.2	2,377.6	2,388.5	84.52
7,182.0	13.80	82.15	6,736.2	230.7	2,400.5	2,411.6	84.51
7,272.0	12.74	83.03	6,823.8	233.3	2,421.0	2,432.2	84.50
7,363.0	12.22	83.21	6,912.6	235.7	2,440.5	2,451.9	84.48
7,454.0	11.12	81.89	7,001.7	238.1	2,458.8	2,470.3	84.47
7,545.0	10.81	81.18	7,091.1	240.6	2,475.9	2,487.6	84.45
7,635.0	10.68	79.69	7,179.5	243.4	2,492.5	2,504.3	84.42
7,726.0	9.45	78.11	7,269.1	246.4	2,508.1	2,520.2	84.39
7,816.0	8.70	78.81	7,358.0	249.3	2,522.0	2,534.3	84.35
7,907.0	8.44	76.17	7,447.9	252.2	2,535.2	2,547.7	84.32
7,997.0	6.15	78.46	7,537.2	254.8	2,546.4	2,559.1	84.29
8,088.0	4.53	76.79	7,627.8	256.6	2,554.6	2,567.5	84.27
8,179.0	4.35	75.21	7,718.5	258.3	2,561.5	2,574.5	84.24
8,269.0	2.59	75.65	7,808.4	259.6	2,566.7	2,579.8	84.22
8,359.0	1.71	75.47	7,898.3	260.5	2,570.0	2,583.2	84.21
8,450.0	1.41	68.44	7,989.3	261.2	2,572.4	2,585.6	84.20
8,541.0	1.23	73.27	8,080.3	261.9	2,574.3	2,587.6	84.19
8,631.0	1.27	76.17	8,170.2	262.4	2,576.2	2,589.6	84.18
8,721.0	0.35	303.02	8,260.2	262.8	2,577.0	2,590.3	84.18
8,812.0	1.76	274.10	8,351.2	263.1	2,575.3	2,588.7	84.17
8,902.0	1.76	286.41	8,441.2	263.6	2,572.6	2,586.1	84.15
8,993.0	1.67	290.72	8,532.1	264.4	2,570.1	2,583.6	84.13
9,083.0	1.45	291.07	8,622.1	265.3	2,567.8	2,581.4	84.10

Company:	Terra Energy Partners, LLP	**Local Co-ordinate Reference:**	Well WMC 333-19-793 - Slot WMC 333-19-793
Project:	Garfield County, CO (Nad 83)	**TVD Reference:**	KB @ 8593.0ft
Site:	Honea 19-05 Pad	**MD Reference:**	KB @ 8593.0ft
Well:	WMC 333-19-793	**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 (°)
9,174.0	1.10	304.43	8,713.1	266.2	2,566.0	2,579.7	84.08
9,265.0	1.45	288.87	8,804.0	267.1	2,564.2	2,578.0	84.05
9,355.0	1.67	294.76	8,894.0	268.0	2,561.9	2,575.9	84.03
9,446.0	1.58	284.21	8,985.0	268.9	2,559.5	2,573.6	84.00
9,536.0	1.58	284.83	9,074.9	269.5	2,557.1	2,571.2	83.98
9,627.0	1.27	282.10	9,165.9	270.0	2,554.9	2,569.1	83.97
9,718.0	1.45	281.49	9,256.9	270.5	2,552.8	2,567.0	83.95
9,808.0	1.41	268.83	9,346.9	270.7	2,550.5	2,564.9	83.94
9,898.0	0.83	272.96	9,436.8	270.7	2,548.8	2,563.1	83.94
9,989.0	0.44	237.28	9,527.8	270.5	2,547.8	2,562.1	83.94
10,079.0	0.48	245.28	9,617.8	270.2	2,547.2	2,561.5	83.95
10,170.0	0.62	255.82	9,708.8	269.9	2,546.4	2,560.6	83.95
10,261.0	0.79	266.19	9,799.8	269.7	2,545.3	2,559.5	83.95
10,351.0	0.83	267.42	9,889.8	269.7	2,544.0	2,558.2	83.95
10,442.0	0.57	303.81	9,980.8	269.9	2,543.0	2,557.2	83.94
10,532.0	0.79	318.23	10,070.8	270.6	2,542.2	2,556.5	83.92
10,623.0	0.75	346.26	10,161.8	271.6	2,541.6	2,556.1	83.90
10,714.0	0.66	309.44	10,252.8	272.6	2,541.1	2,555.6	83.88
10,804.0	1.45	277.09	10,342.8	273.0	2,539.5	2,554.2	83.86
10,895.0	2.07	252.75	10,433.7	272.7	2,536.8	2,551.4	83.87
10,987.0	2.02	246.51	10,525.7	271.5	2,533.8	2,548.3	83.88
11,050.0	2.02	246.51	10,588.6	270.7	2,531.7	2,546.1	83.90

PTB @ 11050 MD/ 10588.6 TVD

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
199.0	199.0	0.2	2.6	First Survey @ 199 MD/ 199 TVD
11,050.0	10,588.6	270.7	2,531.7	PTB @ 11050 MD/ 10588.6 TVD

Checked By: _____ Approved By: _____ Date: _____