

WELL DETAILS: WMC 512-18-793

+N/-S	+E/-W	Northing	Ground Level:	8007.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1591989.000	2342248.300		39.435628	-107.829054		WMC 512-18-793

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7031.00	1950.57	2212.73	1593882.200	2344510.300	39.440983	-107.821219
BHL	10306.00	1950.56	2212.73	1593882.190	2344510.300	39.440983	-107.821219

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
473.39	475.00	8.17	35.81	27.42	19.78	32.97	33.81	First Survey @ 475 MD/ 473.4 TVD
10050.18	10740.00	10.37	215.90	1925.71	2180.70	2909.27	3067.88	PTB @ 10740 MD/ 10050.2 TVD

SLOTS

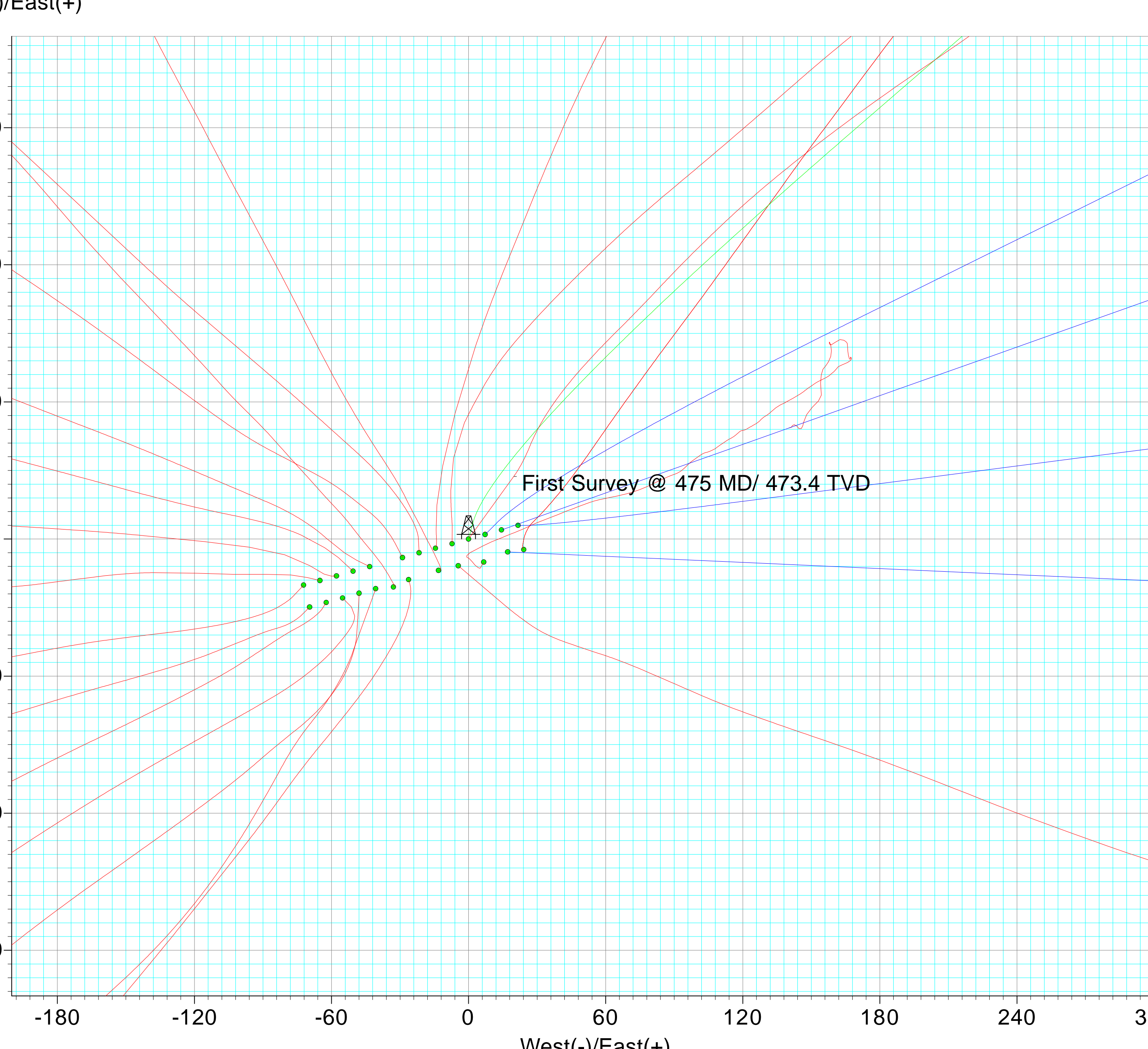
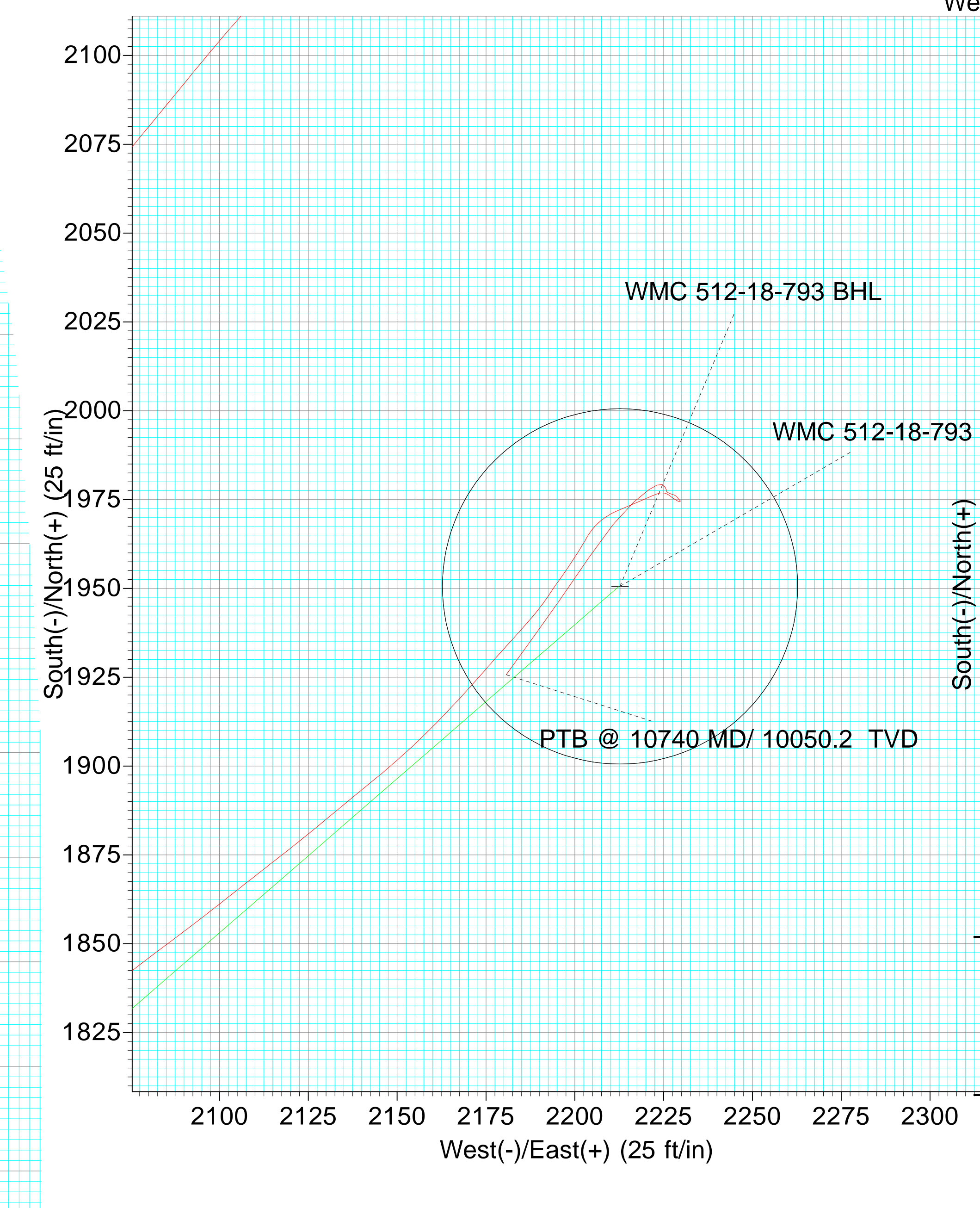
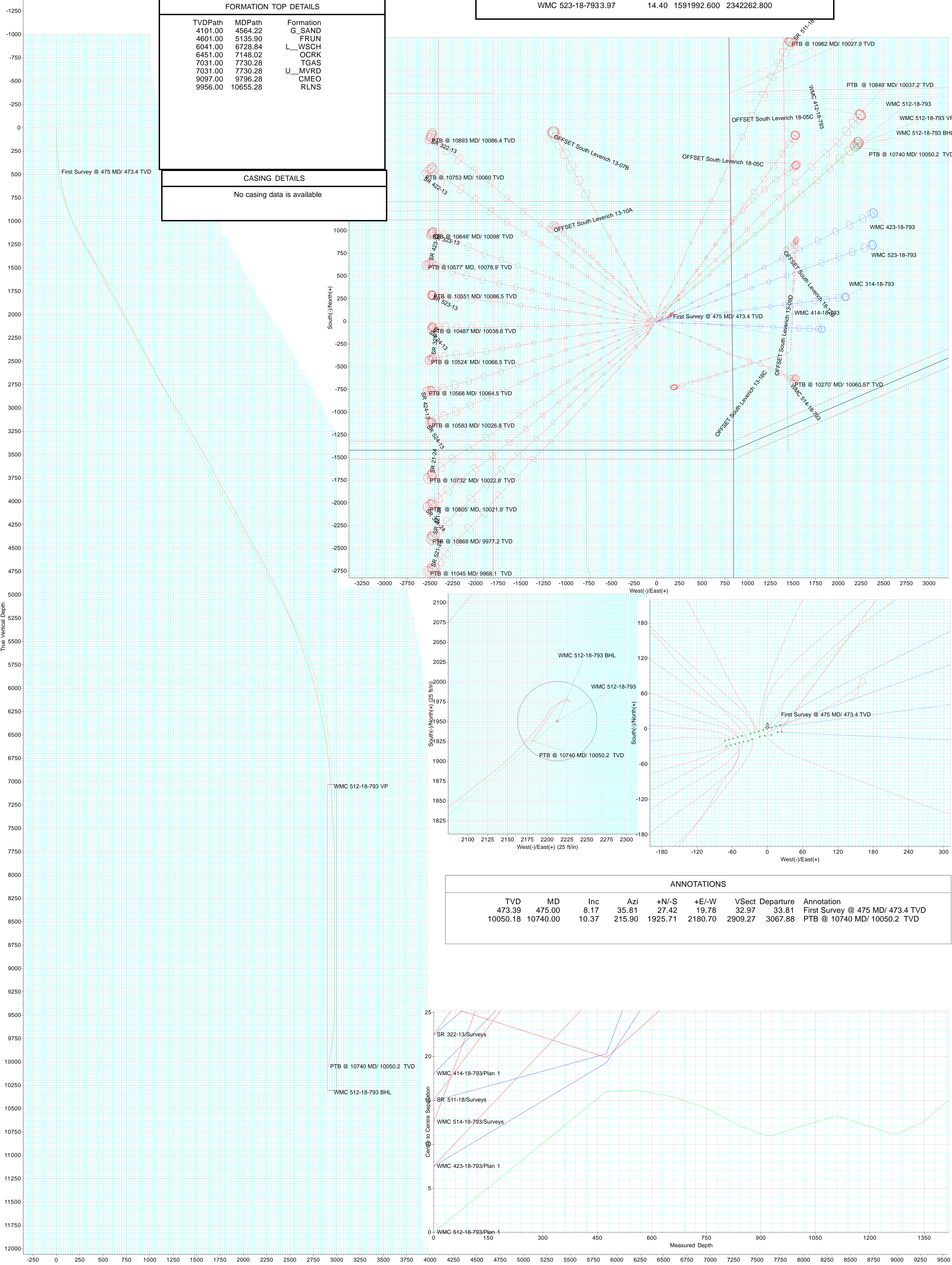
Slot Name	+N/-S	+E/-W	Northing	Easting
OFFSET South Leverich 13-07B	-13.74	-13.13	1591975.598	2342234.824
OFFSET South Leverich 13-09D	-10.10	6.64	1591978.733	2342254.682
OFFSET South Leverich 13-10A	-21.03	-32.90	1591968.823	2342214.873
OFFSET South Leverich 13-16C-345.15		1455.60	1591606.646	2343694.566
OFFSET South Leverich 18-05C	-4.65	24.16	1591983.730	2342272.330
OFFSET South Leverich 18-12B-330.58		1469.72	1591620.850	2343709.057
SR 21-24	-25.82	-55.16	1591964.600	2342192.500
SR 24-13	-18.17	-65.06	1591972.500	2342182.800
SR 321-24	-23.74	-47.91	1591966.500	2342199.800
SR 322-13	-6.06	-21.65	1591983.500	2342226.500
SR 323-13	-12.11	-43.30	1591978.000	2342204.700
SR 324-13	-20.16	-72.21	1591970.700	2342175.600
SR 421-24	-21.75	-40.66	1591968.300	2342207.100
SR 422-13	-8.14	-28.90	1591981.600	2342219.200
SR 423-13	-14.10	-50.56	1591976.200	2342197.400
SR 424-13	-29.79	-69.56	1591961.000	2342178.000
SR 511-18	-4.07	-14.50	1591985.300	2342233.700
SR 521-24	-17.78	-26.25	1591971.900	2342221.600
SR 523-13	-16.19	-57.80	1591974.300	2342190.100
SR 524-13	-27.81	-62.31	1591962.800	2342185.300
WMC 314-18-793	5.96	21.65	1591994.400	2342270.100
WMC 412-18-793	2.09	-7.25	1591987.100	2342241.000
WMC 414-18-793	5.66	17.15	1591982.900	2342265.600
WMC 423-18-793	1.99	7.25	1591990.800	2342255.600
WMC 512-18-793	0.00	0.00	1591989.000	2342248.300
WMC 514-18-793	1.72	-4.50	1591977.400	2342243.500
WMC 523-18-793	3.97	14.40	1591992.600	2342262.800

FORMATION TOP DETAILS

TVDP	MD	Formation
4101.00	4564.22	G_SAND
4601.00	5135.90	FRUN
6041.00	6728.84	L_WSCH
6451.00	7148.02	OCRK
7031.00	7730.28	TGAS
7031.00	7730.28	U_MVRD
9097.00	9796.28	CME0
9956.00	10655.28	RLNS

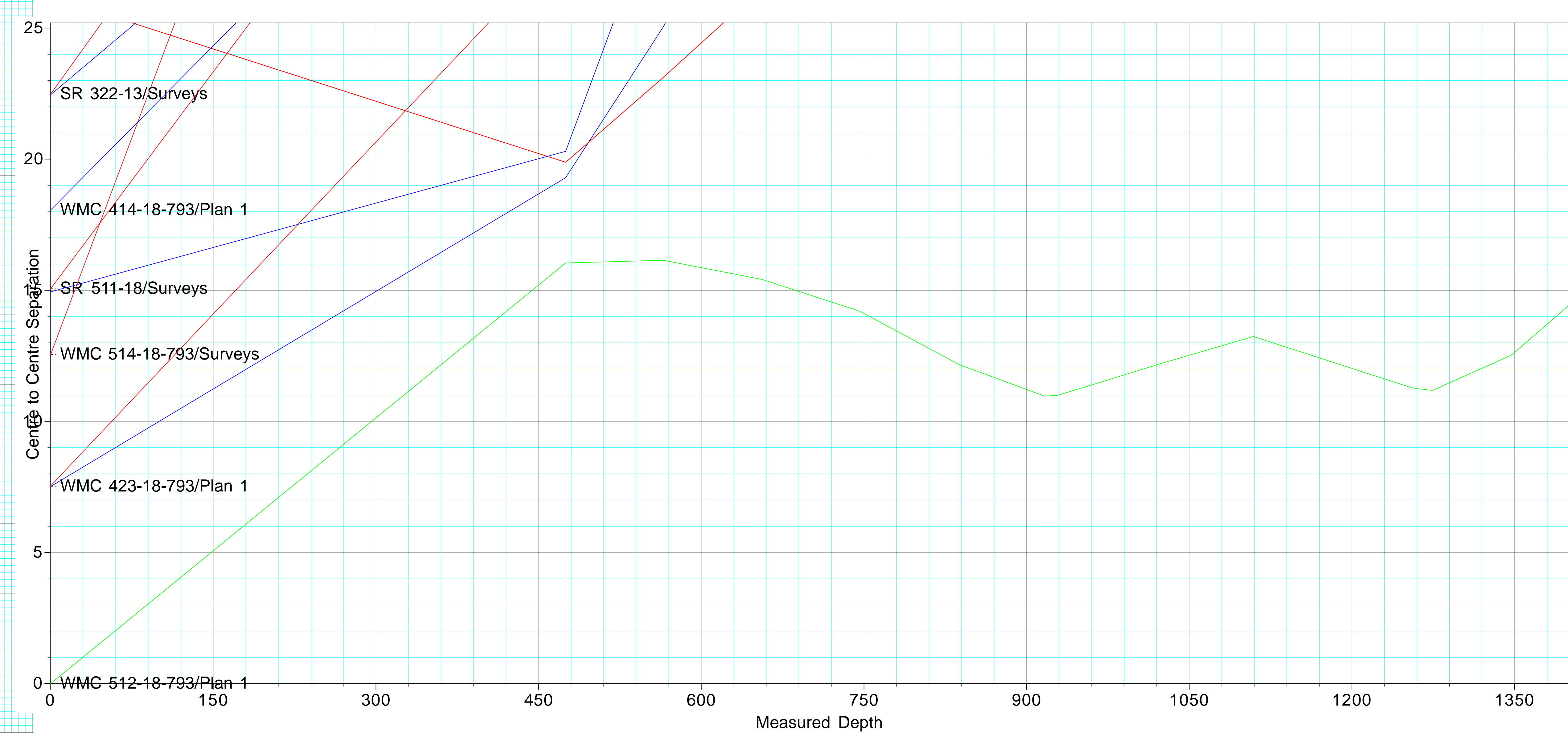
CASING DETAILS

No casing data is available



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
473.39	475.00	8.17	35.81	27.42	19.78	32.97	33.81	First Survey @ 475 MD/ 473.4 TVD
10050.18	10740.00	10.37	215.90	1925.71	2180.70	2909.27	3067.88	PTB @ 10740 MD/ 10050.2 TVD





Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 23092835

Well Name: WMC 512-18-793 A.P.I.# 05-045-24570 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -107.829054 County, State: Garfield County, CO

Legal Description (S,TS,R): Sec 13 T7S R94W

Final Report 11/15/2023 Date of First Survey 9/14/2023 Date of Last Survey: 9/18/2023

Datum: NAD83 Survey MD From: 475.00 To: 10677 FT. Tool Type: MWD + HRGM

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

Ground Elevation: 8007.00 Northings: 1591989 Eastings: 2342248.3

Surveyor Kyle Temple Depth of Final Projection: 10740 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

Well Planner
Title

Native Navigation
Company

11/15/23
Date



Terra Energy Partners, LLP

Garfield County, CO (Nad 83)

S. Leverich 13-09 Pad

WMC 512-18-793 - Slot WMC 512-18-793

OWB

Design: Surveys

Survey Certification Report

15 November, 2023



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well WMC 512-18-793 - Slot WMC 512-18-793
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 8037.00ft
Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.00ft
Well:	WMC 512-18-793	North Reference:	True
Wellbore:	OWB	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	S. Leverich 13-09 Pad				
Site Position:		Northing:	1,591,962.800 usft	Latitude:	39.435551
From:	Map	Easting:	2,342,185.300 usft	Longitude:	-107.829274
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.47 °

Well	WMC 512-18-793 - Slot WMC 512-18-793					
Well Position	+N/-S	0.00 ft	Northing:	1,591,989.000 usft	Latitude:	39.435628
	+E/-W	0.00 ft	Easting:	2,342,248.300 usft	Longitude:	-107.829054
Position Uncertainty		0.00 ft	Wellhead Elevation:	8,037.00 ft	Ground Level:	8,007.00 ft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/5/2023	8.83	65.37	50,996

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:		Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
		0.00	0.00	0.00	48.60

Survey Program	Date	9/18/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
475.00	10,740.00	Surveys (OWB)	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 (°)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
475.00	8.17	35.81	473.39	27.42	19.78	33.81	35.81		
First Survey @ 475 MD/ 473.4 TVD									
565.00	10.94	22.28	562.15	40.51	26.76	48.55	33.45		
656.00	12.17	33.26	651.31	56.52	35.30	66.64	31.98		
746.00	14.63	41.17	738.86	73.02	47.99	87.37	33.31		
838.00	16.52	45.30	827.48	90.96	64.93	111.76	35.52		
929.00	20.74	43.28	913.69	111.81	85.19	140.56	37.30		
1,024.00	24.96	46.54	1,001.22	137.85	111.28	177.16	38.91		
1,109.00	27.64	51.28	1,077.43	162.53	139.69	214.31	40.68		
1,256.00	28.92	55.68	1,206.89	203.90	195.66	282.59	43.82		
1,347.00	30.32	54.97	1,286.00	229.49	232.64	326.79	45.39		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well WMC 512-18-793 - Slot WMC 512-18-793
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 8037.00ft
Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.00ft
Well:	WMC 512-18-793	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	NN

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
1,437.00	30.23	52.86	1,363.73	256.21	269.30	371.71	46.43
1,527.00	29.88	49.61	1,441.63	284.42	304.44	416.63	46.95
1,618.00	29.18	49.61	1,520.81	313.49	338.60	461.44	47.21
1,709.00	29.40	49.00	1,600.18	342.51	372.36	505.93	47.39
1,799.00	29.27	50.05	1,678.64	371.13	405.90	549.99	47.56
1,890.00	28.96	51.37	1,758.14	399.17	440.16	594.21	47.80
1,980.00	29.14	51.54	1,836.82	426.41	474.34	637.83	48.05
2,069.00	28.92	51.81	1,914.63	453.19	508.22	680.93	48.28
2,161.00	28.70	52.16	1,995.25	480.49	543.15	725.18	48.50
2,253.00	29.18	47.68	2,075.77	509.15	577.18	769.66	48.58
2,345.00	29.14	46.36	2,156.11	539.71	609.98	814.47	48.50
2,436.00	28.52	46.97	2,235.83	569.82	641.89	858.33	48.40
2,528.00	27.82	46.18	2,316.93	599.67	673.44	901.74	48.32
2,619.00	27.42	46.80	2,397.56	628.72	704.03	943.90	48.23
2,711.00	28.21	48.64	2,478.93	657.59	735.80	986.83	48.21
2,803.00	27.60	48.12	2,560.23	686.19	767.99	1,029.88	48.22
2,894.00	28.78	48.47	2,640.44	714.78	800.08	1,072.87	48.22
2,986.00	28.13	48.73	2,721.32	743.77	832.96	1,116.70	48.24
3,078.00	30.10	49.87	2,801.70	772.95	866.90	1,161.45	48.28
3,170.00	31.86	50.31	2,880.57	803.33	903.23	1,208.79	48.35
3,262.00	31.16	49.61	2,959.00	834.26	940.04	1,256.85	48.41
3,355.00	32.87	49.79	3,037.86	866.14	977.65	1,306.14	48.46
3,445.00	31.77	49.78	3,113.91	897.21	1,014.39	1,354.24	48.51
3,538.00	31.07	49.87	3,193.28	928.49	1,051.43	1,402.71	48.55
3,630.00	30.85	50.05	3,272.17	958.94	1,087.67	1,450.03	48.60
3,722.00	30.41	50.31	3,351.33	988.95	1,123.67	1,496.88	48.65
3,814.00	29.88	49.79	3,430.89	1,018.62	1,159.09	1,543.07	48.69
3,905.00	29.00	49.35	3,510.14	1,047.62	1,193.13	1,587.79	48.72
3,997.00	28.96	49.08	3,590.62	1,076.74	1,226.88	1,632.36	48.73
4,090.00	28.30	47.59	3,672.25	1,106.36	1,260.18	1,676.92	48.72
4,182.00	27.69	48.03	3,753.48	1,135.36	1,292.17	1,720.10	48.70
4,274.00	29.22	47.24	3,834.37	1,164.90	1,324.55	1,763.93	48.67
4,366.00	28.61	46.45	3,914.90	1,195.32	1,357.00	1,808.39	48.62
4,461.00	27.73	46.01	3,998.64	1,226.35	1,389.39	1,853.20	48.57
4,556.00	28.61	48.38	4,082.39	1,256.81	1,422.30	1,898.02	48.53
4,650.00	27.42	48.47	4,165.38	1,286.10	1,455.33	1,942.17	48.53
4,745.00	29.53	49.79	4,248.88	1,315.73	1,489.58	1,987.46	48.55
4,840.00	28.61	49.00	4,331.91	1,345.76	1,524.63	2,033.61	48.57
4,935.00	27.42	49.00	4,415.78	1,375.04	1,558.31	2,078.23	48.58
5,031.00	29.79	48.64	4,500.06	1,405.30	1,592.89	2,124.19	48.58
5,126.00	28.56	48.21	4,583.00	1,436.03	1,627.54	2,170.50	48.58
5,220.00	29.88	48.21	4,665.04	1,466.61	1,661.75	2,216.38	48.57
5,315.00	28.48	48.29	4,747.98	1,497.45	1,696.31	2,262.70	48.56
5,409.00	27.69	48.56	4,830.91	1,526.82	1,729.41	2,306.95	48.56

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Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.00ft
Well:	WMC 512-18-793	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	NN

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
5,504.00	26.81	48.47	4,915.37	1,555.63	1,762.00	2,350.45	48.56
5,597.00	25.97	47.50	4,998.67	1,583.29	1,792.71	2,391.78	48.55
5,692.00	24.96	47.59	5,084.44	1,610.87	1,822.85	2,432.62	48.53
5,786.00	23.51	46.97	5,170.16	1,637.04	1,851.20	2,471.20	48.51
5,881.00	22.50	45.83	5,257.60	1,662.63	1,878.09	2,508.30	48.48
5,975.00	21.71	46.18	5,344.69	1,687.20	1,903.53	2,543.64	48.45
6,070.00	21.09	47.33	5,433.14	1,710.95	1,928.78	2,578.28	48.42
6,163.00	20.35	47.24	5,520.13	1,733.27	1,952.95	2,611.18	48.41
6,258.00	19.73	47.41	5,609.37	1,755.34	1,976.89	2,643.73	48.40
6,352.00	18.76	46.27	5,698.12	1,776.53	1,999.49	2,674.70	48.38
6,446.00	18.24	46.18	5,787.26	1,797.16	2,021.03	2,704.50	48.36
6,541.00	17.27	50.84	5,877.74	1,816.36	2,042.69	2,733.45	48.36
6,635.00	16.92	51.54	5,967.59	1,833.68	2,064.22	2,761.05	48.38
6,729.00	14.85	53.21	6,057.99	1,849.41	2,084.58	2,786.71	48.42
6,824.00	12.13	51.72	6,150.36	1,862.88	2,102.17	2,808.81	48.45
6,918.00	10.94	51.90	6,242.46	1,874.50	2,116.94	2,827.58	48.48
7,013.00	10.59	50.40	6,335.79	1,885.63	2,130.76	2,845.30	48.49
7,106.00	10.46	50.58	6,427.23	1,896.44	2,143.87	2,862.28	48.50
7,201.00	8.96	46.10	6,520.87	1,907.05	2,155.86	2,878.29	48.50
7,295.00	8.39	43.02	6,613.79	1,917.14	2,165.81	2,892.43	48.49
7,389.00	7.95	41.17	6,706.84	1,927.04	2,174.77	2,905.71	48.46
7,484.00	5.71	42.40	6,801.16	1,935.48	2,182.28	2,916.92	48.43
7,578.00	4.61	40.56	6,894.77	1,941.80	2,187.89	2,925.32	48.41
7,672.00	4.13	34.05	6,988.50	1,947.48	2,192.25	2,932.34	48.38
7,767.00	4.17	35.46	7,083.25	1,953.12	2,196.16	2,939.02	48.35
7,862.00	4.13	32.91	7,178.00	1,958.81	2,200.03	2,945.68	48.32
7,956.00	3.69	29.48	7,271.78	1,964.29	2,203.35	2,951.81	48.28
8,050.00	3.56	49.70	7,365.60	1,968.81	2,207.07	2,957.59	48.27
8,144.00	3.25	66.57	7,459.44	1,971.75	2,211.74	2,963.04	48.28
8,238.00	3.34	67.10	7,553.28	1,973.88	2,216.71	2,968.16	48.32
8,333.00	2.90	66.49	7,648.14	1,975.91	2,221.46	2,973.07	48.35
8,427.00	0.88	88.72	7,742.08	1,976.88	2,224.36	2,975.88	48.37
8,521.00	0.53	104.19	7,836.08	1,976.79	2,225.51	2,976.67	48.39
8,616.00	0.66	128.01	7,931.07	1,976.34	2,226.36	2,977.02	48.40
8,710.00	0.70	126.60	8,025.07	1,975.67	2,227.25	2,977.23	48.43
8,804.00	0.70	118.17	8,119.06	1,975.05	2,228.22	2,977.55	48.45
8,898.00	0.40	130.12	8,213.05	1,974.57	2,228.97	2,977.79	48.46
8,992.00	0.31	76.33	8,307.05	1,974.42	2,229.47	2,978.07	48.47
9,087.00	0.13	2.68	8,402.05	1,974.59	2,229.73	2,978.37	48.47
9,181.00	0.31	298.69	8,496.05	1,974.82	2,229.51	2,978.36	48.47
9,276.00	0.48	325.94	8,591.05	1,975.27	2,229.06	2,978.32	48.45
9,370.00	0.40	328.14	8,685.05	1,975.88	2,228.67	2,978.43	48.44
9,464.00	0.66	283.49	8,779.04	1,976.28	2,227.97	2,978.17	48.43
9,559.00	0.53	296.14	8,874.04	1,976.60	2,227.04	2,977.69	48.41
9,654.00	0.44	284.54	8,969.03	1,976.89	2,226.29	2,977.33	48.40

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Well:	WMC 512-18-793	North Reference:	True
Wellbore:	OWB	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 (°)	
9,748.00	0.31	346.42	9,063.03	1,977.22	2,225.88	2,977.24	48.39	
9,842.00	0.35	346.95	9,157.03	1,977.75	2,225.76	2,977.50	48.38	
9,937.00	0.70	329.98	9,252.03	1,978.54	2,225.40	2,977.76	48.36	
10,032.00	0.75	286.56	9,347.02	1,979.22	2,224.52	2,977.55	48.34	
10,127.00	1.01	249.21	9,442.01	1,979.10	2,223.14	2,976.44	48.32	
10,223.00	2.29	235.85	9,537.97	1,977.72	2,220.76	2,973.74	48.31	
10,317.00	4.26	227.68	9,631.81	1,974.31	2,216.62	2,968.39	48.31	
10,412.00	6.24	219.24	9,726.41	1,967.94	2,210.75	2,959.76	48.33	
10,506.00	7.91	213.88	9,819.69	1,958.61	2,203.91	2,948.46	48.37	
10,600.00	10.46	214.93	9,912.48	1,946.24	2,195.42	2,933.89	48.44	
10,677.00	10.37	215.90	9,988.21	1,934.90	2,187.35	2,920.33	48.50	
10,740.00	10.37	215.90	10,050.18	1,925.71	2,180.70	2,909.27	48.55	
PTB @ 10740 MD/ 10050.2 TVD								

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
475.00	473.39	27.42	19.78	First Survey @ 475 MD/ 473.4 TVD	
10,740.00	10,050.18	1,925.71	2,180.70	PTB @ 10740 MD/ 10050.2 TVD	

Checked By: _____ Approved By: _____ Date: _____