

WELL DETAILS: WMC 412-18-793

+N/-S	+E/-W	Northing	Ground Level: Easting	8007.0 Latitude	Longitude	Slot
0.0	0.0	1591987.100	2342241.000	39.435622	-107.829079	WMC 412-18-793

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7021.0	2251.7	2233.3	1594180.800	2344531.300	39.441804	-107.821171
BHL	10306.0	2251.7	2233.3	1594180.800	2344531.300	39.441804	-107.821171

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
295.9	296.0	2.54	0.57	6.6	0.1	4.7	6.6	First Survey @ 296' MD/ 295.9 TVD
10037.2	10849.0	2.15	254.75	2280.0	2238.1	3194.8	3264.6	PTB @ 10849' MD/ 10037.2' TVD

SLOTS

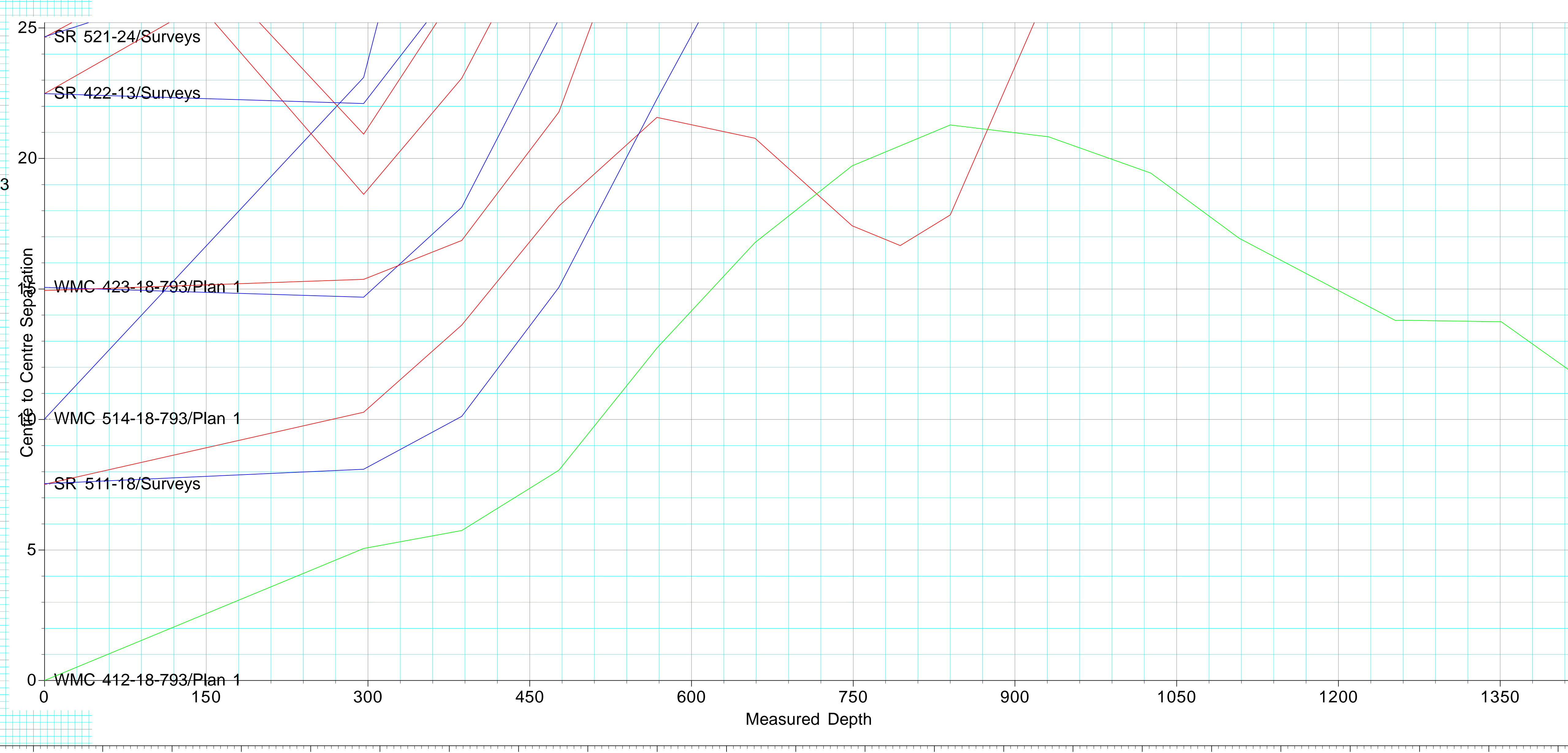
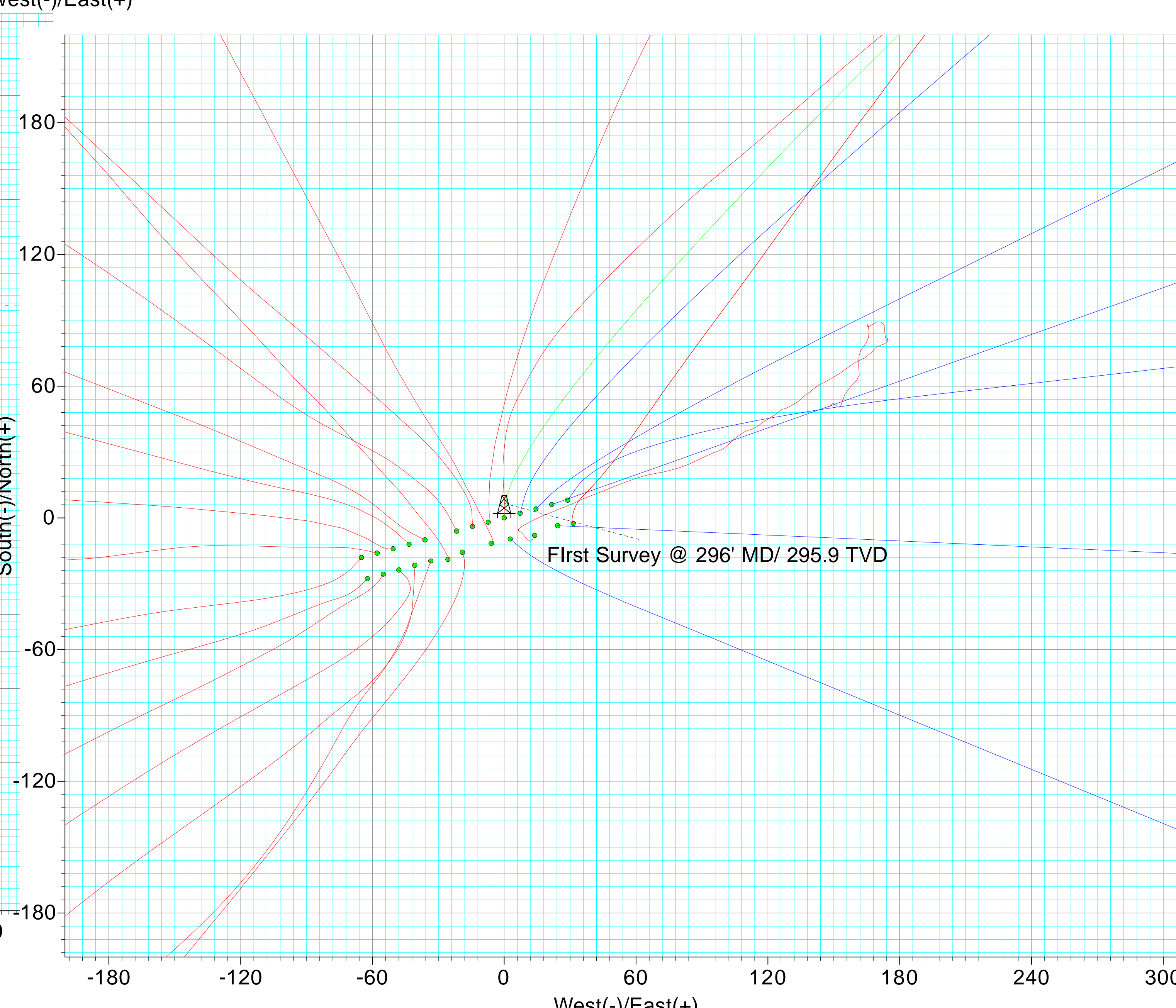
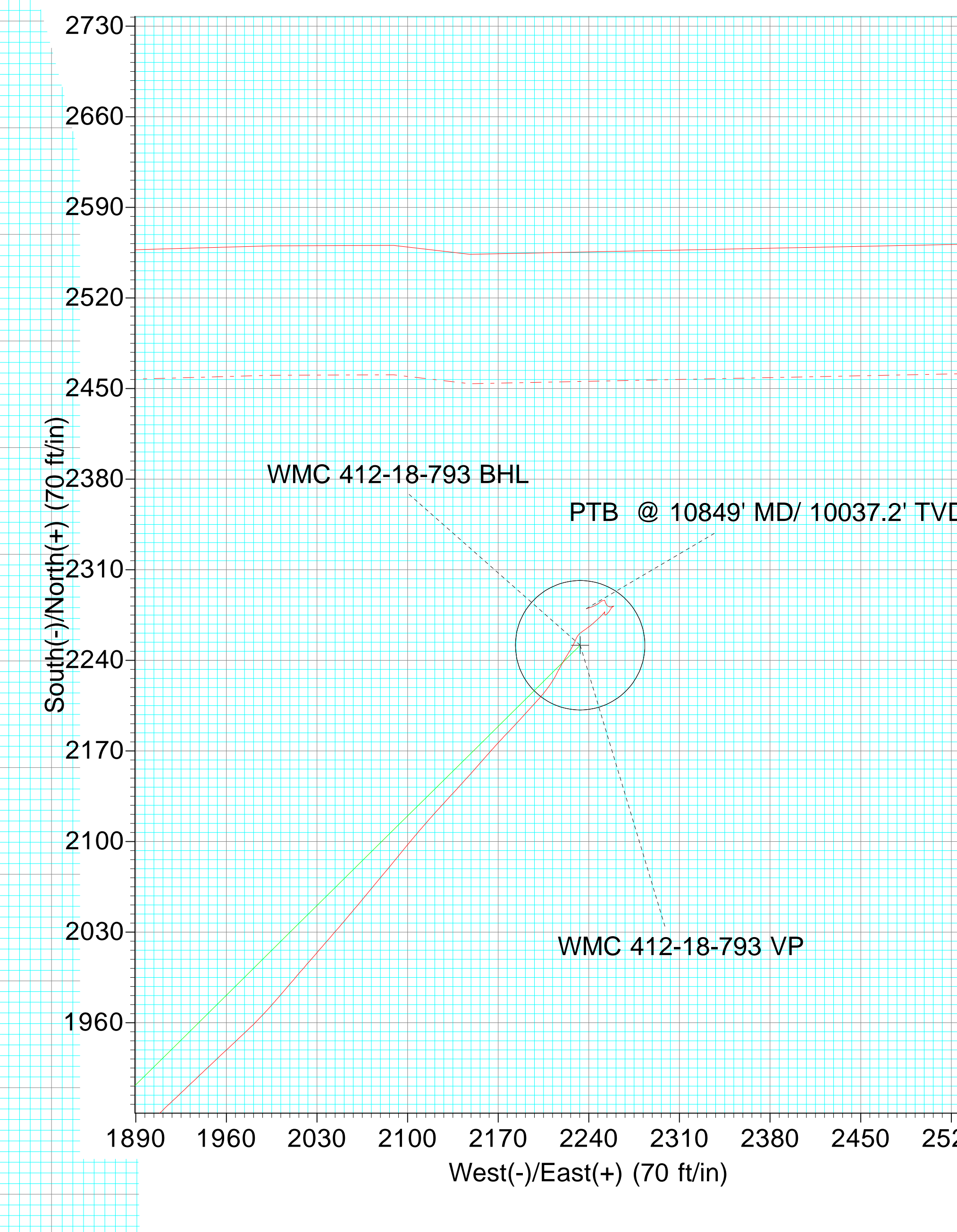
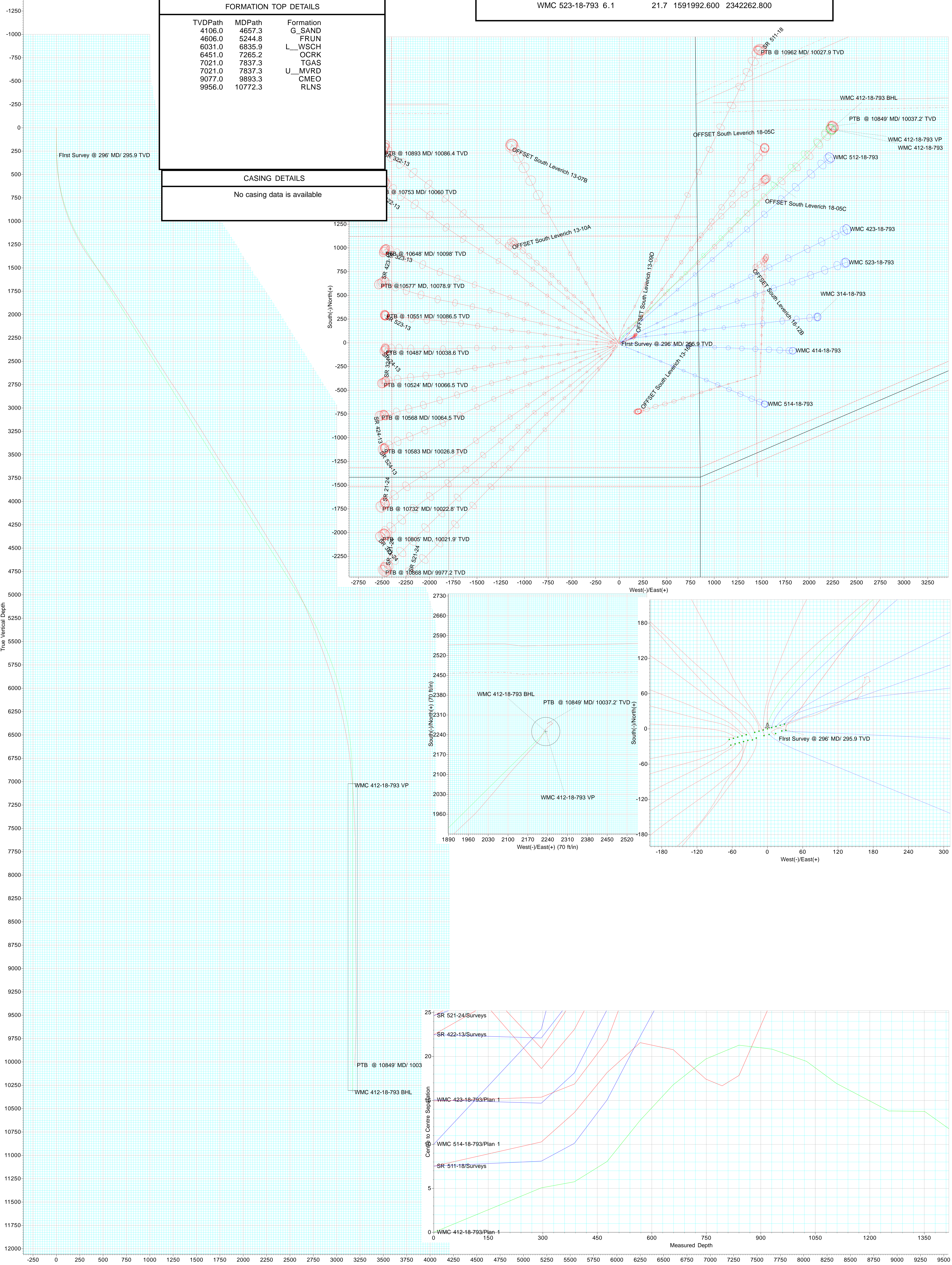
Slot Name	+N/-S	+E/-W	Northing	Easting
OFFSET South Leverich 13-07B	-11.7	-5.9	1591975.598	2342234.824
OFFSET South Leverich 13-09D	-8.0	13.9	1591978.733	2342254.682
OFFSET South Leverich 13-10A	-18.9	-25.6	1591968.823	2342214.873
OFFSET South Leverich 13-16C-343.1		1462.8	1591606.646	2343694.566
OFFSET South Leverich 18-05C	-2.6	31.4	1591983.730	2342272.330
OFFSET South Leverich 18-12B-328.5		1477.0	1591620.850	2343709.057
SR 21-24	-23.7	-47.9	1591964.600	2342192.500
SR 24-13	-16.1	-57.8	1591972.500	2342182.800
SR 321-24	-21.6	-40.7	1591966.500	2342199.800
SR 322-13	-4.0	-14.4	1591983.500	2342226.500
SR 323-13	-10.0	-36.1	1591978.000	2342204.700
SR 324-13	-18.1	-65.0	1591970.700	2342175.600
SR 421-24	-19.7	-33.4	1591968.300	2342207.100
SR 422-13	-6.1	-21.7	1591981.600	2342219.200
SR 423-13	-12.0	-43.3	1591976.200	2342197.400
SR 424-13	-27.7	-62.3	1591961.000	2342178.000
SR 511-18	-2.0	-7.3	1591985.300	2342233.700
SR 521-24	-15.7	-19.0	1591971.900	2342221.600
SR 523-13	-14.1	-50.6	1591974.300	2342190.100
SR 524-13	-25.7	-55.1	1591962.800	2342185.300
WMC 314-18-793	8.0	28.9	1591994.400	2342270.100
WMC 412-18-793	0.0	0.0	1591987.100	2342241.000
WMC 414-18-793	-3.6	24.4	1591982.900	2342265.300
WMC 423-18-793	4.1	14.5	1591990.800	2342255.600
WMC 512-18-793	2.1	7.2	1591989.000	2342248.300
WMC 514-18-793	-9.6	2.7	1591977.400	2342243.500
WMC 523-18-793	6.1	21.7	1591992.600	2342262.800

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
4106.0	4657.3	G_SAND
4606.0	5244.8	FRUN
6031.0	6835.9	L_WSCH
6451.0	7265.2	OCRK
7021.0	7837.3	TGAS
7021.0	7837.3	U_MVRD
9077.0	9893.3	CME0
9956.0	10772.3	RLNS

CASING DETAILS

No casing data is available





Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 23082833

Well Name: WMC 412-18-793 A.P.I.# 05-045-24556 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -107.829079 County, State: Garfield County, CO

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

Final Report 9/13/2023 Date of First Survey 9/1/2023 Date of Last Survey: 9/6/2023

Datum: NAD83 Survey MD From: 296.00 To: 10783 FT. Tool Type: MWD + HRGM

Bit to Sensor: 66 FT. Rig (Company & Number): HP 329 RKB Height: 30.00 FT.

Ground Elevation: 8007.00 Northings: 1591987.1 Eastings: 2342241

Surveyor Kyle Temple Depth of Final Projection: 10849 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

9/13/23
Date



Terra Energy Partners, LLP

Garfield County, CO (Nad 83)

S. Leverich 13-09 Pad

WMC 412-18-793 - Slot WMC 412-18-793

OWB

Design: Surveys

Survey Certification Report

13 September, 2023



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well WMC 412-18-793 - Slot WMC 412-18-793
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 8037.0ft
Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.0ft
Well:	WMC 412-18-793	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:	0.0 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.47 °

Well	WMC 412-18-793 - Slot WMC 412-18-793					
Well Position	+N/-S	0.0 ft	Northing:	1,591,987.100 usft	Latitude:	39.435622
	+E/-W	0.0 ft	Easting:	2,342,241.000 usft	Longitude:	-107.829079
Position Uncertainty		0.0 ft	Wellhead Elevation:	8,037.0 ft	Ground Level:	8,007.0 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:	0.0
Vertical Section:		Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
		0.0	0.0	0.0	44.77

Survey Program	Date	9/6/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
296.0	10,849.0	Surveys (OWB)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	

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
296.0	2.54	0.57	295.9	6.6	0.1	6.6	0.57
First Survey @ 296' MD/ 295.9 TVD							
387.0	5.45	355.65	386.7	12.9	-0.2	12.9	358.92
477.0	7.91	0.39	476.1	23.3	-0.5	23.3	358.71
568.0	9.98	8.21	565.9	37.4	0.6	37.4	0.99
659.0	10.63	25.27	655.5	52.8	5.4	53.1	5.79
749.0	14.11	29.92	743.4	69.8	14.4	71.3	11.63
840.0	16.44	40.73	831.2	89.2	28.3	93.6	17.61
931.0	19.12	44.43	917.8	109.6	47.2	119.3	23.28
1,026.0	22.50	46.71	1,006.6	133.2	71.3	151.1	28.15
1,108.0	25.53	50.14	1,081.5	155.3	96.3	182.7	31.80

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well WMC 412-18-793 - Slot WMC 412-18-793
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Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.0ft
Well:	WMC 412-18-793	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 (°)	
1,261.0	28.52	48.82	1,217.8	200.5	149.1	249.8	36.64	
1,351.0	31.64	51.28	1,295.7	229.4	183.7	293.9	38.69	
1,442.0	34.80	51.19	1,371.8	260.6	222.6	342.7	40.50	
1,532.0	36.30	47.50	1,445.0	294.7	262.2	394.5	41.66	
1,623.0	35.86	44.16	1,518.6	332.0	300.6	447.9	42.16	
1,713.0	35.11	45.39	1,591.9	369.1	337.4	500.1	42.43	
1,804.0	34.54	45.57	1,666.6	405.6	374.5	552.0	42.72	
1,895.0	33.75	44.51	1,741.9	441.6	410.6	603.1	42.92	
1,985.0	33.13	43.37	1,817.0	477.4	445.0	652.6	42.99	
2,075.0	32.12	42.40	1,892.8	512.9	478.1	701.2	42.99	
2,165.0	32.70	47.06	1,968.8	547.1	512.0	749.3	43.10	
2,255.0	32.21	46.54	2,044.7	580.2	547.2	797.5	43.32	
2,346.0	31.77	46.80	2,121.9	613.3	582.3	845.7	43.51	
2,437.0	32.92	47.59	2,198.8	646.4	618.0	894.3	43.72	
2,527.0	32.39	47.77	2,274.6	679.1	653.9	942.7	43.92	
2,617.0	31.95	47.06	2,350.7	711.5	689.2	990.6	44.09	
2,708.0	31.38	46.89	2,428.2	744.1	724.1	1,038.3	44.22	
2,799.0	32.87	46.71	2,505.3	777.2	759.4	1,086.6	44.34	
2,889.0	32.65	46.97	2,580.9	810.5	794.9	1,135.3	44.44	
2,980.0	31.77	46.89	2,657.9	843.6	830.3	1,183.7	44.55	
3,070.0	34.32	46.62	2,733.4	877.3	866.1	1,232.8	44.63	
3,160.0	33.22	45.22	2,808.2	912.1	902.0	1,282.8	44.68	
3,251.0	32.30	45.57	2,884.7	946.6	937.1	1,332.0	44.71	
3,341.0	31.64	45.74	2,961.1	979.9	971.2	1,379.7	44.74	
3,432.0	30.50	44.34	3,039.0	1,013.1	1,004.4	1,426.6	44.75	
3,523.0	33.13	43.20	3,116.3	1,047.8	1,037.6	1,474.6	44.72	
3,613.0	32.12	43.20	3,192.1	1,083.1	1,070.8	1,523.1	44.67	
3,704.0	31.46	43.81	3,269.5	1,117.9	1,103.8	1,571.0	44.64	
3,798.0	30.54	43.55	3,350.0	1,152.9	1,137.2	1,619.4	44.61	
3,893.0	31.64	43.28	3,431.4	1,188.6	1,170.9	1,668.5	44.57	
3,987.0	30.81	42.93	3,511.8	1,224.1	1,204.2	1,717.2	44.53	
4,082.0	33.09	44.43	3,592.4	1,260.5	1,239.0	1,767.4	44.51	
4,177.0	31.99	44.07	3,672.5	1,297.1	1,274.6	1,818.5	44.50	
4,271.0	30.94	44.78	3,752.7	1,332.1	1,309.0	1,867.6	44.50	
4,366.0	33.27	47.94	3,833.1	1,366.9	1,345.5	1,918.0	44.55	
4,461.0	32.12	48.47	3,913.1	1,401.1	1,383.8	1,969.3	44.64	
4,555.0	30.85	46.89	3,993.2	1,434.2	1,420.1	2,018.3	44.72	
4,650.0	32.92	47.41	4,073.9	1,468.3	1,456.9	2,068.4	44.78	
4,745.0	31.11	46.45	4,154.4	1,502.7	1,493.7	2,118.7	44.83	
4,840.0	30.67	46.18	4,236.0	1,536.3	1,528.9	2,167.5	44.86	
4,935.0	31.38	46.36	4,317.4	1,570.2	1,564.3	2,216.4	44.89	
5,031.0	30.28	46.18	4,399.8	1,604.2	1,599.9	2,265.6	44.92	
5,126.0	32.56	47.33	4,480.9	1,638.1	1,636.0	2,315.1	44.96	
5,220.0	31.38	47.50	4,560.6	1,671.8	1,672.6	2,364.8	45.01	

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Site:	S. Leverich 13-09 Pad	RKB Reference:	RKB @ 30' @ 8037.0ft
Well:	WMC 412-18-793	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 (°)	
5,314.0	31.03	46.97	4,641.0	1,704.9	1,708.4	2,413.5	45.06	
5,408.0	29.66	46.27	4,722.1	1,737.5	1,742.9	2,461.0	45.09	
5,503.0	27.95	47.06	4,805.4	1,768.9	1,776.2	2,506.7	45.12	
5,597.0	26.85	46.62	4,888.8	1,798.5	1,807.7	2,550.0	45.15	
5,691.0	25.97	48.38	4,973.0	1,826.7	1,838.5	2,591.7	45.18	
5,786.0	25.05	48.21	5,058.8	1,853.9	1,869.1	2,632.6	45.23	
5,880.0	23.77	46.97	5,144.4	1,880.1	1,897.8	2,671.4	45.27	
5,975.0	22.54	46.45	5,231.7	1,905.7	1,925.0	2,708.7	45.29	
6,069.0	21.53	46.62	5,318.8	1,930.0	1,950.6	2,744.0	45.30	
6,163.0	20.70	46.80	5,406.5	1,953.2	1,975.2	2,777.9	45.32	
6,257.0	21.01	40.65	5,494.4	1,977.4	1,998.3	2,811.3	45.30	
6,351.0	20.30	40.82	5,582.3	2,002.5	2,019.9	2,844.3	45.25	
6,445.0	19.47	41.00	5,670.7	2,026.7	2,040.9	2,876.2	45.20	
6,540.0	18.59	39.68	5,760.5	2,050.3	2,060.9	2,907.1	45.15	
6,634.0	17.97	39.77	5,849.8	2,073.0	2,079.8	2,936.4	45.09	
6,728.0	17.31	39.24	5,939.4	2,094.9	2,097.9	2,964.8	45.04	
6,823.0	15.86	41.35	6,030.4	2,115.6	2,115.4	2,991.8	45.00	
6,917.0	14.94	42.84	6,121.0	2,134.2	2,132.1	3,016.7	44.97	
7,012.0	13.89	41.70	6,213.0	2,151.6	2,148.0	3,040.3	44.95	
7,106.0	12.79	41.35	6,304.5	2,167.9	2,162.4	3,062.0	44.93	
7,200.0	11.87	43.63	6,396.3	2,182.7	2,176.0	3,082.0	44.91	
7,294.0	10.85	42.49	6,488.5	2,196.2	2,188.6	3,100.5	44.90	
7,388.0	10.37	42.14	6,580.9	2,209.0	2,200.3	3,117.8	44.89	
7,483.0	7.78	34.76	6,674.7	2,220.6	2,209.7	3,132.7	44.86	
7,577.0	6.59	26.41	6,768.0	2,230.7	2,215.7	3,144.1	44.81	
7,672.0	5.93	31.77	6,862.4	2,239.7	2,220.7	3,154.0	44.76	
7,766.0	5.80	31.07	6,955.9	2,247.9	2,225.7	3,163.4	44.72	
7,861.0	4.83	22.98	7,050.5	2,255.7	2,229.8	3,171.8	44.67	
7,955.0	3.21	50.67	7,144.3	2,261.0	2,233.3	3,178.1	44.65	
8,049.0	3.12	56.47	7,238.1	2,264.1	2,237.5	3,183.2	44.66	
8,143.0	2.77	50.75	7,332.0	2,267.0	2,241.4	3,188.0	44.67	
8,238.0	2.55	48.21	7,426.9	2,269.8	2,244.7	3,192.3	44.68	
8,333.0	2.46	46.80	7,521.8	2,272.6	2,247.8	3,196.5	44.69	
8,426.0	2.55	42.14	7,614.7	2,275.5	2,250.6	3,200.6	44.68	
8,520.0	0.48	32.21	7,708.7	2,277.4	2,252.3	3,203.0	44.68	
8,615.0	0.18	216.60	7,803.7	2,277.6	2,252.4	3,203.3	44.68	
8,709.0	0.40	198.94	7,897.7	2,277.2	2,252.2	3,202.8	44.68	
8,803.0	0.53	172.66	7,991.7	2,276.5	2,252.1	3,202.3	44.69	
8,897.0	0.31	155.70	8,085.7	2,275.8	2,252.3	3,201.9	44.70	
8,992.0	0.13	180.74	8,180.7	2,275.5	2,252.4	3,201.7	44.71	
9,086.0	0.31	169.85	8,274.7	2,275.1	2,252.4	3,201.5	44.71	
9,181.0	0.09	52.60	8,369.7	2,274.9	2,252.6	3,201.4	44.72	
9,275.0	0.35	76.68	8,463.7	2,275.0	2,252.9	3,201.8	44.72	
9,370.0	0.62	51.81	8,558.7	2,275.4	2,253.6	3,202.5	44.72	
9,464.0	0.57	36.60	8,652.7	2,276.1	2,254.3	3,203.5	44.72	

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Site:	S. Leverich 13-09 Pad	MD Reference:	RKB @ 30' @ 8037.0ft
Well:	WMC 412-18-793	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 (°)	
9,558.0	0.92	44.25	8,746.7	2,277.0	2,255.1	3,204.7	44.72	
9,653.0	1.23	31.15	8,841.6	2,278.4	2,256.1	3,206.4	44.72	
9,747.0	0.75	28.43	8,935.6	2,279.8	2,256.9	3,208.0	44.71	
9,841.0	0.92	48.73	9,029.6	2,280.9	2,257.8	3,209.4	44.71	
9,936.0	1.23	56.29	9,124.6	2,281.9	2,259.2	3,211.1	44.71	
10,031.0	1.58	239.81	9,219.6	2,281.8	2,258.9	3,210.9	44.71	
10,125.0	1.58	273.73	9,313.6	2,281.3	2,256.5	3,208.8	44.69	
10,219.0	1.54	306.43	9,407.5	2,282.1	2,254.2	3,207.7	44.65	
10,314.0	1.80	351.34	9,502.5	2,284.3	2,253.0	3,208.4	44.60	
10,408.0	1.10	322.34	9,596.5	2,286.5	2,252.2	3,209.4	44.57	
10,502.0	2.37	230.31	9,690.4	2,286.0	2,250.1	3,207.6	44.55	
10,596.0	2.42	237.61	9,784.3	2,283.7	2,247.0	3,203.8	44.54	
10,691.0	2.15	243.67	9,879.3	2,281.8	2,243.7	3,200.1	44.52	
10,783.0	2.15	254.75	9,971.2	2,280.6	2,240.5	3,197.0	44.49	
10,849.0	2.15	254.75	10,037.2	2,280.0	2,238.1	3,194.9	44.47	
PTB @ 10849' MD/ 10037.2' TVD								

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
296.0	295.9	6.6	0.1	First Survey @ 296' MD/ 295.9 TVD	
10,849.0	10,037.2	2,280.0	2,238.1	PTB @ 10849' MD/ 10037.2' TVD	

Checked By: _____ Approved By: _____ Date: _____