

WELL DETAILS: WMC 523-18-793

+N/-S	+E/-W	Northing	Ground Level:	8007.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1591992.600	2342262.800		39.435639	-107.829003		WMC 523-18-793

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7051.00	838.99	2364.48	1592770.700	2344648.000	39.437942	-107.820631
BHL	10356.00	838.99	2364.48	1592770.700	2344648.000	39.437942	-107.820631

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
296.84	297.00	3.21	53.65	4.93	6.70	7.96	8.32	First Survey@ 297 MD/ 296.84 TVD
10085.93	10600.00	1.89	229.17	862.18	2369.87	2521.75	2588.18	PTB @ 10600 MD/ 10085.9 TVD

SLOTS

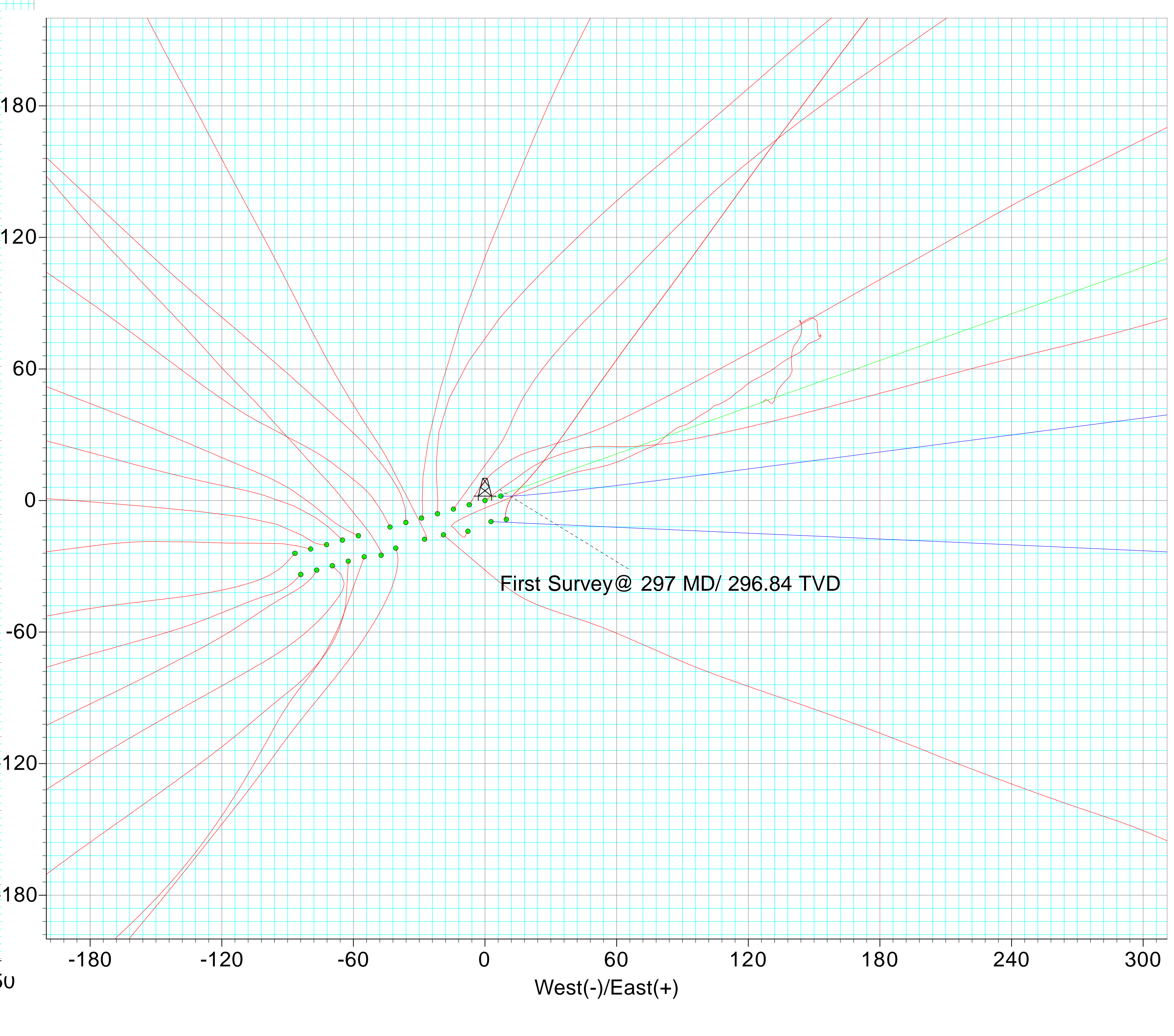
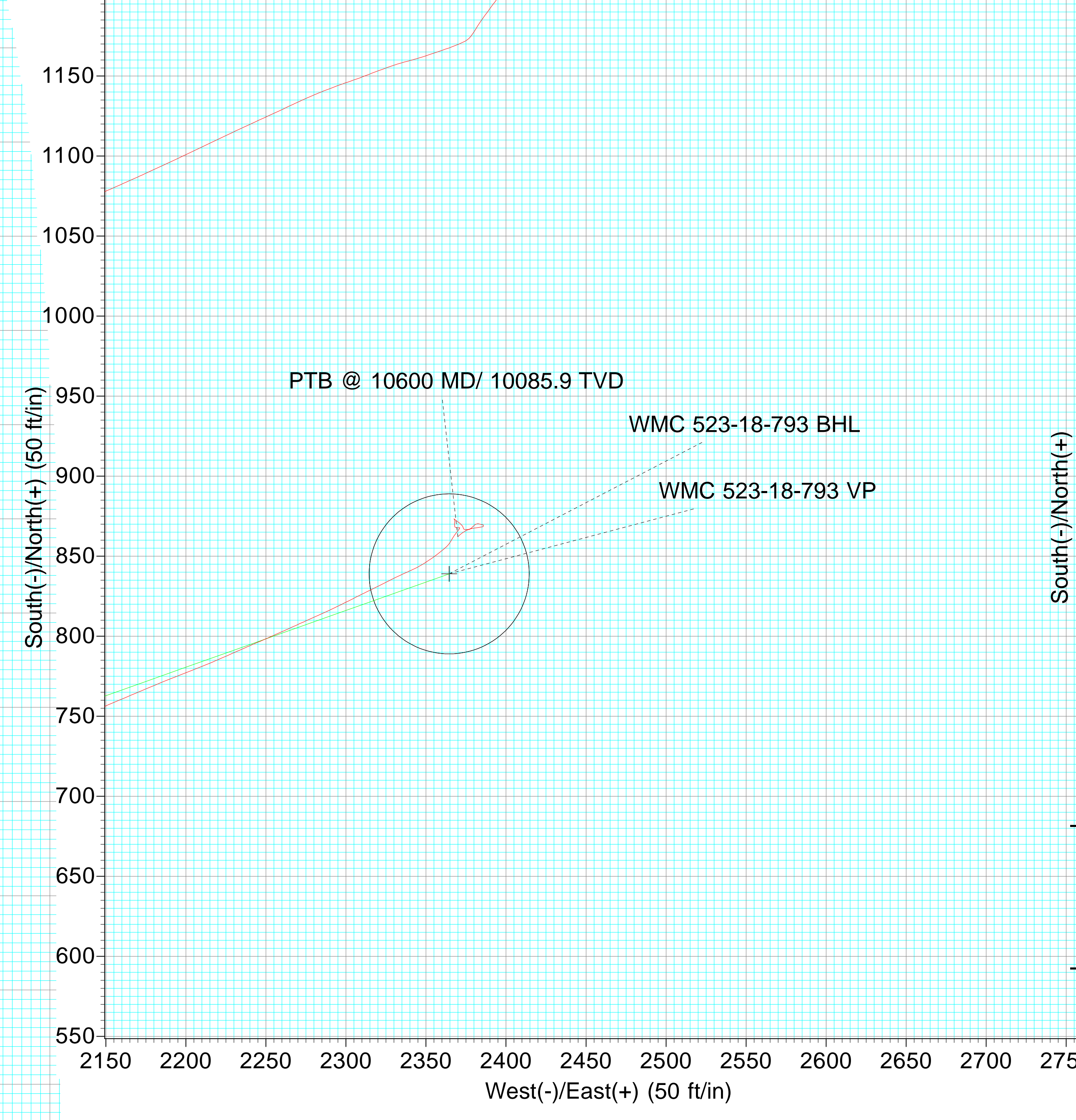
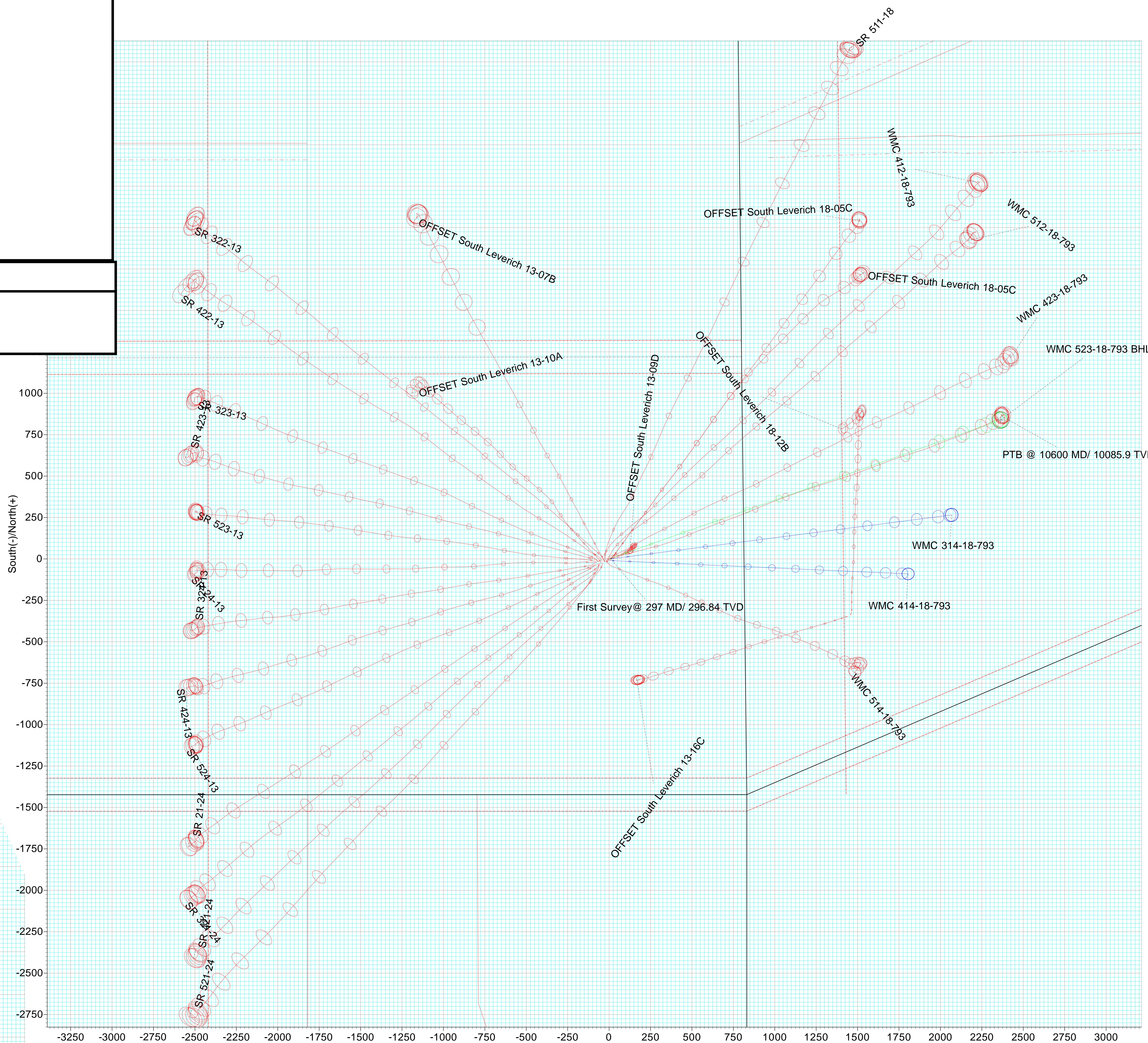
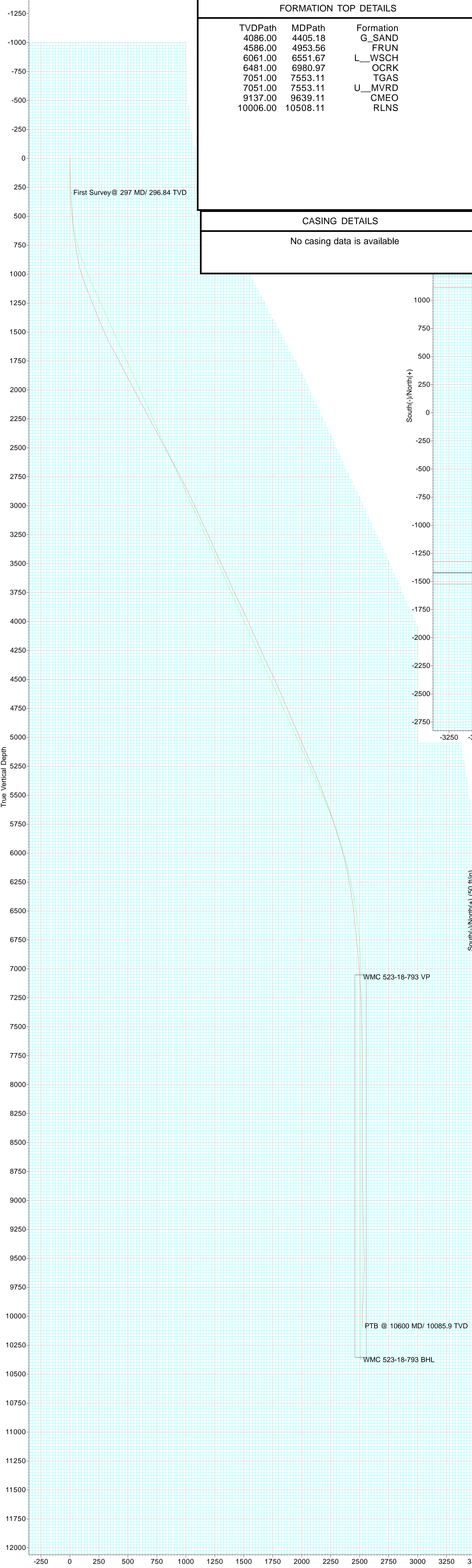
Slot Name	+N/-S	+E/-W	Northing	Easting
OFFSET South Leverich 13-07B-17.71	-27.53	1591975.598	2342234.824	
OFFSET South Leverich 13-09D-14.07	-7.76	1591978.733	2342254.682	
OFFSET South Leverich 13-10A-25.00	-47.30	1591968.823	2342214.873	
OFFSET South Leverich 13-16C-34.13	1441.19	1591606.646	2343694.566	
OFFSET South Leverich 18-05C -8.62	9.75	1591983.730	2342272.330	
OFFSET South Leverich 18-12B-34.56	1455.31	1591620.850	2343709.057	
SR 21-24	-29.79	-69.56	1591964.600	2342192.500
SR 24-13	-22.14	-79.46	1591972.500	2342182.800
SR 321-24	-27.71	-62.31	1591966.500	2342199.800
SR 322-13	-10.03	-36.05	1591983.500	2342226.500
SR 323-13	-16.08	-57.71	1591978.000	2342204.700
SR 324-13	-24.13	-86.61	1591970.700	2342175.600
SR 421-24	-25.72	-55.06	1591968.300	2342207.100
SR 422-13	-12.11	-43.30	1591981.600	2342219.200
SR 423-13	-18.07	-64.96	1591976.200	2342197.400
SR 424-13	-33.76	-83.96	1591961.000	2342178.000
SR 511-18	-8.04	-28.90	1591985.300	2342233.700
SR 521-24	-21.75	-40.66	1591971.900	2342221.600
SR 523-13	-20.16	-72.21	1591974.300	2342190.100
SR 524-13	-31.78	-76.71	1591962.800	2342185.300
WMC 314-18-793	1.99	7.25	1591994.400	2342270.100
WMC 412-18-793	6.06	-21.65	1591987.100	2342241.000
WMC 414-18-793	9.63	2.75	1591982.900	2342265.300
WMC 423-18-793	1.98	-7.15	1591990.800	2342255.600
WMC 512-18-793	3.97	-14.40	1591989.000	2342248.300
WMC 514-18-793	5.69	-18.90	1591977.400	2342243.500
WMC 523-18-793	0.00	0.00	1591992.600	2342262.800

FORMATION TOP DETAILS

TVDP	MDP	Formation
4086.00	4405.18	G_SAND
4586.00	4953.56	FRUN
6061.00	6551.67	L_WSCH
6481.00	6980.97	OCRK
7051.00	7553.11	TGAS
7051.00	7553.11	U_MVRD
9137.00	9639.11	CMEO
10006.00	10508.11	RLNS

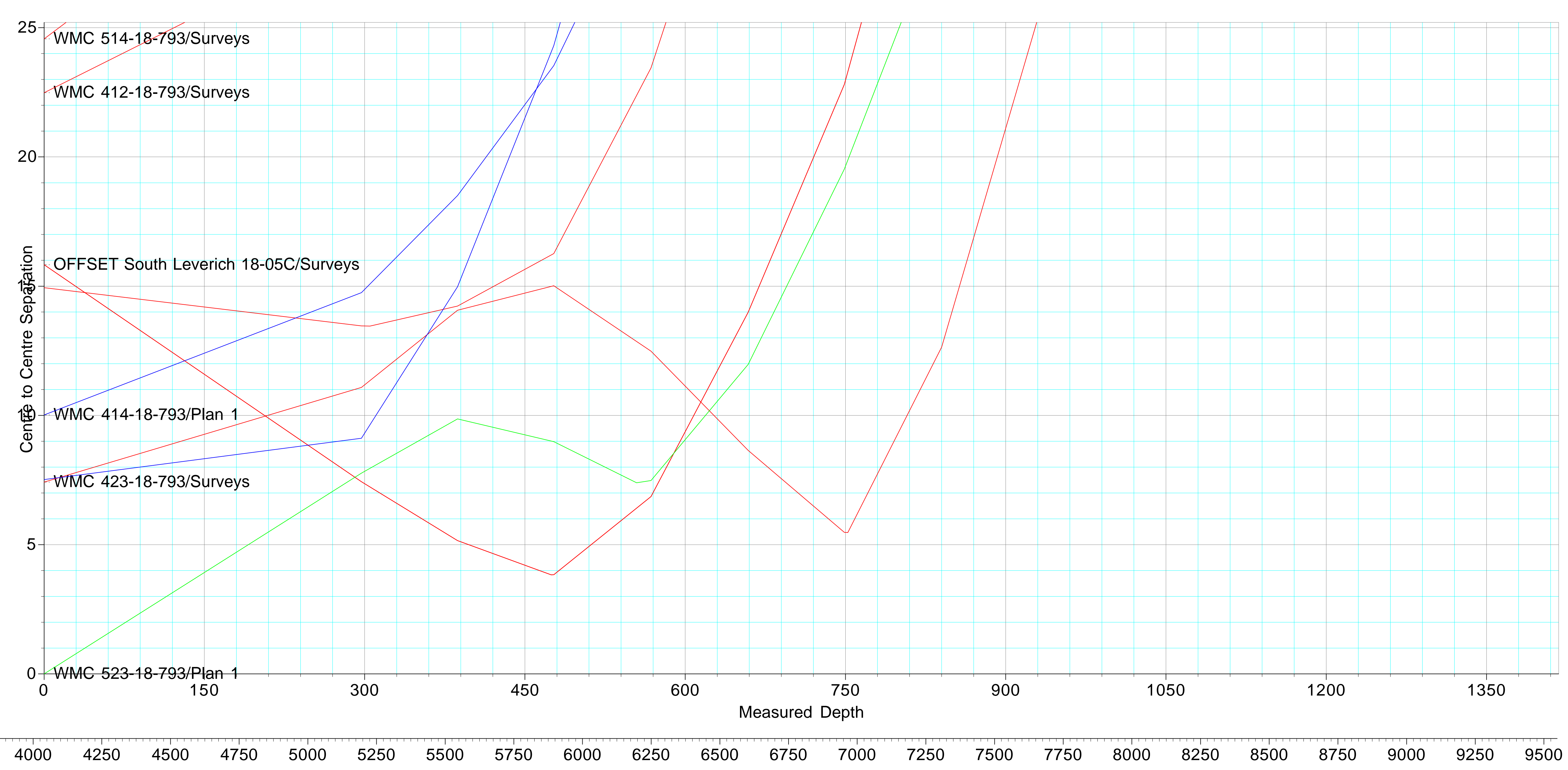
CASING DETAILS

No casing data is available



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
296.84	297.00	3.21	53.65	4.93	6.70	7.96	8.32	First Survey@ 297 MD/ 296.84 TVD
10085.93	10600.00	1.89	229.17	862.18	2369.87	2521.75	2588.18	PTB @ 10600 MD/ 10085.9 TVD





## Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 23092486

Well Name: WMC 523-18-793 A.P.I.# 05-045-24557 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -107.829003 County, State: Garfield County, CO

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

Final Report 11/1/2023 Date of First Survey 9/26/2023 Date of Last Survey: 9/30/2023

Datum: NAD83 Survey MD From: 297.00 To: 10535 FT. Tool Type: MWD + HRGM

Bit to Sensor: 65 FT. Rig (Company & Number): HP 329 RKB Height: 30.00 FT.

Ground Elevation: 8007.00 Northings: 1591992.6 Eastings: 2342262.8

Surveyor Kyle Temple Depth of Final Projection: 10600 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

11/1/23  
Date



## **Terra Energy Partners, LLP**

**Garfield County, CO (Nad 83)**

**S. Leverich 13-09 Pad**

**WMC 523-18-793 - Slot WMC 523-18-793**

**OWB**

**Design: Surveys**

## **Survey Certification Report**

**01 November, 2023**



<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well WMC 523-18-793 - Slot WMC 523-18-793
<b>Project:</b>	Garfield County, CO (Nad 83)	<b>TVD Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Well:</b>	WMC 523-18-793	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	NN

<b>Project</b>	Garfield County, CO (Nad 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	S. Leverich 13-09 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,591,962.800 usft	<b>Latitude:</b>	39.435551
<b>From:</b>	Map	<b>Easting:</b>	2,342,185.300 usft	<b>Longitude:</b>	-107.829274
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	-1.47 °

<b>Well</b>	WMC 523-18-793 - Slot WMC 523-18-793					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,591,992.600 usft	<b>Latitude:</b>	39.435639
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	2,342,262.800 usft	<b>Longitude:</b>	-107.829003
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	8,037.00 ft	<b>Ground Level:</b>	8,007.00 ft

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

<b>Design</b>	Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>		<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
		0.00	0.00	0.00	70.46

<b>Survey Program</b>	<b>Date</b>	9/30/2023			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
297.00	10,600.00	Surveys (OWB)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	

<b>Survey</b>									
<b>MD (ft)</b>	<b>Inc (°)</b>	<b>Azi (azimuth) (°)</b>	<b>TVD (ft)</b>	<b>N/S (ft)</b>	<b>E/W (ft)</b>	<b>Closure Distance (ft)</b>	<b>Closure Azimuth (°)</b>		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
297.00	3.21	53.65	296.84	4.93	6.70	8.32	53.65		
<b>First Survey@ 297 MD/ 296.84 TVD</b>									
387.00	4.66	56.03	386.63	8.47	11.76	14.49	54.25		
477.00	3.82	52.51	476.38	12.33	17.17	21.14	54.31		
568.00	4.44	59.63	567.15	15.96	22.62	27.68	54.79		
659.00	6.42	68.68	657.74	19.59	30.40	36.16	57.20		
749.00	9.05	75.01	746.91	23.25	41.92	47.94	60.99		
840.00	10.33	93.21	836.63	24.65	56.99	62.09	66.61		
931.00	13.97	84.42	925.59	25.26	76.07	80.16	71.63		
1,026.00	17.75	77.82	1,016.96	29.43	101.65	105.83	73.85		
1,066.00	19.78	77.30	1,054.83	32.20	114.22	118.67	74.25		

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well WMC 523-18-793 - Slot WMC 523-18-793
<b>Project:</b>	Garfield County, CO (Nad 83)	<b>TVD Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Well:</b>	WMC 523-18-793	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	NN

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
1,159.00	22.06	75.45	1,141.70	40.05	146.48	151.85	74.71
1,253.00	21.49	75.01	1,228.99	48.94	180.19	186.72	74.80
1,348.00	20.92	74.84	1,317.56	57.88	213.37	221.08	74.82
1,442.00	22.68	76.68	1,404.83	66.44	247.21	255.98	74.96
1,536.00	24.30	75.54	1,491.04	75.45	283.58	293.44	75.10
1,631.00	26.41	72.99	1,576.89	86.51	322.71	334.11	74.99
1,726.00	28.26	68.95	1,661.28	100.77	363.91	377.61	74.52
1,820.00	27.82	68.95	1,744.25	116.64	405.15	421.61	73.94
1,910.00	27.07	69.04	1,824.12	131.51	443.88	462.95	73.50
2,001.00	28.30	67.54	1,904.70	147.16	483.15	505.06	73.06
2,091.00	27.29	68.07	1,984.31	163.02	522.00	546.87	72.66
2,182.00	28.52	70.62	2,064.74	178.02	561.85	589.38	72.42
2,272.00	27.73	68.33	2,144.11	192.88	601.58	631.75	72.22
2,363.00	27.47	68.86	2,224.75	208.27	640.83	673.83	72.00
2,454.00	28.43	70.09	2,305.14	223.21	680.78	716.44	71.85
2,544.00	28.26	70.27	2,384.35	237.70	720.98	759.15	71.75
2,636.00	27.55	69.83	2,465.65	252.39	761.45	802.19	71.66
2,727.00	28.52	67.72	2,545.97	267.89	801.31	844.90	71.51
2,820.00	28.17	67.89	2,627.82	284.57	842.19	888.97	71.33
2,911.00	27.69	67.63	2,708.22	300.70	881.64	931.51	71.17
3,003.00	26.98	67.10	2,789.95	316.95	920.64	973.67	71.00
3,094.00	26.28	67.54	2,871.30	332.68	958.27	1,014.38	70.85
3,186.00	25.44	69.39	2,954.08	347.42	995.59	1,054.46	70.76
3,278.00	24.79	69.04	3,037.39	361.28	1,032.09	1,093.50	70.71
3,369.00	24.04	68.95	3,120.25	374.76	1,067.21	1,131.10	70.65
3,460.00	25.31	70.53	3,202.94	387.90	1,102.85	1,169.08	70.62
3,552.00	24.61	71.23	3,286.35	400.62	1,139.53	1,207.90	70.63
3,645.00	23.95	71.85	3,371.12	412.73	1,175.80	1,246.14	70.66
3,737.00	24.74	71.06	3,454.94	424.80	1,211.75	1,284.06	70.68
3,829.00	24.92	72.02	3,538.43	437.03	1,248.40	1,322.68	70.71
3,920.00	24.30	72.20	3,621.17	448.67	1,284.46	1,360.57	70.75
4,012.00	23.77	72.02	3,705.19	460.18	1,320.12	1,398.03	70.78
4,104.00	26.37	71.76	3,788.52	472.30	1,357.17	1,437.00	70.81
4,197.00	26.02	73.17	3,871.97	484.67	1,396.31	1,478.03	70.86
4,288.00	24.79	72.02	3,954.16	496.34	1,433.56	1,517.05	70.90
4,380.00	23.07	71.32	4,038.25	508.07	1,468.99	1,554.37	70.92
4,472.00	24.61	68.86	4,122.40	520.75	1,503.93	1,591.54	70.90
4,564.00	24.39	69.47	4,206.12	534.32	1,539.59	1,629.67	70.86
4,656.00	23.60	69.12	4,290.17	547.55	1,574.59	1,667.07	70.83
4,748.00	25.84	69.65	4,373.73	561.08	1,610.59	1,705.53	70.79
4,839.00	25.09	69.47	4,455.89	574.75	1,647.26	1,744.65	70.77
4,932.00	24.43	69.04	4,540.34	588.54	1,683.68	1,783.58	70.73
5,023.00	22.90	70.00	4,623.69	601.33	1,717.90	1,820.10	70.71
5,115.00	23.25	71.85	4,708.33	613.11	1,751.97	1,856.15	70.71

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<b>Site:</b>	S. Leverich 13-09 Pad	<b>RKB Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Well:</b>	WMC 523-18-793	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	NN

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)
5,207.00	22.76	73.43	4,793.01	623.84	1,786.28	1,892.08	70.75
5,298.00	23.86	72.29	4,876.58	634.46	1,820.69	1,928.07	70.79
5,390.00	23.60	71.14	4,960.80	646.07	1,855.84	1,965.08	70.81
5,482.00	22.59	72.55	5,045.43	657.32	1,890.13	2,001.16	70.82
5,577.00	24.04	69.39	5,132.67	669.61	1,925.65	2,038.75	70.83
5,672.00	23.42	67.80	5,219.64	683.55	1,961.24	2,076.95	70.78
5,766.00	23.07	67.80	5,306.01	697.57	1,995.59	2,114.00	70.73
5,861.00	21.97	68.51	5,393.77	711.11	2,029.36	2,150.34	70.69
5,956.00	20.52	70.27	5,482.31	723.25	2,061.57	2,184.75	70.67
6,051.00	20.43	69.74	5,571.31	734.61	2,092.80	2,217.98	70.66
6,147.00	19.60	69.56	5,661.51	746.03	2,123.60	2,250.84	70.64
6,242.00	17.53	66.84	5,751.56	757.23	2,151.69	2,281.05	70.61
6,336.00	16.48	67.19	5,841.45	767.96	2,177.00	2,308.48	70.57
6,430.00	16.35	68.95	5,931.62	777.88	2,201.64	2,335.02	70.54
6,525.00	15.38	66.05	6,023.00	787.80	2,225.63	2,360.95	70.51
6,619.00	12.61	66.75	6,114.20	796.91	2,246.45	2,383.62	70.47
6,713.00	10.63	65.52	6,206.27	804.56	2,263.77	2,402.50	70.43
6,808.00	9.14	65.96	6,299.86	811.26	2,278.64	2,418.75	70.40
6,902.00	8.61	64.73	6,392.73	817.31	2,291.82	2,433.20	70.37
6,996.00	6.64	62.79	6,485.90	822.80	2,303.02	2,445.59	70.34
7,091.00	5.93	64.11	6,580.33	827.45	2,312.32	2,455.91	70.31
7,185.00	5.67	63.23	6,673.84	831.66	2,320.83	2,465.35	70.29
7,279.00	5.58	63.41	6,767.39	835.80	2,329.07	2,474.49	70.26
7,373.00	5.27	66.22	6,860.97	839.59	2,337.10	2,483.34	70.24
7,468.00	4.17	62.88	6,955.65	842.92	2,344.17	2,491.11	70.22
7,562.00	3.96	57.08	7,049.41	846.24	2,349.94	2,497.66	70.20
7,657.00	4.00	54.01	7,144.18	849.97	2,355.37	2,504.04	70.16
7,751.00	3.87	50.14	7,237.96	853.93	2,360.46	2,510.17	70.11
7,845.00	1.85	40.82	7,331.84	857.11	2,363.89	2,514.48	70.07
7,940.00	1.63	28.52	7,426.80	859.46	2,365.53	2,516.83	70.03
8,034.00	1.54	32.21	7,520.76	861.70	2,366.84	2,518.83	69.99
8,128.00	1.98	37.57	7,614.72	864.06	2,368.51	2,521.20	69.96
8,222.00	1.89	37.48	7,708.66	866.58	2,370.44	2,523.88	69.92
8,316.00	0.44	278.83	7,802.65	867.86	2,371.03	2,524.87	69.90
8,410.00	0.83	255.71	7,896.64	867.75	2,370.01	2,523.88	69.89
8,505.00	0.66	287.18	7,991.63	867.74	2,368.82	2,522.76	69.88
8,599.00	0.57	326.99	8,085.63	868.29	2,368.05	2,522.22	69.86
8,694.00	1.19	359.34	8,180.62	869.68	2,367.78	2,522.44	69.83
8,788.00	1.54	6.81	8,274.59	871.91	2,367.92	2,523.34	69.79
8,883.00	0.35	258.18	8,369.58	873.12	2,367.79	2,523.64	69.76
8,978.00	0.26	346.77	8,464.58	873.27	2,367.45	2,523.38	69.75
9,072.00	0.13	140.49	8,558.58	873.39	2,367.47	2,523.44	69.75
9,166.00	1.80	129.15	8,652.56	872.38	2,368.69	2,524.23	69.78
9,259.00	1.80	121.59	8,745.51	870.69	2,371.06	2,525.87	69.84
9,354.00	1.49	156.66	8,840.48	868.77	2,372.82	2,526.87	69.89

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<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.00ft
<b>Well:</b>	WMC 523-18-793	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	NN

Survey								
MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	
9,449.00	0.75	156.57	8,935.46	867.07	2,373.56	2,526.97	69.93	
9,543.00	0.70	80.29	9,029.45	866.60	2,374.37	2,527.57	69.95	
9,637.00	1.19	92.68	9,123.44	866.65	2,375.91	2,529.04	69.96	
9,731.00	1.54	55.41	9,217.42	867.32	2,377.93	2,531.16	69.96	
9,826.00	1.80	41.53	9,312.38	869.17	2,379.97	2,533.71	69.94	
9,920.00	2.15	90.22	9,406.33	870.26	2,382.71	2,536.66	69.94	
10,014.00	1.89	117.29	9,500.27	869.55	2,385.85	2,539.37	69.98	
10,108.00	1.89	256.15	9,594.25	868.47	2,385.72	2,538.88	70.00	
10,203.00	2.42	263.89	9,689.18	867.88	2,382.21	2,535.37	69.98	
10,297.00	2.02	258.18	9,783.11	867.33	2,378.61	2,531.81	69.97	
10,391.00	2.11	246.66	9,877.05	866.30	2,375.40	2,528.44	69.96	
10,486.00	1.80	228.47	9,971.99	864.62	2,372.68	2,525.31	69.98	
10,535.00	1.89	229.17	10,020.97	863.58	2,371.49	2,523.83	69.99	
10,600.00	1.89	229.17	10,085.93	862.18	2,369.87	2,521.83	70.01	
<b>PTB @ 10600 MD/ 10085.9 TVD</b>								

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
297.00	296.84	4.93	6.70	First Survey@ 297 MD/ 296.84 TVD	
10,600.00	10,085.93	862.18	2,369.87	PTB @ 10600 MD/ 10085.9 TVD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_