

Azimuths to True North  
Magnetic North: 8.83°  
Magnetic Field  
Strength: 50995.75nT  
Dip Angle: 65.37°  
Date: 4/5/2023  
Model: HDGM

WELL DETAILS: SR 523-13

+N/-S	+E/-W	Northing	Ground Level: Easting	8007.0 Latitude	Longitude	Slot
0.0	0.0	1591974.300	2342190.100	39.435583	-107.829258	SR 523-13

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP	7051.0	859.2	2436.7	1592770.700	2344648.000	39.437942	-107.820631
BHL	10356.0	859.2	2436.7	1592770.700	2344648.000	39.437942	-107.820631

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation
10086.5	10551.0	1.31	26.14	311.3	-2424.0	2443.6	2476.1	PTB @ 10551 MD/ 10086.5 TVD

SLOTS

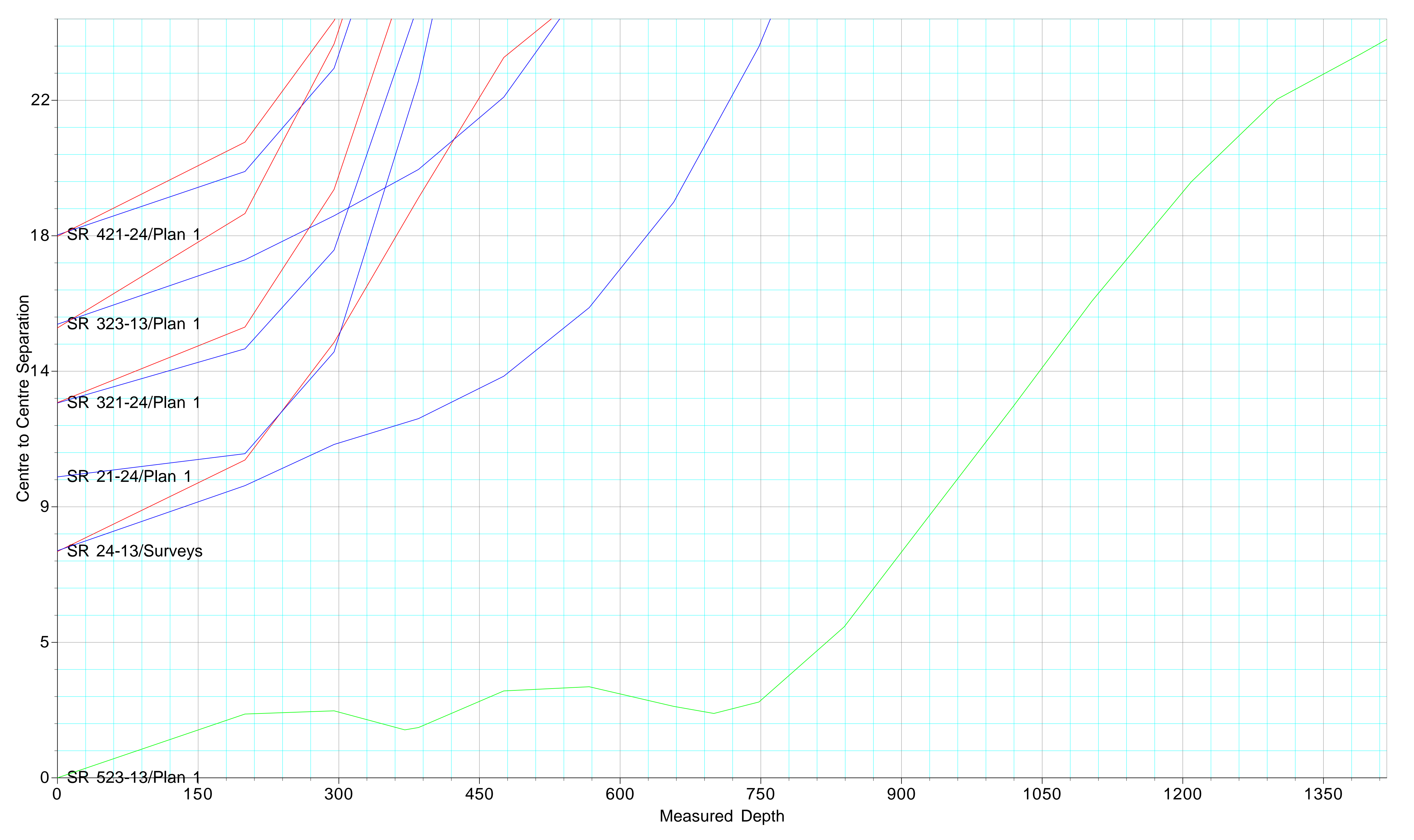
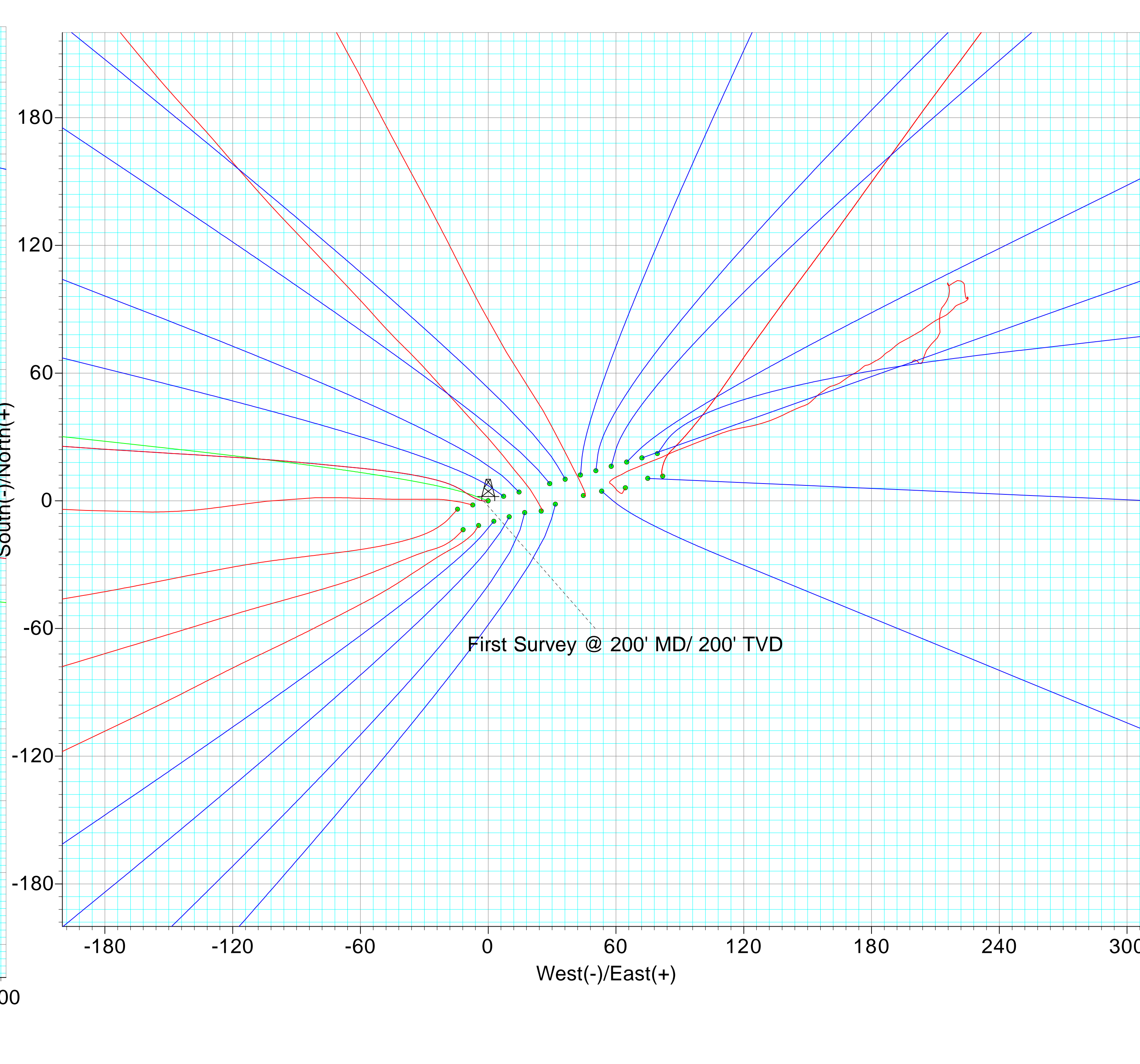
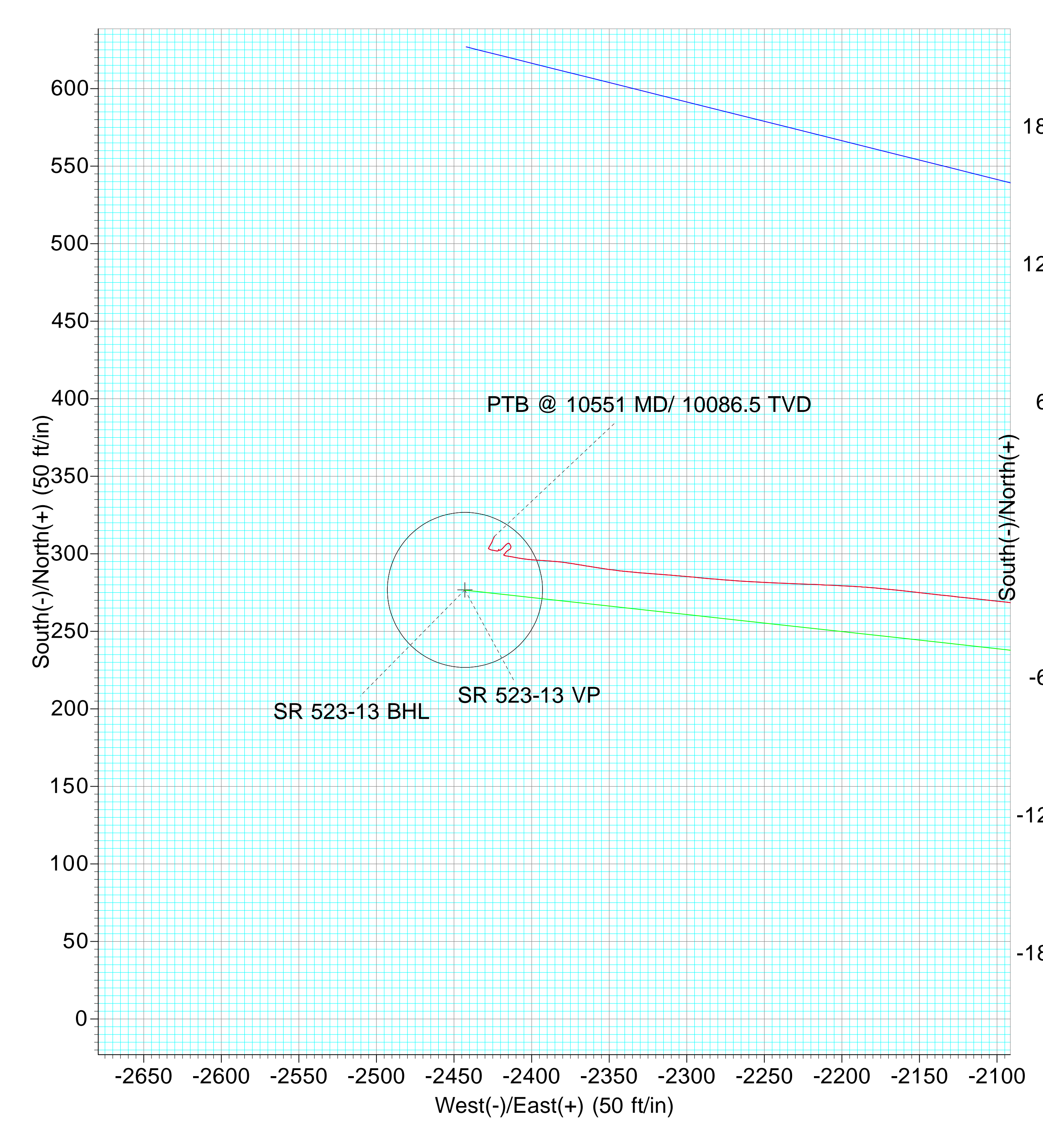
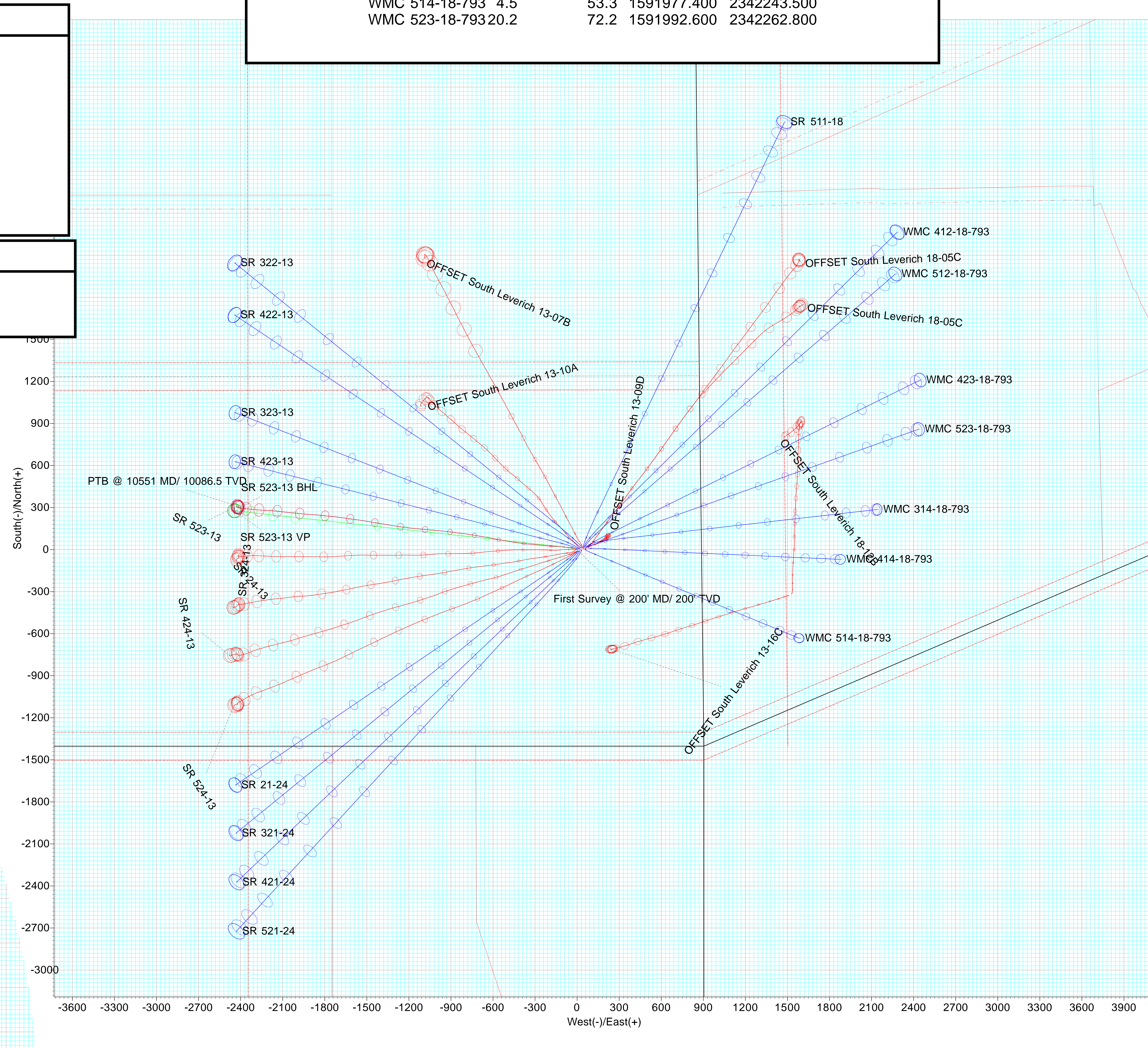
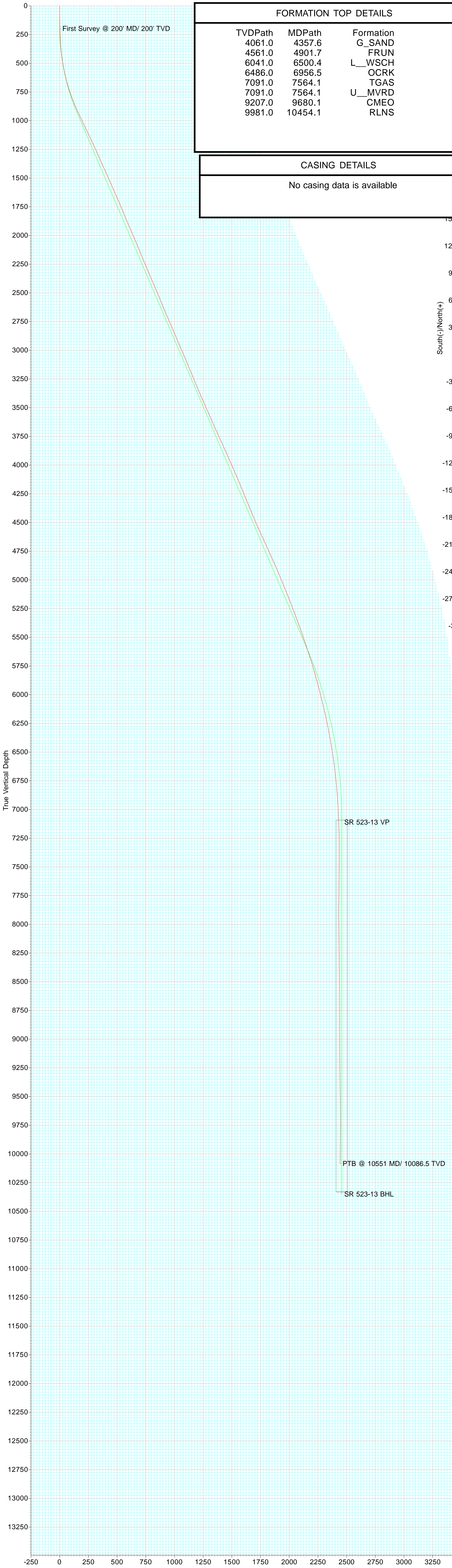
Slot Name	+N/-S	+E/-W	Northing	Easting
OFFSET South Leverich 13-07B	2.4	44.7	1591975.598	2342234.824
OFFSET South Leverich 13-09D	6.1	64.4	1591978.733	2342254.682
OFFSET South Leverich 13-10A	-4.8	24.9	1591968.823	2342214.873
OFFSET South Leverich 13-16G	329.0	1513.4	1591606.646	2343694.566
OFFSET South Leverich 18-05C	11.5	82.0	1591983.730	2342272.330
OFFSET South Leverich 18-12B	14.4	1527.5	1591620.850	2343709.057
SR 21-24	-9.6	2.6	1591964.600	2342192.500
SR 24-13	-2.0	-7.3	1591972.500	2342182.800
SR 321-24	-7.5	9.9	1591966.500	2342199.800
SR 322-13	10.1	36.2	1591983.500	2342226.500
SR 323-13	4.1	14.5	1591978.000	2342204.700
SR 324-13	-4.0	-14.4	1591970.700	2342175.600
SR 421-24	-5.6	17.1	1591968.300	2342207.100
SR 422-13	8.0	28.9	1591981.600	2342219.200
SR 423-13	2.1	7.2	1591976.200	2342197.400
SR 424-13	-13.6	-11.8	1591961.000	2342178.000
SR 511-18	12.1	43.3	1591985.300	2342233.700
SR 521-24	-1.6	31.6	1591971.900	2342221.600
SR 523-13	0.0	0.0	1591974.300	2342190.100
SR 524-13	-11.6	-4.5	1591962.800	2342185.300
WMC 314-18-793	22.1	79.5	1591994.400	2342270.100
WMC 412-18-793	14.1	50.6	1591987.100	2342241.000
WMC 414-18-793	10.5	75.0	1591982.900	2342265.300
WMC 423-18-793	18.2	65.1	1591990.800	2342255.600
WMC 512-18-793	16.2	57.8	1591989.000	2342248.300
WMC 514-18-793	4.5	53.3	1591977.400	2342243.500
WMC 523-18-793	20.2	72.2	1591992.600	2342262.800

FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
4061.0	4357.6	G_SAND
4561.0	4901.7	FRUN
6041.0	6500.4	L_WSCH
6486.0	6956.5	OCRK
7091.0	7564.1	TGAS
7091.0	7564.1	U_MVRD
9207.0	9680.1	CMEQ
9981.0	10454.1	RLNS

CASING DETAILS

No casing data is available





## Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 23062769

Well Name: SR 523-13 A.P.I.# 05-045-24560 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -107.829258 County, State: Garfield County, CO

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

Final Report 7/7/2023 Date of First Survey 6/24/2023 Date of Last Survey: 7/1/2023

Datum: NAD83 Survey MD From: 200.00 To: 10487 FT. Tool Type: MWD + HRGM

Bit to Sensor: 64 FT. Rig (Company & Number): HP 329 RKB Height: 30.00 FT.

Ground Elevation: 8007.00 Northings: 1591974.3 Eastings: 2342190.1

Surveyor Kyle Temple Depth of Final Projection: 10551 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

7/7/23  
Date



## **Terra Energy Partners, LLP**

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

**S. Leverich 13-09 Pad**

**SR 523-13 - Slot SR 523-13**

**OWB**

**Survey: Surveys**

## **Survey Certification Report**

**07 July, 2023**



<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well SR 523-13 - Slot SR 523-13
<b>Project:</b>	Garfield County, CO (Nad 83)	<b>TVD Reference:</b>	RKB @ 30' @ 8037.0ft
<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.0ft
<b>Well:</b>	SR 523-13	<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>	0.0 ft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	-1.47 °

<b>Well</b>	SR 523-13 - Slot SR 523-13					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,591,974.300 usft	<b>Latitude:</b>	39.435583
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,342,190.100 usft	<b>Longitude:</b>	-107.829258
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	8,037.0 ft	<b>Ground Level:</b>	8,007.0 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>	0.0
<b>Vertical Section:</b>		<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
		0.0	0.0	0.0	276.46

<b>Survey Program</b>	<b>Date</b>	6/30/2023			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
200.0	10,551.0	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>		
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	
200.0	1.27	268.81	200.0	0.0	-2.2	2.2	268.81		
<b>First Survey @ 200' MD/ 200' TVD</b>									
295.0	2.86	292.80	294.9	0.9	-5.5	5.5	278.86		
385.0	6.50	303.88	384.6	4.6	-11.8	12.6	291.21		
476.0	8.70	285.69	474.8	9.3	-22.7	24.5	292.30		
567.0	11.34	279.27	564.4	12.6	-38.1	40.1	288.29		
657.0	14.46	275.49	652.1	15.1	-58.0	60.0	284.58		
748.0	18.15	275.58	739.5	17.6	-83.5	85.3	281.88		
839.0	21.75	273.91	825.0	20.1	-114.4	116.2	279.96		
929.0	24.52	273.38	907.7	22.3	-149.7	151.3	278.49		
1,019.0	25.84	273.82	989.2	24.7	-187.9	189.5	277.50		

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well SR 523-13 - Slot SR 523-13
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<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.0ft
<b>Well:</b>	SR 523-13	<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 (°)		
1,103.0	25.18	275.23	1,065.0	27.6	-224.0	225.7	277.02		
1,209.0	25.66	276.46	1,160.7	32.2	-269.2	271.2	276.83		
1,300.0	24.35	275.84	1,243.2	36.4	-307.5	309.6	276.74		
1,390.0	23.77	273.38	1,325.4	39.3	-344.0	346.3	276.52		
1,481.0	24.70	278.04	1,408.4	43.1	-381.2	383.6	276.44		
1,571.0	23.73	276.46	1,490.5	47.7	-417.8	420.5	276.52		
1,661.0	23.82	279.89	1,572.8	52.9	-453.7	456.8	276.65		
1,751.0	23.64	279.53	1,655.2	59.0	-489.4	492.9	276.87		
1,842.0	23.20	279.62	1,738.7	65.0	-525.1	529.1	277.06		
1,932.0	22.37	280.32	1,821.7	71.0	-559.4	563.9	277.24		
2,023.0	23.55	281.56	1,905.5	77.8	-594.2	599.3	277.46		
2,113.0	23.34	280.41	1,988.1	84.6	-629.4	635.0	277.66		
2,203.0	22.81	279.80	2,070.9	90.8	-664.1	670.3	277.79		
2,294.0	22.24	279.53	2,154.9	96.6	-698.5	705.1	277.88		
2,385.0	23.07	279.01	2,238.9	102.3	-733.1	740.2	277.94		
2,475.0	22.68	279.18	2,321.8	107.8	-767.6	775.1	278.00		
2,566.0	23.77	277.86	2,405.4	113.1	-803.1	811.0	278.02		
2,656.0	23.07	277.25	2,488.0	117.8	-838.6	846.8	278.00		
2,747.0	21.67	277.51	2,572.2	122.3	-872.9	881.4	277.97		
2,837.0	23.03	277.07	2,655.4	126.6	-906.9	915.6	277.95		
2,928.0	23.60	275.31	2,739.0	130.5	-942.7	951.6	277.88		
3,018.0	23.38	275.75	2,821.5	134.0	-978.4	987.5	277.80		
3,109.0	22.63	275.31	2,905.3	137.4	-1,013.8	1,023.0	277.72		
3,200.0	23.77	275.23	2,988.9	140.7	-1,049.5	1,058.8	277.63		
3,290.0	22.59	274.35	3,071.7	143.6	-1,084.8	1,094.2	277.54		
3,380.0	23.03	275.05	3,154.6	146.5	-1,119.5	1,129.1	277.46		
3,471.0	21.97	275.05	3,238.7	149.6	-1,154.2	1,163.9	277.38		
3,562.0	22.72	278.22	3,322.9	153.6	-1,188.6	1,198.4	277.36		
3,652.0	24.08	276.81	3,405.5	158.2	-1,224.0	1,234.2	277.37		
3,743.0	23.38	277.51	3,488.8	162.8	-1,260.3	1,270.8	277.36		
3,833.0	24.30	279.09	3,571.1	168.1	-1,296.3	1,307.2	277.39		
3,923.0	23.60	279.62	3,653.3	174.0	-1,332.4	1,343.7	277.44		
4,014.0	25.05	279.36	3,736.3	180.2	-1,369.3	1,381.1	277.50		
4,104.0	24.26	279.53	3,818.0	186.3	-1,406.4	1,418.7	277.55		
4,195.0	23.91	279.09	3,901.1	192.3	-1,443.0	1,455.8	277.59		
4,285.0	23.73	279.45	3,983.5	198.2	-1,478.9	1,492.1	277.63		
4,376.0	23.51	279.27	4,066.8	204.1	-1,514.9	1,528.6	277.67		
4,466.0	22.85	278.83	4,149.6	209.7	-1,549.9	1,564.0	277.71		
4,557.0	21.84	278.30	4,233.7	214.9	-1,584.1	1,598.6	277.72		
4,648.0	22.98	277.42	4,317.9	219.6	-1,618.4	1,633.3	277.73		
4,738.0	22.01	277.42	4,401.0	224.0	-1,652.6	1,667.7	277.72		
4,829.0	23.16	277.51	4,485.0	228.6	-1,687.2	1,702.6	277.72		
4,919.0	24.70	277.75	4,567.3	233.4	-1,723.4	1,739.2	277.71		
5,009.0	25.04	275.05	4,649.0	237.6	-1,761.0	1,777.0	277.69		

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well SR 523-13 - Slot SR 523-13
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<b>Site:</b>	S. Leverich 13-09 Pad	<b>RKB Reference:</b>	RKB @ 30' @ 8037.0ft
<b>Well:</b>	SR 523-13	<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 (°)	
5,100.0	23.95	276.45	4,731.8	241.4	-1,798.6	1,814.7	277.64	
5,191.0	24.60	276.54	4,814.7	245.6	-1,835.7	1,852.1	277.62	
5,281.0	23.47	273.30	4,896.9	248.8	-1,872.2	1,888.7	277.57	
5,372.0	22.28	273.73	4,980.8	251.0	-1,907.5	1,924.0	277.50	
5,467.0	22.41	274.87	5,068.6	253.7	-1,943.6	1,960.0	277.44	
5,561.0	21.53	275.13	5,155.8	256.7	-1,978.6	1,995.2	277.39	
5,656.0	20.96	275.75	5,244.3	260.0	-2,012.9	2,029.6	277.36	
5,750.0	20.39	276.02	5,332.3	263.4	-2,045.9	2,062.8	277.34	
5,845.0	19.73	276.72	5,421.5	267.0	-2,078.3	2,095.3	277.32	
5,940.0	19.03	276.11	5,511.1	270.5	-2,109.6	2,126.9	277.31	
6,034.0	18.28	276.46	5,600.2	273.8	-2,139.5	2,156.9	277.29	
6,129.0	17.97	276.02	5,690.5	277.1	-2,168.8	2,186.5	277.28	
6,223.0	15.86	272.94	5,780.4	279.2	-2,196.1	2,213.8	277.25	
6,318.0	15.25	272.32	5,871.9	280.4	-2,221.5	2,239.2	277.19	
6,413.0	14.28	272.41	5,963.8	281.4	-2,245.7	2,263.3	277.14	
6,508.0	14.15	274.08	6,055.9	282.7	-2,269.0	2,286.6	277.10	
6,603.0	13.05	275.49	6,148.2	284.6	-2,291.3	2,308.9	277.08	
6,699.0	11.73	274.52	6,242.0	286.4	-2,311.8	2,329.5	277.06	
6,794.0	10.68	274.52	6,335.2	287.8	-2,330.2	2,347.9	277.04	
6,888.0	9.45	277.25	6,427.7	289.5	-2,346.5	2,364.3	277.03	
6,983.0	8.92	279.53	6,521.5	291.7	-2,361.5	2,379.5	277.04	
7,077.0	7.43	279.09	6,614.5	293.9	-2,374.7	2,392.8	277.05	
7,171.0	5.84	274.17	6,707.9	295.2	-2,385.5	2,403.7	277.05	
7,265.0	5.36	273.82	6,801.5	295.8	-2,394.7	2,412.9	277.04	
7,359.0	3.86	275.84	6,895.2	296.4	-2,402.2	2,420.4	277.03	
7,454.0	2.72	280.93	6,990.0	297.2	-2,407.6	2,425.8	277.04	
7,548.0	2.76	279.44	7,083.9	298.0	-2,412.0	2,430.3	277.04	
7,643.0	1.93	278.83	7,178.8	298.6	-2,415.8	2,434.2	277.05	
7,737.0	0.48	302.56	7,272.8	299.1	-2,417.7	2,436.2	277.05	
7,831.0	0.26	33.87	7,366.8	299.4	-2,417.9	2,436.4	277.06	
7,925.0	0.39	47.32	7,460.8	299.8	-2,417.6	2,436.1	277.07	
8,020.0	0.74	38.18	7,555.8	300.5	-2,417.0	2,435.6	277.09	
8,114.0	0.87	41.79	7,649.8	301.5	-2,416.1	2,434.9	277.11	
8,208.0	0.83	57.60	7,743.8	302.4	-2,415.1	2,433.9	277.14	
8,302.0	0.96	60.77	7,837.8	303.2	-2,413.8	2,432.8	277.16	
8,397.0	1.05	347.82	7,932.7	304.4	-2,413.3	2,432.4	277.19	
8,491.0	1.31	326.73	8,026.7	306.2	-2,414.1	2,433.4	277.23	
8,586.0	0.75	247.45	8,121.7	306.8	-2,415.2	2,434.7	277.24	
8,680.0	0.79	230.40	8,215.7	306.2	-2,416.3	2,435.6	277.22	
8,774.0	0.88	216.43	8,309.7	305.2	-2,417.2	2,436.4	277.20	
8,868.0	0.97	222.58	8,403.7	304.0	-2,418.2	2,437.2	277.17	
8,962.0	0.92	229.26	8,497.7	303.0	-2,419.3	2,438.2	277.14	
9,057.0	0.53	256.07	8,592.7	302.3	-2,420.3	2,439.1	277.12	
9,151.0	0.31	308.54	8,686.7	302.4	-2,420.9	2,439.8	277.12	
9,246.0	0.31	356.70	8,781.7	302.8	-2,421.2	2,440.0	277.13	

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well SR 523-13 - Slot SR 523-13
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<b>Site:</b>	S. Leverich 13-09 Pad	<b>MD Reference:</b>	RKB @ 30' @ 8037.0ft
<b>Well:</b>	SR 523-13	<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 (°)
9,340.0	0.18	192.08	8,875.7	302.9	-2,421.2	2,440.1	277.13
9,435.0	0.22	195.77	8,970.7	302.6	-2,421.3	2,440.1	277.12
9,529.0	0.31	191.64	9,064.7	302.2	-2,421.4	2,440.2	277.11
9,624.0	0.44	261.96	9,159.7	301.9	-2,421.8	2,440.5	277.11
9,718.0	0.66	278.83	9,253.6	301.9	-2,422.7	2,441.4	277.10
9,812.0	0.70	283.49	9,347.6	302.1	-2,423.8	2,442.5	277.11
9,906.0	0.88	276.37	9,441.6	302.3	-2,425.1	2,443.8	277.11
10,001.0	0.75	294.39	9,536.6	302.7	-2,426.3	2,445.2	277.11
10,094.0	0.62	289.20	9,629.6	303.1	-2,427.4	2,446.2	277.12
10,188.0	0.48	9.36	9,723.6	303.7	-2,427.8	2,446.7	277.13
10,283.0	1.62	34.58	9,818.6	305.2	-2,427.0	2,446.1	277.17
10,378.0	1.58	23.24	9,913.6	307.5	-2,425.7	2,445.1	277.22
10,472.0	1.31	23.68	10,007.5	309.6	-2,424.7	2,444.4	277.28
10,487.0	1.31	26.14	10,022.5	309.9	-2,424.6	2,444.3	277.28
10,551.0	1.31	26.14	10,086.5	311.3	-2,424.0	2,443.9	277.32

**PTB @ 10551 MD/ 10086.5 TVD**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	-2.2	First Survey @ 200' MD/ 200' TVD
10,551.0	10,086.5	311.3	-2,424.0	PTB @ 10551 MD/ 10086.5 TVD

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