

WELL DETAILS: Federal RG 12-18-297							
+N/-S	+E/-W	Northing	Ground Level:	Easting	6603.00	Latitude	Longitude
0.00	0.00	1760871.000	2206255.100	2206255.100	6603.00	39.888476	-108.328929
							RGU 12-18-297

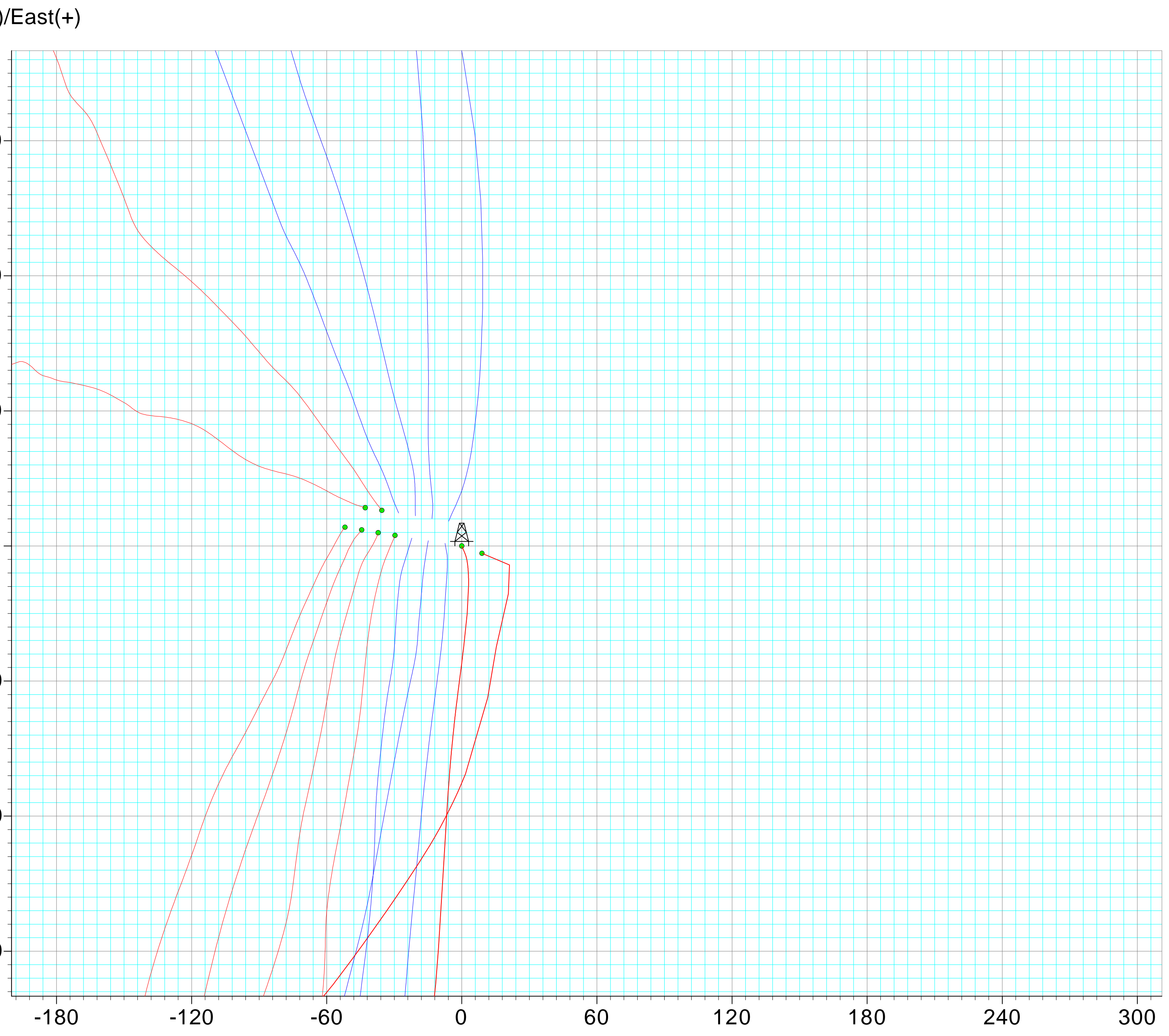
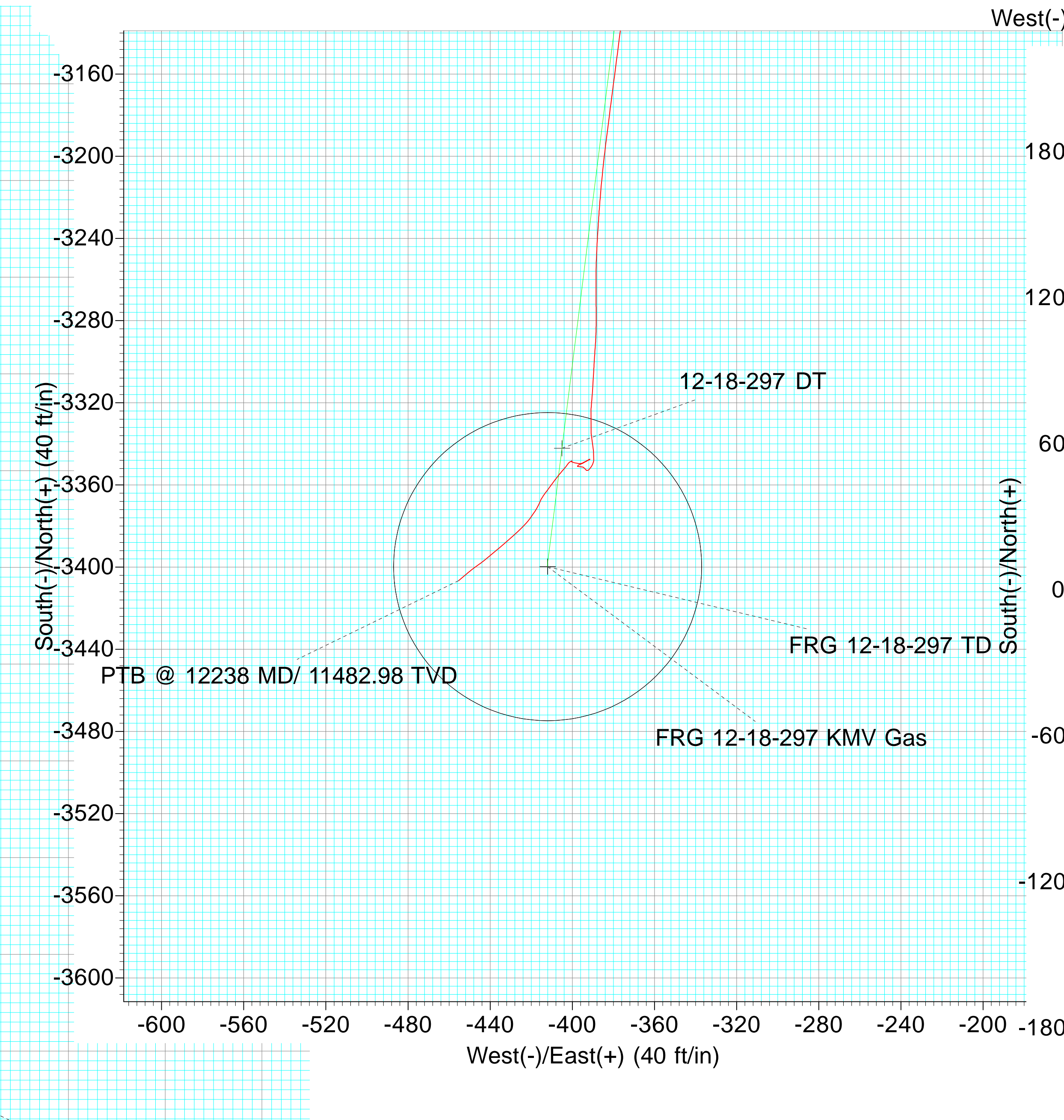
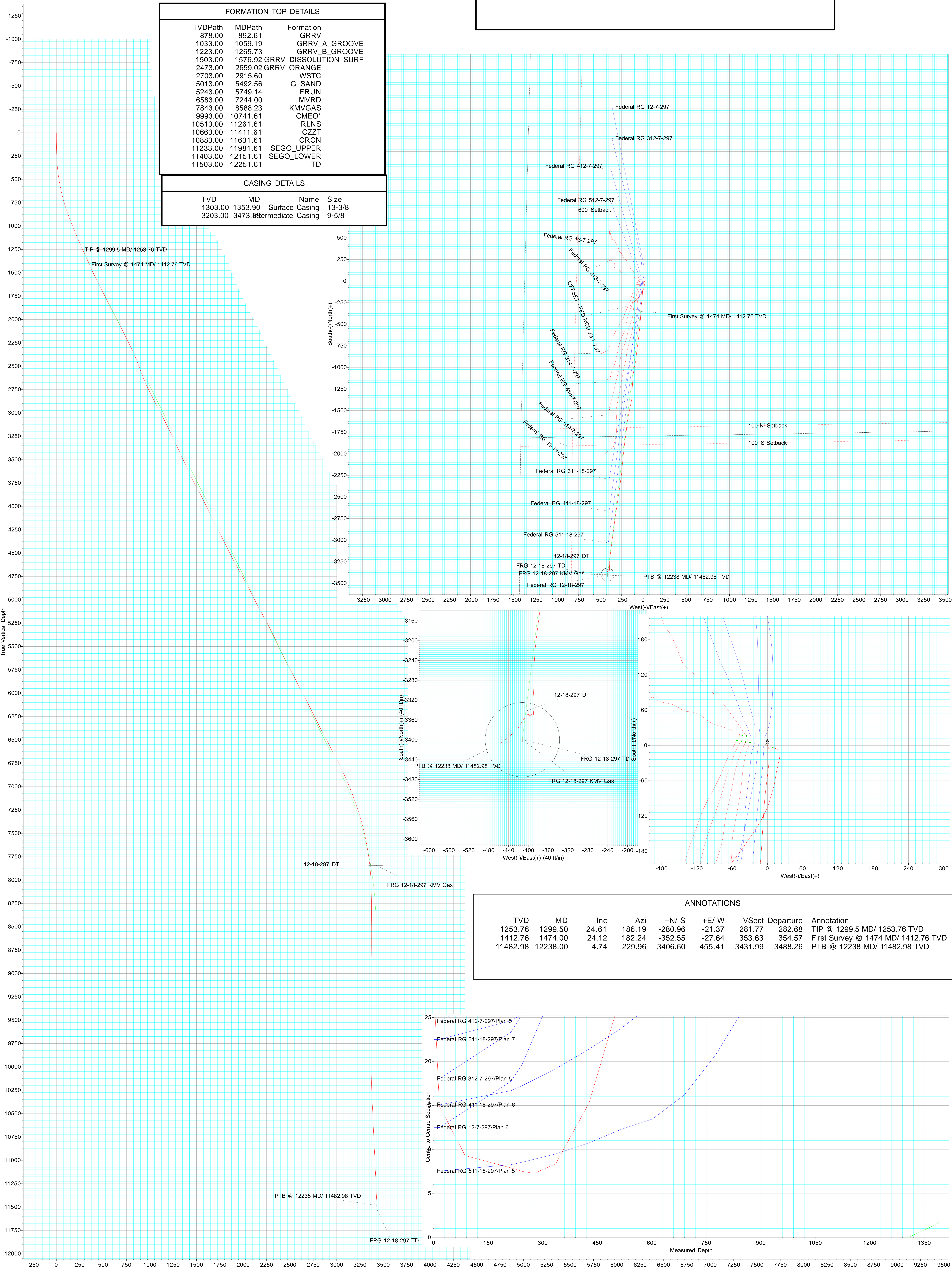
SLOTS			
Slot Name	+N/-S	+E/-W	Northing
RGU 11-18-297	4.68	-29.66	1760876.600
RGU 12-18-297	0.00	0.00	1760871.000
RGU 12-7-297	11.02	-5.85	1760882.200
RGU 13-7-297	15.80	-35.51	1760887.900
RGU 311-18-297	3.51	-22.22	1760875.200
RGU 312-7-297	12.19	-13.29	1760883.600
RGU 313-7-297	16.97	-42.85	1760889.300
RGU 314-7-297	8.29	-51.88	1760880.900
RGU 411-18-297	2.34	-14.88	1760873.800
RGU 412-7-297	13.36	-20.63	1760885.000
RGU 413-7-297	18.14	-50.29	1760890.700
RGU 414-7-297	7.12	-44.44	1760879.500
RGU 511-18-297	1.17	-7.44	1760872.400
RGU 512-7-297	14.63	-28.07	1760886.500
RGU 514-7-297	5.85	-37.10	1760878.000

DESIGN TARGET DETAILS							
DT	Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude
	KMV Gas	7843.00	-3399.78	-412.05	1757485.700	2205737.400	39.879143
	TD	11503.00	-3399.78	-412.05	1757485.700	2205737.400	39.879143

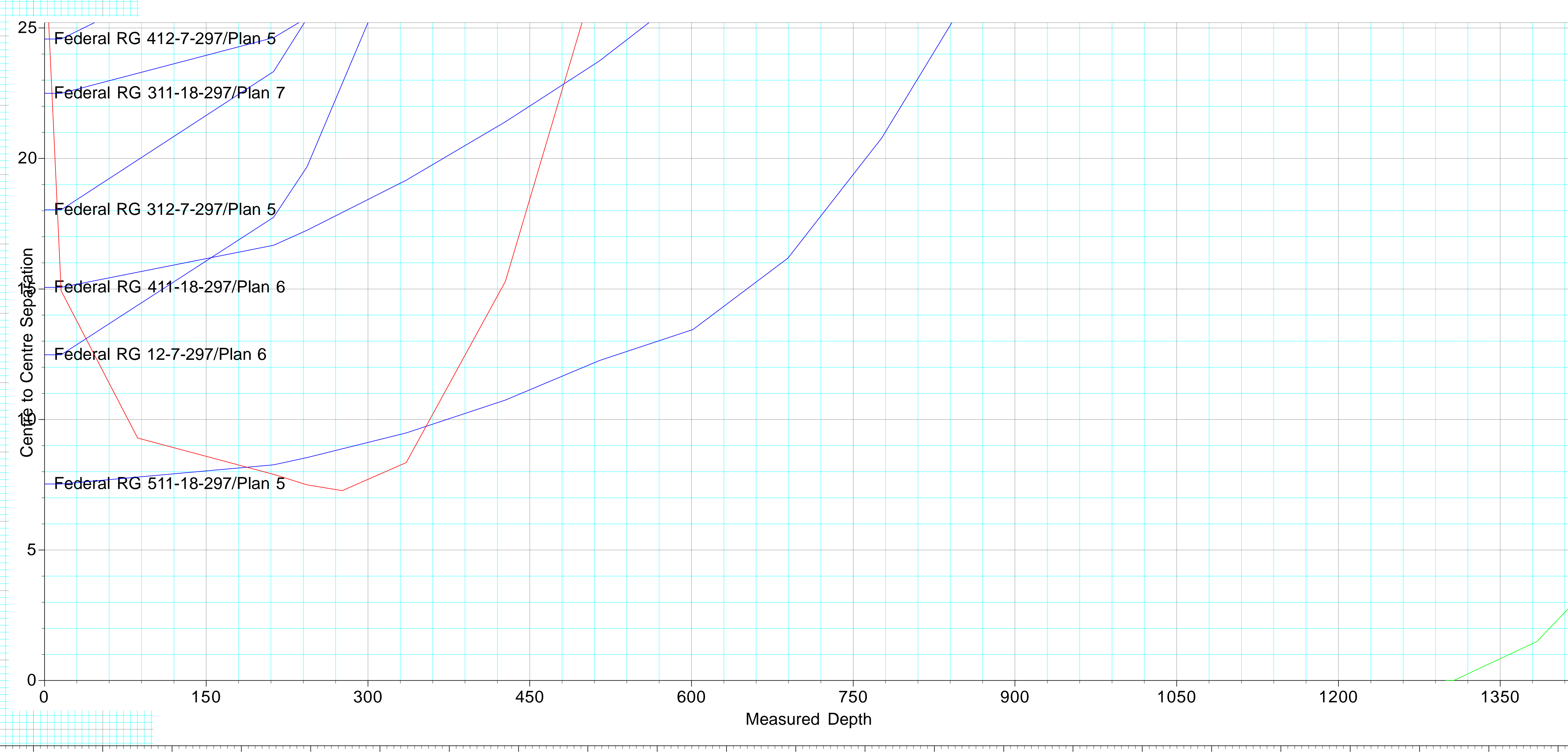
ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation	
1253.76	1299.50	24.61	186.19	-280.96	-21.37	281.77	282.68	TIP @ 1299.5 MD/ 1253.76 TVD	
1412.76	1474.00	24.12	182.24	-352.55	-27.64	353.63	354.57	First Survey @ 1474 MD/ 1412.76 TVD	
11482.98	12238.00	4.74	229.96	-3406.60	-455.41	3431.99	3488.26	PTB @ 12238 MD/ 11482.98 TVD	

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
878.00	892.61	GRRV
1033.00	1059.19	GRRV_A_GROOVE
1223.00	1265.73	GRRV_B_GROOVE
1503.00	1576.92	GRRV DISSOLUTION SURF
2473.00	2659.02	GRRV_ORANGE
2703.00	2915.60	WSTC
5013.00	5492.56	G_SAND
5243.00	5749.14	FRUN
6583.00	7244.00	MVRD
7843.00	8588.23	KMVGAS
9993.00	10741.61	CMEO*
10513.00	11261.61	RLNS
10663.00	11411.61	CZTZ
10883.00	11631.61	CRCN
11233.00	11981.61	SEGO_UPPER
11403.00	12151.61	SEGO_LOWER
11503.00	12251.61	TD

CASING DETAILS				
TVD	MD	Name	Size	
1303.00	1353.90	Surface Casing	13-3/8	
3203.00	3473.88	Intermediate Casing	9-5/8	



ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation	
1253.76	1299.50	24.61	186.19	-280.96	-21.37	281.77	282.68	TIP @ 1299.5 MD/ 1253.76 TVD	
1412.76	1474.00	24.12	182.24	-352.55	-27.64	353.63	354.57	First Survey @ 1474 MD/ 1412.76 TVD	
11482.98	12238.00	4.74	229.96	-3406.60	-455.41	3431.99	3488.26	PTB @ 12238 MD/ 11482.98 TVD	





Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 23122906

Well Name: RG 12-18-297 A.P.I.# 05-103-12477 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -108.328929 County, State: Garfield County, CO

Legal Description (S,TS,R): Sec 7 T2S R97W

Final Report 12/29/2023 Date of First Survey 12/10/2023 Date of Last Survey: 12/14/2023

Datum: NAD83 Survey MD From: 1384.00 To: 12172 FT. Tool Type: MWD + HRGM

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

Ground Elevation: 6603.00 Northings: 1760871 Eastings: 2206255.1

Surveyor Kyle Temple Depth of Final Projection: 12238 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

12/29/23
Date



Terra Energy Partners, LLP

Garfield County, CO (Nad 83)

RGU 23-7-297 Pad

Federal RG 12-18-297 - Slot RGU 12-18-297

OH

Survey: Surveys

Survey Certification Report

29 December, 2023



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 12-18-297 - Slot RGU 12-18-297
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 6633.00ft
Site:	RGU 23-7-297 Pad	MD Reference:	RKB @ 30' @ 6633.00ft
Well:	Federal RG 12-18-297	North Reference:	True
Wellbore:	OH	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	RGU 23-7-297 Pad, Site Center : RGU 314-7-297				
Site Position:		Northing:	1,760,880.900 usft	Latitude:	39.888499
From:	Map	Easting:	2,206,203.500 usft	Longitude:	-108.329114
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16"	Grid Convergence:	-1.78 °

Well	Federal RG 12-18-297 - Slot RGU 12-18-297, 1794' FSL 1372' FWL Sec 7 T2S R97W					
Well Position	+N/-S	0.00 ft	Northing:	1,760,871.000 usft	Latitude:	39.888476
	+E/-W	0.00 ft	Easting:	2,206,255.100 usft	Longitude:	-108.328929
Position Uncertainty		0.00 ft	Wellhead Elevation:	6,633.00 ft	Ground Level:	6,603.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/8/2023	9.10	65.77	50,978

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	184.55

Survey Program	Date	12/18/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
15.50	1,299.50	Surface Surveys (OH)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	
1,384.00	12,238.00	Surveys (OH)	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 (°)		
1,299.50	24.61	186.19	186.19	1,253.76	-280.96	-21.37	281.77	184.35		
1,384.00	24.30	185.84	185.84	1,330.68	-315.75	-25.03	316.74	184.53		
1,474.00	24.12	182.24	182.24	1,412.76	-352.55	-27.64	353.63	184.48		
First Survey @ 1474 MD/ 1412.76 TVD										
1,565.00	25.18	181.89	181.89	1,495.47	-390.47	-29.00	391.55	184.25		
1,656.00	25.92	183.29	183.29	1,577.57	-429.68	-30.78	430.78	184.10		
1,746.00	27.33	184.26	184.26	1,658.03	-469.92	-33.45	471.11	184.07		
1,837.00	27.37	186.11	186.11	1,738.86	-511.55	-37.22	512.91	184.16		
1,927.00	27.07	185.14	185.14	1,818.89	-552.52	-41.26	554.06	184.27		
2,018.00	26.71	185.32	185.32	1,900.05	-593.51	-45.01	595.21	184.34		
2,109.00	27.46	188.13	188.13	1,981.07	-634.64	-49.88	636.60	184.49		

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 12-18-297 - Slot RGU 12-18-297
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 6633.00ft
Site:	RGU 23-7-297 Pad	MD Reference:	RKB @ 30' @ 6633.00ft
Well:	Federal RG 12-18-297	North Reference:	True
Wellbore:	OH	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 (°)
2,199.00	27.42	187.43	2,060.95	-675.73	-55.49	678.01	184.69
2,291.00	26.45	187.87	2,142.97	-717.04	-61.04	719.63	184.87
2,383.00	26.85	188.04	2,225.19	-757.91	-66.75	760.84	185.03
2,475.00	26.14	186.99	2,307.53	-798.59	-72.12	801.84	185.16
2,567.00	23.37	186.11	2,391.07	-836.86	-76.53	840.35	185.22
2,659.00	20.65	185.14	2,476.36	-871.17	-79.92	874.83	185.24
2,750.00	20.30	185.58	2,561.61	-902.86	-82.90	906.66	185.25
2,842.00	22.45	192.26	2,647.29	-935.92	-88.18	940.06	185.38
2,934.00	25.40	192.44	2,731.37	-972.36	-96.16	977.10	185.65
3,026.00	27.33	190.50	2,813.80	-1,012.40	-104.26	1,017.75	185.88
3,117.00	27.99	188.66	2,894.40	-1,054.05	-111.28	1,059.91	186.03
3,208.00	27.15	184.96	2,975.07	-1,095.85	-116.30	1,102.00	186.06
3,299.00	28.12	184.35	3,055.69	-1,137.92	-119.72	1,144.20	186.01
3,392.00	26.19	183.38	3,138.44	-1,180.26	-122.59	1,186.61	185.93
3,422.00	25.57	183.12	3,165.43	-1,193.33	-123.33	1,199.69	185.90
3,526.00	25.79	182.59	3,259.16	-1,238.35	-125.58	1,244.70	185.79
3,618.00	25.18	181.45	3,342.20	-1,277.90	-126.98	1,284.20	185.67
3,709.00	24.21	182.42	3,424.88	-1,315.90	-128.25	1,322.14	185.57
3,801.00	24.91	184.88	3,508.56	-1,354.05	-130.70	1,360.35	185.51
3,893.00	26.32	191.73	3,591.53	-1,393.34	-136.50	1,400.01	185.59
3,984.00	25.79	193.40	3,673.29	-1,432.35	-145.18	1,439.69	185.79
4,076.00	27.07	190.50	3,755.67	-1,472.40	-153.64	1,480.40	185.96
4,168.00	28.56	191.82	3,837.04	-1,514.52	-161.96	1,523.15	186.10
4,260.00	26.71	191.82	3,918.54	-1,556.28	-170.70	1,565.62	186.26
4,351.00	26.36	188.57	3,999.96	-1,596.28	-177.90	1,606.16	186.36
4,443.00	25.31	189.36	4,082.76	-1,635.88	-184.14	1,646.21	186.42
4,535.00	26.63	185.84	4,165.48	-1,675.80	-189.44	1,686.47	186.45
4,626.00	27.50	183.73	4,246.51	-1,717.05	-192.88	1,727.85	186.41
4,718.00	27.29	189.10	4,328.21	-1,759.08	-197.60	1,770.15	186.41
4,810.00	26.23	187.78	4,410.36	-1,800.05	-203.69	1,811.54	186.46
4,902.00	27.02	188.92	4,492.60	-1,840.84	-209.68	1,852.75	186.50
4,993.00	28.30	185.84	4,573.20	-1,882.73	-215.08	1,894.97	186.52
5,084.00	28.56	187.25	4,653.23	-1,925.76	-220.02	1,938.29	186.52
5,176.00	29.44	185.93	4,733.69	-1,970.07	-225.13	1,982.89	186.52
5,268.00	27.94	186.63	4,814.40	-2,013.97	-229.96	2,027.06	186.51
5,360.00	28.87	185.05	4,895.32	-2,057.50	-234.40	2,070.81	186.50
5,451.00	25.75	185.40	4,976.17	-2,099.08	-238.19	2,112.55	186.47
5,543.00	27.42	184.09	5,058.44	-2,140.11	-241.59	2,153.70	186.44
5,634.00	29.13	185.05	5,138.58	-2,183.07	-245.03	2,196.78	186.40
5,725.00	28.47	187.07	5,218.32	-2,226.66	-249.65	2,240.61	186.40
5,817.00	28.38	188.04	5,299.23	-2,270.07	-255.41	2,284.40	186.42
5,909.00	24.78	187.51	5,381.50	-2,310.85	-260.99	2,325.54	186.44
6,000.00	26.01	187.34	5,463.70	-2,349.55	-266.03	2,364.56	186.46
6,091.00	25.62	188.04	5,545.62	-2,388.82	-271.33	2,404.18	186.48
6,182.00	26.41	188.48	5,627.40	-2,428.32	-277.07	2,444.07	186.51

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 12-18-297 - Slot RGU 12-18-297
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 6633.00ft
Site:	RGU 23-7-297 Pad	MD Reference:	RKB @ 30' @ 6633.00ft
Well:	Federal RG 12-18-297	North Reference:	True
Wellbore:	OH	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 (°)
6,274.00	28.03	190.06	5,709.21	-2,469.84	-283.86	2,486.10	186.56
6,366.00	27.24	188.13	5,790.71	-2,511.97	-290.61	2,528.73	186.60
6,458.00	27.55	187.87	5,872.40	-2,553.89	-296.50	2,571.05	186.62
6,551.00	27.50	189.10	5,954.87	-2,596.40	-302.84	2,614.00	186.65
6,642.00	27.55	187.69	6,035.57	-2,638.00	-308.98	2,656.03	186.68
6,734.00	27.50	189.45	6,117.16	-2,680.04	-315.32	2,698.52	186.71
6,825.00	27.20	187.60	6,197.99	-2,721.38	-321.52	2,740.30	186.74
6,917.00	25.40	189.18	6,280.46	-2,761.70	-327.45	2,781.05	186.76
7,009.00	27.55	185.76	6,362.81	-2,802.35	-332.73	2,822.04	186.77
7,100.00	28.08	186.11	6,443.30	-2,844.59	-337.12	2,864.50	186.76
7,192.00	27.55	188.83	6,524.67	-2,887.14	-342.69	2,907.41	186.77
7,284.00	27.94	188.83	6,606.10	-2,929.47	-349.27	2,950.21	186.80
7,375.00	27.37	187.43	6,686.70	-2,971.28	-355.25	2,992.44	186.82
7,469.00	26.10	186.99	6,770.65	-3,013.23	-360.56	3,034.72	186.82
7,563.00	24.96	187.95	6,855.47	-3,053.39	-365.82	3,075.23	186.83
7,657.00	23.86	187.07	6,941.07	-3,091.91	-370.90	3,114.07	186.84
7,751.00	21.48	186.90	7,027.80	-3,127.86	-375.31	3,150.30	186.84
7,845.00	20.03	187.51	7,115.70	-3,160.91	-379.48	3,183.61	186.85
7,940.00	18.89	187.16	7,205.27	-3,192.30	-383.52	3,215.26	186.85
8,035.00	17.57	184.53	7,295.50	-3,221.85	-386.57	3,244.96	186.84
8,129.00	14.85	182.50	7,385.75	-3,248.04	-388.22	3,271.16	186.82
8,223.00	14.06	178.64	7,476.78	-3,271.49	-388.47	3,294.47	186.77
8,317.00	11.03	183.91	7,568.53	-3,291.88	-388.82	3,314.76	186.74
8,411.00	9.49	183.12	7,661.02	-3,308.59	-389.85	3,331.48	186.72
8,505.00	8.26	185.58	7,753.90	-3,323.05	-390.93	3,345.96	186.71
8,600.00	6.24	171.96	7,848.14	-3,334.95	-390.87	3,357.78	186.68
8,695.00	4.04	172.57	7,942.75	-3,343.38	-389.72	3,366.02	186.65
8,789.00	1.71	191.47	8,036.63	-3,348.04	-389.57	3,370.63	186.64
8,884.00	1.40	208.61	8,131.59	-3,350.45	-390.40	3,373.12	186.65
8,978.00	1.53	221.79	8,225.56	-3,352.40	-391.79	3,375.21	186.67
9,073.00	0.79	310.74	8,320.55	-3,352.91	-393.13	3,375.88	186.69
9,168.00	0.70	325.59	8,415.54	-3,352.01	-393.96	3,375.08	186.70
9,262.00	0.70	290.35	8,509.53	-3,351.33	-394.82	3,374.51	186.72
9,356.00	0.83	270.83	8,603.53	-3,351.12	-396.04	3,374.45	186.74
9,451.00	0.96	275.14	8,698.51	-3,351.04	-397.52	3,374.54	186.77
9,546.00	1.53	65.53	8,793.50	-3,350.45	-397.16	3,373.90	186.76
9,640.00	1.36	65.17	8,887.47	-3,349.46	-395.00	3,372.67	186.73
9,734.00	1.27	56.38	8,981.45	-3,348.41	-393.12	3,371.41	186.70
9,828.00	0.48	55.94	9,075.44	-3,347.62	-391.93	3,370.48	186.68
9,922.00	0.17	117.29	9,169.44	-3,347.46	-391.48	3,370.27	186.67
10,017.00	0.35	241.39	9,264.44	-3,347.66	-391.61	3,370.49	186.67
10,111.00	0.92	246.66	9,358.43	-3,348.10	-392.55	3,371.03	186.69
10,205.00	1.84	242.71	9,452.40	-3,349.09	-394.59	3,372.25	186.72
10,300.00	1.09	279.10	9,547.37	-3,349.65	-396.83	3,373.07	186.76

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 12-18-297 - Slot RGU 12-18-297
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 6633.00ft
Site:	RGU 23-7-297 Pad	MD Reference:	RKB @ 30' @ 6633.00ft
Well:	Federal RG 12-18-297	North Reference:	True
Wellbore:	OH	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 (°)
10,395.00	1.62	280.94	9,642.34	-3,349.25	-399.05	3,372.94	186.79
10,489.00	0.30	349.41	9,736.33	-3,348.75	-400.40	3,372.61	186.82
10,583.00	0.26	58.75	9,830.33	-3,348.40	-400.26	3,372.24	186.82
10,677.00	0.26	256.42	9,924.33	-3,348.34	-400.28	3,372.18	186.82
10,771.00	0.92	240.34	10,018.32	-3,348.76	-401.15	3,372.71	186.83
10,866.00	1.49	213.06	10,113.30	-3,350.18	-402.48	3,374.27	186.85
10,960.00	2.15	222.32	10,207.26	-3,352.51	-404.34	3,376.80	186.88
11,054.00	3.07	218.36	10,301.16	-3,355.78	-407.09	3,380.38	186.92
11,148.00	3.03	215.81	10,395.02	-3,359.77	-410.10	3,384.71	186.96
11,242.00	3.42	217.13	10,488.88	-3,364.02	-413.25	3,389.31	187.00
11,337.00	2.41	202.63	10,583.75	-3,368.12	-415.73	3,393.68	187.04
11,431.00	2.81	211.24	10,677.65	-3,371.92	-417.68	3,397.69	187.06
11,526.00	3.07	215.64	10,772.53	-3,375.98	-420.37	3,402.05	187.10
11,619.00	3.73	224.43	10,865.37	-3,380.16	-423.94	3,406.64	187.15
11,713.00	3.69	228.65	10,959.17	-3,384.34	-428.35	3,411.34	187.21
11,807.00	3.69	228.47	11,052.97	-3,388.35	-432.89	3,415.89	187.28
11,901.00	3.82	230.23	11,146.77	-3,392.36	-437.56	3,420.46	187.35
11,996.00	3.64	231.02	11,241.57	-3,396.28	-442.34	3,424.96	187.42
12,091.00	3.16	235.33	11,336.40	-3,399.66	-446.83	3,428.90	187.49
12,172.00	4.74	229.96	11,417.21	-3,403.09	-451.23	3,432.87	187.55
12,238.00	4.74	229.96	11,482.98	-3,406.60	-455.41	3,436.90	187.61

PTB @ 12238 MD/ 11482.98 TVD

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,474.00	1,412.76	-352.55	-27.64	First Survey @ 1474 MD/ 1412.76 TVD
12,238.00	11,482.98	-3,406.60	-455.41	PTB @ 12238 MD/ 11482.98 TVD

Checked By: _____ Approved By: _____ Date: _____