

WELL DETAILS: Federal RG 411-18-297

+N/-S	+E/-W	Northing	Ground Level:	Easting	6603.00	Latitude	Longitude	Slot
0.00	0.00	1760873.800	2206240.300	39.888482	-108.328982	RGU 411-18-297		

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FRG 411-18-297 K1266.98	1435.89	0.00	-378.45	1758219.900	2205779.000	39.881161	-108.330330
FRG 411-18-297 T2666.98	11506.88	0.00	-378.45	1758219.900	2205779.000	39.881161	-108.330330

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation
1435.89	1475.00	21.62	196.30	-268.73	-55.70	273.89	63.12	First Survey @ 1475 MD/ 1435.89 TVD
11506.88	12002.00	1.18	197.62	-2715.85	-415.16	2747.24	2567.15	PTB @ 12002 MD/ 11506.88 TVD

SLOTS

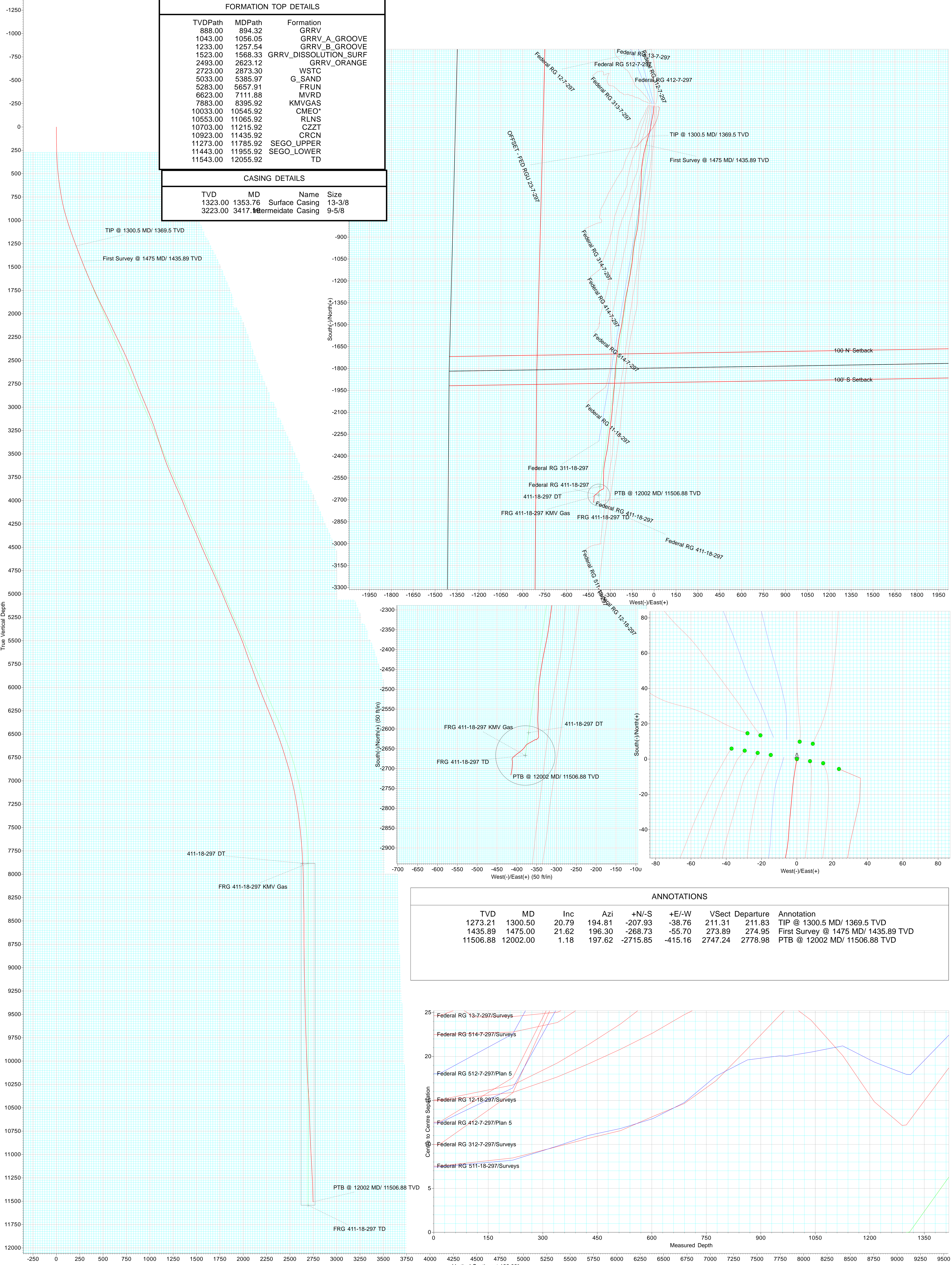
Slot Name	+N/-S	+E/-W	Northing	Easting
RGU 11-18-297	2.34	-14.78	1760876.600	2206225.600
RGU 12-18-297	-2.34	14.88	1760871.000	2206255.100
RGU 12-7-297	8.69	9.03	1760882.200	2206249.600
RGU 13-7-297	13.46	-20.63	1760887.900	2206220.100
RGU 311-18-297	1.17	-7.34	1760875.200	2206233.000
RGU 312-7-297	9.85	1.59	1760883.600	2206242.200
RGU 313-7-297	14.64	-27.97	1760889.300	2206212.800
RGU 314-7-297	5.95	-37.00	1760880.900	2206203.500
RGU 411-18-297	0.00	0.00	1760873.800	2206240.300
RGU 412-7-297	11.03	-5.75	1760885.000	2206234.900
RGU 413-7-297	15.81	-35.41	1760890.700	2206205.400
RGU 414-7-297	4.78	-29.56	1760879.500	2206210.900
RGU 511-18-297	-1.17	7.44	1760872.400	2206247.700
RGU 512-7-297	12.30	-13.19	1760886.500	2206227.500
RGU 514-7-297	3.51	-22.22	1760878.000	2206218.200

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
888.00	894.32	GRRV
1043.00	1056.05	GRRV_A_GROOVE
1233.00	1257.54	GRRV_B_GROOVE
1523.00	1568.33	GRRV_DISSOLUTION_SURF
2493.00	2623.12	GRRV_ORANGE
2723.00	2873.30	WSTC
5033.00	5385.97	G_SAND
5283.00	5657.91	FRUN
6623.00	7111.88	MVRD
7883.00	8395.92	KMVGAS
10033.00	10545.92	CMEO*
10553.00	11065.92	RLNS
10703.00	11215.92	CZTZ
10923.00	11435.92	CRCN
11273.00	11785.92	SEGO_UPPER
11443.00	11955.92	SEGO_LOWER
11543.00	12055.92	TD

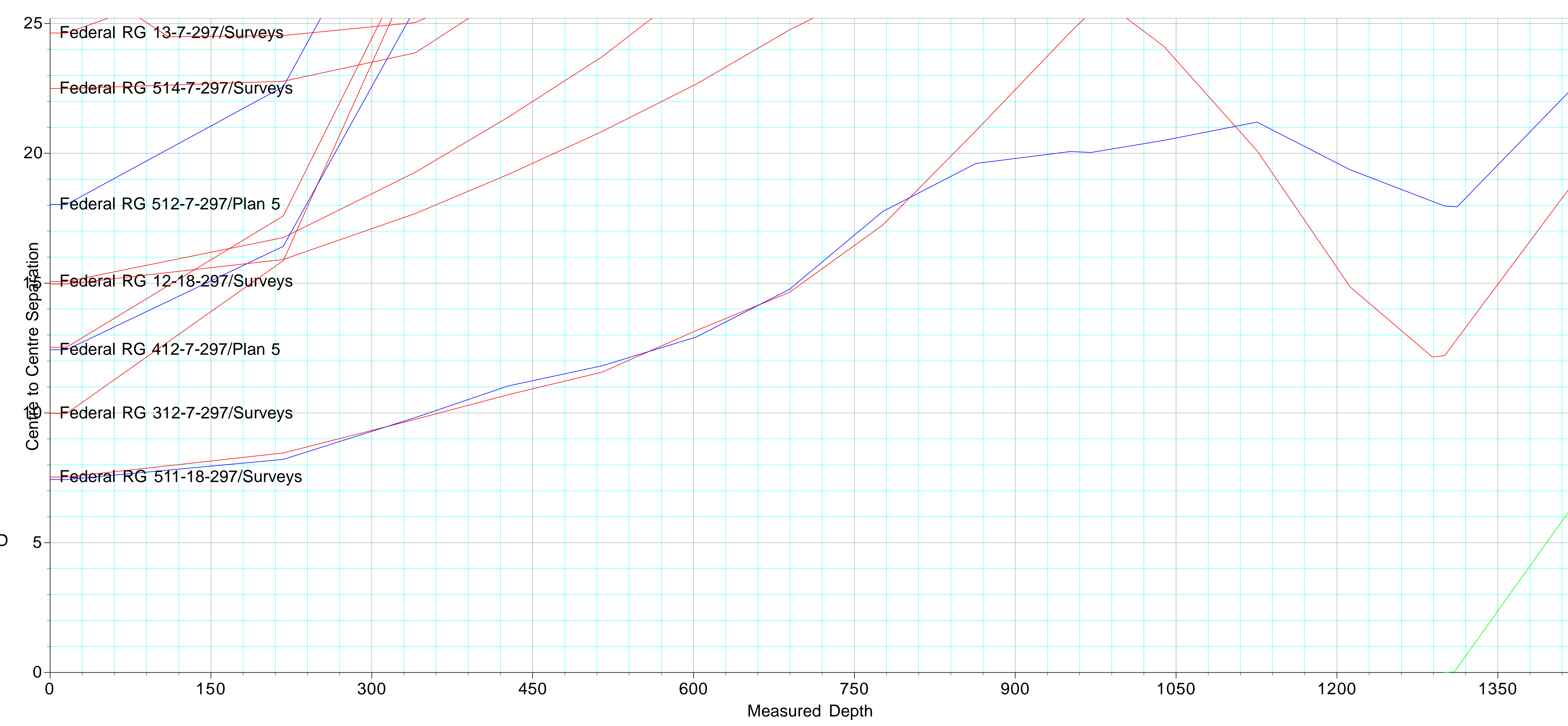
CASING DETAILS

TVD	MD	Name	Size
1323.00	1353.76	Surface Casing	13-3/8
3223.00	3417.16	Intermediate Casing	9-5/8



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation
1273.21	1300.50	20.79	194.81	-207.93	-38.76	211.31	211.83	TIP @ 1300.5 MD/ 1369.5 TVD
1435.89	1475.00	21.62	196.30	-268.73	-55.70	273.89	274.95	First Survey @ 1475 MD/ 1435.89 TVD
11506.88	12002.00	1.18	197.62	-2715.85	-415.16	2747.24	2778.98	PTB @ 12002 MD/ 11506.88 TVD





Directional Survey Certification

Survey Company: Native Navigation Survey Company Job #: 24012914

Well Name: RG 411-18-297 A.P.I.# 05-103-12478 Operator Terra Energy Partners

Latitude: 40.217433 Longitude: -108.328982 County, State: Garfield County, CO

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

Final Report 1/30/2024 Date of First Survey 1/13/2024 Date of Last Survey: 1/20/2024

Datum: NAD83 Survey MD From: 1475.00 To: 11939 FT. Tool Type: MWD + HRGM

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

Ground Elevation: 6603.00 Northings: 1760873.8 Eastings: 2206240.3

Surveyor Kyle Temple Depth of Final Projection: 12002 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

1/30/24
Date



Terra Energy Partners, LLP

Garfield County, CO (Nad 83)

RGU 23-7-297 Pad

Federal RG 411-18-297 - Slot RGU 411-18-297

OH

Survey: Surveys

Survey Certification Report

30 January, 2024



Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 411-18-297 - Slot RGU 411-18-2
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 411-18-297	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 411-18-297 - Slot RGU 411-18-297, 1797' FSL 1357' FWL Sec 7 T2S R97W					
Well Position	+N/-S	0.00 ft	Northing:	1,760,873.800 usft	Latitude:	39.888482
	+E/-W	0.00 ft	Easting:	2,206,240.300 usft	Longitude:	-108.328982
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	188.08

Survey Program	Date	1/19/2024			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
15.50	1,300.50	Surface Surveys (OH)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	
1,475.00	12,002.00	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 (°)	
1,300.50	20.79	194.81	1,273.21	-207.93	-38.76	211.51	190.56	
1,475.00	21.62	196.30	1,435.89	-268.73	-55.70	274.44	191.71	
First Survey @ 1475 MD/ 1435.89 TVD								
1,565.00	22.54	193.49	1,519.29	-301.41	-64.38	308.21	192.06	
1,656.00	22.80	191.03	1,603.26	-335.68	-71.82	343.28	192.08	
1,746.00	23.81	189.71	1,685.92	-370.71	-78.22	378.87	191.91	
1,837.00	24.43	185.05	1,768.98	-407.56	-82.97	415.92	191.51	
1,927.00	25.62	183.56	1,850.53	-445.52	-85.82	453.71	190.90	
2,018.00	26.45	182.06	1,932.30	-485.41	-87.77	493.28	190.25	
2,108.00	25.97	182.06	2,013.04	-525.14	-89.20	532.66	189.64	
2,199.00	25.13	184.35	2,095.15	-564.32	-91.38	571.67	189.20	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 411-18-297 - Slot RGU 411-18-2
Project:	Garfield County, CO (Nad 83)	TVD Reference:	RKB @ 30' @ 6633.00ft
Site:	RGU 23-7-297 Pad	MWD Reference:	RKB @ 30' @ 6633.00ft
Well:	Federal RG 411-18-297	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 (°)
2,290.00	25.35	184.61	2,177.46	-603.00	-94.41	610.35	188.90
2,381.00	26.41	183.82	2,259.33	-642.61	-97.33	649.94	188.61
2,472.00	25.83	184.70	2,341.04	-682.56	-100.30	689.89	188.36
2,562.00	24.91	181.98	2,422.36	-721.05	-102.56	728.31	188.10
2,653.00	23.11	183.91	2,505.48	-758.02	-104.44	765.18	187.84
2,743.00	21.97	188.13	2,588.61	-792.31	-108.03	799.64	187.76
2,834.00	21.35	186.11	2,673.19	-825.64	-112.20	833.23	187.74
2,925.00	20.60	191.38	2,758.17	-857.80	-117.12	865.76	187.77
3,016.00	22.89	193.31	2,842.69	-890.73	-124.35	899.36	187.95
3,108.00	22.89	190.41	2,927.44	-925.74	-131.71	935.06	188.10
3,199.00	22.45	189.01	3,011.41	-960.30	-137.63	970.12	188.16
3,290.00	21.53	186.55	3,095.80	-994.06	-142.25	1,004.18	188.14
3,338.00	20.78	184.35	3,140.56	-1,011.30	-143.90	1,021.48	188.10
3,461.00	18.41	186.02	3,256.43	-1,052.37	-147.59	1,062.67	187.98
3,553.00	17.79	189.36	3,343.88	-1,080.69	-151.40	1,091.24	187.98
3,644.00	17.44	190.50	3,430.61	-1,107.82	-156.15	1,118.77	188.02
3,736.00	19.20	186.72	3,517.95	-1,136.40	-160.43	1,147.67	188.04
3,828.00	20.83	191.47	3,604.40	-1,167.46	-165.46	1,179.12	188.07
3,919.00	22.89	189.18	3,688.85	-1,200.79	-171.50	1,212.97	188.13
4,011.00	22.63	192.26	3,773.69	-1,235.75	-178.11	1,248.52	188.20
4,103.00	24.21	191.03	3,858.11	-1,271.56	-185.48	1,285.02	188.30
4,194.00	24.30	191.73	3,941.07	-1,308.21	-192.86	1,322.35	188.39
4,286.00	21.70	187.51	4,025.76	-1,343.62	-198.93	1,358.26	188.42
4,377.00	21.66	187.07	4,110.32	-1,376.96	-203.19	1,391.87	188.39
4,469.00	23.68	189.01	4,195.21	-1,412.06	-208.18	1,427.33	188.39
4,561.00	24.08	189.10	4,279.34	-1,448.84	-214.04	1,464.57	188.40
4,652.00	22.89	187.16	4,362.80	-1,484.73	-219.18	1,500.83	188.40
4,744.00	22.19	192.52	4,447.78	-1,519.45	-225.18	1,536.05	188.43
4,835.00	23.81	191.38	4,531.54	-1,554.24	-232.53	1,571.53	188.51
4,928.00	24.25	190.85	4,616.48	-1,591.40	-239.83	1,609.37	188.57
5,019.00	24.21	187.25	4,699.47	-1,628.26	-245.70	1,646.70	188.58
5,110.00	24.21	184.79	4,782.47	-1,665.37	-249.61	1,683.97	188.52
5,201.00	23.90	186.90	4,865.57	-1,702.26	-253.39	1,721.02	188.47
5,293.00	22.85	186.72	4,950.01	-1,738.50	-257.72	1,757.50	188.43
5,385.00	22.19	186.99	5,035.00	-1,773.49	-261.92	1,792.73	188.40
5,477.00	22.63	183.82	5,120.05	-1,808.39	-265.21	1,827.74	188.34
5,569.00	23.24	182.59	5,204.78	-1,844.19	-267.21	1,863.45	188.24
5,660.00	23.68	183.91	5,288.26	-1,880.35	-269.27	1,899.54	188.15
5,752.00	22.85	185.14	5,372.78	-1,916.58	-272.13	1,935.80	188.08
5,844.00	22.36	185.05	5,457.71	-1,951.80	-275.27	1,971.12	188.03
5,936.00	19.81	184.70	5,543.54	-1,984.78	-278.09	2,004.16	187.98
6,028.00	18.89	184.00	5,630.35	-2,015.17	-280.41	2,034.58	187.92
6,119.00	20.78	186.63	5,715.95	-2,045.90	-283.30	2,065.42	187.88
6,211.00	20.12	184.44	5,802.15	-2,077.89	-286.41	2,097.54	187.85
6,303.00	19.95	185.76	5,888.58	-2,109.28	-289.21	2,129.02	187.81

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 411-18-297 - Slot RGU 411-18-2
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 411-18-297	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 (°)
6,395.00	20.91	186.55	5,974.79	-2,141.21	-292.66	2,161.12	187.78
6,486.00	21.04	187.95	6,059.76	-2,173.52	-296.77	2,193.69	187.77
6,577.00	22.14	189.01	6,144.38	-2,206.64	-301.71	2,227.17	187.79
6,669.00	22.41	186.90	6,229.51	-2,241.17	-306.53	2,262.03	187.79
6,760.00	22.36	185.93	6,313.66	-2,275.61	-310.41	2,296.68	187.77
6,852.00	20.47	188.04	6,399.30	-2,308.94	-314.47	2,330.26	187.76
6,944.00	20.43	188.04	6,485.50	-2,340.77	-318.96	2,362.40	187.76
7,036.00	19.29	191.12	6,572.03	-2,371.58	-324.14	2,393.63	187.78
7,127.00	18.19	191.73	6,658.21	-2,400.24	-329.92	2,422.81	187.83
7,219.00	17.00	189.89	6,745.90	-2,427.55	-335.15	2,450.58	187.86
7,311.00	16.74	188.83	6,833.94	-2,453.89	-339.50	2,477.27	187.88
7,403.00	14.85	187.25	6,922.47	-2,478.68	-343.02	2,502.30	187.88
7,495.00	13.53	183.47	7,011.66	-2,501.12	-345.16	2,524.82	187.86
7,587.00	12.12	179.69	7,101.36	-2,521.52	-345.76	2,545.12	187.81
7,678.00	9.88	181.01	7,190.69	-2,538.88	-345.84	2,562.33	187.76
7,770.00	9.40	183.03	7,281.39	-2,554.28	-346.38	2,577.66	187.72
7,861.00	8.12	182.15	7,371.32	-2,568.12	-347.01	2,591.46	187.70
7,952.00	6.72	178.20	7,461.56	-2,579.87	-347.09	2,603.11	187.66
8,418.00	2.50	174.15	7,925.95	-2,617.25	-345.20	2,639.91	187.51
8,512.00	1.09	176.44	8,019.90	-2,620.18	-344.93	2,642.78	187.50
8,606.00	1.01	215.37	8,113.89	-2,621.75	-345.35	2,644.39	187.50
8,701.00	1.09	226.54	8,208.87	-2,623.05	-346.50	2,645.84	187.52
8,796.00	1.23	225.48	8,303.85	-2,624.39	-347.88	2,647.34	187.55
8,890.00	1.58	221.79	8,397.82	-2,626.06	-349.46	2,649.21	187.58
8,984.00	0.52	264.59	8,491.81	-2,627.07	-350.75	2,650.38	187.60
9,078.00	0.52	287.27	8,585.80	-2,626.98	-351.58	2,650.40	187.62
9,172.00	0.87	268.99	8,679.80	-2,626.87	-352.70	2,650.44	187.65
9,266.00	0.92	237.87	8,773.78	-2,627.28	-354.05	2,651.03	187.68
9,361.00	1.05	239.81	8,868.77	-2,628.12	-355.45	2,652.05	187.70
9,456.00	1.14	246.49	8,963.75	-2,628.94	-357.07	2,653.08	187.73
9,550.00	1.93	234.53	9,057.72	-2,630.23	-359.22	2,654.65	187.78
9,645.00	2.28	242.09	9,152.65	-2,632.04	-362.19	2,656.85	187.84
9,739.00	2.46	241.74	9,246.57	-2,633.87	-365.62	2,659.13	187.90
9,834.00	1.75	241.57	9,341.51	-2,635.53	-368.69	2,661.19	187.96
9,929.00	1.71	238.84	9,436.47	-2,636.95	-371.18	2,662.95	188.01
10,023.00	2.46	238.49	9,530.40	-2,638.73	-374.10	2,665.12	188.07
10,117.00	2.24	216.52	9,624.33	-2,641.26	-376.91	2,668.02	188.12
10,211.00	1.97	210.28	9,718.26	-2,644.13	-378.82	2,671.13	188.15
10,305.00	2.24	221.18	9,812.20	-2,646.91	-380.85	2,674.17	188.19
10,400.00	2.41	222.23	9,907.12	-2,649.79	-383.41	2,677.38	188.23
10,494.00	2.76	227.68	10,001.03	-2,652.78	-386.41	2,680.77	188.29
10,683.00	4.04	233.39	10,189.69	-2,659.81	-395.12	2,689.00	188.45
10,778.00	5.40	231.46	10,284.37	-2,664.59	-401.30	2,694.64	188.56
10,872.00	5.09	229.09	10,377.97	-2,670.08	-407.92	2,701.06	188.69

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well Federal RG 411-18-297 - Slot RGU 411-18-2
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 411-18-297	North Reference:	True
Wellbore:	OH	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 (°)	
10,966.00	2.15	200.26	10,471.78	-2,674.46	-411.68	2,705.96	188.75	
11,060.00	1.75	164.22	10,565.73	-2,677.50	-411.90	2,709.00	188.75	
11,154.00	1.97	169.76	10,659.68	-2,680.47	-411.22	2,711.83	188.72	
11,249.00	2.32	179.60	10,754.61	-2,684.00	-410.92	2,715.27	188.70	
11,343.00	2.54	186.11	10,848.53	-2,687.97	-411.13	2,719.23	188.70	
11,437.00	2.98	182.59	10,942.42	-2,692.49	-411.46	2,723.74	188.69	
11,531.00	2.94	185.58	11,036.29	-2,697.33	-411.80	2,728.58	188.68	
11,625.00	2.76	187.34	11,130.18	-2,701.97	-412.33	2,733.25	188.68	
11,720.00	3.16	188.92	11,225.05	-2,706.83	-413.03	2,738.15	188.68	
11,814.00	2.10	193.58	11,318.95	-2,711.06	-413.83	2,742.46	188.68	
11,909.00	1.49	195.34	11,413.90	-2,713.94	-414.57	2,745.42	188.69	
11,939.00	1.18	197.62	11,443.90	-2,714.61	-414.76	2,746.12	188.69	
12,002.00	1.18	197.62	11,506.88	-2,715.85	-415.16	2,747.40	188.69	
PTB @ 12002 MD/ 11506.88 TVD								

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,475.00	1,435.89	-268.73	-55.70	First Survey @ 1475 MD/ 1435.89 TVD	
12,002.00	11,506.88	-2,715.85	-415.16	PTB @ 12002 MD/ 11506.88 TVD	

Checked By: _____ Approved By: _____ Date: _____