TERRA ENERGY PARTNERS

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well WGV 514-27-697 - Slot WGV 514-27-697, True North
Vertical (TVD) Reference: RKB @ 30' @ 8412.0ft
Section (VS) Reference: Slot - WGV 514-27-697(0.0N, 0.0E)
Measured Depth Reference: RKB @ 30' @ 8412.0ft
Calculation Method: Minimum Curvature

NATIVE NAVIGATION
DIRECTIONAL DRILLING SPECIALISTS

Project: Garfield County, CO (Nad 83)
Site: Acro Deep 1-27
Well: WGV 514-27-697
Wellbore: OWB
Design: Plan

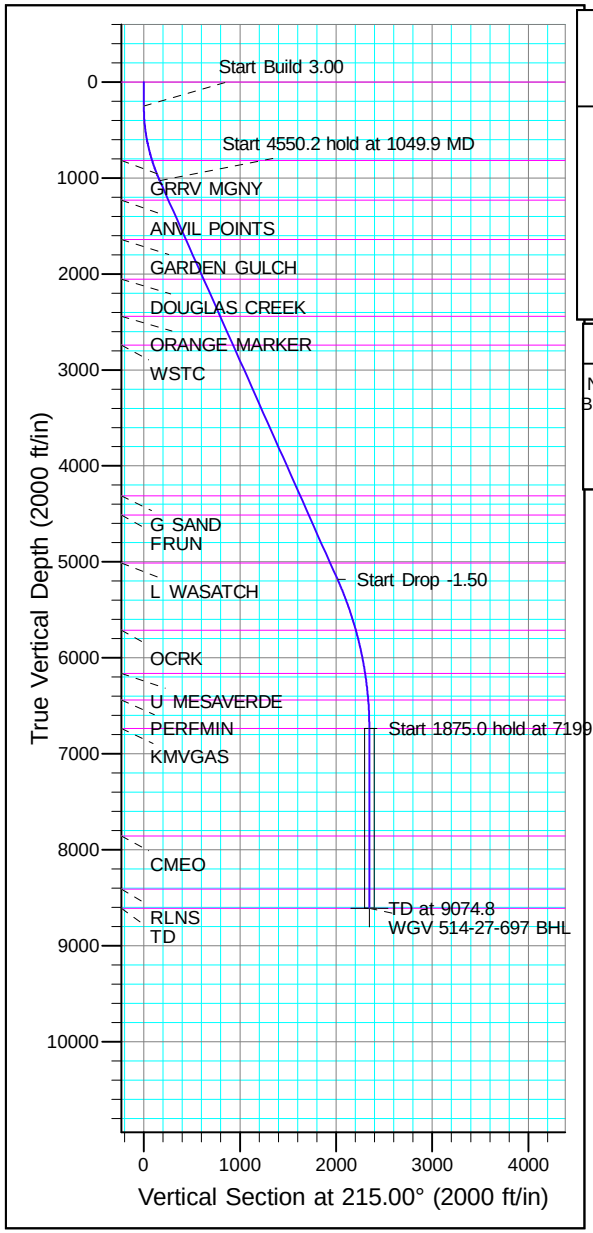
T M

Azimuths to True North
Magnetic North: 9.17°
Magnetic Field
Strength: 51090.3snT
Dip Angle: 65.50°
Date: 1/31/2023
Model: HDGM

WELL DETAILS: WGV 514-27-697

Ground Level: 8382.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Sl
0	0.0	1615645.700	2235925.500	39.492460	-108.207824	WGV 514-27-69



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.0	Start Build 3.00
1049.9	24.00	215.00	1026.7	-135.2	-94.7	3.00	215.00	165.1	Start 4550.2 hold at 1049.9 MD
5600.1	24.00	215.00	5183.6	-1650.9	-1156.1	0.00	0.00	2015.5	Start Drop -1.50
7199.8	0.00	0.00	6737.0	-1921.4	-1345.4	1.50	180.00	2345.6	Start 1875.0 hold at 7199.8 MD
9074.8	0.00	0.00	8612.0	-1921.4	-1345.4	0.00	0.00	2345.6	TD at 9074.8

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
0.0	0.0	GRRV
818.0	826.7	GRRV MGNY
1230.0	1272.4	ANVIL POINTS
1642.0	1723.4	GARDEN GULCH
2053.0	2173.3	DOUGLAS CREEK
2442.0	2599.1	ORANGE MARKER
2739.0	2924.2	WSTC
4312.0	4646.0	G SAND
4512.0	4864.9	FRUN
5012.0	5412.2	L WASATCH
5712.0	6162.1	OCRK
6162.0	6622.6	U MESAVERDE
6437.0	6899.5	PERFMIN
6737.0	7199.8	KMVGAS
7857.0	8319.8	CMEO
8412.0	8874.8	RLNS
8612.0	9074.8	TD

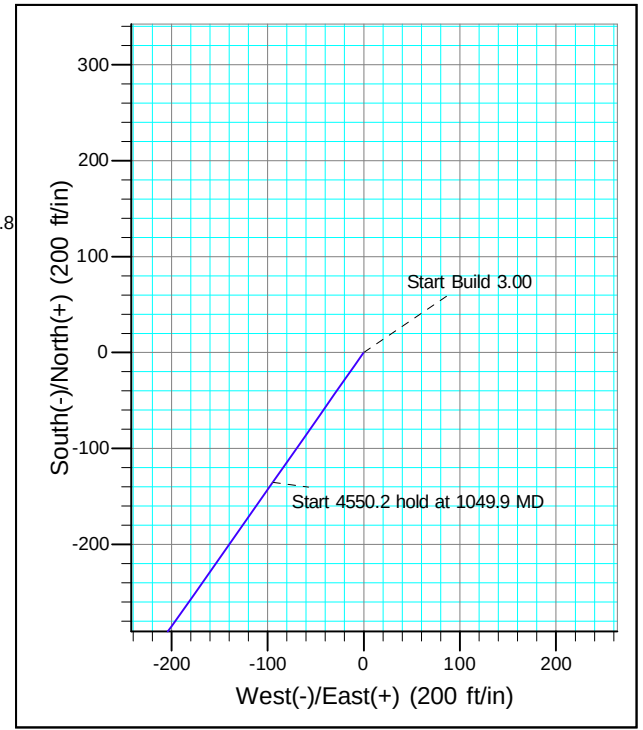
DESIGN TARGET DETAILS

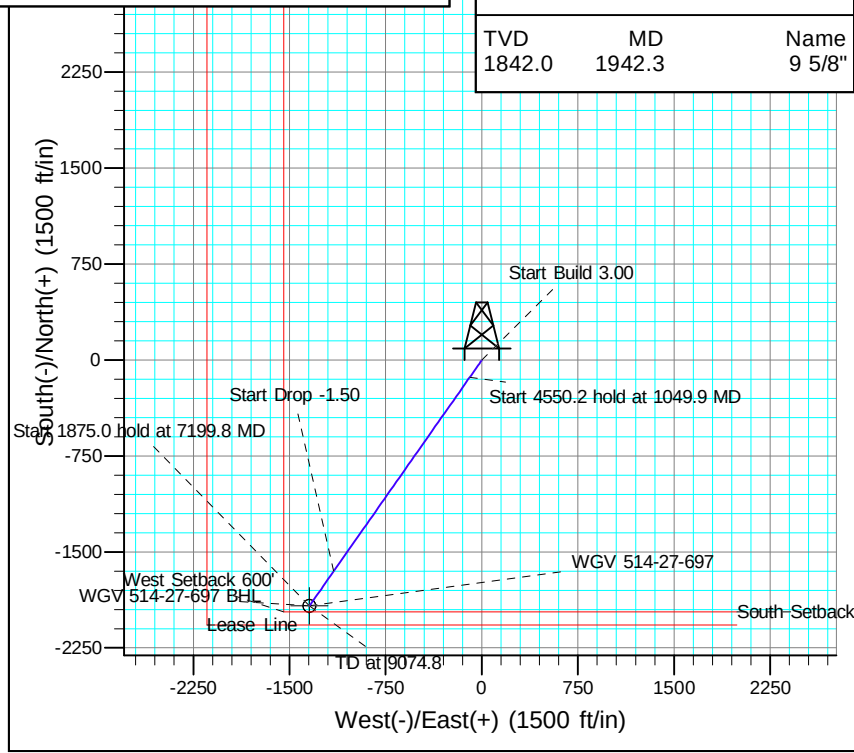
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL	8612.0	-1921.4	-1345.4	1613765.300	2234523.400	39.487185	-108.212591	Circle (Radius: 50.0)

- plan hits target center

CASING DETAILS

TVD	MD	Name
1842.0	1942.3	9 5/8"





Terra Energy Partners, LLP

Garfield County, CO (Nad 83)
Acro Deep 1-27
WGV 514-27-697 - Slot WGV 514-27-697

OWB

Plan: Plan

Standard Planning Report

07 March, 2023

Database:	NN	**Local Co-ordinate Reference:**	Well WGV 514-27-697 - Slot WGV 514-27-697
Company:	Terra Energy Partners, LLP	**TVD Reference:**	RKB @ 30' @ 8412.0ft
Project:	Garfield County, CO (Nad 83)	**MD Reference:**	RKB @ 30' @ 8412.0ft
Site:	Acro Deep 1-27	**North Reference:**	True
Well:	WGV 514-27-697	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	Plan		

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 Acro Deep 1-27

Site Position:		**Northing:**	1,615,634.200 usft	**Latitude:**	39.492428
From:	Map	**Easting:**	2,235,915.800 usft	**Longitude:**	-108.207857
Position Uncertainty:	0.0 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-1.71 °

Well WGV 514-27-697 - Slot WGV 514-27-697

Well Position	**+N/-S**	11.8 ft	**Northing:**	1,615,645.700 usft	**Latitude:**	39.492461
	+E/-W	9.4 ft	**Easting:**	2,235,925.500 usft	**Longitude:**	-108.207824
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	8,412.0 ft	**Ground Level:**	8,382.0 ft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/31/2023	9.17	65.50	51,090

Design Plan

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	215.00

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,049.9	24.00	215.00	1,026.7	-135.2	-94.7	3.00	3.00	0.00	215.00	
5,600.1	24.00	215.00	5,183.6	-1,650.9	-1,156.1	0.00	0.00	0.00	0.00	
7,199.8	0.00	0.00	6,737.0	-1,921.4	-1,345.4	1.50	-1.50	0.00	180.00	
9,074.8	0.00	0.00	8,612.0	-1,921.4	-1,345.4	0.00	0.00	0.00	0.00	WGV 514-27-697 BHI

Database:	NN	**Local Co-ordinate Reference:**	Well WGV 514-27-697 - Slot WGV 514-27-697
Company:	Terra Energy Partners, LLP	**TVD Reference:**	RKB @ 30' @ 8412.0ft
Project:	Garfield County, CO (Nad 83)	**MD Reference:**	RKB @ 30' @ 8412.0ft
Site:	Acro Deep 1-27	**North Reference:**	True
Well:	WGV 514-27-697	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	Plan		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.00									
300.0	1.50	215.00	300.0	-0.5	-0.4	0.7	3.00	3.00	0.00
400.0	4.50	215.00	399.8	-4.8	-3.4	5.9	3.00	3.00	0.00
500.0	7.50	215.00	499.3	-13.4	-9.4	16.3	3.00	3.00	0.00
600.0	10.50	215.00	598.0	-26.2	-18.3	32.0	3.00	3.00	0.00
700.0	13.50	215.00	695.8	-43.2	-30.3	52.8	3.00	3.00	0.00
800.0	16.50	215.00	792.4	-64.4	-45.1	78.6	3.00	3.00	0.00
900.0	19.50	215.00	887.5	-89.7	-62.8	109.5	3.00	3.00	0.00
1,000.0	22.50	215.00	980.9	-119.1	-83.4	145.4	3.00	3.00	0.00
1,049.9	24.00	215.00	1,026.7	-135.2	-94.7	165.1	3.00	3.00	0.00
Start 4550.2 hold at 1049.9 MD									
1,100.0	24.00	215.00	1,072.5	-151.9	-106.4	185.4	0.00	0.00	0.00
1,200.0	24.00	215.00	1,163.8	-185.2	-129.7	226.1	0.00	0.00	0.00
1,300.0	24.00	215.00	1,255.2	-218.5	-153.0	266.8	0.00	0.00	0.00
1,400.0	24.00	215.00	1,346.6	-251.8	-176.4	307.4	0.00	0.00	0.00
1,500.0	24.00	215.00	1,437.9	-285.2	-199.7	348.1	0.00	0.00	0.00
1,600.0	24.00	215.00	1,529.3	-318.5	-223.0	388.8	0.00	0.00	0.00
1,700.0	24.00	215.00	1,620.6	-351.8	-246.3	429.4	0.00	0.00	0.00
1,800.0	24.00	215.00	1,712.0	-385.1	-269.7	470.1	0.00	0.00	0.00
1,900.0	24.00	215.00	1,803.3	-418.4	-293.0	510.8	0.00	0.00	0.00
2,000.0	24.00	215.00	1,894.7	-451.7	-316.3	551.4	0.00	0.00	0.00
2,100.0	24.00	215.00	1,986.1	-485.0	-339.6	592.1	0.00	0.00	0.00
2,200.0	24.00	215.00	2,077.4	-518.3	-363.0	632.8	0.00	0.00	0.00
2,300.0	24.00	215.00	2,168.8	-551.6	-386.3	673.4	0.00	0.00	0.00
2,400.0	24.00	215.00	2,260.1	-585.0	-409.6	714.1	0.00	0.00	0.00
2,500.0	24.00	215.00	2,351.5	-618.3	-432.9	754.8	0.00	0.00	0.00
2,600.0	24.00	215.00	2,442.9	-651.6	-456.3	795.5	0.00	0.00	0.00
2,700.0	24.00	215.00	2,534.2	-684.9	-479.6	836.1	0.00	0.00	0.00
2,800.0	24.00	215.00	2,625.6	-718.2	-502.9	876.8	0.00	0.00	0.00
2,900.0	24.00	215.00	2,716.9	-751.5	-526.3	917.5	0.00	0.00	0.00
3,000.0	24.00	215.00	2,808.3	-784.8	-549.6	958.1	0.00	0.00	0.00
3,100.0	24.00	215.00	2,899.6	-818.1	-572.9	998.8	0.00	0.00	0.00
3,200.0	24.00	215.00	2,991.0	-851.4	-596.2	1,039.5	0.00	0.00	0.00
3,300.0	24.00	215.00	3,082.4	-884.8	-619.6	1,080.1	0.00	0.00	0.00
3,400.0	24.00	215.00	3,173.7	-918.1	-642.9	1,120.8	0.00	0.00	0.00
3,500.0	24.00	215.00	3,265.1	-951.4	-666.2	1,161.5	0.00	0.00	0.00
3,600.0	24.00	215.00	3,356.4	-984.7	-689.5	1,202.1	0.00	0.00	0.00
3,700.0	24.00	215.00	3,447.8	-1,018.0	-712.9	1,242.8	0.00	0.00	0.00
3,800.0	24.00	215.00	3,539.1	-1,051.3	-736.2	1,283.5	0.00	0.00	0.00
3,900.0	24.00	215.00	3,630.5	-1,084.6	-759.5	1,324.1	0.00	0.00	0.00
4,000.0	24.00	215.00	3,721.9	-1,117.9	-782.8	1,364.8	0.00	0.00	0.00
4,100.0	24.00	215.00	3,813.2	-1,151.3	-806.2	1,405.5	0.00	0.00	0.00
4,200.0	24.00	215.00	3,904.6	-1,184.6	-829.5	1,446.1	0.00	0.00	0.00
4,300.0	24.00	215.00	3,995.9	-1,217.9	-852.8	1,486.8	0.00	0.00	0.00
4,400.0	24.00	215.00	4,087.3	-1,251.2	-876.2	1,527.5	0.00	0.00	0.00
4,500.0	24.00	215.00	4,178.6	-1,284.5	-899.5	1,568.1	0.00	0.00	0.00
4,600.0	24.00	215.00	4,270.0	-1,317.8	-922.8	1,608.8	0.00	0.00	0.00
4,700.0	24.00	215.00	4,361.4	-1,351.1	-946.1	1,649.5	0.00	0.00	0.00
4,800.0	24.00	215.00	4,452.7	-1,384.4	-969.5	1,690.1	0.00	0.00	0.00

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Project:	Garfield County, CO (Nad 83)	**MD Reference:**	RKB @ 30' @ 8412.0ft
Site:	Acro Deep 1-27	**North Reference:**	True
Well:	WGV 514-27-697	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	Plan		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,900.0	24.00	215.00	4,544.1	-1,417.7	-992.8	1,730.8	0.00	0.00	0.00
5,000.0	24.00	215.00	4,635.4	-1,451.1	-1,016.1	1,771.5	0.00	0.00	0.00
5,100.0	24.00	215.00	4,726.8	-1,484.4	-1,039.4	1,812.1	0.00	0.00	0.00
5,200.0	24.00	215.00	4,818.2	-1,517.7	-1,062.8	1,852.8	0.00	0.00	0.00
5,300.0	24.00	215.00	4,909.5	-1,551.0	-1,086.1	1,893.5	0.00	0.00	0.00
5,400.0	24.00	215.00	5,000.9	-1,584.3	-1,109.4	1,934.1	0.00	0.00	0.00
5,500.0	24.00	215.00	5,092.2	-1,617.6	-1,132.7	1,974.8	0.00	0.00	0.00
5,600.0	24.00	215.00	5,183.6	-1,650.9	-1,156.1	2,015.5	0.00	0.00	0.00
5,600.1	24.00	215.00	5,183.6	-1,650.9	-1,156.1	2,015.5	0.00	0.00	0.00
Start Drop -1.50									
5,700.0	22.50	215.00	5,275.5	-1,683.3	-1,178.7	2,054.9	1.50	-1.50	0.00
5,800.0	21.00	215.00	5,368.3	-1,713.6	-1,200.0	2,092.0	1.50	-1.50	0.00
5,900.0	19.50	215.00	5,462.2	-1,741.9	-1,219.8	2,126.6	1.50	-1.50	0.00
6,000.0	18.00	215.00	5,556.9	-1,768.3	-1,238.2	2,158.7	1.50	-1.50	0.00
6,100.0	16.50	215.00	5,652.4	-1,792.6	-1,255.2	2,188.4	1.50	-1.50	0.00
6,200.0	15.00	215.00	5,748.6	-1,814.8	-1,270.8	2,215.5	1.50	-1.50	0.00
6,300.0	13.50	215.00	5,845.5	-1,834.9	-1,284.9	2,240.1	1.50	-1.50	0.00
6,400.0	12.00	215.00	5,943.1	-1,853.0	-1,297.6	2,262.2	1.50	-1.50	0.00
6,500.0	10.50	215.00	6,041.1	-1,869.0	-1,308.8	2,281.7	1.50	-1.50	0.00
6,600.0	9.00	215.00	6,139.7	-1,882.9	-1,318.5	2,298.6	1.50	-1.50	0.00
6,700.0	7.50	215.00	6,238.6	-1,894.6	-1,326.7	2,312.9	1.50	-1.50	0.00
6,800.0	6.00	215.00	6,338.0	-1,904.2	-1,333.5	2,324.7	1.50	-1.50	0.00
6,900.0	4.50	215.00	6,437.5	-1,911.7	-1,338.7	2,333.8	1.50	-1.50	0.00
7,000.0	3.00	215.00	6,537.3	-1,917.1	-1,342.4	2,340.4	1.50	-1.50	0.00
7,100.0	1.50	215.00	6,637.2	-1,920.3	-1,344.7	2,344.3	1.50	-1.50	0.00
7,199.8	0.00	0.00	6,737.0	-1,921.4	-1,345.4	2,345.6	1.50	-1.50	0.00
Start 1875.0 hold at 7199.8 MD									
7,200.0	0.00	0.00	6,737.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,300.0	0.00	0.00	6,837.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,400.0	0.00	0.00	6,937.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,500.0	0.00	0.00	7,037.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,137.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,237.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,800.0	0.00	0.00	7,337.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,437.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,537.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,100.0	0.00	0.00	7,637.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,200.0	0.00	0.00	7,737.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,300.0	0.00	0.00	7,837.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,400.0	0.00	0.00	7,937.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,500.0	0.00	0.00	8,037.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,600.0	0.00	0.00	8,137.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,700.0	0.00	0.00	8,237.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,800.0	0.00	0.00	8,337.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
8,900.0	0.00	0.00	8,437.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
9,000.0	0.00	0.00	8,537.2	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
9,074.8	0.00	0.00	8,612.0	-1,921.4	-1,345.4	2,345.6	0.00	0.00	0.00
TD at 9074.8									

Database:	NN	**Local Co-ordinate Reference:**	Well WGV 514-27-697 - Slot WGV 514-27-697
Company:	Terra Energy Partners, LLP	**TVD Reference:**	RKB @ 30' @ 8412.0ft
Project:	Garfield County, CO (Nad 83)	**MD Reference:**	RKB @ 30' @ 8412.0ft
Site:	Acro Deep 1-27	**North Reference:**	True
Well:	WGV 514-27-697	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	Plan		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
WGV 514-27-697 BHL - plan hits target center - Circle (radius 50.0)	0.00	0.00	8,612.0	-1,921.4	-1,345.4	1,613,765.300	2,234,523.400	39.487185	-108.212591

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,942.3	1,842.0	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.0	0.0	GRRV		0.00	
826.7	818.0	GRRV MGNY		0.00	
1,272.4	1,230.0	ANVIL POINTS		0.00	
1,723.4	1,642.0	GARDEN GULCH		0.00	
2,173.3	2,053.0	DOUGLAS CREEK		0.00	
2,599.1	2,442.0	ORANGE MARKER		0.00	
2,924.2	2,739.0	WSTC		0.00	
4,646.0	4,312.0	G SAND		0.00	
4,864.9	4,512.0	FRUN		0.00	
5,412.2	5,012.0	L WASATCH		0.00	
6,162.1	5,712.0	OCRK		0.00	
6,622.6	6,162.0	U MESAVERDE		0.00	
6,899.5	6,437.0	PERFMIN		0.00	
7,199.8	6,737.0	KMVGAS		0.00	
8,319.8	7,857.0	CMEO		0.00	
8,874.8	8,412.0	RLNS		0.00	
9,074.8	8,612.0	TD		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
250.0	250.0	0.0	0.0	Start Build 3.00
1,049.9	1,026.7	-135.2	-94.7	Start 4550.2 hold at 1049.9 MD
5,600.1	5,183.6	-1,650.9	-1,156.1	Start Drop -1.50
7,199.8	6,737.0	-1,921.4	-1,345.4	Start 1875.0 hold at 7199.8 MD
9,074.8	8,612.0	-1,921.4	-1,345.4	TD at 9074.8