



# **Ursa Operating Company, LLC**

**Rockies Region**

**Valley Farms G**

**Valley Farms G 31C-14-06-92**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**10 May, 2015**



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Valley Farms G 31C-14-06-92
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 31C-14-06-92	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<b>Project</b>	Rockies Region		
<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		

Site	Valley Farms G				
Site Position:		Northing:	1,624,165.22 usft	Latitude:	39° 31' 39.977 N
From:	Lat/Long	Easting:	2,399,120.26 usft	Longitude:	107° 37' 49.521 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.34 °

Well	Valley Farms G 31C-14-06-92, SHL: 39.527744032 -107.630422546					
Well Position	+N/-S	-10.0 usft	Northing:	1,624,155.22 usft	Latitude:	39° 31' 39.878 N
	+E/-W	0.0 usft	Easting:	2,399,119.99 usft	Longitude:	107° 37' 49.521 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,640.0 usft	Ground Level:	5,623.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	5/3/2015	9.69	65.72	51,924

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	343.25

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	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	
1,150.0	0.00	0.00	1,150.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	1.63	310.00	1,200.0	0.5	-0.5	3.25	3.25	0.00	310.00	
1,885.7	25.34	343.44	1,862.3	149.6	-50.5	3.50	3.46	4.88	35.45	
4,979.4	25.34	343.44	4,658.3	1,418.7	-427.8	0.00	0.00	0.00	0.00	
5,900.8	0.00	0.00	5,550.0	1,610.9	-485.0	2.75	-2.75	0.00	180.00	
7,810.8	0.00	0.00	7,460.0	1,610.9	-485.0	0.00	0.00	0.00	0.00	

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 31C-14-06-92	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
Surface Casing									
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,150.0	0.00	0.00	1,150.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.25									
1,200.0	1.63	310.00	1,200.0	0.5	-0.5	0.6	3.25	3.25	0.00
Start DLS 3.50 TFO 35.45									
1,300.0	4.91	334.41	1,299.8	5.2	-3.5	6.0	3.50	3.29	24.41
1,400.0	8.38	339.02	1,399.1	15.9	-7.9	17.5	3.50	3.46	4.61
1,500.0	11.86	340.94	1,497.6	32.4	-13.9	35.1	3.50	3.48	1.92
1,600.0	15.35	342.00	1,594.7	54.7	-21.4	58.6	3.50	3.49	1.06
1,700.0	18.85	342.67	1,690.3	82.7	-30.3	88.0	3.50	3.49	0.67
1,800.0	22.34	343.14	1,783.9	116.4	-40.6	123.1	3.50	3.50	0.47
1,885.7	25.34	343.44	1,862.3	149.6	-50.5	157.8	3.50	3.50	0.35
Start 3093.6 hold at 1885.7 MD									
1,900.0	25.34	343.44	1,875.2	155.4	-52.3	163.9	0.00	0.00	0.00
2,000.0	25.34	343.44	1,965.6	196.4	-64.5	206.7	0.00	0.00	0.00
2,100.0	25.34	343.44	2,056.0	237.5	-76.7	249.5	0.00	0.00	0.00
2,200.0	25.34	343.44	2,146.3	278.5	-88.9	292.3	0.00	0.00	0.00
2,300.0	25.34	343.44	2,236.7	319.5	-101.1	335.1	0.00	0.00	0.00
2,400.0	25.34	343.44	2,327.1	360.5	-113.3	377.9	0.00	0.00	0.00
2,500.0	25.34	343.44	2,417.5	401.6	-125.5	420.7	0.00	0.00	0.00
2,600.0	25.34	343.44	2,507.8	442.6	-137.6	463.5	0.00	0.00	0.00
2,700.0	25.34	343.44	2,598.2	483.6	-149.8	506.3	0.00	0.00	0.00
2,800.0	25.34	343.44	2,688.6	524.6	-162.0	549.1	0.00	0.00	0.00
2,900.0	25.34	343.44	2,779.0	565.7	-174.2	591.9	0.00	0.00	0.00
3,000.0	25.34	343.44	2,869.4	606.7	-186.4	634.7	0.00	0.00	0.00
3,100.0	25.34	343.44	2,959.7	647.7	-198.6	677.5	0.00	0.00	0.00
3,200.0	25.34	343.44	3,050.1	688.7	-210.8	720.3	0.00	0.00	0.00
3,300.0	25.34	343.44	3,140.5	729.8	-223.0	763.1	0.00	0.00	0.00
3,400.0	25.34	343.44	3,230.9	770.8	-235.2	805.9	0.00	0.00	0.00
3,500.0	25.34	343.44	3,321.3	811.8	-247.4	848.7	0.00	0.00	0.00
3,600.0	25.34	343.44	3,411.6	852.8	-259.6	891.5	0.00	0.00	0.00
3,700.0	25.34	343.44	3,502.0	893.9	-271.8	934.3	0.00	0.00	0.00
3,800.0	25.34	343.44	3,592.4	934.9	-284.0	977.1	0.00	0.00	0.00
3,893.6	25.34	343.44	3,677.0	973.3	-295.4	1,017.1	0.00	0.00	0.00
Williams Fork									
3,900.0	25.34	343.44	3,682.8	975.9	-296.2	1,019.9	0.00	0.00	0.00
4,000.0	25.34	343.44	3,773.1	1,016.9	-308.4	1,062.7	0.00	0.00	0.00
4,100.0	25.34	343.44	3,863.5	1,058.0	-320.6	1,105.5	0.00	0.00	0.00
4,200.0	25.34	343.44	3,953.9	1,099.0	-332.8	1,148.3	0.00	0.00	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 31C-14-06-92	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,300.0	25.34	343.44	4,044.3	1,140.0	-345.0	1,191.1	0.00	0.00	0.00	
4,400.0	25.34	343.44	4,134.7	1,181.0	-357.2	1,233.9	0.00	0.00	0.00	
4,500.0	25.34	343.44	4,225.0	1,222.1	-369.4	1,276.7	0.00	0.00	0.00	
4,600.0	25.34	343.44	4,315.4	1,263.1	-381.6	1,319.5	0.00	0.00	0.00	
4,700.0	25.34	343.44	4,405.8	1,304.1	-393.8	1,362.3	0.00	0.00	0.00	
4,800.0	25.34	343.44	4,496.2	1,345.1	-406.0	1,405.1	0.00	0.00	0.00	
4,900.0	25.34	343.44	4,586.5	1,386.2	-418.1	1,447.9	0.00	0.00	0.00	
4,979.4	25.34	343.44	4,658.3	1,418.7	-427.8	1,481.8	0.00	0.00	0.00	
<b>Start Drop -2.75</b>										
5,000.0	24.77	343.44	4,677.0	1,427.1	-430.3	1,490.6	2.75	-2.75	0.00	
5,100.0	22.02	343.44	4,768.7	1,465.2	-441.6	1,530.3	2.75	-2.75	0.00	
5,200.0	19.27	343.44	4,862.3	1,499.0	-451.7	1,565.5	2.75	-2.75	0.00	
5,300.0	16.52	343.44	4,957.5	1,528.4	-460.4	1,596.3	2.75	-2.75	0.00	
5,318.3	16.02	343.44	4,975.0	1,533.3	-461.9	1,601.4	2.75	-2.75	0.00	
<b>Top of Gas</b>										
5,400.0	13.77	343.44	5,054.0	1,553.5	-467.9	1,622.4	2.75	-2.75	0.00	
5,500.0	11.02	343.44	5,151.6	1,574.0	-474.0	1,643.9	2.75	-2.75	0.00	
5,600.0	8.27	343.44	5,250.2	1,590.1	-478.8	1,660.6	2.75	-2.75	0.00	
5,700.0	5.52	343.44	5,349.5	1,601.6	-482.2	1,672.6	2.75	-2.75	0.00	
5,800.0	2.77	343.44	5,449.2	1,608.6	-484.3	1,679.9	2.75	-2.75	0.00	
5,900.8	0.00	0.00	5,550.0	1,610.9	-485.0	1,682.3	2.75	-2.75	0.00	
<b>Start 1910.0 hold at 5900.8 MD - Back to Vertical</b>										
6,000.0	0.00	0.00	5,649.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,100.0	0.00	0.00	5,749.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,200.0	0.00	0.00	5,849.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,300.0	0.00	0.00	5,949.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,049.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,149.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,514.8	0.00	0.00	6,164.0	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
<b>Cameo</b>										
6,600.0	0.00	0.00	6,249.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,349.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,449.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,549.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,000.0	0.00	0.00	6,649.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,100.0	0.00	0.00	6,749.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,200.0	0.00	0.00	6,849.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,300.0	0.00	0.00	6,949.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,400.0	0.00	0.00	7,049.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,500.0	0.00	0.00	7,149.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,510.8	0.00	0.00	7,160.0	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
<b>Rollins</b>										
7,600.0	0.00	0.00	7,249.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,349.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,449.2	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
7,810.7	0.00	0.00	7,459.9	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
<b>BHL: 39.5321666, -107.6321419</b>										
7,810.8	0.00	0.00	7,460.0	1,610.9	-485.0	1,682.3	0.00	0.00	0.00	
<b>TD at 7810.8 - TD</b>										

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 31C-14-06-92	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Design Targets

### Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Valley Farms G 31C-14-	0.00	0.00	4,975.0	1,610.9	-485.0	1,625,777.05	2,398,672.94	39° 31' 55.800 N	107° 37' 55.711 W
- plan misses target center by 77.9usft at 5339.1usft MD (4995.0 TVD, 1538.7 N, -463.5 E)									
- Rectangle (sides W100.0 H40.0 D2,485.0)									

## Formations

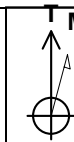
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,893.6	3,677.0	Williams Fork		0.00	
5,318.3	4,975.0	Top of Gas		0.00	
6,514.8	6,164.0	Cameo		0.00	
7,510.8	7,160.0	Rollins		0.00	
7,810.8	7,460.0	TD		0.00	

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,000.0	1,000.0	0.0	0.0	Surface Casing
1,150.0	1,150.0	0.0	0.0	Start Build 3.25
1,200.0	1,200.0	0.5	-0.5	Start DLS 3.50 TFO 35.45
1,885.7	1,862.3	149.6	-50.5	Start 3093.6 hold at 1885.7 MD
4,979.4	4,658.3	1,418.7	-427.8	Start Drop -2.75
5,900.8	5,550.0	1,610.9	-485.0	Start 1910.0 hold at 5900.8 MD
5,900.8	5,550.0	1,610.9	-485.0	Back to Vertical
7,810.7	7,459.9	1,610.9	-485.0	BHL: 39.5321666, -107.6321419
7,810.8	7,460.0	1,610.9	-485.0	TD at 7810.8



Well Name: Valley Farms G 31C-14-06-92  
Surface Location: Valley Farms G  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5623.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1624155.23 2399119.98 39° 31' 39.878 N 107° 37' 49.521 W  
PLAN KB Valley Farms G 31C-14-06-92 @ 5640.0usft (PLAN KB)



Azimuths to True North  
Magnetic North: 9.69°  
Magnetic Field  
Strength: 51924.5snT  
Dip Angle: 65.72°  
Date: 5/3/2015  
Model: IGRF2010

Valley Farms G  
Valley Farms G 31C-14-06-92  
Design #1  
17:55, May 10 2015

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Valley Farms G 31C-14-06-92 TGT	4975.0	1610.9	-485.0	1625777.05	2398672.949	39° 31' 55.800 N	107° 37' 55.711 W	Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1150.0	0.00	0.00	1150.0	0.0	0.0	0.00	0.00	0.0	
3	1200.0	1.63	310.00	1200.0	0.5	-0.5	3.25	310.00	0.6	
4	1885.7	25.34	343.44	1862.3	149.6	-50.5	3.50	35.45	157.8	
5	4979.4	25.34	343.44	4658.3	1418.7	-427.8	0.00	0.00	1481.8	
6	5900.8	0.00	0.00	5550.0	1610.9	-485.0	2.75	180.00	1682.3	
7	7810.8	0.00	0.00	7460.0	1610.9	-485.0	0.00	0.00	1682.3	

#### ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	Surface Casing
1150.0	1150.0	Start Build 3.25
1200.0	1200.0	Start DLS 3.50 TFO 35.45
1862.3	1885.7	Start 3093.6 hold at 1885.7 MD
4658.3	4979.4	Start Drop -2.75
5550.0	5900.8	Start 1910.0 hold at 5900.8 MD
5550.0	5900.8	Back to Vertical
7459.9	7810.7	BHL: 39.5321666, -107.6321419
7460.0	7810.8	TD at 7810.8

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3677.0	3893.6	Williams Fork	0.00	
4975.0	5318.3	Top of Gas	0.00	
6164.0	6514.8	Cameo	0.00	
7160.0	7510.8	Rollins	0.00	

