



# **Ursa Operating Company, LLC**

**Rockies Region**

**Valley Farms G**

**Valley Farms G 23C-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 23C-14-06-92
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Valley Farms G 23C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 23C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 23C-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 23C-14-06-92, SHL: 39.527401196 -107.630504062					
Well Position	+N/-S	-134.9 usft	Northing:	1,624,030.92 usft	Latitude:	39° 31' 38.644 N
	+E/-W	-23.0 usft	Easting:	2,399,094.07 usft	Longitude:	107° 37' 49.815 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	236.36	

<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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	3.50	245.00	1,199.9	-1.3	-2.8	3.50	3.50	0.00	245.00	
1,967.3	30.31	236.23	1,927.4	-121.0	-188.3	3.50	3.49	-1.14	-9.81	
4,605.3	30.31	236.23	4,204.9	-861.0	-1,295.0	0.00	0.00	0.00	0.00	
5,471.2	0.00	0.00	5,031.0	-985.4	-1,481.0	3.50	-3.50	0.00	180.00	Valley Farms G 23C-1
7,956.2	0.00	0.00	7,516.0	-985.4	-1,481.0	0.00	0.00	0.00	0.00	

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 23C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 23C-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
Start Build 3.50									
1,200.0	3.50	245.00	1,199.9	-1.3	-2.8	3.0	3.50	3.50	0.00
Start DLS 3.50 TFO -9.81									
1,300.0	6.97	240.09	1,299.5	-5.6	-10.8	12.1	3.50	3.47	-4.91
1,400.0	10.47	238.44	1,398.3	-13.4	-23.8	27.2	3.50	3.49	-1.65
1,500.0	13.96	237.61	1,496.1	-24.6	-41.7	48.4	3.50	3.50	-0.83
1,600.0	17.46	237.11	1,592.3	-39.2	-64.5	75.4	3.50	3.50	-0.50
1,700.0	20.96	236.77	1,686.7	-57.2	-92.1	108.3	3.50	3.50	-0.34
1,800.0	24.46	236.52	1,779.0	-78.4	-124.3	146.9	3.50	3.50	-0.25
1,900.0	27.95	236.33	1,868.7	-102.8	-161.1	191.1	3.50	3.50	-0.19
1,967.3	30.31	236.23	1,927.4	-121.0	-188.3	223.8	3.50	3.50	-0.15
Start 2638.0 hold at 1967.3 MD									
2,000.0	30.31	236.23	1,955.7	-130.2	-202.1	240.4	0.00	0.00	0.00
2,100.0	30.31	236.23	2,042.0	-158.2	-244.0	290.8	0.00	0.00	0.00
2,200.0	30.31	236.23	2,128.3	-186.3	-286.0	341.3	0.00	0.00	0.00
2,300.0	30.31	236.23	2,214.7	-214.3	-327.9	391.8	0.00	0.00	0.00
2,400.0	30.31	236.23	2,301.0	-242.4	-369.9	442.2	0.00	0.00	0.00
2,500.0	30.31	236.23	2,387.3	-270.4	-411.8	492.7	0.00	0.00	0.00
2,600.0	30.31	236.23	2,473.7	-298.5	-453.8	543.2	0.00	0.00	0.00
2,700.0	30.31	236.23	2,560.0	-326.5	-495.7	593.6	0.00	0.00	0.00
2,800.0	30.31	236.23	2,646.3	-354.6	-537.7	644.1	0.00	0.00	0.00
2,900.0	30.31	236.23	2,732.7	-382.6	-579.6	694.5	0.00	0.00	0.00
3,000.0	30.31	236.23	2,819.0	-410.7	-621.6	745.0	0.00	0.00	0.00
3,100.0	30.31	236.23	2,905.3	-438.8	-663.5	795.5	0.00	0.00	0.00
3,200.0	30.31	236.23	2,991.7	-466.8	-705.5	845.9	0.00	0.00	0.00
3,300.0	30.31	236.23	3,078.0	-494.9	-747.5	896.4	0.00	0.00	0.00
3,400.0	30.31	236.23	3,164.3	-522.9	-789.4	946.9	0.00	0.00	0.00
3,500.0	30.31	236.23	3,250.7	-551.0	-831.4	997.3	0.00	0.00	0.00
3,600.0	30.31	236.23	3,337.0	-579.0	-873.3	1,047.8	0.00	0.00	0.00
3,700.0	30.31	236.23	3,423.3	-607.1	-915.3	1,098.3	0.00	0.00	0.00
3,800.0	30.31	236.23	3,509.6	-635.1	-957.2	1,148.7	0.00	0.00	0.00
3,900.0	30.31	236.23	3,596.0	-663.2	-999.2	1,199.2	0.00	0.00	0.00
4,000.0	30.31	236.23	3,682.3	-691.2	-1,041.1	1,249.7	0.00	0.00	0.00
4,058.7	30.31	236.23	3,733.0	-707.7	-1,065.7	1,279.3	0.00	0.00	0.00
Williams Fork									
4,100.0	30.31	236.23	3,768.6	-719.3	-1,083.1	1,300.1	0.00	0.00	0.00
4,200.0	30.31	236.23	3,855.0	-747.3	-1,125.0	1,350.6	0.00	0.00	0.00
4,300.0	30.31	236.23	3,941.3	-775.4	-1,167.0	1,401.1	0.00	0.00	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms G 23C-14-06-92 @ 5640.0usft (PLAN KB)
<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 23C-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)
4,400.0	30.31	236.23	4,027.6	-803.4	-1,208.9	1,451.5	0.00	0.00	0.00
4,500.0	30.31	236.23	4,114.0	-831.5	-1,250.9	1,502.0	0.00	0.00	0.00
4,605.3	30.31	236.23	4,204.9	-861.0	-1,295.0	1,555.1	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
4,700.0	26.99	236.23	4,288.0	-886.2	-1,332.8	1,600.6	3.50	-3.50	0.00
4,800.0	23.49	236.23	4,378.4	-909.9	-1,368.2	1,643.2	3.50	-3.50	0.00
4,900.0	19.99	236.23	4,471.3	-930.5	-1,399.0	1,680.2	3.50	-3.50	0.00
5,000.0	16.49	236.23	4,566.2	-947.9	-1,425.0	1,711.5	3.50	-3.50	0.00
5,100.0	12.99	236.23	4,662.9	-962.1	-1,446.2	1,737.0	3.50	-3.50	0.00
5,200.0	9.49	236.23	4,761.0	-972.9	-1,462.4	1,756.5	3.50	-3.50	0.00
5,300.0	5.99	236.23	4,860.1	-980.4	-1,473.6	1,769.9	3.50	-3.50	0.00
5,400.0	2.49	236.23	4,959.8	-984.5	-1,479.8	1,777.3	3.50	-3.50	0.00
5,471.2	0.00	0.00	5,031.0	-985.4	-1,481.0	1,778.9	3.50	-3.50	0.00
<b>Start 2485.0 hold at 5471.2 MD - Back to Vertical - Top of Gas</b>									
5,500.0	0.00	0.00	5,059.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,159.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,259.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,359.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,459.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,559.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,100.0	0.00	0.00	5,659.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,200.0	0.00	0.00	5,759.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,300.0	0.00	0.00	5,859.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,400.0	0.00	0.00	5,959.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,059.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,159.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,660.2	0.00	0.00	6,220.0	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
<b>Cameo</b>									
6,700.0	0.00	0.00	6,259.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,359.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,459.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,559.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,100.0	0.00	0.00	6,659.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,759.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,300.0	0.00	0.00	6,859.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,400.0	0.00	0.00	6,959.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,500.0	0.00	0.00	7,059.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,159.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,656.2	0.00	0.00	7,216.0	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
<b>Rollins</b>									
7,700.0	0.00	0.00	7,259.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,359.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,459.8	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
7,956.1	0.00	0.00	7,515.9	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
<b>BHL: 39.5246958, -107.6357544</b>									
7,956.2	0.00	0.00	7,516.0	-985.4	-1,481.0	1,778.9	0.00	0.00	0.00
<b>TD at 7956.2</b>									

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<b>Site:</b>	Valley Farms G	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms G 23C-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 23C-14- - plan hits target center - Rectangle (sides W100.0 H40.0 D2,485.0)	0.00	0.00	5,031.0	-985.4	-1,481.0	1,623,080.54	2,397,590.33	39° 31' 28.905 N	107° 38' 8.716 W

## Formations

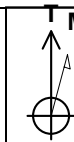
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,058.7	3,733.0	Williams Fork		0.00	
5,471.2	5,031.0	Top of Gas		0.00	
6,660.2	6,220.0	Cameo		0.00	
7,656.2	7,216.0	Rollins		0.00	

## 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
1,100.0	1,100.0	0.0	0.0	Start Build 3.50
1,200.0	1,199.9	-1.3	-2.8	Start DLS 3.50 TFO -9.81
1,967.3	1,927.4	-121.0	-188.3	Start 2638.0 hold at 1967.3 MD
4,605.3	4,204.9	-861.0	-1,295.0	Start Drop -3.50
5,471.2	5,031.0	-985.4	-1,481.0	Start 2485.0 hold at 5471.2 MD
5,471.2	5,031.0	-985.4	-1,481.0	Back to Vertical
7,956.1	7,515.9	-985.4	-1,481.0	BHL: 39.5246958, -107.6357544
7,956.2	7,516.0	-985.4	-1,481.0	TD at 7956.2



Well Name: Valley Farms G 23C-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 1624030.92 2399094.07 39° 31' 38.644 N 107° 37' 49.815 W  
PLAN KB Valley Farms G 23C-14-06-92 @ 5640.0usft (PLAN KB)



Azinuths to True North  
Magnetic North: 9.69°  
Magnetic Field  
Strength: 51924.3snT  
Dip Angle: 65.72°  
Date: 5/3/2015  
Model: IGRF2010

Valley Farms G  
Valley Farms G 23C-14-06-92  
Design #1  
17:22, 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 23C-14-06-92 TGT	1779.0	-985.4	-1481.0	1623080.55	2397590.329	39° 31' 28.905 N	107° 38' 8.716 W	Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0	
3	1200.0	3.50	245.00	1199.9	-1.3	-2.8	3.50	245.00	3.0	
4	1967.3	30.31	236.23	1927.4	-121.0	-188.3	3.50	-9.81	223.8	
5	4605.3	30.31	236.23	4204.9	-861.0	-1295.0	0.00	0.00	1555.1	
6	5471.2	0.00	0.00	5031.0	-985.4	-1481.0	3.50	180.00	1778.9	Valley Farms G 23C-14-06-92 TGT
7	7956.2	0.00	0.00	7516.0	-985.4	-1481.0	0.00	0.00	1778.9	

#### ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	Surface Casing
1100.0	1100.0	Start Build 3.50
1199.9	1200.0	Start DLS 3.50 TFO -9.81
1927.4	1967.3	Start 2638.0 hold at 1967.3 MD
4204.9	4605.3	Start Drop -3.50
5031.0	5471.2	Start 2485.0 hold at 5471.2 MD
5031.0	5471.2	Back to Vertical
7515.9	7956.1	BHL: 39.5246958, -107.6357544
7516.0	7956.2	TD at 7956.2

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3733.0	4058.7	Williams Fork	0.00	
5031.0	5471.2	Top of Gas	0.00	
6220.0	6660.2	Cameo	0.00	
7216.0	7656.2	Rollins	0.00	

