



# **Ursa Operating Company, LLC**

**Rockies Region**

**Valley Farms J**

**Valley Farms J1**

**Wellbore #1**

**Plan: Design #2**

## **Standard Planning Report**

**03 March, 2014**



<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well Valley Farms J1
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Valley Farms J1 @ 5552.4usft (PAD Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms J1 @ 5552.4usft (PAD Est KB)
<b>Site:</b>	Valley Farms J	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms J1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

<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 J			
Site Position:		Northing:	1,626,334.55 usft	Latitude:	39° 32' 2.073 N
From:	Lat/Long	Easting:	2,401,977.73 usft	Longitude:	107° 37' 13.708 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.34 °

Well	Valley Farms J1					
Well Position	+N/-S	0.0 usft	Northing:	1,626,334.55 usft	Latitude:	39° 32' 2.073 N
	+E/-W	0.0 usft	Easting:	2,401,977.73 usft	Longitude:	107° 37' 13.708 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,552.4 usft	Ground Level:	5,537.0 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>
	IGRF200510	9/5/2013	9.87	65.79	52,138

<b>Design</b>	Design #2			
<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	25.77

<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	
2,297.0	35.91	25.77	2,220.1	326.9	157.8	3.00	3.00	0.00	25.77	
3,605.4	35.91	25.77	3,279.9	1,017.9	491.4	0.00	0.00	0.00	0.00	
4,802.3	0.00	0.00	4,400.0	1,344.8	649.2	3.00	-3.00	0.00	180.00	
7,426.3	0.00	0.00	7,024.0	1,344.8	649.2	0.00	0.00	0.00	0.00	

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms J1 @ 5552.4usft (PAD Est KB)
<b>Site:</b>	Valley Farms J	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms J1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.00									
1,200.0	3.00	25.77	1,200.0	2.4	1.1	2.6	3.00	3.00	0.00
1,300.0	6.00	25.77	1,299.6	9.4	4.5	10.5	3.00	3.00	0.00
1,400.0	9.00	25.77	1,398.8	21.2	10.2	23.5	3.00	3.00	0.00
1,500.0	12.00	25.77	1,497.1	37.6	18.1	41.7	3.00	3.00	0.00
1,600.0	15.00	25.77	1,594.3	58.6	28.3	65.1	3.00	3.00	0.00
1,700.0	18.00	25.77	1,690.2	84.2	40.6	93.5	3.00	3.00	0.00
1,800.0	21.00	25.77	1,784.4	114.2	55.2	126.9	3.00	3.00	0.00
1,900.0	24.00	25.77	1,876.8	148.7	71.8	165.1	3.00	3.00	0.00
2,000.0	27.00	25.77	1,967.1	187.5	90.5	208.2	3.00	3.00	0.00
2,100.0	30.00	25.77	2,054.9	230.4	111.2	255.9	3.00	3.00	0.00
2,200.0	33.00	25.77	2,140.2	277.5	134.0	308.1	3.00	3.00	0.00
2,297.0	35.91	25.77	2,220.1	326.9	157.8	363.0	3.00	3.00	0.00
Start 1308.4 hold at 2297.0 MD									
2,300.0	35.91	25.77	2,222.6	328.5	158.6	364.8	0.00	0.00	0.00
2,400.0	35.91	25.77	2,303.6	381.3	184.1	423.4	0.00	0.00	0.00
2,500.0	35.91	25.77	2,384.6	434.1	209.6	482.0	0.00	0.00	0.00
2,600.0	35.91	25.77	2,465.6	486.9	235.1	540.7	0.00	0.00	0.00
2,700.0	35.91	25.77	2,546.6	539.7	260.6	599.3	0.00	0.00	0.00
2,800.0	35.91	25.77	2,627.6	592.6	286.1	658.0	0.00	0.00	0.00
2,900.0	35.91	25.77	2,708.6	645.4	311.6	716.6	0.00	0.00	0.00
3,000.0	35.91	25.77	2,789.6	698.2	337.1	775.3	0.00	0.00	0.00
3,100.0	35.91	25.77	2,870.5	751.0	362.6	833.9	0.00	0.00	0.00
3,200.0	35.91	25.77	2,951.5	803.8	388.1	892.6	0.00	0.00	0.00
3,300.0	35.91	25.77	3,032.5	856.6	413.6	951.2	0.00	0.00	0.00
3,394.9	35.91	25.77	3,109.4	906.8	437.8	1,006.9	0.00	0.00	0.00
WF									
3,400.0	35.91	25.77	3,113.5	909.5	439.1	1,009.9	0.00	0.00	0.00
3,500.0	35.91	25.77	3,194.5	962.3	464.6	1,068.5	0.00	0.00	0.00
3,605.4	35.91	25.77	3,279.9	1,017.9	491.4	1,130.3	0.00	0.00	0.00
Start Drop -3.00									
3,700.0	33.07	25.77	3,357.9	1,066.2	514.7	1,183.9	3.00	-3.00	0.00
3,800.0	30.07	25.77	3,443.1	1,113.3	537.5	1,236.3	3.00	-3.00	0.00
3,900.0	27.07	25.77	3,530.9	1,156.4	558.3	1,284.1	3.00	-3.00	0.00
4,000.0	24.07	25.77	3,621.1	1,195.2	577.0	1,327.2	3.00	-3.00	0.00
4,100.0	21.07	25.77	3,713.4	1,229.8	593.7	1,365.6	3.00	-3.00	0.00
4,200.0	18.07	25.77	3,807.6	1,260.0	608.3	1,399.1	3.00	-3.00	0.00
4,300.0	15.07	25.77	3,903.4	1,285.6	620.7	1,427.6	3.00	-3.00	0.00
4,400.0	12.07	25.77	4,000.6	1,306.8	630.9	1,451.1	3.00	-3.00	0.00
4,500.0	9.07	25.77	4,098.9	1,323.3	638.8	1,469.4	3.00	-3.00	0.00
4,600.0	6.07	25.77	4,198.0	1,335.2	644.6	1,482.6	3.00	-3.00	0.00
4,642.5	4.79	25.77	4,240.4	1,338.8	646.3	1,486.6	3.00	-3.00	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms J1 @ 5552.4usft (PAD Est KB)
<b>Site:</b>	Valley Farms J	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms J1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

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)
<b>Top of Gas</b>									
4,642.6	4.79	25.77	4,240.5	1,338.8	646.3	1,486.6	0.00	0.00	0.00
<b>J1 TGT</b>									
4,700.0	3.07	25.77	4,297.7	1,342.3	648.0	1,490.6	3.00	-3.00	0.00
4,802.3	0.00	0.00	4,400.0	1,344.8	649.2	1,493.3	3.00	-3.00	0.00
<b>Start 2624.0 hold at 4802.3 MD</b>									
4,900.0	0.00	0.00	4,497.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,597.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,100.0	0.00	0.00	4,697.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,200.0	0.00	0.00	4,797.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,300.0	0.00	0.00	4,897.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,400.0	0.00	0.00	4,997.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,500.0	0.00	0.00	5,097.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,197.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,700.0	0.00	0.00	5,297.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,397.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,497.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
5,940.7	0.00	0.00	5,538.4	1,344.8	649.2	1,493.3	0.00	0.00	0.00
<b>Cameo</b>									
6,000.0	0.00	0.00	5,597.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,100.0	0.00	0.00	5,697.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,200.0	0.00	0.00	5,797.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,300.0	0.00	0.00	5,897.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,400.0	0.00	0.00	5,997.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,500.0	0.00	0.00	6,097.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,197.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,700.0	0.00	0.00	6,297.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,397.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
6,900.0	0.00	0.00	6,497.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,597.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,100.0	0.00	0.00	6,697.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,126.7	0.00	0.00	6,724.4	1,344.8	649.2	1,493.3	0.00	0.00	0.00
<b>Rollins</b>									
7,200.0	0.00	0.00	6,797.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,300.0	0.00	0.00	6,897.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,400.0	0.00	0.00	6,997.7	1,344.8	649.2	1,493.3	0.00	0.00	0.00
7,426.3	0.00	0.00	7,024.0	1,344.8	649.2	1,493.3	0.00	0.00	0.00
<b>TD at 7426.3</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
J1 TGT	0.00	0.00	4,240.0	1,344.8	649.2	1,627,663.83	2,402,658.17	39° 32' 15.364 N	107° 37' 5.421 W
- hit/miss target									
- Shape									
- plan misses target center by 6.7usft at 4642.6usft MD (4240.5 TVD, 1338.8 N, 646.3 E) - Rectangle (sides W100.0 H40.0 D2,784.0)									

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Valley Farms J1 @ 5552.4usft (PAD Est KB)
<b>Site:</b>	Valley Farms J	<b>North Reference:</b>	True
<b>Well:</b>	Valley Farms J1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,394.9	3,109.4	WF		0.00	
4,642.5	4,240.4	Top of Gas		0.00	
5,940.7	5,538.4	Cameo		0.00	
7,126.7	6,724.4	Rollins		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,100.0	1,100.0	0.0	0.0	Start Build 3.00
2,297.0	2,220.1	326.9	157.8	Start 1308.4 hold at 2297.0 MD
3,605.4	3,279.9	1,017.9	491.4	Start Drop -3.00
4,802.3	4,400.0	1,344.8	649.2	Start 2624.0 hold at 4802.3 MD
7,426.3	7,024.0	1,344.8	649.2	TD at 7426.3



Well Name: Valley Farms J1  
Surface Location: Valley Farms J  
North American Datum 1983 US State Plane 1983 Colorado Central Zone  
Ground Elevation: 5537.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1626334.55 2401977.73 39° 32' 2.073 N 107° 37' 13.708 W  
PAD Est KB Valley Farms J1 @ 5552.4usft (PAD Est KB)



Azimuths to True North  
Magnetic North: 9.87°  
Magnetic Field  
Strength: 52137.5snT  
Dip Angle: 65.79°  
Date: 9/5/2013  
Model: IGRF200510

Valley Farms J  
Valley Farms J1  
Design #2  
10:45, March 03 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
J1 TGT	4240.0	1344.8	649.2	1627663.83	2402658.17	39° 32' 15.364 N	107° 37' 5.421 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	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0	
3	2297.0	35.91	25.77	2220.1	326.9	157.8	3.00	25.77	363.0	
4	3605.4	35.91	25.77	3279.9	1017.9	491.4	0.00	0.00	1130.3	
5	4802.3	0.00	0.00	4400.0	1344.8	649.2	3.00	180.00	1493.3	
6	7426.3	0.00	0.00	7024.0	1344.8	649.2	0.00	0.00	1493.3	

#### ANNOTATIONS

TVD	MD	Annotation
1100.0	1100.0	Start Build 3.00
2178.6	2246.2	Start 1190.8 hold at 2246.2 MD
3143.5	3437.0	Start Drop -3.00
4181.4	4583.3	Start 2784.0 hold at 4583.3 MD
6964.9	7367.2	TD at 7367.3

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3109.4	3394.9	WF	0.00	
4240.4	4642.5	Top of Gas	0.00	
5538.4	5940.7	Cameo	0.00	
6724.4	7126.7	Rollins	0.00	

