



Ursa Operating Company, LLC

Rockies Region

Valley Farms G

Valley Farms G 21C-14-06-92

Wellbore #1

Plan: Design #1

Standard Planning Report

10 May, 2015



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Valley Farms G 21C-14-06-92
Company:	Ursa Operating Company, LLC	TVD Reference:	Valley Farms G 21C-14-06-92 @ 5640.0usft (PLAN KB)
Project:	Rockies Region	MD Reference:	Valley Farms G 21C-14-06-92 @ 5640.0usft (PLAN KB)
Site:	Valley Farms G	North Reference:	True
Well:	Valley Farms G 21C-14-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Rockies Region		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 21C-14-06-92, SHL: 39.527606799 -107.630423254					
Well Position	+N/-S	-60.0 usft	Northing:	1,624,105.26 usft	Latitude:	39° 31' 39.384 N
	+E/-W	-0.2 usft	Easting:	2,399,118.61 usft	Longitude:	107° 37' 49.524 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,640.0 usft	Ground Level:	5,623.0 usft

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

Design	Design #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	315.02	

Plan Sections										
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	
1,075.0	0.00	0.00	1,075.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,275.0	7.00	295.00	1,274.5	5.2	-11.1	3.50	3.50	0.00	295.00	
2,187.5	38.41	315.65	2,106.6	237.4	-266.3	3.50	3.44	2.26	24.46	
4,634.5	38.41	315.65	4,024.0	1,324.4	-1,328.9	0.00	0.00	0.00	0.00	
5,731.8	0.00	0.00	5,041.0	1,577.7	-1,576.6	3.50	-3.50	0.00	180.00	Valley Farms G 21C-1
8,216.8	0.00	0.00	7,526.0	1,577.7	-1,576.6	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Valley Farms G 21C-14-06-92
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Project:	Rockies Region	MD Reference:	Valley Farms G 21C-14-06-92 @ 5640.0usft (PLAN KB)
Site:	Valley Farms G	North Reference:	True
Well:	Valley Farms G 21C-14-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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										
1,075.0	0.00	0.00	1,075.0	0.0	0.0	0.0	0.00	0.00	0.00	
Start Build 3.50										
1,100.0	0.88	295.00	1,100.0	0.1	-0.2	0.2	3.50	3.50	0.00	
1,200.0	4.38	295.00	1,199.9	2.0	-4.3	4.5	3.50	3.50	0.00	
1,275.0	7.00	295.00	1,274.5	5.2	-11.1	11.5	3.50	3.50	0.00	
Start DLS 3.50 TFO 24.46										
1,300.0	7.80	297.67	1,299.3	6.6	-13.9	14.5	3.50	3.22	10.68	
1,400.0	11.13	304.42	1,397.9	15.2	-27.9	30.5	3.50	3.33	6.75	
1,500.0	14.54	308.07	1,495.4	28.4	-45.8	52.4	3.50	3.41	3.65	
1,600.0	17.98	310.34	1,591.4	46.1	-67.4	80.3	3.50	3.44	2.28	
1,700.0	21.44	311.91	1,685.5	68.3	-92.8	113.9	3.50	3.46	1.56	
1,800.0	24.91	313.06	1,777.4	94.9	-121.8	153.2	3.50	3.47	1.15	
1,900.0	28.39	313.94	1,866.8	125.8	-154.3	198.1	3.50	3.48	0.88	
2,000.0	31.87	314.64	1,953.3	160.9	-190.2	248.2	3.50	3.48	0.70	
2,100.0	35.36	315.22	2,036.6	200.0	-229.4	303.6	3.50	3.49	0.58	
2,187.5	38.41	315.65	2,106.6	237.4	-266.3	356.1	3.50	3.49	0.49	
Start 2446.9 hold at 2187.5 MD										
2,200.0	38.41	315.65	2,116.3	242.9	-271.7	363.9	0.00	0.00	0.00	
2,300.0	38.41	315.65	2,194.7	287.4	-315.1	426.0	0.00	0.00	0.00	
2,400.0	38.41	315.65	2,273.1	331.8	-358.5	488.1	0.00	0.00	0.00	
2,500.0	38.41	315.65	2,351.4	376.2	-402.0	550.2	0.00	0.00	0.00	
2,600.0	38.41	315.65	2,429.8	420.6	-445.4	612.4	0.00	0.00	0.00	
2,700.0	38.41	315.65	2,508.1	465.1	-488.8	674.5	0.00	0.00	0.00	
2,800.0	38.41	315.65	2,586.5	509.5	-532.2	736.6	0.00	0.00	0.00	
2,900.0	38.41	315.65	2,664.9	553.9	-575.7	798.7	0.00	0.00	0.00	
3,000.0	38.41	315.65	2,743.2	598.3	-619.1	860.8	0.00	0.00	0.00	
3,100.0	38.41	315.65	2,821.6	642.8	-662.5	923.0	0.00	0.00	0.00	
3,200.0	38.41	315.65	2,899.9	687.2	-706.0	985.1	0.00	0.00	0.00	
3,300.0	38.41	315.65	2,978.3	731.6	-749.4	1,047.2	0.00	0.00	0.00	
3,400.0	38.41	315.65	3,056.7	776.0	-792.8	1,109.3	0.00	0.00	0.00	
3,500.0	38.41	315.65	3,135.0	820.4	-836.2	1,171.5	0.00	0.00	0.00	
3,600.0	38.41	315.65	3,213.4	864.9	-879.7	1,233.6	0.00	0.00	0.00	
3,700.0	38.41	315.65	3,291.7	909.3	-923.1	1,295.7	0.00	0.00	0.00	
3,800.0	38.41	315.65	3,370.1	953.7	-966.5	1,357.8	0.00	0.00	0.00	
3,900.0	38.41	315.65	3,448.5	998.1	-1,010.0	1,419.9	0.00	0.00	0.00	
4,000.0	38.41	315.65	3,526.8	1,042.6	-1,053.4	1,482.1	0.00	0.00	0.00	
4,100.0	38.41	315.65	3,605.2	1,087.0	-1,096.8	1,544.2	0.00	0.00	0.00	
4,200.0	38.41	315.65	3,683.5	1,131.4	-1,140.2	1,606.3	0.00	0.00	0.00	
4,275.9	38.41	315.65	3,743.0	1,165.1	-1,173.2	1,653.4	0.00	0.00	0.00	

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Site:	Valley Farms G	North Reference:	True
Well:	Valley Farms G 21C-14-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
Williams Fork									
4,300.0	38.41	315.65	3,761.9	1,175.8	-1,183.7	1,668.4	0.00	0.00	0.00
4,400.0	38.41	315.65	3,840.3	1,220.3	-1,227.1	1,730.6	0.00	0.00	0.00
4,500.0	38.41	315.65	3,918.6	1,264.7	-1,270.5	1,792.7	0.00	0.00	0.00
4,600.0	38.41	315.65	3,997.0	1,309.1	-1,314.0	1,854.8	0.00	0.00	0.00
4,634.5	38.41	315.65	4,024.0	1,324.4	-1,328.9	1,876.2	0.00	0.00	0.00
Start Drop -3.50									
4,700.0	36.11	315.65	4,076.1	1,352.8	-1,356.7	1,915.9	3.50	-3.50	0.00
4,800.0	32.61	315.65	4,158.7	1,393.2	-1,396.1	1,972.3	3.50	-3.50	0.00
4,900.0	29.11	315.65	4,244.5	1,429.8	-1,432.0	2,023.6	3.50	-3.50	0.00
5,000.0	25.61	315.65	4,333.3	1,462.7	-1,464.1	2,069.6	3.50	-3.50	0.00
5,100.0	22.11	315.65	4,424.7	1,491.6	-1,492.4	2,110.0	3.50	-3.50	0.00
5,200.0	18.61	315.65	4,518.5	1,516.5	-1,516.7	2,144.8	3.50	-3.50	0.00
5,300.0	15.11	315.65	4,614.2	1,537.2	-1,537.0	2,173.8	3.50	-3.50	0.00
5,400.0	11.61	315.65	4,711.4	1,553.8	-1,553.1	2,196.9	3.50	-3.50	0.00
5,500.0	8.11	315.65	4,809.9	1,566.0	-1,565.1	2,214.0	3.50	-3.50	0.00
5,600.0	4.61	315.65	4,909.3	1,573.9	-1,572.9	2,225.1	3.50	-3.50	0.00
5,700.0	1.11	315.65	5,009.2	1,577.5	-1,576.4	2,230.1	3.50	-3.50	0.00
5,731.8	0.00	0.00	5,041.0	1,577.7	-1,576.6	2,230.4	3.50	-3.50	0.00
Start 2485.0 hold at 5731.8 MD - Back to Vertical - Top of Gas									
5,800.0	0.00	0.00	5,109.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,209.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,309.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,100.0	0.00	0.00	5,409.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,200.0	0.00	0.00	5,509.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,300.0	0.00	0.00	5,609.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,400.0	0.00	0.00	5,709.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,500.0	0.00	0.00	5,809.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,600.0	0.00	0.00	5,909.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,700.0	0.00	0.00	6,009.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,109.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,900.0	0.00	0.00	6,209.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
6,920.8	0.00	0.00	6,230.0	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
Cameo									
7,000.0	0.00	0.00	6,309.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,100.0	0.00	0.00	6,409.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,200.0	0.00	0.00	6,509.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,300.0	0.00	0.00	6,609.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,400.0	0.00	0.00	6,709.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,500.0	0.00	0.00	6,809.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,600.0	0.00	0.00	6,909.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,700.0	0.00	0.00	7,009.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,109.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,900.0	0.00	0.00	7,209.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
7,916.8	0.00	0.00	7,226.0	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
Rollins									
8,000.0	0.00	0.00	7,309.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
8,100.0	0.00	0.00	7,409.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
8,200.0	0.00	0.00	7,509.2	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
8,216.7	0.00	0.00	7,525.9	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
BHL: 39.5319382, -107.6360128									

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Well:	Valley Farms G 21C-14-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
8,216.8	0.00	0.00	7,526.0	1,577.7	-1,576.6	2,230.4	0.00	0.00	0.00
TD at 8216.8 - TD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Valley Farms G 21C-14-	0.00	0.00	5,041.0	1,577.7	-1,576.6	1,625,719.52	2,397,579.48	39° 31' 54.977 N	107° 38' 9.646 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,485.0)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,275.9	3,743.0	Williams Fork		0.00		
5,731.8	5,041.0	Top of Gas		0.00		
6,920.8	6,230.0	Cameo		0.00		
7,916.8	7,226.0	Rollins		0.00		
8,216.8	7,526.0	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
1,075.0	1,075.0	0.0	0.0	Start Build 3.50
1,275.0	1,274.5	5.2	-11.1	Start DLS 3.50 TFO 24.46
2,187.5	2,106.6	237.4	-266.3	Start 2446.9 hold at 2187.5 MD
4,634.5	4,024.0	1,324.4	-1,328.9	Start Drop -3.50
5,731.8	5,041.0	1,577.7	-1,576.6	Start 2485.0 hold at 5731.8 MD
5,731.8	5,041.0	1,577.7	-1,576.6	Back to Vertical
8,216.7	7,525.9	1,577.7	-1,576.6	BHL: 39.5319382, -107.6360128
8,216.8	7,526.0	1,577.7	-1,576.6	TD at 8216.8



Well Name: Valley Farms G 21C-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 1624105.26 2399118.61 39° 31' 39.384 N 107° 37' 49.524 W
PLAN KB Valley Farms G 21C-14-06-92 @ 5640.0usft (PLAN KB)



Azinuths to True North
Magnetic North: 9.69°
Magnetic Field
Strength: 51924.4snT
Dip Angle: 65.72°
Date: 5/3/2015
Model: IGRF2010

Valley Farms G
Valley Farms G 21C-14-06-92
Design #1
16:54, 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 21C-14-06-92	5041.0	1577.7	-1576.6	1625719.53	2397579.479	31° 54.977' N 07° 38' 9.646' 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	1075.0	0.00	0.00	1075.0	0.0	0.0	0.00	0.00	0.0	
3	1275.0	7.00	295.00	1274.5	5.2	-11.1	3.50	295.00	11.5	
4	2187.5	38.41	315.65	2106.6	237.4	-266.3	3.50	24.46	356.1	
5	4634.5	38.41	315.65	4024.0	1324.4	-1328.9	0.00	0.00	1876.2	
6	5731.8	0.00	0.00	5041.0	1577.7	-1576.6	3.50	180.00	2230.4	Valley Farms G 21C-14-06-92
7	8216.8	0.00	0.00	7526.0	1577.7	-1576.6	0.00	0.00	2230.4	

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	Surface Casing
1075.0	1075.0	Start Build 3.50
1274.5	1275.0	Start DLS 3.50 TFO 24.46
2106.6	2187.5	Start 2446.9 hold at 2187.5 MD
4024.0	4634.5	Start Drop -3.50
5041.0	5731.8	Start 2485.0 hold at 5731.8 MD
5041.0	5731.8	Back to Vertical
7525.9	8216.7	BHL: 39.5319382, -107.6360128
7526.0	8216.8	TD at 8216.8

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3743.0	4275.9	Williams Fork	0.00	
5041.0	5731.8	Top of Gas	0.00	
6230.0	6920.8	Cameo	0.00	
7226.0	7916.8	Rollins	0.00	
7526.0	8216.8	TD	0.00	

