



Ursa Operating Company, LLC

Rockies Region

Valley Farms O

Valley Farms O 14D-10-06-92

Wellbore #1

Plan: Design #1

Standard Planning Report

24 July, 2015



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Valley Farms O 14D-10-06-92
Company:	Ursa Operating Company, LLC	TVD Reference:	Valley Farms O 14D-10-06-92 @ 5449.0usft (PLAN KB)
Project:	Rockies Region	MD Reference:	Valley Farms O 14D-10-06-92 @ 5449.0usft (PLAN KB)
Site:	Valley Farms O	North Reference:	True
Well:	Valley Farms O 14D-10-06-92	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 O			
Site Position:		Northing:	1,627,349.92 usft	Latitude:	39° 32' 9.673 N
From:	Lat/Long	Easting:	2,391,526.29 usft	Longitude:	107° 39' 27.378 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.36 °

Well	Valley Farms O 14D-10-06-92, SHL: 39.535826806 -107.657678554					
Well Position	+N/-S	-70.5 usft	Northing:	1,627,279.91 usft	Latitude:	39° 32' 8.976 N
	+E/-W	-20.8 usft	Easting:	2,391,503.86 usft	Longitude:	107° 39' 27.643 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,449.0 usft	Ground Level:	5,432.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/21/2015	9.67	65.72	51,905

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	235.42	

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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,464.6	12.76	235.42	1,461.6	-23.0	-33.3	3.50	3.50	0.00	235.42	
5,095.1	12.76	235.42	5,002.4	-478.1	-693.6	0.00	0.00	0.00	0.00	
5,459.7	0.00	0.00	5,364.0	-501.0	-726.9	3.50	-3.50	0.00	180.00	14D-10-06-92 TGT
7,929.7	0.00	0.00	7,834.0	-501.0	-726.9	0.00	0.00	0.00	0.00	

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Project:	Rockies Region	MD Reference:	Valley Farms O 14D-10-06-92 @ 5449.0usft (PLAN KB)
Site:	Valley Farms O	North Reference:	True
Well:	Valley Farms O 14D-10-06-92	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
0.1	0.00	0.00	0.1	0.0	0.0	0.0	0.00	0.00	0.00
SHL: 39.535826806 -107.657678554									
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	235.42	1,199.9	-1.7	-2.5	3.1	3.50	3.50	0.00
1,300.0	7.00	235.42	1,299.5	-6.9	-10.0	12.2	3.50	3.50	0.00
1,400.0	10.50	235.42	1,398.3	-15.6	-22.6	27.4	3.50	3.50	0.00
1,464.6	12.76	235.42	1,461.6	-23.0	-33.3	40.4	3.50	3.50	0.00
Start 3630.4 hold at 1464.6 MD									
1,500.0	12.76	235.42	1,496.1	-27.4	-39.7	48.3	0.00	0.00	0.00
1,600.0	12.76	235.42	1,593.6	-39.9	-57.9	70.3	0.00	0.00	0.00
1,700.0	12.76	235.42	1,691.2	-52.5	-76.1	92.4	0.00	0.00	0.00
1,800.0	12.76	235.42	1,788.7	-65.0	-94.3	114.5	0.00	0.00	0.00
1,900.0	12.76	235.42	1,886.2	-77.5	-112.5	136.6	0.00	0.00	0.00
2,000.0	12.76	235.42	1,983.8	-90.1	-130.7	158.7	0.00	0.00	0.00
2,100.0	12.76	235.42	2,081.3	-102.6	-148.9	180.8	0.00	0.00	0.00
2,200.0	12.76	235.42	2,178.8	-115.1	-167.0	202.9	0.00	0.00	0.00
2,300.0	12.76	235.42	2,276.4	-127.7	-185.2	225.0	0.00	0.00	0.00
2,400.0	12.76	235.42	2,373.9	-140.2	-203.4	247.1	0.00	0.00	0.00
2,500.0	12.76	235.42	2,471.4	-152.8	-221.6	269.2	0.00	0.00	0.00
2,600.0	12.76	235.42	2,568.9	-165.3	-239.8	291.2	0.00	0.00	0.00
2,700.0	12.76	235.42	2,666.5	-177.8	-258.0	313.3	0.00	0.00	0.00
2,800.0	12.76	235.42	2,764.0	-190.4	-276.2	335.4	0.00	0.00	0.00
2,900.0	12.76	235.42	2,861.5	-202.9	-294.4	357.5	0.00	0.00	0.00
3,000.0	12.76	235.42	2,959.1	-215.4	-312.6	379.6	0.00	0.00	0.00
3,100.0	12.76	235.42	3,056.6	-228.0	-330.7	401.7	0.00	0.00	0.00
3,200.0	12.76	235.42	3,154.1	-240.5	-348.9	423.8	0.00	0.00	0.00
3,300.0	12.76	235.42	3,251.7	-253.0	-367.1	445.9	0.00	0.00	0.00
3,400.0	12.76	235.42	3,349.2	-265.6	-385.3	468.0	0.00	0.00	0.00
3,500.0	12.76	235.42	3,446.7	-278.1	-403.5	490.1	0.00	0.00	0.00
3,600.0	12.76	235.42	3,544.2	-290.7	-421.7	512.1	0.00	0.00	0.00
3,700.0	12.76	235.42	3,641.8	-303.2	-439.9	534.2	0.00	0.00	0.00
3,800.0	12.76	235.42	3,739.3	-315.7	-458.1	556.3	0.00	0.00	0.00
3,830.5	12.76	235.42	3,769.0	-319.5	-463.6	563.1	0.00	0.00	0.00
Williams Fork									
3,900.0	12.76	235.42	3,836.8	-328.3	-476.2	578.4	0.00	0.00	0.00
4,000.0	12.76	235.42	3,934.4	-340.8	-494.4	600.5	0.00	0.00	0.00
4,100.0	12.76	235.42	4,031.9	-353.3	-512.6	622.6	0.00	0.00	0.00
4,200.0	12.76	235.42	4,129.4	-365.9	-530.8	644.7	0.00	0.00	0.00

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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)
4,300.0	12.76	235.42	4,226.9	-378.4	-549.0	666.8	0.00	0.00	0.00
4,400.0	12.76	235.42	4,324.5	-390.9	-567.2	688.9	0.00	0.00	0.00
4,500.0	12.76	235.42	4,422.0	-403.5	-585.4	711.0	0.00	0.00	0.00
4,600.0	12.76	235.42	4,519.5	-416.0	-603.6	733.0	0.00	0.00	0.00
4,700.0	12.76	235.42	4,617.1	-428.6	-621.7	755.1	0.00	0.00	0.00
4,800.0	12.76	235.42	4,714.6	-441.1	-639.9	777.2	0.00	0.00	0.00
4,900.0	12.76	235.42	4,812.1	-453.6	-658.1	799.3	0.00	0.00	0.00
5,000.0	12.76	235.42	4,909.7	-466.2	-676.3	821.4	0.00	0.00	0.00
5,095.1	12.76	235.42	5,002.4	-478.1	-693.6	842.4	0.00	0.00	0.00
Start Drop -3.50									
5,100.0	12.59	235.42	5,007.2	-478.7	-694.5	843.5	3.50	-3.50	0.00
5,200.0	9.09	235.42	5,105.4	-489.4	-710.0	862.3	3.50	-3.50	0.00
5,300.0	5.59	235.42	5,204.6	-496.6	-720.5	875.1	3.50	-3.50	0.00
5,400.0	2.09	235.42	5,304.3	-500.4	-726.0	881.8	3.50	-3.50	0.00
5,459.7	0.00	0.00	5,364.0	-501.0	-726.9	882.9	3.50	-3.50	0.00
Back to Vertical - Start 2470.0 hold at 5459.7 MD - Top of Gas									
5,500.0	0.00	0.00	5,404.3	-501.0	-726.9	882.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,504.3	-501.0	-726.9	882.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,604.3	-501.0	-726.9	882.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,704.3	-501.0	-726.9	882.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,804.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,904.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,004.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,104.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,204.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,304.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,431.7	0.00	0.00	6,336.0	-501.0	-726.9	882.9	0.00	0.00	0.00
Cameo									
6,500.0	0.00	0.00	6,404.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,504.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,700.0	0.00	0.00	6,604.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,704.3	-501.0	-726.9	882.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,804.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,904.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,100.0	0.00	0.00	7,004.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,104.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,300.0	0.00	0.00	7,204.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,304.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,429.7	0.00	0.00	7,334.0	-501.0	-726.9	882.9	0.00	0.00	0.00
Rollins									
7,500.0	0.00	0.00	7,404.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,504.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,700.0	0.00	0.00	7,604.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,704.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,804.3	-501.0	-726.9	882.9	0.00	0.00	0.00
7,929.6	0.00	0.00	7,833.9	-501.0	-726.9	882.9	0.00	0.00	0.00
BHL: 39.5344512 -107.6602558									
7,929.7	0.00	0.00	7,834.0	-501.0	-726.9	882.9	0.00	0.00	0.00
TD at 7929.7 - TD									

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Project:	Rockies Region	MD Reference:	Valley Farms O 14D-10-06-92 @ 5449.0usft (PLAN KB)
Site:	Valley Farms O	North Reference:	True
Well:	Valley Farms O 14D-10-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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									
14D-10-06-92 TGT	0.00	0.00	5,364.0	-501.0	-726.9	1,626,796.28	2,390,765.26	39° 32' 4.024 N	107° 39' 36.921 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,470.0)									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,830.5	3,769.0	Williams Fork		0.00	
5,459.7	5,364.0	Top of Gas		0.00	
6,431.7	6,336.0	Cameo		0.00	
7,429.7	7,334.0	Rollins		0.00	
7,929.7	7,834.0	TD		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.1	0.1	0.0	0.0	SHL: 39.535826806 -107.657678554
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
1,464.6	1,461.6	-23.0	-33.3	Start 3630.4 hold at 1464.6 MD
5,095.1	5,002.4	-478.1	-693.6	Start Drop -3.50
5,459.7	5,364.0	-501.0	-726.9	Back to Vertical
5,459.7	5,364.0	-501.0	-726.9	Start 2470.0 hold at 5459.7 MD
7,929.6	7,833.9	-501.0	-726.9	BHL: 39.5344512 -107.6602558
7,929.7	7,834.0	-501.0	-726.9	TD at 7929.7

