



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

**B&V 23D-07-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Ursa Operating Company LLC Planning Report**

**05 August, 2014**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 23D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 23D-07-07-95 @ 5097.0usft (PAD Est KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 23D-07-07-95 @ 5097.0usft (PAD Est KB)
<b>Well:</b>	B&V 23D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

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		B&V			
Site Position:		Northing:		Latitude:	
From:	Lat/Long	Easting:		Longitude:	
Position Uncertainty:	0.0 usft	Slot Radius:		Grid Convergence:	
		1,598,935.06 usft		39° 27' 0.591 N	
		2,280,801.73 usft		108° 2' 49.963 W	
		13-3/16 "		-1.61 °	

Well	B&V 23D-07-07-95, SHL LAT: 39.450319497 LONG: -108.047088960					
Well Position	+N/-S	0.0 usft	Northing:	1,598,990.64 usft	Latitude:	39° 27' 1.150 N
	+E/-W	0.0 usft	Easting:	2,280,838.02 usft	Longitude:	108° 2' 49.520 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,097.0 usft	Ground Level:	5,084.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/4/2014	9.97	65.61	51,909

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	111.91

Survey Tool Program		Date	8/4/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	6,687.9	Design #1 (Wellbore #1)	MWD	MWD - Standard	

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<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

## Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	-5,097.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
100.0	0.00	0.00	100.0	-4,997.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
200.0	0.00	0.00	200.0	-4,897.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
300.0	0.00	0.00	300.0	-4,797.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
400.0	0.00	0.00	400.0	-4,697.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
500.0	0.00	0.00	500.0	-4,597.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
600.0	0.00	0.00	600.0	-4,497.0	0.0	0.0	0.0	0.00	1,598,990.64	2,280,838.02
<b>Start Build 3.00</b>										
700.0	3.00	111.91	700.0	-4,397.0	-1.0	2.4	2.6	3.00	1,598,989.60	2,280,840.42
800.0	6.00	111.91	799.6	-4,297.4	-3.9	9.7	10.5	3.00	1,598,986.47	2,280,847.62
900.0	9.00	111.91	898.8	-4,198.2	-8.8	21.8	23.5	3.00	1,598,981.26	2,280,859.59
1,000.0	12.00	111.91	997.1	-4,099.9	-15.6	38.7	41.7	3.00	1,598,973.99	2,280,876.29
1,100.0	15.00	111.91	1,094.3	-4,002.7	-24.3	60.4	65.1	3.00	1,598,964.68	2,280,897.70
1,200.0	18.00	111.91	1,190.2	-3,906.8	-34.9	86.7	93.5	3.00	1,598,953.35	2,280,923.74
1,300.0	21.00	111.91	1,284.4	-3,812.6	-47.3	117.7	126.9	3.00	1,598,940.03	2,280,954.34
1,400.0	24.00	111.91	1,376.8	-3,720.2	-61.6	153.2	165.1	3.00	1,598,924.76	2,280,989.43
1,500.0	27.00	111.91	1,467.1	-3,629.9	-77.7	193.1	208.2	3.00	1,598,907.59	2,281,028.90
1,600.0	30.00	111.91	1,554.9	-3,542.1	-95.5	237.4	255.9	3.00	1,598,888.55	2,281,072.65
1,615.9	30.48	111.91	1,568.6	-3,528.4	-98.5	244.8	263.9	3.00	1,598,885.36	2,281,079.98
<b>Start 1827.1 hold at 1615.9 MD</b>										
1,700.0	30.48	111.91	1,641.1	-3,455.9	-114.4	284.4	306.5	0.00	1,598,868.34	2,281,119.10
1,800.0	30.48	111.91	1,727.3	-3,369.7	-133.3	331.5	357.3	0.00	1,598,848.10	2,281,165.61
1,900.0	30.48	111.91	1,813.5	-3,283.5	-152.2	378.5	408.0	0.00	1,598,827.87	2,281,212.12
2,000.0	30.48	111.91	1,899.7	-3,197.3	-171.1	425.6	458.7	0.00	1,598,807.63	2,281,258.62
2,100.0	30.48	111.91	1,985.9	-3,111.1	-190.1	472.6	509.4	0.00	1,598,787.39	2,281,305.13
2,200.0	30.48	111.91	2,072.1	-3,024.9	-209.0	519.7	560.1	0.00	1,598,767.16	2,281,351.64
2,300.0	30.48	111.91	2,158.2	-2,938.8	-227.9	566.7	610.8	0.00	1,598,746.92	2,281,398.14

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<b>Well:</b>	B&V 23D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2,400.0	30.48	111.91	2,244.4	-2,852.6	-246.8	613.8	661.6	0.00	1,598,726.69	2,281,444.65
2,500.0	30.48	111.91	2,330.6	-2,766.4	-265.8	660.8	712.3	0.00	1,598,706.45	2,281,491.16
2,600.0	30.48	111.91	2,416.8	-2,680.2	-284.7	707.9	763.0	0.00	1,598,686.21	2,281,537.66
2,700.0	30.48	111.91	2,503.0	-2,594.0	-303.6	755.0	813.7	0.00	1,598,665.98	2,281,584.17
2,800.0	30.48	111.91	2,589.2	-2,507.8	-322.5	802.0	864.4	0.00	1,598,645.74	2,281,630.67
2,900.0	30.48	111.91	2,675.4	-2,421.6	-341.5	849.1	915.2	0.00	1,598,625.51	2,281,677.18
3,000.0	30.48	111.91	2,761.5	-2,335.5	-360.4	896.1	965.9	0.00	1,598,605.27	2,281,723.69
3,100.0	30.48	111.91	2,847.7	-2,249.3	-379.3	943.2	1,016.6	0.00	1,598,585.03	2,281,770.19
3,200.0	30.48	111.91	2,933.9	-2,163.1	-398.2	990.2	1,067.3	0.00	1,598,564.80	2,281,816.70
3,300.0	30.48	111.91	3,020.1	-2,076.9	-417.2	1,037.3	1,118.0	0.00	1,598,544.56	2,281,863.21
3,334.7	30.48	111.91	3,050.0	-2,047.0	-423.7	1,053.6	1,135.6	0.00	1,598,537.54	2,281,879.35
<b>Williams Fork</b>										
3,400.0	30.48	111.91	3,106.3	-1,990.7	-436.1	1,084.3	1,168.7	0.00	1,598,524.33	2,281,909.71
3,443.0	30.48	111.91	3,143.4	-1,953.6	-444.2	1,104.6	1,190.6	0.00	1,598,515.62	2,281,929.72
<b>Start Drop -3.00</b>										
3,500.0	28.77	111.91	3,192.9	-1,904.1	-454.7	1,130.7	1,218.7	3.00	1,598,504.38	2,281,955.54
3,600.0	25.77	111.91	3,281.8	-1,815.2	-471.8	1,173.2	1,264.5	3.00	1,598,486.11	2,281,997.55
3,700.0	22.77	111.91	3,372.9	-1,724.1	-487.2	1,211.3	1,305.6	3.00	1,598,469.71	2,282,035.23
3,800.0	19.77	111.91	3,466.1	-1,630.9	-500.7	1,245.0	1,341.9	3.00	1,598,455.24	2,282,068.49
3,900.0	16.77	111.91	3,561.0	-1,536.0	-512.4	1,274.1	1,373.2	3.00	1,598,442.74	2,282,097.23
4,000.0	13.77	111.91	3,657.5	-1,439.5	-522.2	1,298.5	1,399.6	3.00	1,598,432.23	2,282,121.37
4,100.0	10.77	111.91	3,755.2	-1,341.8	-530.1	1,318.2	1,420.8	3.00	1,598,423.75	2,282,140.85
4,200.0	7.77	111.91	3,853.9	-1,243.1	-536.2	1,333.1	1,436.9	3.00	1,598,417.33	2,282,155.61
4,300.0	4.77	111.91	3,953.3	-1,143.7	-540.2	1,343.3	1,447.8	3.00	1,598,412.97	2,282,165.62
4,400.0	1.77	111.91	4,053.1	-1,043.9	-542.3	1,348.6	1,453.5	3.00	1,598,410.70	2,282,170.85
4,458.9	0.00	0.00	4,112.0	-985.0	-542.7	1,349.4	1,454.4	3.00	1,598,410.34	2,282,171.68
<b>Back to Vertical - Start 2229.0 hold at 4458.9 MD - Top of Gas - B&amp;V 23D-07-07-95 TGT</b>										
4,500.0	0.00	0.00	4,153.1	-943.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68

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<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 23D-07-07-95 @ 5097.0usft (PAD Est KB)
<b>Well:</b>	B&V 23D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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## Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
4,600.0	0.00	0.00	4,253.1	-843.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
4,700.0	0.00	0.00	4,353.1	-743.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
4,800.0	0.00	0.00	4,453.1	-643.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
4,900.0	0.00	0.00	4,553.1	-543.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,000.0	0.00	0.00	4,653.1	-443.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,100.0	0.00	0.00	4,753.1	-343.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,200.0	0.00	0.00	4,853.1	-243.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,300.0	0.00	0.00	4,953.1	-143.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,400.0	0.00	0.00	5,053.1	-43.9	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,500.0	0.00	0.00	5,153.1	56.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,600.0	0.00	0.00	5,253.1	156.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,700.0	0.00	0.00	5,353.1	256.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,800.0	0.00	0.00	5,453.1	356.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
5,863.9	0.00	0.00	5,517.0	420.0	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
<b>Cameo</b>										
5,900.0	0.00	0.00	5,553.1	456.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,000.0	0.00	0.00	5,653.1	556.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,100.0	0.00	0.00	5,753.1	656.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,200.0	0.00	0.00	5,853.1	756.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,300.0	0.00	0.00	5,953.1	856.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,387.9	0.00	0.00	6,041.0	944.0	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
<b>Rollins</b>										
6,400.0	0.00	0.00	6,053.1	956.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,500.0	0.00	0.00	6,153.1	1,056.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,600.0	0.00	0.00	6,253.1	1,156.1	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
6,687.9	0.00	0.00	6,341.0	1,244.0	-542.7	1,349.4	1,454.4	0.00	1,598,410.34	2,282,171.68
<b>TD at 6687.9</b>										

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<b>Well:</b>	B&V 23D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,387.9	6,041.0	Rollins		0.00		
4,458.9	4,112.0	Top of Gas		0.00		
3,334.7	3,050.0	Williams Fork		0.00		
5,863.9	5,517.0	Cameo		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
600.0	600.0	0.0	0.0	Start Build 3.00	
1,615.9	1,568.6	-98.5	244.8	Start 1827.1 hold at 1615.9 MD	
3,443.0	3,143.4	-444.2	1,104.6	Start Drop -3.00	
4,458.9	4,112.0	-542.7	1,349.4	Back to Vertical	
4,458.9	4,112.0	-542.7	1,349.4	Start 2229.0 hold at 4458.9 MD	
6,687.9	6,341.0	-542.7	1,349.4	TD at 6687.9	

Checked By: _____	Approved By: _____	Date: _____
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Well Name: B&V 23D-07-07-95  
Surface Location: B&V  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5084.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1598990.64 2280838.02 39° 27' 1.150 N 108° 2' 49.520 W  
PAD Est KB B&V 23D-07-07-95 @ 5097.0usft (PAD Est KB)



Azimuths to True North  
Magnetic North: 9.97°  
Magnetic Field  
Strength: 51909.5snT  
Dip Angle: 65.61°  
Date: 8/4/2014  
Model: IGRF2010

B&V  
B&V 23D-07-07-95  
Design #1  
15:20, August 05 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
B&V 23D-07-07-95 TGT	6341.0	-542.7	1349.4	1598410.34	2282171.68	39° 26' 55.786 N	108° 2' 32.318 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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1615.9	30.48	111.91	1568.6	-98.5	244.8	3.00	111.91	263.9	
4	3443.0	30.48	111.91	3143.4	-444.2	1104.6	0.00	0.00	1190.6	
5	4458.9	0.00	0.00	4112.0	-542.7	1349.4	3.00	180.00	1454.4	B&V 23D-07-07-95 TGT
6	6687.9	0.00	0.00	6341.0	-542.7	1349.4	0.00	0.00	1454.4	

#### ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	Start Build 3.00
1568.6	1615.9	Start 1827.1 hold at 1615.9 MD
3143.4	3443.0	Start Drop -3.00
4112.0	4458.9	Back to Vertical
4112.0	4458.9	Start 2229.0 hold at 4458.9 MD
6341.0	6687.9	TD at 6687.9

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3050.0	3334.7	Williams Fork	0.00	
4112.0	4458.9	Top of Gas	0.00	
5517.0	5863.9	Cameo	0.00	
6041.0	6387.9	Rollins	0.00	

