



Ursa Operating Company, LLC

Rockies Region

B&V

B&V 24B-07-07-95 (New SHL)

Wellbore #1

Plan: Design #1

Standard Planning Report

21 February, 2017



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well B&V 24B-07-07-95 (New SHL)
Company:	Ursa Operating Company, LLC	TVD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Project:	Rockies Region	MD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	North Reference:	True
Well:	B&V 24B-07-07-95 (New SHL)	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		Using geodetic scale factor

Site		B&V			
Site Position:		Northing:	1,598,935.06 usft	Latitude:	39.450164128
From:	Lat/Long	Easting:	2,280,801.73 usft	Longitude:	-108.047211920
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.61 °

Well	B&V 24B-07-07-95 (New SHL), SHL: Lat 39.450379510 Long -108.046992236					
Well Position	+N/-S	78.5 usft	Northing:	1,599,011.74 usft	Latitude:	39.450379510
	+E/-W	62.0 usft	Easting:	2,280,865.94 usft	Longitude:	-108.046992236
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,101.0 usft	Ground Level:	5,084.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/21/2017	9.75	65.55	51,540

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	132.61

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	
650.0	0.00	0.00	650.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,741.1	38.19	132.61	1,662.1	-237.2	257.9	3.50	3.50	0.00	132.61	
3,533.5	38.19	132.61	3,070.9	-987.4	1,073.5	0.00	0.00	0.00	0.00	
4,624.7	0.00	0.00	4,083.0	-1,224.6	1,331.4	3.50	-3.50	0.00	180.00	B&V 24B-07-07-95 TC
6,853.7	0.00	0.00	6,312.0	-1,224.6	1,331.4	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well B&V 24B-07-07-95 (New SHL)
Company:	Ursa Operating Company, LLC	TVD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Project:	Rockies Region	MD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	North Reference:	True
Well:	B&V 24B-07-07-95 (New SHL)	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: 39.450379510, -108.046992236									
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
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.50									
700.0	1.75	132.61	700.0	-0.5	0.6	0.8	3.50	3.50	0.00
800.0	5.25	132.61	799.8	-4.6	5.1	6.9	3.50	3.50	0.00
900.0	8.75	132.61	899.0	-12.9	14.0	19.1	3.50	3.50	0.00
1,000.0	12.25	132.61	997.3	-25.2	27.4	37.3	3.50	3.50	0.00
1,100.0	15.75	132.61	1,094.4	-41.6	45.2	61.5	3.50	3.50	0.00
1,200.0	19.25	132.61	1,189.7	-62.0	67.4	91.5	3.50	3.50	0.00
1,300.0	22.75	132.61	1,283.1	-86.2	93.7	127.4	3.50	3.50	0.00
1,400.0	26.25	132.61	1,374.0	-114.3	124.3	168.8	3.50	3.50	0.00
1,500.0	29.75	132.61	1,462.3	-146.1	158.8	215.8	3.50	3.50	0.00
1,600.0	33.25	132.61	1,547.6	-181.4	197.3	268.0	3.50	3.50	0.00
1,700.0	36.75	132.61	1,629.5	-220.3	239.5	325.4	3.50	3.50	0.00
1,741.1	38.19	132.61	1,662.1	-237.2	257.9	350.4	3.50	3.50	0.00
Start 1792.4 hold at 1741.1 MD									
1,789.3	38.19	132.61	1,700.0	-257.4	279.8	380.2	0.00	0.00	0.00
Surface Casing									
1,800.0	38.19	132.61	1,708.4	-261.8	284.7	386.8	0.00	0.00	0.00
1,900.0	38.19	132.61	1,787.0	-303.7	330.2	448.6	0.00	0.00	0.00
2,000.0	38.19	132.61	1,865.6	-345.5	375.7	510.4	0.00	0.00	0.00
2,100.0	38.19	132.61	1,944.2	-387.4	421.2	572.2	0.00	0.00	0.00
2,200.0	38.19	132.61	2,022.8	-429.2	466.7	634.1	0.00	0.00	0.00
2,300.0	38.19	132.61	2,101.4	-471.1	512.2	695.9	0.00	0.00	0.00
2,400.0	38.19	132.61	2,180.0	-513.0	557.7	757.7	0.00	0.00	0.00
2,500.0	38.19	132.61	2,258.6	-554.8	603.2	819.6	0.00	0.00	0.00
2,600.0	38.19	132.61	2,337.2	-596.7	648.7	881.4	0.00	0.00	0.00
2,700.0	38.19	132.61	2,415.8	-638.5	694.2	943.2	0.00	0.00	0.00
2,800.0	38.19	132.61	2,494.4	-680.4	739.7	1,005.0	0.00	0.00	0.00
2,900.0	38.19	132.61	2,573.0	-722.2	785.2	1,066.9	0.00	0.00	0.00
3,000.0	38.19	132.61	2,651.6	-764.1	830.7	1,128.7	0.00	0.00	0.00
3,100.0	38.19	132.61	2,730.1	-805.9	876.2	1,190.5	0.00	0.00	0.00
3,200.0	38.19	132.61	2,808.7	-847.8	921.7	1,252.3	0.00	0.00	0.00
3,300.0	38.19	132.61	2,887.3	-889.6	967.2	1,314.2	0.00	0.00	0.00
3,400.0	38.19	132.61	2,965.9	-931.5	1,012.7	1,376.0	0.00	0.00	0.00
3,470.1	38.19	132.61	3,021.0	-960.8	1,044.6	1,419.3	0.00	0.00	0.00
Williams Fork									
3,500.0	38.19	132.61	3,044.5	-973.4	1,058.2	1,437.8	0.00	0.00	0.00
3,533.5	38.19	132.61	3,070.9	-987.4	1,073.5	1,458.5	0.00	0.00	0.00
Start Drop -3.50									
3,600.0	35.86	132.61	3,124.0	-1,014.5	1,103.0	1,498.6	3.50	-3.50	0.00
3,700.0	32.36	132.61	3,206.7	-1,052.4	1,144.2	1,554.6	3.50	-3.50	0.00
3,800.0	28.86	132.61	3,292.8	-1,086.9	1,181.7	1,605.6	3.50	-3.50	0.00
3,900.0	25.36	132.61	3,381.8	-1,117.8	1,215.2	1,651.1	3.50	-3.50	0.00
4,000.0	21.86	132.61	3,473.4	-1,144.9	1,244.7	1,691.2	3.50	-3.50	0.00

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Project:	Rockies Region	MD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	North Reference:	True
Well:	B&V 24B-07-07-95 (New SHL)	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)	
4,100.0	18.36	132.61	3,567.3	-1,168.2	1,270.0	1,725.6	3.50	-3.50	0.00	
4,200.0	14.86	132.61	3,663.1	-1,187.5	1,291.1	1,754.1	3.50	-3.50	0.00	
4,300.0	11.36	132.61	3,760.5	-1,202.9	1,307.8	1,776.8	3.50	-3.50	0.00	
4,400.0	7.86	132.61	3,859.0	-1,214.2	1,320.1	1,793.5	3.50	-3.50	0.00	
4,500.0	4.36	132.61	3,958.5	-1,221.4	1,327.9	1,804.2	3.50	-3.50	0.00	
4,600.0	0.86	132.61	4,058.3	-1,224.5	1,331.2	1,808.7	3.50	-3.50	0.00	
4,624.7	0.00	0.00	4,083.0	-1,224.6	1,331.4	1,808.9	3.50	-3.50	-537.81	
Back to Vertical - Start 2229.0 hold at 4624.7 MD - Top of Gas - B&V 24B-07-07-95 TGT										
4,700.0	0.00	0.00	4,158.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
4,800.0	0.00	0.00	4,258.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
4,900.0	0.00	0.00	4,358.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,000.0	0.00	0.00	4,458.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,100.0	0.00	0.00	4,558.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,200.0	0.00	0.00	4,658.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,300.0	0.00	0.00	4,758.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,400.0	0.00	0.00	4,858.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,500.0	0.00	0.00	4,958.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,058.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,158.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,258.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,358.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,000.0	0.00	0.00	5,458.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,029.7	0.00	0.00	5,488.0	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
Cameo										
6,100.0	0.00	0.00	5,558.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,200.0	0.00	0.00	5,658.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,300.0	0.00	0.00	5,758.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,400.0	0.00	0.00	5,858.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,500.0	0.00	0.00	5,958.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,553.7	0.00	0.00	6,012.0	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
Rollins										
6,600.0	0.00	0.00	6,058.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,158.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,258.3	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
6,853.7	0.00	0.00	6,312.0	-1,224.6	1,331.4	1,808.9	0.00	0.00	0.00	
TD at 6853.7 - BHL: 39.4470174980, -108.0422778830										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
B&V 24B-07-07-95 TGT	0.00	0.00	4,083.0	-1,224.6	1,331.4	1,597,750.37	2,282,162.41	39.447017498	-108.042277883	
- hit/miss target										
- Shape										
- plan hits target center										
- Rectangle (sides W100.0 H40.0 D2,229.0)										

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Project:	Rockies Region	MD Reference:	B&V 24B-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	North Reference:	True
Well:	B&V 24B-07-07-95 (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,470.1	3,021.0	Williams Fork		0.00	
4,624.7	4,083.0	Top of Gas		0.00	
6,029.7	5,488.0	Cameo		0.00	
6,553.7	6,012.0	Rollins		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: 39.450379510, -108.046992236
650.0	650.0	0.0	0.0	Start Build 3.50
1,741.1	1,662.1	-237.2	257.9	Start 1792.4 hold at 1741.1 MD
1,789.3	1,700.0	-257.4	279.8	Surface Casing
3,533.5	3,070.9	-987.4	1,073.5	Start Drop -3.50
4,624.7	4,083.0	-1,224.6	1,331.4	Back to Vertical
4,624.7	4,083.0	-1,224.6	1,331.4	Start 2229.0 hold at 4624.7 MD
6,853.7	6,312.0	-1,224.6	1,331.4	TD at 6853.7
6,853.7	6,312.0	-1,224.6	1,331.4	BHL: 39.4470174980, -108.0422778830



Well Name: B&V 24B-07-07-95 (New SHL)
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
0.0 0.0 1599011.75 2280865.94 39.450379510 -108.046992236
Plan KB B&V 24B-07-07-95 @ 5101.0usft (Plan KB)

Slot



Azimuths to True North
Magnetic North: 9.75°
Magnetic Field
Strength: 51540.2snT
Dip Angle: 65.55°
Date: 2/21/2017
Model: IGRF2015

B&V
B&V 24B-07-07-95 (New SHL)
Design #1
12:19, February 21 2017

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
B&V 24B-07-07-95 TGT	4083.0	-1224.6	1331.4	1597750.38	2282162.41	39.447017498108	-108.042277883	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	650.0	0.00	0.00	650.0	0.0	0.0	0.00	0.00	0.0	
3	1741.1	38.19	132.61	1662.1	-237.2	257.9	3.50	132.61	350.4	
4	3533.5	38.19	132.61	3070.9	-987.4	1073.5	0.00	0.00	1458.5	
5	4624.7	0.00	0.00	4083.0	-1224.6	1331.4	3.50	180.00	1808.9	B&V 24B-07-07-95 TGT
6	6853.7	0.00	0.00	6312.0	-1224.6	1331.4	0.00	0.00	1808.9	

ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.450379510, -108.046992236
650.0	650.0	Start Build 3.50
1662.1	1741.1	Start 1792.4 hold at 1741.1 MD
1700.0	1789.3	Surface Casing
3070.9	3533.5	Start Drop -3.50
4083.0	4624.7	Back to Vertical
4083.0	4624.7	Start 2229.0 hold at 4624.7 MD
6312.0	6853.7	TD at 6853.7
6312.0	6853.7	BHL: 39.4470174980, -108.0422778830

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3021.0	3470.1	Williams Fork	0.00	
4083.0	4624.7	Top of Gas	0.00	
5488.0	6029.7	Cameo	0.00	
6012.0	6553.7	Rollins	0.00	

