



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

**B&V 24D-07-07-95**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**28 December, 2016**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

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	
From:	Lat/Long	Easting:		2,280,801.73 usft	
Position Uncertainty:		Slot Radius:		13-3/16 " 0.0 usft	
				Latitude: 39.450164128	
				Longitude: -108.047211920	
				Grid Convergence: -1.61 °	

Well		B&V 24D-07-07-95, SHL LAT: 39.450228426 LONG: -108.047108287				
Well Position	+N/-S	0.0 usft	Northing:	1,598,957.66 usft	Latitude:	39.450228426
	+E/-W	0.0 usft	Easting:	2,280,831.64 usft	Longitude:	-108.047108287
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	12/28/2016	9.77	65.55	51,557

Design		Actual			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)		+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0		0.0	0.0	142.76

Survey Program		Date	12/28/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
194.0	6,835.0	Actual (Wellbore #1)	MWD	MWD - Standard	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
194.0	0.31	281.04	194.0	-0.4	0.1	-0.5	0.16	0.16	0.00	
224.0	0.31	275.47	224.0	-0.5	0.1	-0.7	0.10	0.00	-18.57	
254.0	0.34	210.05	254.0	-0.5	0.1	-0.8	1.17	0.10	-218.07	
285.0	0.62	188.07	285.0	-0.4	-0.2	-0.9	1.07	0.90	-70.90	
315.0	0.88	182.27	315.0	-0.1	-0.6	-0.9	0.90	0.87	-19.33	
346.0	1.14	166.27	346.0	0.4	-1.1	-0.8	1.23	0.84	-51.61	
377.0	1.89	156.47	377.0	1.2	-1.9	-0.6	2.55	2.42	-31.61	
407.0	2.33	148.65	407.0	2.3	-2.9	0.0	1.75	1.47	-26.07	
438.0	2.50	149.70	437.9	3.5	-4.0	0.6	0.57	0.55	3.39	
468.0	2.81	146.14	467.9	4.9	-5.2	1.4	1.17	1.03	-11.87	
499.0	3.43	143.64	498.9	6.6	-6.5	2.3	2.05	2.00	-8.06	
530.0	4.40	142.48	529.8	8.7	-8.2	3.6	3.14	3.13	-3.74	
560.0	5.45	144.74	559.7	11.3	-10.3	5.1	3.56	3.50	7.53	
591.0	6.72	142.01	590.5	14.6	-12.9	7.1	4.20	4.10	-8.81	
622.0	8.13	138.32	621.2	18.6	-16.0	9.7	4.80	4.55	-11.90	
652.0	9.62	138.41	650.9	23.2	-19.5	12.7	4.97	4.97	0.30	
683.0	10.51	138.38	681.4	28.6	-23.5	16.3	2.87	2.87	-0.10	
713.0	11.16	136.87	710.9	34.2	-27.7	20.1	2.36	2.17	-5.03	
744.0	12.04	138.01	741.2	40.4	-32.3	24.4	2.93	2.84	3.68	
774.0	13.01	140.25	770.5	46.9	-37.2	28.6	3.62	3.23	7.47	
805.0	14.37	142.28	800.6	54.3	-42.9	33.2	4.65	4.39	6.55	
836.0	15.64	142.67	830.6	62.3	-49.3	38.1	4.11	4.10	1.26	
878.0	17.23	142.10	870.9	74.2	-58.7	45.3	3.81	3.79	-1.36	
920.0	18.41	142.01	910.8	87.0	-68.8	53.2	2.81	2.81	-0.21	
963.0	20.01	142.72	951.4	101.2	-80.0	61.9	3.76	3.72	1.65	
1,006.0	21.28	144.26	991.7	116.3	-92.2	70.9	3.21	2.95	3.58	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
1,049.0	22.68	145.97	1,031.6	132.4	-105.4	80.1	3.58	3.26	3.98	
1,091.0	24.04	145.97	1,070.1	149.0	-119.2	89.4	3.24	3.24	0.00	
1,134.0	24.96	144.87	1,109.2	166.8	-133.9	99.5	2.39	2.14	-2.56	
1,177.0	26.28	145.48	1,148.0	185.4	-149.2	110.2	3.13	3.07	1.42	
1,219.0	27.69	145.97	1,185.4	204.4	-164.9	120.9	3.40	3.36	1.17	
1,262.0	29.44	145.31	1,223.2	225.0	-181.9	132.5	4.14	4.07	-1.53	
1,305.0	30.98	144.30	1,260.4	246.6	-199.6	145.0	3.77	3.58	-2.35	
1,348.0	32.30	143.42	1,297.0	269.2	-217.8	158.3	3.25	3.07	-2.05	
1,391.0	34.01	143.11	1,333.0	292.7	-236.6	172.3	4.00	3.98	-0.72	
1,433.0	35.68	142.70	1,367.4	316.7	-255.8	186.8	4.02	3.98	-0.98	
1,476.0	36.69	141.75	1,402.1	342.0	-275.8	202.4	2.69	2.35	-2.21	
1,518.0	36.77	140.84	1,435.8	367.2	-295.4	218.1	1.31	0.19	-2.17	
1,561.0	36.52	139.68	1,470.3	392.8	-315.2	234.5	1.71	-0.58	-2.70	
1,604.0	36.65	140.17	1,504.8	418.4	-334.8	251.0	0.74	0.30	1.14	
1,646.0	37.27	139.90	1,538.4	443.6	-354.1	267.2	1.53	1.48	-0.64	
1,689.0	37.40	140.34	1,572.6	469.7	-374.1	283.9	0.69	0.30	1.02	
1,732.0	37.13	142.45	1,606.8	495.7	-394.5	300.2	3.04	-0.63	4.91	
1,790.0	36.83	143.11	1,653.1	530.6	-422.3	321.3	0.86	-0.52	1.14	
Last PZD Surface Survey										
1,869.0	35.46	143.89	1,716.9	577.2	-459.7	349.0	1.83	-1.73	0.99	
1,954.0	34.67	142.67	1,786.5	626.0	-498.9	378.2	1.24	-0.93	-1.44	
2,039.0	34.49	141.82	1,856.5	674.2	-537.0	407.7	0.61	-0.21	-1.00	
2,124.0	34.54	141.77	1,926.5	722.4	-574.9	437.5	0.07	0.06	-0.06	
2,209.0	35.07	143.19	1,996.3	770.9	-613.3	467.0	1.14	0.62	1.67	
2,295.0	35.91	142.64	2,066.3	820.8	-653.2	497.1	1.04	0.98	-0.64	
2,380.0	36.91	143.37	2,134.8	871.3	-693.5	527.5	1.28	1.18	0.86	
2,466.0	37.72	144.23	2,203.1	923.4	-735.5	558.3	1.12	0.94	1.00	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
2,551.0	36.47	143.68	2,270.9	974.7	-777.0	588.5	1.52	-1.47	-0.65	
2,636.0	36.61	144.56	2,339.2	1,025.3	-818.0	618.1	0.64	0.16	1.04	
2,722.0	36.95	145.00	2,408.1	1,076.7	-860.1	647.8	0.50	0.40	0.51	
2,807.0	36.61	145.70	2,476.2	1,127.6	-901.9	676.7	0.63	-0.40	0.82	
2,893.0	36.87	144.60	2,545.1	1,179.0	-944.1	706.1	0.82	0.30	-1.28	
2,978.0	36.65	144.43	2,613.2	1,229.8	-985.6	735.7	0.29	-0.26	-0.20	
3,063.0	36.83	144.87	2,681.3	1,280.6	-1,027.0	765.1	0.38	0.21	0.52	
3,149.0	37.35	142.89	2,749.9	1,332.5	-1,068.9	795.7	1.51	0.60	-2.30	
3,234.0	36.96	142.76	2,817.7	1,383.8	-1,109.8	826.7	0.47	-0.46	-0.15	
3,320.0	37.66	142.98	2,886.1	1,435.9	-1,151.4	858.1	0.83	0.81	0.26	
3,405.0	37.09	142.36	2,953.6	1,487.5	-1,192.4	889.4	0.80	-0.67	-0.73	
3,491.0	36.65	142.14	3,022.4	1,539.1	-1,233.2	921.0	0.53	-0.51	-0.26	
3,576.0	36.39	143.29	3,090.7	1,589.7	-1,273.4	951.7	0.86	-0.31	1.35	
3,661.0	37.03	142.97	3,158.9	1,640.5	-1,314.1	982.2	0.79	0.75	-0.38	
3,747.0	37.40	142.98	3,227.4	1,692.5	-1,355.6	1,013.5	0.43	0.43	0.01	
3,832.0	37.75	143.20	3,294.7	1,744.4	-1,397.1	1,044.6	0.44	0.41	0.26	
3,918.0	35.82	142.58	3,363.6	1,795.9	-1,438.1	1,075.7	2.29	-2.24	-0.72	
4,003.0	34.58	142.67	3,433.1	1,844.9	-1,477.1	1,105.4	1.46	-1.46	0.11	
4,089.0	32.87	142.23	3,504.6	1,892.6	-1,514.9	1,134.5	2.01	-1.99	-0.51	
4,174.0	31.76	141.45	3,576.4	1,938.0	-1,550.7	1,162.6	1.39	-1.31	-0.92	
4,260.0	29.36	141.40	3,650.5	1,981.7	-1,584.8	1,189.8	2.79	-2.79	-0.06	
4,345.0	27.38	141.44	3,725.3	2,022.1	-1,616.4	1,215.0	2.33	-2.33	0.05	
4,430.0	24.17	140.78	3,801.8	2,059.1	-1,645.2	1,238.2	3.79	-3.78	-0.78	
4,516.0	21.93	139.59	3,880.9	2,092.7	-1,671.1	1,259.8	2.66	-2.60	-1.38	
4,601.0	19.57	139.58	3,960.4	2,122.8	-1,694.0	1,279.3	2.78	-2.78	-0.01	
4,686.0	18.24	139.33	4,040.8	2,150.3	-1,714.9	1,297.2	1.57	-1.56	-0.29	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)
4,731.7	17.33	139.05	4,084.4	2,164.2	-1,725.5	1,306.3	2.00	-1.99	-0.61
<b>B&amp;V 24D-07-07-95 TGT</b>									
4,772.0	16.53	138.78	4,122.9	2,175.9	-1,734.3	1,314.0	2.00	-1.99	-0.67
4,857.0	15.64	143.42	4,204.6	2,199.4	-1,752.6	1,328.8	1.84	-1.05	5.46
4,942.0	13.61	143.39	4,286.8	2,220.9	-1,769.9	1,341.6	2.39	-2.39	-0.04
5,027.0	11.78	142.54	4,369.7	2,239.6	-1,784.8	1,352.9	2.16	-2.15	-1.00
5,113.0	10.77	142.06	4,454.1	2,256.4	-1,798.1	1,363.1	1.18	-1.17	-0.56
5,198.0	8.12	142.16	4,537.9	2,270.3	-1,809.1	1,371.7	3.12	-3.12	0.12
5,284.0	6.35	140.49	4,623.2	2,281.1	-1,817.5	1,378.4	2.07	-2.06	-1.94
5,365.1	3.93	150.00	4,704.0	2,288.4	-1,823.4	1,382.7	3.15	-2.98	11.73
<b>B&amp;V 24D-07-07-95 TGT 2</b>									
5,369.0	3.82	150.76	4,707.9	2,288.6	-1,823.6	1,382.8	3.15	-2.87	19.39
5,455.0	1.05	155.63	4,793.8	2,292.2	-1,826.9	1,384.5	3.23	-3.22	5.66
5,540.0	0.79	358.57	4,878.8	2,292.5	-1,827.0	1,384.9	2.12	-0.31	-184.78
5,625.0	0.75	328.60	4,963.8	2,291.5	-1,825.9	1,384.6	0.47	-0.05	-35.26
5,711.0	1.32	271.21	5,049.8	2,290.3	-1,825.4	1,383.3	1.29	0.66	-66.73
5,796.0	1.58	262.99	5,134.7	2,289.1	-1,825.5	1,381.1	0.39	0.31	-9.67
5,881.0	0.75	283.25	5,219.7	2,288.1	-1,825.6	1,379.4	1.08	-0.98	23.84
5,966.0	2.25	53.52	5,304.7	2,287.7	-1,824.4	1,380.2	3.29	1.76	153.26
6,051.0	2.62	61.02	5,389.6	2,288.0	-1,822.5	1,383.3	0.57	0.44	8.82
6,136.0	2.07	49.42	5,474.6	2,288.2	-1,820.6	1,386.1	0.85	-0.65	-13.65
6,222.0	0.88	64.45	5,560.5	2,288.2	-1,819.3	1,387.9	1.44	-1.38	17.48
6,307.0	0.40	90.33	5,645.5	2,288.5	-1,819.0	1,388.8	0.65	-0.56	30.45
6,392.0	0.13	328.95	5,730.5	2,288.6	-1,818.9	1,389.0	0.57	-0.32	-142.80
6,478.0	0.42	268.19	5,816.5	2,288.4	-1,818.8	1,388.7	0.44	0.34	-70.65
6,564.0	0.75	238.52	5,902.5	2,288.1	-1,819.1	1,387.9	0.51	0.38	-34.50
6,649.0	1.05	205.38	5,987.5	2,288.4	-1,820.1	1,387.1	0.69	0.35	-38.99

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 24D-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 24D-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 24D-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
6,735.0	1.27	205.82	6,073.5	2,289.2	-1,821.7	1,386.3	0.26	0.26	0.51	
6,775.0	1.45	222.91	6,113.5	2,289.5	-1,822.5	1,385.8	1.10	0.45	42.72	
<b>Last PZD Survey</b>										
6,835.0	1.45	222.91	6,173.5	2,289.8	-1,823.6	1,384.7	0.00	0.00	0.00	
<b>Straight Line Projection to TD</b>										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,790.0	1,653.1	-422.3	321.3	Last PZD Surface Survey
6,775.0	6,113.5	-1,822.5	1,385.8	Last PZD Survey
6,835.0	6,173.5	-1,823.6	1,384.7	Straight Line Projection to TD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------

