



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

**B&V 13C-07-07-95**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**14 March, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 13C-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 13C-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 13C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 13C-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	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 13C-07-07-95, SHL LAT: 39.450340930 LONG: -108.047054416				
Well Position	+N/-S	0.0 usft	Northing:	1,598,998.19 usft	Latitude:	39.450340930
	+E/-W	0.0 usft	Easting:	2,280,847.99 usft	Longitude:	-108.047054416
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	2/16/2017	9.75	65.55	51,542

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	165.88

Survey Program		Date	3/14/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
168.0	6,230.0	Surface (Wellbore #1)	MWD	MWD - Standard	

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<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	
168.0	0.83	94.02	168.0	0.4	-0.1	1.2	0.49	0.49	0.00	
199.0	0.88	90.24	199.0	0.5	-0.1	1.7	0.24	0.16	-12.19	
229.0	0.92	100.75	229.0	0.7	-0.1	2.1	0.57	0.13	35.03	
260.0	0.88	88.21	260.0	0.8	-0.2	2.6	0.65	-0.13	-40.45	
290.0	0.70	74.29	290.0	0.9	-0.1	3.0	0.87	-0.60	-46.40	
321.0	0.53	23.40	321.0	0.7	0.1	3.3	1.78	-0.55	-164.16	
351.0	0.45	8.21	351.0	0.5	0.3	3.3	0.51	-0.27	-50.63	
382.0	0.55	302.51	382.0	0.3	0.5	3.2	1.77	0.32	-211.94	
412.0	0.92	279.52	412.0	0.1	0.6	2.9	1.55	1.23	-76.63	
443.0	1.01	287.44	443.0	-0.1	0.7	2.4	0.52	0.29	25.55	
473.0	1.10	279.82	473.0	-0.4	0.9	1.8	0.55	0.30	-25.40	
504.0	1.19	287.07	504.0	-0.7	1.0	1.2	0.55	0.29	23.39	
535.0	1.23	278.42	535.0	-1.0	1.2	0.6	0.60	0.13	-27.90	
565.0	1.41	287.91	564.9	-1.3	1.3	-0.1	0.94	0.60	31.63	
595.0	1.32	281.58	594.9	-1.6	1.5	-0.8	0.58	-0.30	-21.10	
626.0	1.45	281.93	625.9	-2.0	1.7	-1.5	0.42	0.42	1.13	
657.0	1.45	282.37	656.9	-2.3	1.8	-2.3	0.04	0.00	1.42	
687.0	0.98	266.75	686.9	-2.5	1.9	-2.9	1.90	-1.57	-52.07	
718.0	0.67	246.55	717.9	-2.6	1.8	-3.3	1.36	-1.00	-65.16	
748.0	0.69	218.63	747.9	-2.4	1.6	-3.6	1.10	0.07	-93.07	
779.0	0.88	202.04	778.9	-2.1	1.2	-3.8	0.95	0.61	-53.52	
810.0	1.31	171.53	809.9	-1.6	0.6	-3.8	2.29	1.39	-98.42	
840.0	1.67	163.24	839.9	-0.8	-0.1	-3.7	1.40	1.20	-27.63	
883.0	1.89	150.93	882.9	0.5	-1.3	-3.1	1.02	0.51	-28.63	
926.0	2.29	156.82	925.8	2.1	-2.7	-2.5	1.05	0.93	13.70	
968.0	2.29	163.98	967.8	3.7	-4.3	-1.9	0.68	0.00	17.05	

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<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 13C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 13C-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)
1,011.0	2.11	154.32		1,010.8	5.4	-5.9	-1.3	0.96	-0.42	-22.47
1,054.0	1.93	141.92		1,053.7	6.8	-7.1	-0.5	1.10	-0.42	-28.84
1,096.0	1.84	134.31		1,095.7	8.0	-8.2	0.4	0.63	-0.21	-18.12
1,139.0	1.98	126.45		1,138.7	9.2	-9.1	1.5	0.69	0.33	-18.28
1,182.0	1.63	125.39		1,181.7	10.2	-9.9	2.6	0.82	-0.81	-2.47
1,225.0	0.61	124.81		1,224.7	10.9	-10.4	3.3	2.37	-2.37	-1.35
1,267.0	0.26	105.10		1,266.7	11.1	-10.5	3.5	0.89	-0.83	-46.93
1,310.0	0.22	149.00		1,309.7	11.2	-10.6	3.7	0.43	-0.09	102.09
1,353.0	0.12	197.92		1,352.7	11.3	-10.7	3.7	0.39	-0.23	113.77
1,395.0	0.26	186.04		1,394.7	11.4	-10.9	3.7	0.34	0.33	-28.29
1,438.0	0.32	203.21		1,437.7	11.6	-11.1	3.6	0.24	0.14	39.93
1,481.0	0.31	216.19		1,480.7	11.8	-11.3	3.5	0.17	-0.02	30.19
1,524.0	0.31	190.70		1,523.7	12.0	-11.5	3.4	0.32	0.00	-59.28
1,566.0	0.26	193.65		1,565.7	12.2	-11.7	3.4	0.12	-0.12	7.02
1,609.0	0.26	191.80		1,608.7	12.3	-11.9	3.3	0.02	0.00	-4.30
1,665.0	0.31	202.04		1,664.7	12.6	-12.2	3.3	0.13	0.09	18.29
Last PZD Surface Survey										
1,758.0	0.62	161.92		1,757.7	13.3	-12.9	3.3	0.46	0.33	-43.14
1,843.0	0.53	169.57		1,842.7	14.1	-13.7	3.5	0.14	-0.11	9.00
1,929.0	0.75	218.56		1,928.7	14.9	-14.5	3.3	0.66	0.26	56.97
2,014.0	0.54	244.97		2,013.6	15.3	-15.1	2.5	0.42	-0.25	31.07
2,100.0	1.14	251.81		2,099.6	15.4	-15.6	1.4	0.71	0.70	7.95
2,185.0	1.36	70.51		2,184.6	15.4	-15.5	1.5	2.94	0.26	210.24
2,271.0	1.76	67.39		2,270.6	15.1	-14.6	3.7	0.48	0.47	-3.63
2,356.0	1.80	82.95		2,355.6	15.1	-14.0	6.2	0.57	0.05	18.31
2,441.0	1.36	69.81		2,440.5	15.1	-13.5	8.5	0.67	-0.52	-15.46
2,527.0	1.63	89.06		2,526.5	15.3	-13.1	10.7	0.66	0.31	22.38

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<b>Well:</b>	B&V 13C-07-07-95	<b>North Reference:</b>	True
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2,612.0	2.29	118.41	2,611.4	16.7	-13.9	13.4	1.39	0.78	34.53	
2,697.0	1.99	120.03	2,696.4	18.9	-15.4	16.1	0.36	-0.35	1.91	
2,782.0	1.76	119.64	2,781.3	20.8	-16.8	18.6	0.27	-0.27	-0.46	
2,868.0	2.11	122.46	2,867.3	22.9	-18.3	21.0	0.42	0.41	3.28	
2,953.0	1.45	137.97	2,952.3	25.0	-19.9	23.1	0.95	-0.78	18.25	
3,038.0	1.71	158.40	3,037.2	27.2	-21.9	24.3	0.72	0.31	24.04	
3,124.0	1.80	166.93	3,123.2	29.8	-24.4	25.0	0.32	0.10	9.92	
3,209.0	1.10	175.98	3,208.2	31.9	-26.6	25.4	0.86	-0.82	10.65	
3,295.0	1.54	170.84	3,294.1	33.9	-28.5	25.6	0.53	0.51	-5.98	
3,380.0	1.32	152.95	3,379.1	36.0	-30.5	26.3	0.58	-0.26	-21.05	
3,465.0	0.53	142.10	3,464.1	37.3	-31.7	27.0	0.95	-0.93	-12.76	
3,550.0	0.57	200.37	3,549.1	38.0	-32.4	27.1	0.63	0.05	68.55	
3,636.0	0.79	220.54	3,635.1	38.7	-33.3	26.5	0.37	0.26	23.45	
3,721.0	1.23	306.45	3,720.1	38.4	-33.2	25.4	1.66	0.52	101.07	
3,806.0	1.49	285.71	3,805.0	37.1	-32.3	23.6	0.65	0.31	-24.40	
3,892.0	1.83	279.19	3,891.0	36.0	-31.8	21.2	0.45	0.40	-7.58	
3,977.0	1.23	257.54	3,976.0	35.4	-31.8	18.9	0.97	-0.71	-25.47	
4,063.0	1.76	246.38	4,062.0	35.6	-32.5	16.8	0.70	0.62	-12.98	
4,114.1	2.26	245.68	4,113.0	35.9	-33.2	15.2	0.98	0.98	-1.36	
B&V 13C-07-07-95 TGT										
4,148.0	2.59	245.37	4,146.9	36.2	-33.8	13.9	0.98	0.98	-0.93	
4,233.0	2.86	242.16	4,231.8	37.0	-35.6	10.3	0.36	0.32	-3.78	
4,319.0	2.20	269.54	4,317.7	37.2	-36.6	6.7	1.58	-0.77	31.84	
4,404.0	1.14	258.73	4,402.7	36.7	-36.8	4.3	1.30	-1.25	-12.72	
4,490.0	1.71	45.38	4,488.7	36.0	-36.1	4.3	3.18	0.66	170.52	
4,575.0	1.76	31.71	4,573.6	34.5	-34.1	5.9	0.49	0.06	-16.08	
4,661.0	1.19	357.56	4,659.6	32.7	-32.1	6.6	1.19	-0.66	-39.71	

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<b>Well:</b>	B&V 13C-07-07-95	<b>North Reference:</b>	True
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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
4,746.0	0.70	356.20	4,744.6	31.3	-30.7	6.5	0.58	-0.58	-1.60	
4,832.0	0.83	262.86	4,830.6	30.7	-30.2	5.9	1.30	0.15	-108.53	
4,917.0	1.24	281.47	4,915.6	30.3	-30.1	4.3	0.62	0.48	21.89	
5,003.0	0.83	280.09	5,001.6	29.6	-29.8	2.8	0.48	-0.48	-1.60	
5,088.0	1.41	267.87	5,086.5	29.1	-29.7	1.2	0.73	0.68	-14.38	
5,173.0	1.54	260.03	5,171.5	28.8	-30.0	-1.0	0.28	0.15	-9.22	
5,259.0	2.46	248.05	5,257.5	29.0	-30.9	-3.8	1.17	1.07	-13.93	
5,344.0	2.11	245.99	5,342.4	29.5	-32.2	-7.0	0.42	-0.41	-2.42	
5,429.0	1.19	292.30	5,427.4	29.3	-32.5	-9.2	1.82	-1.08	54.48	
5,515.0	0.97	6.70	5,513.3	28.0	-31.4	-10.0	1.53	-0.26	86.51	
5,600.0	1.15	353.81	5,598.3	26.5	-29.9	-10.0	0.35	0.21	-15.16	
5,685.0	0.65	312.85	5,683.3	25.3	-28.7	-10.4	0.92	-0.59	-48.19	
5,771.0	0.92	322.98	5,769.3	24.2	-27.8	-11.2	0.35	0.31	11.78	
5,856.0	1.32	254.34	5,854.3	23.6	-27.5	-12.5	1.54	0.47	-80.75	
5,941.0	1.80	256.58	5,939.3	23.6	-28.1	-14.8	0.57	0.56	2.64	
6,027.0	1.85	246.56	6,025.2	23.9	-29.0	-17.4	0.38	0.06	-11.65	
6,112.0	1.41	219.44	6,110.2	24.7	-30.3	-19.3	1.03	-0.52	-31.91	
6,170.0	1.84	232.19	6,168.2	25.5	-31.4	-20.5	0.96	0.74	21.98	
Last PZD Survey										
6,230.0	1.84	232.19	6,228.1	26.3	-32.6	-22.0	0.00	0.00	0.00	
Straightline Projection to TD										

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<b>Well:</b>	B&V 13C-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

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,665.0	1,664.7	-12.2	3.3	Last PZD Surface Survey	
6,170.0	6,168.2	-31.4	-20.5	Last PZD Survey	
6,230.0	6,228.1	-32.6	-22.0	Straightline Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

