



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

**B&V 33B-07-07-95**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**10 February, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 33B-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 33B-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 33B-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 33B-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 33B-07-07-95, SHL: 39.450408459 -108.046818115				
Well Position	+N/-S	0.0 usft	Northing:	1,599,020.91 usft	Latitude:	39.450408459
	+E/-W	0.0 usft	Easting:	2,280,915.39 usft	Longitude:	-108.046818115
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	2/9/2017	9.75	65.55	51,544

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	84.44

Survey Program		Date	2/10/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
114.0	7,083.0	Actual (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	
114.0	0.59	219.53	114.0	-0.4	-0.5	-0.4	0.52	0.52	0.00	
144.0	0.35	213.11	144.0	-0.6	-0.6	-0.5	0.82	-0.80	-21.40	
173.0	0.75	148.69	173.0	-0.6	-0.9	-0.5	2.33	1.38	-222.14	
202.0	1.41	120.43	202.0	-0.2	-1.2	-0.1	2.86	2.28	-97.45	
233.0	2.11	100.31	233.0	0.7	-1.5	0.8	2.98	2.26	-64.90	
263.0	2.68	95.47	262.9	1.9	-1.7	2.1	2.01	1.90	-16.13	
294.0	3.62	91.75	293.9	3.6	-1.8	3.8	3.10	3.03	-12.00	
325.0	4.53	92.62	324.8	5.8	-1.9	6.0	2.94	2.94	2.81	
355.0	5.49	89.85	354.7	8.4	-1.9	8.6	3.30	3.20	-9.23	
386.0	6.40	87.79	385.5	11.6	-1.9	11.8	3.01	2.94	-6.65	
416.0	7.34	85.41	415.3	15.1	-1.6	15.4	3.27	3.13	-7.93	
446.0	8.53	84.40	445.0	19.3	-1.3	19.5	3.99	3.97	-3.37	
476.0	9.76	84.40	474.7	24.1	-0.8	24.2	4.10	4.10	0.00	
507.0	10.94	84.62	505.2	29.6	-0.3	29.8	3.81	3.81	0.71	
537.0	12.08	84.38	534.5	35.6	0.3	35.7	3.80	3.80	-0.80	
568.0	13.18	84.14	564.8	42.4	1.0	42.5	3.55	3.55	-0.77	
599.0	14.29	83.13	594.9	49.7	1.8	49.8	3.66	3.58	-3.26	
629.0	15.25	82.40	623.9	57.4	2.8	57.4	3.26	3.20	-2.43	
659.0	16.26	81.94	652.8	65.5	3.9	65.5	3.39	3.37	-1.53	
690.0	17.14	82.38	682.5	74.4	5.1	74.3	2.87	2.84	1.42	
721.0	18.11	83.70	712.0	83.8	6.2	83.6	3.38	3.13	4.26	
751.0	19.18	83.98	740.5	93.4	7.3	93.1	3.58	3.57	0.93	
782.0	20.30	84.40	769.6	103.9	8.3	103.6	3.64	3.61	1.35	
812.0	21.20	84.55	797.7	114.5	9.3	114.1	3.01	3.00	0.50	
843.0	22.26	84.38	826.5	126.0	10.4	125.6	3.43	3.42	-0.55	
886.0	23.93	84.79	866.0	142.8	12.0	142.4	3.90	3.88	0.95	

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<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 33B-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 33B-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)	
928.0	25.66	85.15	904.2	160.5	13.6	159.9	4.13	4.12	0.86	
971.0	27.11	85.06	942.7	179.6	15.2	178.9	3.37	3.37	-0.21	
1,014.0	28.65	84.49	980.7	199.7	17.0	199.0	3.63	3.58	-1.33	
1,057.0	30.09	83.63	1,018.2	220.8	19.2	219.9	3.49	3.35	-2.00	
1,099.0	31.51	82.91	1,054.2	242.3	21.8	241.3	3.49	3.38	-1.71	
1,142.0	32.89	82.65	1,090.6	265.2	24.6	264.0	3.23	3.21	-0.60	
1,184.0	34.85	83.12	1,125.5	288.6	27.5	287.2	4.71	4.67	1.12	
1,227.0	36.39	82.38	1,160.4	313.6	30.7	312.1	3.72	3.58	-1.72	
1,270.0	35.93	82.06	1,195.2	338.9	34.1	337.2	1.16	-1.07	-0.74	
1,313.0	35.77	82.60	1,230.0	364.1	37.5	362.2	0.82	-0.37	1.26	
1,355.0	36.65	82.64	1,263.9	388.9	40.7	386.8	2.10	2.10	0.10	
1,398.0	37.66	83.56	1,298.2	414.9	43.8	412.6	2.68	2.35	2.14	
1,441.0	37.88	83.92	1,332.2	441.2	46.7	438.8	0.72	0.51	0.84	
1,483.0	37.92	82.91	1,365.3	467.0	49.6	464.4	1.48	0.10	-2.40	
1,526.0	38.45	82.77	1,399.1	493.6	52.9	490.8	1.25	1.23	-0.33	
1,569.0	37.92	84.53	1,432.9	520.2	55.9	517.2	2.81	-1.23	4.09	
1,612.0	36.43	86.07	1,467.2	546.1	58.0	543.1	4.09	-3.47	3.58	
1,654.0	36.31	86.48	1,501.0	571.0	59.6	567.9	0.65	-0.29	0.98	
1,697.0	36.69	86.29	1,535.6	596.6	61.2	593.4	0.92	0.88	-0.44	
1,739.0	37.29	86.40	1,569.1	621.8	62.9	618.7	1.44	1.43	0.26	
1,782.0	37.79	86.42	1,603.2	648.0	64.5	644.8	1.16	1.16	0.05	
1,824.0	38.54	86.35	1,636.2	674.0	66.1	670.7	1.79	1.79	-0.17	
1,867.0	38.85	84.84	1,669.8	700.8	68.2	697.5	2.31	0.72	-3.51	
Last PZD Surface Survey										
1,976.0	39.12	83.29	1,754.5	769.4	75.3	765.7	0.93	0.25	-1.42	
2,061.0	38.06	80.88	1,820.9	822.4	82.6	818.2	2.16	-1.25	-2.84	
2,147.0	36.91	83.30	1,889.2	874.7	89.8	870.0	2.17	-1.34	2.81	

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<b>Well:</b>	B&V 33B-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)	
2,232.0	36.66	84.47	1,957.3	925.6	95.2	920.7	0.88	-0.29	1.38	
2,317.0	37.18	86.11	2,025.2	976.6	99.4	971.5	1.31	0.61	1.93	
2,403.0	38.19	86.99	2,093.3	1,029.1	102.6	1,024.0	1.33	1.17	1.02	
2,488.0	38.50	86.60	2,160.0	1,081.8	105.5	1,076.7	0.46	0.36	-0.46	
2,574.0	38.19	84.75	2,227.4	1,135.2	109.5	1,129.9	1.38	-0.36	-2.15	
2,659.0	37.50	83.94	2,294.5	1,187.3	114.7	1,181.8	1.00	-0.81	-0.95	
2,745.0	36.91	84.37	2,363.0	1,239.3	120.0	1,233.5	0.75	-0.69	0.50	
2,830.0	37.41	85.49	2,430.8	1,290.6	124.5	1,284.6	0.99	0.59	1.32	
2,915.0	37.92	85.72	2,498.0	1,342.6	128.5	1,336.4	0.62	0.60	0.27	
3,001.0	37.44	84.36	2,566.1	1,395.1	133.0	1,388.8	1.12	-0.56	-1.58	
3,086.0	36.43	83.96	2,634.1	1,446.2	138.2	1,439.6	1.22	-1.19	-0.47	
3,171.0	36.65	82.69	2,702.3	1,496.8	144.1	1,489.9	0.93	0.26	-1.49	
3,257.0	36.25	82.29	2,771.5	1,547.9	150.8	1,540.5	0.54	-0.47	-0.47	
3,342.0	36.47	82.47	2,840.0	1,598.2	157.5	1,590.5	0.29	0.26	0.21	
3,427.0	36.18	84.16	2,908.5	1,648.6	163.3	1,640.5	1.23	-0.34	1.99	
3,513.0	36.83	85.45	2,977.6	1,699.7	167.9	1,691.4	1.17	0.76	1.50	
3,598.0	36.87	85.28	3,045.6	1,750.7	172.1	1,742.2	0.13	0.05	-0.20	
3,683.0	36.12	84.31	3,113.9	1,801.2	176.6	1,792.6	1.11	-0.88	-1.14	
3,769.0	37.57	85.19	3,182.8	1,852.8	181.4	1,843.9	1.79	1.69	1.02	
3,854.0	38.01	84.62	3,249.9	1,904.9	186.0	1,895.8	0.66	0.52	-0.67	
3,940.0	38.41	83.57	3,317.5	1,958.1	191.5	1,948.7	0.89	0.47	-1.22	
4,025.0	37.35	83.48	3,384.6	2,010.3	197.3	2,000.6	1.25	-1.25	-0.11	
4,111.0	35.42	83.43	3,453.8	2,061.3	203.2	2,051.2	2.24	-2.24	-0.06	
4,196.0	36.04	84.53	3,522.8	2,110.9	208.4	2,100.6	1.05	0.73	1.29	
4,281.0	35.02	84.84	3,592.0	2,160.3	212.9	2,149.8	1.22	-1.20	0.36	
4,367.0	33.71	84.53	3,663.0	2,208.9	217.4	2,198.1	1.54	-1.52	-0.36	
4,452.0	31.64	84.49	3,734.5	2,254.7	221.8	2,243.8	2.44	-2.44	-0.05	

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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)	
4,537.0	29.14	82.77	3,807.8	2,297.7	226.6	2,286.5	3.11	-2.94	-2.02	
4,622.0	26.48	83.11	3,883.0	2,337.4	231.5	2,325.9	3.13	-3.13	0.40	
4,708.0	25.00	83.61	3,960.5	2,374.7	235.8	2,363.0	1.74	-1.72	0.58	
4,793.0	22.94	83.61	4,038.2	2,409.2	239.6	2,397.3	2.42	-2.42	0.00	
4,879.0	21.49	83.87	4,117.8	2,441.7	243.2	2,429.6	1.69	-1.69	0.30	
4,964.0	17.80	83.12	4,197.8	2,470.3	246.4	2,458.0	4.35	-4.34	-0.88	
4,976.9	17.48	83.10	4,210.1	2,474.2	246.9	2,461.9	2.48	-2.48	-0.14	
<b>B&amp;V 33B-07-07-95 TGT</b>										
5,049.0	15.69	82.99	4,279.2	2,494.8	249.3	2,482.3	2.48	-2.48	-0.16	
5,134.0	14.19	83.78	4,361.3	2,516.7	251.9	2,504.1	1.78	-1.76	0.93	
5,220.0	12.57	85.15	4,445.0	2,536.6	253.8	2,523.9	1.92	-1.88	1.59	
5,305.0	10.85	84.88	4,528.2	2,553.9	255.3	2,541.1	2.02	-2.02	-0.32	
5,391.0	8.50	81.31	4,613.0	2,568.3	257.0	2,555.4	2.82	-2.73	-4.15	
5,476.0	5.63	71.70	4,697.3	2,578.6	259.2	2,565.6	3.64	-3.38	-11.31	
5,528.8	5.03	67.89	4,750.0	2,583.4	260.9	2,570.2	1.33	-1.14	-7.21	
<b>B&amp;V 33B-07-07-95</b>										
5,561.0	4.67	65.10	4,782.0	2,586.0	262.0	2,572.7	1.33	-1.10	-8.68	
5,647.0	4.39	65.99	4,867.7	2,592.4	264.8	2,578.9	0.34	-0.33	1.03	
5,732.0	3.78	69.68	4,952.5	2,598.2	267.1	2,584.5	0.78	-0.72	4.34	
5,818.0	3.56	70.91	5,038.3	2,603.5	269.0	2,589.6	0.27	-0.26	1.43	
5,903.0	3.12	70.56	5,123.2	2,608.3	270.6	2,594.3	0.52	-0.52	-0.41	
5,988.0	2.56	67.35	5,208.1	2,612.4	272.1	2,598.3	0.68	-0.66	-3.78	
6,074.0	2.02	71.83	5,294.0	2,615.7	273.3	2,601.5	0.66	-0.63	5.21	
6,159.0	1.67	94.81	5,379.0	2,618.4	273.7	2,604.1	0.95	-0.41	27.04	
6,245.0	1.19	105.71	5,464.9	2,620.5	273.3	2,606.2	0.64	-0.56	12.67	
6,330.0	1.27	121.36	5,549.9	2,622.0	272.6	2,607.9	0.40	0.09	18.41	
6,416.0	1.42	137.97	5,635.9	2,623.4	271.3	2,609.4	0.48	0.17	19.31	

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6,501.0	1.71	175.76	5,720.9	2,624.0	269.3	2,610.2	1.24	0.34	44.46	
6,587.0	2.02	193.82	5,806.8	2,623.5	266.5	2,609.9	0.77	0.36	21.00	
6,672.0	2.78	204.18	5,891.7	2,622.0	263.2	2,608.7	1.03	0.89	12.19	
6,757.0	1.34	193.18	5,976.7	2,620.6	260.3	2,607.7	1.75	-1.69	-12.94	
6,842.0	0.72	174.67	6,061.7	2,620.3	258.8	2,607.5	0.82	-0.73	-21.78	
6,928.0	0.93	191.58	6,147.7	2,620.1	257.6	2,607.4	0.37	0.24	19.66	
7,013.0	0.79	203.27	6,232.7	2,619.6	256.4	2,607.0	0.26	-0.16	13.75	
Last PZD Survey										
7,083.0	0.79	203.27	6,302.7	2,619.1	255.5	2,606.7	0.00	0.00	0.00	
Straightline Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,867.0	1,669.8	68.2	697.5	Last PZD Surface Survey	
7,013.0	6,232.7	256.4	2,607.0	Last PZD Survey	
7,083.0	6,302.7	255.5	2,606.7	Straightline Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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