



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

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

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**07 February, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 33C-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 33C-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 33C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 33C-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 "	
				Latitude: 39.450164128	
				Longitude: -108.047211920	
				Grid Convergence: -1.61 °	

Well		B&V 33C-07-07-95, SHL: 39.450391313 -108.046845751				
Well Position	+N/-S	0.0 usft	Northing:	1,599,014.88 usft	Latitude:	39.450391313
	+E/-W	0.0 usft	Easting:	2,280,907.41 usft	Longitude:	-108.046845751
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	2/7/2017	9.75	65.55	51,545

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	91.13

Survey Program		Date	2/7/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
118.0	7,067.0	Actual (Wellbore #1)	MWD	MWD - Standard	

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<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	
118.0	0.40	264.27	118.0	-0.4	0.0	-0.4	0.34	0.34	0.00	
144.0	0.31	222.39	144.0	-0.5	-0.1	-0.5	1.03	-0.35	-161.08	
173.0	0.35	164.29	173.0	-0.6	-0.2	-0.6	1.11	0.14	-200.34	
202.0	0.88	105.45	202.0	-0.3	-0.4	-0.3	2.62	1.83	-202.90	
233.0	1.71	92.79	233.0	0.4	-0.5	0.4	2.82	2.68	-40.84	
262.0	2.41	88.42	262.0	1.4	-0.5	1.4	2.47	2.41	-15.07	
294.0	3.47	92.35	293.9	3.0	-0.5	3.0	3.37	3.31	12.28	
325.0	4.48	99.43	324.9	5.2	-0.7	5.2	3.62	3.26	22.84	
355.0	5.78	98.30	354.7	7.8	-1.1	7.8	4.35	4.33	-3.77	
386.0	7.03	96.00	385.5	11.3	-1.6	11.2	4.12	4.03	-7.42	
416.0	8.44	94.51	415.3	15.3	-1.9	15.3	4.75	4.70	-4.97	
446.0	9.71	94.95	444.9	20.0	-2.3	20.0	4.24	4.23	1.47	
476.0	10.77	91.43	474.4	25.4	-2.6	25.3	4.10	3.53	-11.73	
507.0	11.78	91.52	504.8	31.4	-2.8	31.4	3.26	3.26	0.29	
537.0	12.79	91.21	534.1	37.8	-2.9	37.7	3.37	3.37	-1.03	
568.0	13.71	90.64	564.3	44.9	-3.0	44.9	3.00	2.97	-1.84	
599.0	14.90	89.15	594.3	52.6	-3.0	52.5	4.02	3.84	-4.81	
629.0	16.00	89.06	623.3	60.5	-2.9	60.5	3.67	3.67	-0.30	
659.0	17.14	89.50	652.0	69.1	-2.8	69.1	3.82	3.80	1.47	
690.0	18.06	90.64	681.6	78.5	-2.8	78.4	3.17	2.97	3.68	
721.0	19.03	91.65	710.9	88.3	-3.0	88.3	3.30	3.13	3.26	
751.0	19.95	91.69	739.2	98.3	-3.3	98.3	3.07	3.07	0.13	
782.0	20.87	92.31	768.3	109.1	-3.7	109.1	3.05	2.97	2.00	
812.0	22.06	92.66	796.2	120.1	-4.1	120.1	3.99	3.97	1.17	
843.0	23.12	93.19	824.8	132.0	-4.8	132.0	3.48	3.42	1.71	
886.0	24.39	93.14	864.2	149.3	-5.7	149.3	2.95	2.95	-0.12	

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<b>Well:</b>	B&V 33C-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	25.53	92.00	902.3	167.1	-6.5	167.0	2.95	2.71	-2.71	
971.0	27.11	91.25	940.8	186.1	-7.0	186.0	3.75	3.67	-1.74	
1,014.0	28.61	90.42	978.8	206.2	-7.3	206.1	3.60	3.49	-1.93	
1,057.0	30.54	90.42	1,016.2	227.4	-7.5	227.3	4.49	4.49	0.00	
1,099.0	31.95	90.38	1,052.1	249.2	-7.6	249.1	3.36	3.36	-0.10	
1,142.0	33.18	90.82	1,088.3	272.4	-7.9	272.3	2.91	2.86	1.02	
1,184.0	34.45	90.86	1,123.2	295.7	-8.2	295.6	3.02	3.02	0.10	
1,227.0	35.35	90.93	1,158.5	320.3	-8.6	320.2	2.10	2.09	0.16	
1,270.0	35.73	90.24	1,193.5	345.3	-8.9	345.2	1.28	0.88	-1.60	
1,313.0	36.87	90.07	1,228.2	370.8	-8.9	370.7	2.66	2.65	-0.40	
1,355.0	37.09	89.63	1,261.7	396.0	-8.9	395.9	0.82	0.52	-1.05	
1,398.0	37.18	89.06	1,296.0	422.0	-8.6	421.9	0.83	0.21	-1.33	
1,441.0	37.09	88.75	1,330.3	447.9	-8.1	447.8	0.48	-0.21	-0.72	
1,483.0	36.61	88.49	1,363.9	473.1	-7.5	473.0	1.20	-1.14	-0.62	
1,526.0	35.51	89.67	1,398.6	498.4	-7.1	498.3	3.03	-2.56	2.74	
1,569.0	35.51	90.38	1,433.6	523.3	-7.1	523.3	0.96	0.00	1.65	
1,611.0	34.58	91.34	1,468.0	547.5	-7.4	547.4	2.57	-2.21	2.29	
1,654.0	34.31	91.96	1,503.5	571.8	-8.1	571.7	1.03	-0.63	1.44	
1,697.0	34.63	92.53	1,538.9	596.1	-9.1	596.1	1.06	0.74	1.33	
1,739.0	35.01	92.53	1,573.4	620.1	-10.1	620.0	0.90	0.90	0.00	
1,782.0	35.38	92.40	1,608.6	644.9	-11.2	644.8	0.88	0.86	-0.30	
1,824.0	35.64	92.15	1,642.7	669.3	-12.2	669.1	0.71	0.62	-0.60	
Last PZD Surface Survey										
1,975.0	35.42	88.44	1,765.6	757.0	-12.6	756.9	1.44	-0.15	-2.46	
2,061.0	35.99	89.23	1,835.5	807.1	-11.6	807.0	0.85	0.66	0.92	
2,146.0	38.06	92.40	1,903.3	858.3	-12.4	858.2	3.31	2.44	3.73	
2,231.0	40.69	95.03	1,969.0	912.1	-15.9	912.0	3.66	3.09	3.09	

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<b>Well:</b>	B&V 33C-07-07-95	<b>North Reference:</b>	True
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2,316.0	40.03	95.25	2,033.8	967.0	-20.8	966.8	0.79	-0.78	0.26	
2,402.0	39.55	94.46	2,099.9	1,022.0	-25.5	1,021.7	0.81	-0.56	-0.92	
2,487.0	39.16	94.55	2,165.6	1,075.8	-29.7	1,075.4	0.46	-0.46	0.11	
2,573.0	38.36	94.37	2,232.7	1,129.5	-33.9	1,129.1	0.94	-0.93	-0.21	
2,658.0	38.32	92.49	2,299.4	1,182.2	-37.1	1,181.7	1.37	-0.05	-2.21	
2,743.0	37.71	92.09	2,366.3	1,234.5	-39.2	1,234.0	0.77	-0.72	-0.47	
2,829.0	36.69	91.78	2,434.8	1,286.5	-40.9	1,286.0	1.21	-1.19	-0.36	
2,914.0	36.74	91.30	2,503.0	1,337.3	-42.3	1,336.8	0.34	0.06	-0.56	
2,999.0	37.88	90.95	2,570.6	1,388.9	-43.3	1,388.3	1.36	1.34	-0.41	
3,084.0	37.53	91.78	2,637.8	1,440.8	-44.5	1,440.2	0.73	-0.41	0.98	
3,170.0	36.69	91.03	2,706.4	1,492.7	-45.8	1,492.1	1.11	-0.98	-0.87	
3,255.0	36.97	90.32	2,774.4	1,543.7	-46.4	1,543.1	0.60	0.33	-0.84	
3,340.0	38.09	88.33	2,841.8	1,595.4	-45.8	1,594.8	1.94	1.32	-2.34	
3,426.0	37.84	88.75	2,909.6	1,648.3	-44.4	1,647.7	0.42	-0.29	0.49	
3,511.0	36.65	87.91	2,977.3	1,699.7	-42.9	1,699.1	1.52	-1.40	-0.99	
3,596.0	36.25	89.06	3,045.7	1,750.1	-41.6	1,749.6	0.93	-0.47	1.35	
3,682.0	35.55	90.33	3,115.3	1,800.5	-41.3	1,800.0	1.19	-0.81	1.48	
3,767.0	35.55	92.49	3,184.5	1,849.9	-42.5	1,849.4	1.48	0.00	2.54	
3,852.0	37.34	90.92	3,252.9	1,900.4	-44.0	1,899.9	2.37	2.11	-1.85	
3,938.0	37.35	91.74	3,321.2	1,952.6	-45.2	1,952.1	0.58	0.01	0.95	
4,023.0	38.02	91.73	3,388.5	2,004.5	-46.8	2,004.0	0.79	0.79	-0.01	
4,108.0	36.48	91.28	3,456.2	2,056.0	-48.2	2,055.4	1.84	-1.81	-0.53	
4,194.0	35.07	91.17	3,525.9	2,106.3	-49.3	2,105.7	1.64	-1.64	-0.13	
4,279.0	32.92	90.02	3,596.4	2,153.8	-49.8	2,153.2	2.64	-2.53	-1.35	
4,365.0	30.50	91.65	3,669.6	2,199.0	-50.4	2,198.4	2.98	-2.81	1.90	
4,450.0	28.08	91.56	3,743.7	2,240.6	-51.6	2,240.0	2.85	-2.85	-0.11	
4,535.0	26.41	92.35	3,819.3	2,279.5	-52.9	2,278.9	2.01	-1.96	0.93	

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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)
4,621.0	24.43	92.27		3,896.9	2,316.4	-54.4	2,315.7	2.30	-2.30	-0.09
4,706.0	23.77	92.44		3,974.5	2,351.1	-55.8	2,350.4	0.78	-0.78	0.20
4,791.0	22.37	91.87		4,052.7	2,384.4	-57.1	2,383.7	1.67	-1.65	-0.67
4,877.0	20.79	92.27		4,132.7	2,416.0	-58.2	2,415.3	1.85	-1.84	0.47
4,962.0	18.68	92.84		4,212.7	2,444.7	-59.5	2,444.0	2.49	-2.48	0.67
4,965.9	18.61	92.83		4,216.4	2,445.9	-59.5	2,445.2	1.77	-1.76	-0.20
B&V 33C-07-07-95 TGT										
5,047.0	17.18	92.66		4,293.6	2,470.8	-60.7	2,470.1	1.77	-1.76	-0.21
5,133.0	15.47	90.29		4,376.1	2,495.0	-61.4	2,494.3	2.13	-1.99	-2.76
5,218.0	13.10	89.85		4,458.5	2,516.0	-61.4	2,515.3	2.79	-2.79	-0.52
5,303.0	11.69	91.03		4,541.5	2,534.2	-61.5	2,533.5	1.69	-1.66	1.39
5,389.0	9.58	88.79		4,626.0	2,550.1	-61.5	2,549.4	2.50	-2.45	-2.60
5,474.0	8.88	89.94		4,709.9	2,563.7	-61.4	2,563.0	0.85	-0.82	1.35
5,560.0	8.46	91.11		4,794.9	2,576.7	-61.5	2,576.0	0.53	-0.49	1.36
5,645.0	6.72	89.41		4,879.2	2,587.9	-61.6	2,587.2	2.06	-2.05	-2.00
5,731.0	4.70	89.28		4,964.7	2,596.4	-61.5	2,595.7	2.35	-2.35	-0.15
5,816.0	3.12	91.91		5,049.5	2,602.2	-61.5	2,601.5	1.87	-1.86	3.09
5,901.0	2.49	86.14		5,134.4	2,606.4	-61.5	2,605.7	0.81	-0.74	-6.79
5,987.0	2.37	87.17		5,220.4	2,610.0	-61.2	2,609.3	0.15	-0.14	1.20
6,072.0	1.93	98.07		5,305.3	2,613.2	-61.4	2,612.5	0.70	-0.52	12.82
6,158.0	1.67	108.96		5,391.3	2,615.8	-62.0	2,615.1	0.50	-0.30	12.66
6,243.0	1.14	109.54		5,476.2	2,617.8	-62.6	2,617.1	0.62	-0.62	0.68
6,328.0	0.75	108.79		5,561.2	2,619.1	-63.1	2,618.4	0.46	-0.46	-0.88
6,414.0	0.73	147.70		5,647.2	2,620.0	-63.8	2,619.2	0.57	-0.02	45.24
6,499.0	1.05	193.87		5,732.2	2,620.1	-65.0	2,619.3	0.89	0.38	54.32
6,585.0	1.32	141.31		5,818.2	2,620.6	-66.5	2,619.8	1.25	0.31	-61.12
6,670.0	1.98	110.20		5,903.2	2,622.6	-67.8	2,621.8	1.28	0.78	-36.60

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6,755.0	1.45	96.31	5,988.1	2,625.0	-68.4	2,624.2	0.79	-0.62	-16.34	
6,841.0	1.03	93.09	6,074.1	2,626.9	-68.6	2,626.1	0.49	-0.49	-3.74	
6,926.0	0.67	92.33	6,159.1	2,628.2	-68.6	2,627.3	0.42	-0.42	-0.89	
6,997.0	0.62	104.57	6,230.1	2,629.0	-68.7	2,628.1	0.21	-0.07	17.24	
Last PZD Survey										
7,067.0	0.62	104.57	6,300.1	2,629.7	-68.9	2,628.8	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)		
1,824.0	1,642.7	-12.2	669.1	Last PZD Surface Survey	
6,997.0	6,230.1	-68.7	2,628.1	Last PZD Survey	
7,067.0	6,300.1	-68.9	2,628.8	Straightline Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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