



Ursa Operating Company, LLC

Rockies Region

B&V

B&V 33D-07-07-95

Wellbore #1

Design: Actual

End of Well Report

03 February, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well B&V 33D-07-07-95
Project:	Rockies Region	TVD Reference:	B&V 33D-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	MD Reference:	B&V 33D-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 33D-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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 33D-07-07-95, SHL: 39.450374167 -108.046873386				
Well Position	+N/-S	0.0 usft	Northing:	1,599,008.86 usft	Latitude:	39.450374167
	+E/-W	0.0 usft	Easting:	2,280,899.43 usft	Longitude:	-108.046873386
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	2/3/2017	9.76	65.55	51,546

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	98.34

Survey Program		Date	2/3/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
115.0	7,095.0	Actual (Wellbore #1)	MWD	MWD - Standard	

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Design:	Actual	Database:	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	
115.0	0.17	232.07	115.0	-0.1	-0.1	-0.1	0.15	0.15	0.00	
144.0	0.18	19.58	144.0	-0.1	-0.1	-0.2	1.16	0.03	508.66	
173.0	0.76	80.96	173.0	0.1	0.0	0.1	2.39	2.00	211.66	
203.0	1.76	87.78	203.0	0.7	0.0	0.7	3.36	3.33	22.73	
233.0	2.77	81.15	233.0	1.8	0.2	1.9	3.47	3.37	-22.10	
264.0	3.74	87.04	263.9	3.5	0.3	3.6	3.31	3.13	19.00	
295.0	4.91	96.89	294.8	5.9	0.2	6.0	4.46	3.77	31.77	
325.0	6.29	101.50	324.7	8.8	-0.3	8.8	4.83	4.60	15.37	
356.0	7.43	96.35	355.5	12.5	-0.8	12.5	4.18	3.68	-16.61	
386.0	8.67	101.62	385.2	16.7	-1.5	16.6	4.81	4.13	17.57	
416.0	9.45	101.45	414.8	21.4	-2.4	21.3	2.60	2.60	-0.57	
447.0	10.40	106.45	445.3	26.7	-3.7	26.5	4.13	3.06	16.13	
477.0	11.29	107.25	474.8	32.3	-5.4	31.9	3.01	2.97	2.67	
508.0	12.35	107.07	505.1	38.6	-7.2	37.9	3.42	3.42	-0.58	
538.0	13.18	104.20	534.4	45.1	-9.0	44.3	3.48	2.77	-9.57	
569.0	13.84	100.75	564.5	52.4	-10.6	51.4	3.36	2.13	-11.13	
599.0	14.63	97.80	593.6	59.7	-11.8	58.7	3.57	2.63	-9.83	
630.0	15.51	95.47	623.5	67.8	-12.7	66.7	3.45	2.84	-7.52	
660.0	16.39	94.55	652.4	76.0	-13.4	74.9	3.05	2.93	-3.07	
691.0	17.46	94.78	682.1	85.0	-14.1	83.9	3.46	3.45	0.74	
721.0	18.46	92.25	710.6	94.2	-14.7	93.1	4.23	3.33	-8.43	
752.0	19.42	96.04	739.9	104.3	-15.4	103.1	5.03	3.10	12.23	
782.0	20.21	96.75	768.1	114.4	-16.6	113.2	2.75	2.63	2.37	
813.0	21.20	97.28	797.1	125.4	-17.9	124.1	3.25	3.19	1.71	
844.0	21.93	96.79	826.0	136.8	-19.3	135.4	2.43	2.35	-1.58	
886.0	23.30	97.60	864.7	152.9	-21.3	151.4	3.35	3.26	1.93	

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Site:	B&V	MD Reference:	B&V 33D-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 33D-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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)	
929.0	24.60	97.00	904.0	170.4	-23.5	168.8	3.08	3.02	-1.40	
972.0	25.90	96.40	942.9	188.7	-25.7	187.0	3.08	3.02	-1.40	
1,014.0	27.10	97.50	980.5	207.5	-28.0	205.6	3.09	2.86	2.62	
1,057.0	28.40	97.60	1,018.6	227.5	-30.6	225.4	3.03	3.02	0.23	
1,100.0	29.44	98.37	1,056.2	248.3	-33.5	246.0	2.57	2.42	1.79	
1,142.0	30.80	98.40	1,092.5	269.3	-36.6	266.9	3.24	3.24	0.07	
1,185.0	32.50	98.60	1,129.1	291.9	-39.9	289.2	3.96	3.95	0.47	
1,228.0	34.50	98.00	1,165.0	315.6	-43.3	312.7	4.71	4.65	-1.40	
1,270.0	36.52	98.15	1,199.2	340.0	-46.7	336.8	4.81	4.81	0.36	
1,313.0	38.01	99.25	1,233.4	366.1	-50.7	362.5	3.80	3.47	2.56	
1,356.0	38.07	99.14	1,267.3	392.6	-54.9	388.7	0.21	0.14	-0.26	
1,399.0	38.28	98.77	1,301.1	419.1	-59.1	415.0	0.72	0.49	-0.86	
1,441.0	38.23	98.15	1,334.0	445.1	-62.9	440.7	0.92	-0.12	-1.48	
1,484.0	38.23	97.76	1,367.8	471.7	-66.6	467.0	0.56	0.00	-0.91	
1,526.0	38.32	98.35	1,400.8	497.8	-70.2	492.8	0.90	0.21	1.40	
1,569.0	38.14	98.51	1,434.6	524.4	-74.1	519.1	0.48	-0.42	0.37	
1,612.0	38.58	98.33	1,468.3	551.1	-78.0	545.5	1.06	1.02	-0.42	
1,654.0	38.67	98.07	1,501.1	577.3	-81.8	571.5	0.44	0.21	-0.62	
1,697.0	39.39	97.89	1,534.5	604.4	-85.5	598.3	1.70	1.67	-0.42	
1,740.0	39.95	97.76	1,567.6	631.8	-89.2	625.5	1.32	1.30	-0.30	
1,782.0	39.77	99.21	1,599.8	658.7	-93.2	652.1	2.25	-0.43	3.45	
1,825.0	40.08	99.56	1,632.8	686.3	-97.7	679.3	0.89	0.72	0.81	
1,867.0	40.64	99.44	1,664.8	713.5	-102.2	706.1	1.35	1.33	-0.29	
Last PZD Surface Survey										
1,971.0	40.91	98.47	1,743.6	781.4	-112.8	773.2	0.66	0.26	-0.93	
2,056.0	40.34	97.58	1,808.1	836.8	-120.5	828.0	0.96	-0.67	-1.05	
2,142.0	39.42	97.14	1,874.1	891.9	-127.6	882.7	1.12	-1.07	-0.51	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000.1 Single User Db

Survey										
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2,227.0	39.37	98.02	1,939.8	945.8	-134.7	936.2	0.66	-0.06	1.04	
2,313.0	38.95	97.73	2,006.5	1,000.1	-142.1	990.0	0.53	-0.49	-0.34	
2,398.0	38.58	99.78	2,072.7	1,053.4	-150.2	1,042.6	1.57	-0.44	2.41	
2,483.0	38.45	99.78	2,139.2	1,106.3	-159.2	1,094.7	0.15	-0.15	0.00	
2,569.0	38.63	99.47	2,206.5	1,159.8	-168.2	1,147.6	0.31	0.21	-0.36	
2,654.0	38.67	99.16	2,272.9	1,212.9	-176.8	1,200.0	0.23	0.05	-0.36	
2,740.0	38.67	99.12	2,340.0	1,266.6	-185.3	1,253.0	0.03	0.00	-0.05	
2,825.0	38.58	97.63	2,406.4	1,319.7	-193.0	1,305.5	1.10	-0.11	-1.75	
2,910.0	38.98	97.76	2,472.7	1,372.9	-200.2	1,358.3	0.48	0.47	0.15	
2,996.0	38.32	97.98	2,539.9	1,426.6	-207.5	1,411.5	0.78	-0.77	0.26	
3,081.0	37.75	96.97	2,606.8	1,479.0	-214.3	1,463.4	0.99	-0.67	-1.19	
3,169.0	37.57	98.68	2,676.5	1,532.8	-221.7	1,516.7	1.20	-0.20	1.94	
3,254.0	37.18	99.03	2,744.0	1,584.4	-229.6	1,567.6	0.52	-0.46	0.41	
3,339.0	38.06	98.73	2,811.4	1,636.2	-237.6	1,618.9	1.06	1.04	-0.35	
3,425.0	36.78	98.59	2,879.7	1,688.5	-245.5	1,670.6	1.49	-1.49	-0.16	
3,510.0	37.09	97.63	2,947.6	1,739.6	-252.7	1,721.1	0.77	0.36	-1.13	
3,596.0	36.69	96.53	3,016.4	1,791.2	-259.0	1,772.4	0.90	-0.47	-1.28	
3,681.0	36.47	95.74	3,084.6	1,841.8	-264.5	1,822.7	0.61	-0.26	-0.93	
3,766.0	36.21	95.82	3,153.1	1,892.1	-269.5	1,872.8	0.31	-0.31	0.09	
3,852.0	35.68	98.15	3,222.7	1,942.6	-275.7	1,922.9	1.71	-0.62	2.71	
3,937.0	36.34	100.79	3,291.5	1,992.5	-283.9	1,972.2	1.98	0.78	3.11	
4,023.0	36.52	99.96	3,360.7	2,043.6	-293.1	2,022.5	0.61	0.21	-0.97	
4,108.0	35.38	98.68	3,429.5	2,093.5	-301.2	2,071.7	1.61	-1.34	-1.51	
4,194.0	32.56	97.63	3,500.8	2,141.5	-308.0	2,119.2	3.35	-3.28	-1.22	
4,279.0	31.46	99.69	3,572.9	2,186.6	-314.8	2,163.8	1.82	-1.29	2.42	
4,364.0	29.22	99.47	3,646.3	2,229.5	-321.9	2,206.1	2.64	-2.64	-0.26	
4,449.0	28.96	97.49	3,720.5	2,270.8	-328.0	2,247.0	1.17	-0.31	-2.33	

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4,535.0	29.67	97.44	3,795.5	2,312.9	-333.5	2,288.7	0.83	0.83	-0.06	
4,620.0	27.91	96.35	3,870.0	2,353.8	-338.4	2,329.4	2.16	-2.07	-1.28	
4,705.0	27.82	99.08	3,945.2	2,393.5	-343.7	2,368.7	1.50	-0.11	3.21	
4,791.0	25.88	98.42	4,021.9	2,432.4	-349.7	2,407.1	2.28	-2.26	-0.77	
4,876.0	24.70	98.11	4,098.7	2,468.7	-354.9	2,443.1	1.40	-1.39	-0.36	
4,962.0	21.49	98.30	4,177.8	2,502.4	-359.7	2,476.4	3.73	-3.73	0.22	
4,973.2	21.17	98.48	4,188.3	2,506.5	-360.3	2,480.5	2.91	-2.85	1.62	
B&V 33D-07-07-95 TGT										
5,047.0	19.07	99.82	4,257.6	2,531.9	-364.3	2,505.5	2.91	-2.85	1.81	
5,132.0	17.31	100.40	4,338.3	2,558.4	-369.0	2,531.7	2.08	-2.07	0.68	
5,218.0	13.60	98.79	4,421.2	2,581.3	-372.8	2,554.2	4.34	-4.31	-1.87	
5,303.0	11.36	100.81	4,504.2	2,599.7	-375.9	2,572.3	2.68	-2.64	2.38	
5,389.0	8.83	102.99	4,588.8	2,614.7	-379.0	2,587.1	2.97	-2.94	2.53	
5,474.0	6.50	99.56	4,673.1	2,626.0	-381.3	2,598.2	2.79	-2.74	-4.04	
5,516.8	5.48	101.03	4,715.7	2,630.5	-382.0	2,602.6	2.41	-2.38	3.42	
B&V 33D-07-07-95										
5,559.0	4.48	103.12	4,757.7	2,634.1	-382.8	2,606.2	2.41	-2.37	4.96	
5,645.0	2.90	78.77	4,843.5	2,639.5	-383.1	2,611.6	2.55	-1.84	-28.31	
5,730.0	2.33	73.98	4,928.4	2,643.1	-382.2	2,615.3	0.72	-0.67	-5.64	
5,815.0	2.02	74.99	5,013.3	2,646.1	-381.4	2,618.5	0.37	-0.36	1.19	
5,901.0	1.80	85.94	5,099.3	2,648.8	-380.9	2,621.3	0.49	-0.26	12.73	
5,986.0	1.51	89.88	5,184.3	2,651.2	-380.8	2,623.7	0.37	-0.34	4.64	
6,071.0	1.05	95.91	5,269.2	2,653.1	-380.9	2,625.6	0.56	-0.54	7.09	
6,156.0	0.92	105.19	5,354.2	2,654.5	-381.1	2,627.0	0.24	-0.15	10.92	
6,242.0	0.66	223.27	5,440.2	2,655.0	-381.7	2,627.4	1.58	-0.30	137.30	
6,327.0	1.80	228.50	5,525.2	2,653.8	-382.9	2,626.0	1.35	1.34	6.15	
6,413.0	2.34	229.86	5,611.1	2,651.8	-384.9	2,623.7	0.63	0.63	1.58	

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Survey										
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6,498.0	2.55	247.44	5,696.1	2,649.0	-386.8	2,620.6	0.91	0.25	20.68	
6,583.0	1.54	293.75	5,781.0	2,646.3	-387.1	2,617.8	2.18	-1.19	54.48	
6,669.0	1.14	314.54	5,867.0	2,644.5	-386.0	2,616.2	0.72	-0.47	24.17	
6,754.0	1.27	328.56	5,952.0	2,643.2	-384.6	2,615.1	0.38	0.15	16.49	
6,839.0	1.14	312.61	6,037.0	2,641.9	-383.2	2,613.9	0.42	-0.15	-18.76	
6,925.0	1.27	303.29	6,122.9	2,640.3	-382.1	2,612.5	0.27	0.15	-10.84	
7,035.0	1.05	286.02	6,232.9	2,638.2	-381.2	2,610.5	0.37	-0.20	-15.70	
Last PZD Survey										
7,095.0	1.05	286.02	6,292.9	2,637.1	-380.9	2,609.5	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	1,664.8	-102.2	706.1	Last PZD Surface Survey	
7,035.0	6,232.9	-381.2	2,610.5	Last PZD Survey	
7,095.0	6,292.9	-380.9	2,609.5	Straightline Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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