



Ursa Operating Company, LLC

Rockies Region

B&V

B&V 23A-07-07-95

Wellbore #1

Design: Actual

End of Well Report

30 January, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well B&V 23A-07-07-95
Project:	Rockies Region	TVD Reference:	B&V 23A-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	MD Reference:	B&V 23A-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 23A-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 23A-07-07-95, SHL LAT: 39.450357021 LONG: -108.046901022				
Well Position	+N/-S	0.0 usft	Northing:	1,599,002.83 usft	Latitude:	39.450357021
	+E/-W	0.0 usft	Easting:	2,280,891.46 usft	Longitude:	-108.046901022
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	1/30/2017	9.76	65.55	51,547

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	71.45

Survey Program		Date	1/30/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
106.0	6,534.0	Actual (Wellbore #1)	MWD	MWD - Standard	

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Well:	B&V 23A-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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
106.0	0.22	209.05	106.0	-0.2	-0.2	-0.1	0.21	0.21	0.00	
135.0	0.30	185.68	135.0	-0.2	-0.3	-0.1	0.45	0.28	-80.59	
164.0	0.26	186.84	164.0	-0.3	-0.4	-0.1	0.14	-0.14	4.00	
194.0	0.31	191.98	194.0	-0.4	-0.6	-0.2	0.19	0.17	17.13	
224.0	0.35	183.67	224.0	-0.4	-0.8	-0.2	0.21	0.13	-27.70	
255.0	0.44	197.91	255.0	-0.5	-1.0	-0.2	0.43	0.29	45.94	
286.0	0.40	189.87	286.0	-0.7	-1.2	-0.3	0.23	-0.13	-25.94	
316.0	0.44	188.46	316.0	-0.8	-1.4	-0.3	0.14	0.13	-4.70	
347.0	0.48	193.60	347.0	-0.9	-1.6	-0.4	0.19	0.13	16.58	
377.0	0.40	161.35	377.0	-0.9	-1.9	-0.4	0.85	-0.27	-107.50	
407.0	1.25	90.16	407.0	-0.6	-2.0	0.0	3.94	2.83	-237.30	
438.0	1.98	77.50	438.0	0.2	-1.9	0.8	2.61	2.35	-40.84	
468.0	2.86	73.06	468.0	1.5	-1.5	2.1	3.00	2.93	-14.80	
499.0	3.56	73.11	498.9	3.2	-1.0	3.7	2.26	2.26	0.16	
529.0	4.00	72.27	528.8	5.2	-0.4	5.6	1.48	1.47	-2.80	
560.0	4.61	71.26	559.7	7.5	0.3	7.8	1.98	1.97	-3.26	
590.0	5.36	69.81	589.6	10.1	1.2	10.3	2.53	2.50	-4.83	
621.0	6.20	71.79	620.5	13.2	2.2	13.2	2.78	2.71	6.39	
651.0	7.03	75.08	650.3	16.7	3.2	16.5	3.04	2.77	10.97	
682.0	8.09	77.10	681.0	20.8	4.1	20.5	3.52	3.42	6.52	
712.0	9.32	75.96	710.7	25.3	5.2	24.9	4.14	4.10	-3.80	
743.0	10.63	73.46	741.2	30.6	6.6	30.1	4.45	4.23	-8.06	
773.0	11.78	72.97	770.6	36.5	8.3	35.7	3.85	3.83	-1.63	
804.0	12.55	72.45	800.9	43.0	10.3	41.9	2.51	2.48	-1.68	
835.0	13.45	71.87	831.1	50.0	12.4	48.6	2.93	2.90	-1.87	
877.0	14.63	71.30	871.9	60.2	15.6	58.2	2.83	2.81	-1.36	

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Site:	B&V	MD Reference:	B&V 23A-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 23A-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)	
920.0	15.82	70.51	913.4	71.5	19.3	68.9	2.81	2.77	-1.84	
963.0	17.15	70.78	954.6	83.7	23.4	80.4	3.10	3.09	0.63	
1,005.0	18.68	71.30	994.6	96.6	27.5	92.6	3.66	3.64	1.24	
1,048.0	20.13	71.13	1,035.1	110.9	32.2	106.1	3.37	3.37	-0.40	
1,091.0	21.09	70.25	1,075.4	126.0	37.2	120.4	2.35	2.23	-2.05	
1,133.0	22.02	70.04	1,114.4	141.4	42.4	134.9	2.22	2.21	-0.50	
1,176.0	23.42	69.06	1,154.1	158.0	48.2	150.5	3.37	3.26	-2.28	
1,219.0	23.99	68.62	1,193.5	175.3	54.4	166.6	1.39	1.33	-1.02	
1,261.0	24.26	68.45	1,231.8	192.4	60.7	182.6	0.66	0.64	-0.40	
1,304.0	24.57	69.24	1,270.9	210.2	67.1	199.2	1.05	0.72	1.84	
1,347.0	24.26	72.23	1,310.1	228.0	73.0	215.9	2.96	-0.72	6.95	
1,390.0	24.08	71.87	1,349.3	245.6	78.4	232.7	0.54	-0.42	-0.84	
1,432.0	24.21	72.28	1,387.7	262.7	83.7	249.0	0.51	0.31	0.98	
1,475.0	24.61	72.49	1,426.8	280.5	89.1	266.0	0.95	0.93	0.49	
1,517.0	24.96	72.36	1,464.9	298.1	94.4	282.8	0.84	0.83	-0.31	
1,560.0	25.62	72.40	1,503.8	316.5	100.0	300.3	1.54	1.53	0.09	
1,603.0	25.93	72.23	1,542.5	335.2	105.7	318.1	0.74	0.72	-0.40	
1,645.0	25.88	72.18	1,580.3	353.5	111.3	335.6	0.13	-0.12	-0.12	
1,688.0	24.90	70.79	1,619.2	372.0	117.1	353.0	2.67	-2.28	-3.23	
1,731.0	25.09	69.72	1,658.1	390.1	123.3	370.1	1.14	0.44	-2.49	
1,750.0	25.27	69.85	1,675.3	398.2	126.0	377.7	0.99	0.95	0.68	
Last PZD Surface Survey										
1,888.0	23.68	68.29	1,800.9	455.3	146.4	431.1	1.24	-1.15	-1.13	
1,974.0	23.20	68.58	1,879.8	489.5	159.0	462.9	0.57	-0.56	0.34	
2,059.0	23.47	70.29	1,957.9	523.1	170.8	494.5	0.86	0.32	2.01	
2,144.0	24.26	73.05	2,035.6	557.5	181.6	527.1	1.61	0.93	3.25	
2,230.0	25.40	75.13	2,113.7	593.6	191.5	561.8	1.67	1.33	2.42	

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Well:	B&V 23A-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)	
2,315.0	27.38	75.92	2,189.8	631.3	201.0	598.4	2.37	2.33	0.93	
2,400.0	27.92	74.90	2,265.1	670.6	210.9	636.6	0.84	0.64	-1.20	
2,486.0	27.07	74.22	2,341.4	710.3	221.5	674.9	1.05	-0.99	-0.79	
2,571.0	27.38	72.75	2,417.0	749.1	232.5	712.1	0.87	0.36	-1.73	
2,657.0	27.73	72.93	2,493.2	788.9	244.3	750.1	0.42	0.41	0.21	
2,742.0	27.11	73.02	2,568.7	828.0	255.7	787.6	0.73	-0.73	0.11	
2,827.0	26.72	71.42	2,644.5	866.5	267.5	824.2	0.97	-0.46	-1.88	
2,913.0	26.10	70.64	2,721.5	904.7	279.9	860.4	0.83	-0.72	-0.91	
2,998.0	25.36	70.47	2,798.1	941.6	292.2	895.2	0.87	-0.87	-0.20	
3,083.0	24.37	68.73	2,875.2	977.3	304.6	928.7	1.45	-1.16	-2.05	
3,169.0	24.79	70.25	2,953.4	1,013.1	317.2	962.2	0.88	0.49	1.77	
3,254.0	23.73	69.85	3,030.9	1,048.0	329.1	995.0	1.26	-1.25	-0.47	
3,340.0	22.32	69.37	3,110.0	1,081.6	340.8	1,026.5	1.65	-1.64	-0.56	
3,425.0	21.01	68.10	3,189.0	1,113.0	352.2	1,055.8	1.64	-1.54	-1.49	
3,510.0	19.86	67.35	3,268.7	1,142.6	363.4	1,083.3	1.39	-1.35	-0.88	
3,596.0	18.33	71.70	3,349.9	1,170.7	373.3	1,109.6	2.43	-1.78	5.06	
3,681.0	17.14	71.44	3,430.9	1,196.6	381.5	1,134.1	1.40	-1.40	-0.31	
3,767.0	15.86	71.52	3,513.4	1,221.0	389.2	1,157.3	1.49	-1.49	0.09	
3,852.0	14.63	72.62	3,595.4	1,243.3	396.1	1,178.6	1.49	-1.45	1.29	
3,937.0	13.54	72.75	3,677.8	1,264.0	402.3	1,198.3	1.28	-1.28	0.15	
4,023.0	12.43	72.48	3,761.6	1,283.3	408.0	1,216.8	1.29	-1.29	-0.31	
4,108.0	11.25	73.28	3,844.8	1,300.8	413.2	1,233.4	1.40	-1.39	0.94	
4,194.0	10.20	73.70	3,929.3	1,316.8	417.7	1,248.8	1.22	-1.22	0.49	
4,279.0	9.40	73.06	4,013.1	1,331.2	421.9	1,262.6	0.95	-0.94	-0.75	
4,364.0	9.05	71.92	4,097.0	1,344.9	426.0	1,275.6	0.46	-0.41	-1.34	
4,425.7	7.44	72.93	4,158.0	1,353.7	428.6	1,284.1	2.62	-2.61	1.64	
B&V 23A-07-07-95 TGT										

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4,450.0	6.81	73.46	4,182.1	1,356.7	429.5	1,286.9	2.62	-2.60	2.17	
4,535.0	4.75	76.31	4,266.7	1,365.3	431.8	1,295.2	2.45	-2.42	3.35	
4,620.0	3.13	59.80	4,351.5	1,371.0	433.8	1,300.6	2.31	-1.91	-19.42	
4,706.0	0.92	75.65	4,437.4	1,374.0	435.1	1,303.3	2.63	-2.57	18.43	
4,791.0	0.40	126.67	4,522.4	1,374.9	435.1	1,304.2	0.87	-0.61	60.02	
4,876.0	0.31	141.84	4,607.4	1,375.1	434.8	1,304.6	0.15	-0.11	17.85	
4,961.0	0.48	149.00	4,692.4	1,375.3	434.3	1,304.9	0.21	0.20	8.42	
5,047.0	1.19	327.77	4,778.4	1,375.1	434.7	1,304.6	1.94	0.83	207.87	
5,132.0	1.32	307.86	4,863.4	1,374.4	436.1	1,303.4	0.53	0.15	-23.42	
5,217.0	1.19	284.20	4,948.4	1,373.1	436.9	1,301.8	0.62	-0.15	-27.84	
5,303.0	1.23	272.13	5,034.4	1,371.5	437.1	1,300.0	0.30	0.05	-14.03	
5,388.0	1.27	266.64	5,119.3	1,369.7	437.1	1,298.1	0.15	0.05	-6.46	
5,473.0	2.38	264.02	5,204.3	1,367.1	436.9	1,295.4	1.31	1.31	-3.08	
5,559.0	1.41	237.42	5,290.2	1,364.3	436.1	1,292.8	1.49	-1.13	-30.93	
5,644.0	0.57	219.49	5,375.2	1,363.0	435.2	1,291.6	1.04	-0.99	-21.09	
5,730.0	0.73	202.32	5,461.2	1,362.2	434.4	1,291.1	0.29	0.19	-19.97	
5,815.0	0.83	228.23	5,546.2	1,361.3	433.5	1,290.5	0.43	0.12	30.48	
5,900.0	0.92	221.68	5,631.2	1,360.2	432.6	1,289.5	0.16	0.11	-7.71	
5,986.0	1.36	230.17	5,717.2	1,358.6	431.4	1,288.3	0.55	0.51	9.87	
6,071.0	1.54	235.66	5,802.2	1,356.6	430.1	1,286.6	0.27	0.21	6.46	
6,157.0	0.31	221.42	5,888.2	1,355.3	429.3	1,285.5	1.44	-1.43	-16.56	
6,242.0	1.36	89.19	5,973.1	1,356.0	429.1	1,286.3	1.86	1.24	-155.56	
6,328.0	0.97	101.62	6,059.1	1,357.6	429.0	1,288.1	0.54	-0.45	14.45	
6,413.0	0.92	108.88	6,144.1	1,358.8	428.6	1,289.4	0.15	-0.06	8.54	
6,474.0	0.83	106.02	6,205.1	1,359.5	428.3	1,290.3	0.16	-0.15	-4.69	
Last PZD Survey										

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6,534.0	0.83	106.02	6,265.1	1,360.3	428.1	1,291.1	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)	
1,750.0	1,675.3	126.0	377.7	Last PZD Surface Survey
6,474.0	6,205.1	428.3	1,290.3	Last PZD Survey
6,534.0	6,265.1	428.1	1,291.1	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

