



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 42C-13-07-96

Wellbore #1

Design: Actual

End of Well Report

14 August, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 42C-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 42C-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 42C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 42C-13-07-96	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		BMC B			
Site Position:		Northing:		1,594,816.34 usft	
From:	Lat/Long	Easting:		2,280,886.96 usft	
Position Uncertainty:		Slot Radius:		13-3/16 "	
				Latitude: 39.438867241	
				Longitude: -108.046501442	
				Grid Convergence: -1.61 °	

Well		BMC B 42C-13-07-96, SHL: Lat 39.438862628 Long -108.046713696				
Well Position	+N/-S	0.0 usft	Northing:	1,594,816.34 usft	Latitude:	39.438862628
	+E/-W	0.0 usft	Easting:	2,280,826.99 usft	Longitude:	-108.046713696
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,117.0 usft	Ground Level:	5,100.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/14/2017	9.70	65.53	51,481

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	268.26

Survey Program		Date	8/14/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
169.0	6,185.0	Surface (Wellbore #1)	MWD	MWD - Standard	

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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	
169.0	1.45	182.13	169.0	0.1	-2.1	-0.1	0.86	0.86	0.00	
200.0	2.15	202.78	200.0	0.4	-3.1	-0.3	3.04	2.26	66.61	
229.0	2.81	202.08	228.9	0.9	-4.2	-0.8	2.28	2.28	-2.41	
260.0	3.16	224.53	259.9	1.8	-5.5	-1.7	3.91	1.13	72.42	
290.0	3.56	239.21	289.8	3.3	-6.6	-3.1	3.15	1.33	48.93	
320.0	4.06	249.85	319.8	5.1	-7.4	-4.9	2.88	1.67	35.47	
351.0	4.83	261.45	350.7	7.4	-8.0	-7.2	3.81	2.48	37.42	
380.0	5.41	268.00	379.6	10.0	-8.2	-9.8	2.84	2.00	22.59	
411.0	5.84	268.04	410.4	13.0	-8.4	-12.8	1.39	1.39	0.13	
440.0	6.15	269.45	439.3	16.1	-8.4	-15.8	1.18	1.07	4.86	
471.0	6.68	271.25	470.1	19.5	-8.4	-19.3	1.83	1.71	5.81	
501.0	7.16	270.15	499.9	23.1	-8.4	-22.9	1.66	1.60	-3.67	
531.0	7.78	270.81	529.6	27.0	-8.3	-26.8	2.09	2.07	2.20	
562.0	8.22	267.73	560.3	31.3	-8.4	-31.1	1.98	1.42	-9.94	
592.0	8.53	267.47	590.0	35.7	-8.6	-35.5	1.04	1.03	-0.87	
623.0	8.79	267.07	620.6	40.4	-8.8	-40.1	0.86	0.84	-1.29	
654.0	9.05	267.38	651.2	45.2	-9.0	-44.9	0.85	0.84	1.00	
683.0	10.20	267.34	679.8	50.0	-9.2	-49.8	3.97	3.97	-0.14	
713.0	11.38	268.57	709.3	55.7	-9.4	-55.4	4.01	3.93	4.10	
743.0	12.61	269.80	738.7	61.9	-9.5	-61.6	4.19	4.10	4.10	
774.0	13.58	269.57	768.8	68.9	-9.6	-68.6	3.13	3.13	-0.74	
804.0	13.97	269.31	798.0	76.0	-9.6	-75.8	1.32	1.30	-0.87	
834.0	14.24	269.05	827.1	83.4	-9.7	-83.1	0.92	0.90	-0.87	
876.0	14.41	269.27	867.8	93.8	-9.9	-93.5	0.43	0.40	0.52	
918.0	15.06	268.95	908.4	104.4	-10.1	-104.2	1.56	1.55	-0.76	
961.0	16.62	269.21	949.8	116.2	-10.2	-115.9	3.63	3.63	0.60	

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Site:	BMC B	MD Reference:	BMC B 42C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 42C-13-07-96	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)	
1,003.0	17.97	269.27	989.9	128.7	-10.4	-128.4	3.21	3.21	0.14	
1,045.0	19.20	269.93	1,029.7	142.0	-10.5	-141.8	2.97	2.93	1.57	
1,087.0	20.45	269.76	1,069.2	156.3	-10.5	-156.0	2.98	2.98	-0.40	
1,129.0	21.93	268.88	1,108.3	171.4	-10.7	-171.2	3.60	3.52	-2.10	
1,171.0	23.91	268.39	1,147.0	187.8	-11.1	-187.6	4.74	4.71	-1.17	
1,213.0	25.53	268.04	1,185.2	205.4	-11.7	-205.1	3.87	3.86	-0.83	
1,256.0	25.93	267.91	1,223.9	224.0	-12.3	-223.8	0.94	0.93	-0.30	
1,298.0	25.97	267.82	1,261.7	242.4	-13.0	-242.1	0.13	0.10	-0.21	
1,340.0	25.93	267.60	1,299.4	260.8	-13.7	-260.5	0.25	-0.10	-0.52	
1,382.0	26.15	268.39	1,337.2	279.2	-14.4	-278.9	0.98	0.52	1.88	
1,424.0	26.15	268.83	1,374.9	297.7	-14.8	-297.4	0.46	0.00	1.05	
1,466.0	26.45	268.54	1,412.5	316.3	-15.3	-316.0	0.78	0.71	-0.69	
1,508.0	26.81	267.78	1,450.1	335.2	-15.9	-334.8	1.18	0.86	-1.81	
1,551.0	26.67	267.12	1,488.5	354.5	-16.7	-354.2	0.76	-0.33	-1.53	
1,593.0	26.89	266.59	1,526.0	373.4	-17.8	-373.1	0.77	0.52	-1.26	
1,635.0	26.25	266.44	1,563.5	392.2	-18.9	-391.8	1.53	-1.52	-0.36	
1,677.0	26.12	265.69	1,601.2	410.7	-20.2	-410.3	0.85	-0.31	-1.79	
1,719.0	25.05	264.52	1,639.1	428.8	-21.7	-428.4	2.82	-2.55	-2.79	
1,755.0	24.96	264.26	1,671.7	444.0	-23.2	-443.5	0.39	-0.25	-0.72	
Last PZD Surface Survey										
1,841.0	24.21	267.03	1,749.9	479.8	-25.9	-479.2	1.60	-0.87	3.22	
1,925.0	24.57	270.72	1,826.4	514.4	-26.6	-513.9	1.86	0.43	4.39	
2,011.0	25.40	274.24	1,904.4	550.6	-25.0	-550.1	1.98	0.97	4.09	
2,096.0	26.81	273.01	1,980.7	587.9	-22.7	-587.5	1.78	1.66	-1.45	
2,182.0	26.50	272.00	2,057.6	626.3	-21.0	-626.0	0.64	-0.36	-1.17	
2,270.0	25.97	271.29	2,136.5	665.2	-19.9	-664.9	0.70	-0.60	-0.81	
2,354.0	25.22	269.62	2,212.3	701.4	-19.6	-701.2	1.24	-0.89	-1.99	

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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)
2,439.0	25.80	271.38	2,289.0	738.0	-19.2	-737.8	1.12	0.68	2.07
2,523.0	25.31	270.77	2,364.8	774.2	-18.6	-774.0	0.66	-0.58	-0.73
2,607.0	26.72	269.75	2,440.3	811.0	-18.4	-810.8	1.76	1.68	-1.21
2,696.0	26.24	268.79	2,519.9	850.7	-18.9	-850.5	0.72	-0.54	-1.08
2,780.0	26.02	267.82	2,595.3	887.7	-20.0	-887.5	0.57	-0.26	-1.15
2,866.0	24.96	268.39	2,673.0	924.7	-21.2	-924.5	1.27	-1.23	0.66
2,953.0	24.68	269.98	2,751.9	961.2	-21.7	-961.0	0.83	-0.32	1.83
3,037.0	23.95	268.83	2,828.5	995.8	-22.1	-995.6	1.04	-0.87	-1.37
3,121.0	23.64	268.17	2,905.3	1,029.7	-23.0	-1,029.5	0.49	-0.37	-0.79
3,206.0	22.68	267.12	2,983.5	1,063.1	-24.4	-1,062.9	1.23	-1.13	-1.24
3,290.0	22.06	266.06	3,061.2	1,095.1	-26.3	-1,094.8	0.88	-0.74	-1.26
3,374.0	20.52	270.33	3,139.4	1,125.5	-27.3	-1,125.2	2.60	-1.83	5.08
3,458.0	19.56	268.70	3,218.4	1,154.3	-27.5	-1,154.0	1.32	-1.14	-1.94
3,543.0	16.44	267.73	3,299.2	1,180.6	-28.3	-1,180.3	3.69	-3.67	-1.14
3,627.0	13.75	270.50	3,380.3	1,202.4	-28.7	-1,202.1	3.31	-3.20	3.30
3,714.0	10.94	266.68	3,465.3	1,221.0	-29.1	-1,220.7	3.36	-3.23	-4.39
3,798.0	8.13	272.79	3,548.1	1,234.9	-29.2	-1,234.6	3.55	-3.35	7.27
3,882.0	4.97	276.30	3,631.5	1,244.4	-28.5	-1,244.2	3.79	-3.76	4.18
3,966.0	2.02	288.96	3,715.4	1,249.4	-27.7	-1,249.2	3.61	-3.51	15.07
4,051.7	1.83	106.95	3,801.0	1,249.6	-27.6	-1,249.3	4.49	-0.22	207.76
42C-13-07-96 TGT									
4,053.0	1.89	106.98	3,802.4	1,249.5	-27.6	-1,249.3	4.49	4.49	2.51
4,137.0	2.81	114.94	3,886.3	1,246.4	-28.9	-1,246.1	1.16	1.10	9.48
4,222.0	2.42	119.86	3,971.2	1,243.0	-30.6	-1,242.6	0.53	-0.46	5.79
4,306.0	2.15	119.81	4,055.1	1,240.1	-32.3	-1,239.7	0.32	-0.32	-0.06
4,390.0	1.85	125.44	4,139.1	1,237.7	-33.9	-1,237.2	0.43	-0.36	6.70
4,474.0	1.67	135.50	4,223.0	1,235.8	-35.5	-1,235.3	0.42	-0.21	11.98

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4,561.0	0.66	21.46	4,310.0	1,234.7	-36.0	-1,234.2	2.33	-1.16	-131.08	
4,646.0	3.34	349.65	4,395.0	1,234.9	-33.1	-1,234.5	3.30	3.15	-37.42	
4,732.0	2.81	339.54	4,480.8	1,236.0	-28.6	-1,235.7	0.88	-0.62	-11.76	
4,816.0	2.64	326.44	4,564.7	1,237.6	-25.1	-1,237.4	0.77	-0.20	-15.60	
4,900.0	2.68	314.14	4,648.7	1,240.0	-22.1	-1,239.9	0.68	0.05	-14.64	
4,985.0	2.99	302.14	4,733.6	1,243.2	-19.5	-1,243.2	0.79	0.36	-14.12	
5,069.0	3.16	296.12	4,817.4	1,247.1	-17.4	-1,247.2	0.43	0.20	-7.17	
5,153.0	3.21	295.73	4,901.3	1,251.2	-15.3	-1,251.4	0.06	0.06	-0.46	
5,238.0	1.98	294.63	4,986.2	1,254.7	-13.7	-1,254.8	1.45	-1.45	-1.29	
5,322.0	1.71	223.52	5,070.2	1,256.9	-14.0	-1,257.0	2.57	-0.32	-84.65	
5,406.0	2.20	214.52	5,154.1	1,258.7	-16.2	-1,258.8	0.69	0.58	-10.71	
5,491.0	2.46	214.78	5,239.1	1,260.8	-19.1	-1,260.8	0.31	0.31	0.31	
5,575.0	2.42	233.81	5,323.0	1,263.3	-21.6	-1,263.2	0.96	-0.05	22.65	
5,662.0	2.36	234.89	5,409.9	1,266.3	-23.7	-1,266.2	0.09	-0.07	1.24	
5,746.0	2.64	236.36	5,493.8	1,269.4	-25.8	-1,269.2	0.34	0.33	1.75	
5,832.0	2.86	230.25	5,579.7	1,272.8	-28.2	-1,272.5	0.43	0.26	-7.10	
5,920.0	2.72	231.17	5,667.6	1,276.2	-30.9	-1,275.8	0.17	-0.16	1.05	
6,005.0	3.03	233.46	5,752.5	1,279.6	-33.5	-1,279.2	0.39	0.36	2.69	
6,089.0	2.99	235.30	5,836.4	1,283.3	-36.1	-1,282.8	0.12	-0.05	2.19	
6,130.0	2.94	234.42	5,877.3	1,285.0	-37.3	-1,284.5	0.16	-0.12	-2.15	
Last PZD Survey										
6,185.0	2.94	234.42	5,932.3	1,287.4	-39.0	-1,286.8	0.00	0.00	0.00	
Straightline Projection to TD										

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Well:	BMC B 42C-13-07-96	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,755.0	1,671.7	-23.2	-443.5	Last PZD Surface Survey
6,130.0	5,877.3	-37.3	-1,284.5	Last PZD Survey
6,185.0	5,932.3	-39.0	-1,286.8	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

