



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 13C-18-07-95

Wellbore #1

Design: Actual

End of Well Report

23 June, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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		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 13C-18-07-95, SHL: Lat 39.438805138 Long -108.046516899				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.85 usft	Latitude:	39.438805138
	+E/-W	0.0 usft	Easting:	2,280,881.96 usft	Longitude:	-108.046516899
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	6/23/2017	9.71	65.53	51,497

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	183.92

Survey Program		Date	6/23/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
143.0	6,250.0	Actual (Wellbore #1)	MWD	MWD - Standard	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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	
143.0	0.31	339.89	143.0	-0.4	0.4	-0.1	0.22	0.22	0.00	
173.0	0.15	78.33	173.0	-0.4	0.4	-0.1	1.21	-0.53	328.13	
204.0	0.13	293.57	204.0	-0.5	0.5	-0.1	0.86	-0.06	-466.97	
233.0	0.26	17.90	233.0	-0.5	0.5	-0.1	0.96	0.45	290.79	
264.0	0.26	307.77	264.0	-0.6	0.7	-0.2	0.96	0.00	-226.23	
294.0	0.18	50.29	294.0	-0.7	0.7	-0.2	1.16	-0.27	341.73	
325.0	0.22	0.94	325.0	-0.8	0.8	-0.1	0.55	0.13	-159.19	
355.0	0.22	315.11	355.0	-0.9	0.9	-0.2	0.57	0.00	-152.77	
386.0	0.13	98.68	386.0	-0.9	1.0	-0.2	1.08	-0.29	463.13	
416.0	0.22	37.94	416.0	-1.0	1.0	-0.1	0.64	0.30	-202.47	
447.0	0.40	196.23	447.0	-0.9	0.9	-0.1	1.97	0.58	510.61	
477.0	0.75	206.03	477.0	-0.6	0.7	-0.2	1.21	1.17	32.67	
508.0	1.23	185.12	508.0	-0.1	0.1	-0.3	1.91	1.55	-67.45	
538.0	2.02	187.23	538.0	0.7	-0.7	-0.4	2.64	2.63	7.03	
569.0	2.81	184.37	569.0	2.0	-2.0	-0.6	2.58	2.55	-9.23	
599.0	3.61	188.04	598.9	3.7	-3.7	-0.8	2.75	2.67	12.23	
630.0	4.70	180.19	629.8	6.0	-5.9	-0.9	3.96	3.52	-25.32	
660.0	5.71	181.69	659.7	8.7	-8.6	-0.9	3.40	3.37	5.00	
691.0	6.86	180.41	690.5	12.1	-12.0	-1.0	3.74	3.71	-4.13	
721.0	8.14	182.63	720.3	16.0	-15.9	-1.1	4.37	4.27	7.40	
752.0	8.86	181.16	750.9	20.5	-20.5	-1.3	2.43	2.32	-4.74	
796.0	10.50	182.57	794.3	27.9	-27.9	-1.5	3.77	3.73	3.20	
840.0	11.82	184.41	837.5	36.5	-36.4	-2.0	3.11	3.00	4.18	
884.0	13.54	184.02	880.4	46.1	-46.0	-2.7	3.91	3.91	-0.89	
928.0	15.03	186.65	923.0	57.0	-56.8	-3.8	3.69	3.39	5.98	
972.0	16.88	185.95	965.3	69.0	-68.9	-5.1	4.23	4.20	-1.59	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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)	
1,014.0	17.89	183.23	1,005.4	81.6	-81.4	-6.1	3.09	2.40	-6.48	
1,059.0	19.38	178.96	1,048.0	95.9	-95.7	-6.3	4.49	3.31	-9.49	
1,101.0	20.91	181.99	1,087.5	110.4	-110.2	-6.5	4.41	3.64	7.21	
1,145.0	22.37	184.02	1,128.4	126.6	-126.4	-7.3	3.73	3.32	4.61	
1,189.0	23.95	183.53	1,168.8	143.9	-143.7	-8.5	3.62	3.59	-1.11	
1,233.0	24.21	181.86	1,209.0	161.9	-161.6	-9.3	1.66	0.59	-3.80	
1,275.0	24.04	181.51	1,247.3	179.0	-178.8	-9.8	0.53	-0.40	-0.83	
1,317.0	24.04	181.56	1,285.7	196.1	-195.9	-10.3	0.05	0.00	0.12	
1,359.0	24.21	182.57	1,324.0	213.3	-213.0	-10.9	1.06	0.40	2.40	
1,402.0	24.59	183.19	1,363.2	231.0	-230.8	-11.8	1.07	0.88	1.44	
1,444.0	25.20	184.59	1,401.3	248.7	-248.4	-13.0	2.02	1.45	3.33	
1,488.0	25.14	184.15	1,441.1	267.4	-267.0	-14.4	0.45	-0.14	-1.00	
1,530.0	25.09	182.74	1,479.1	285.2	-284.8	-15.5	1.43	-0.12	-3.36	
1,574.0	25.62	182.17	1,518.9	304.1	-303.7	-16.3	1.33	1.20	-1.30	
1,618.0	25.40	183.89	1,558.6	323.0	-322.6	-17.3	1.76	-0.50	3.91	
1,660.0	24.79	187.14	1,596.6	340.8	-340.3	-19.0	3.59	-1.45	7.74	
1,705.0	24.30	188.19	1,637.6	359.5	-358.8	-21.5	1.46	-1.09	2.33	
1,747.0	24.30	188.19	1,675.8	376.7	-375.9	-24.0	0.00	0.00	0.00	
Last PZD Surface Survey										
1,826.0	24.21	187.18	1,747.9	409.1	-408.1	-28.3	0.54	-0.11	-1.28	
1,910.0	22.46	183.45	1,825.0	442.3	-441.2	-31.4	2.73	-2.08	-4.44	
1,994.0	24.13	182.35	1,902.2	475.5	-474.4	-33.1	2.05	1.99	-1.31	
2,079.0	25.75	183.23	1,979.2	511.4	-510.2	-34.8	1.96	1.91	1.04	
2,163.0	26.54	181.20	2,054.6	548.4	-547.2	-36.3	1.42	0.94	-2.42	
2,247.0	26.02	181.20	2,130.0	585.5	-584.4	-37.0	0.62	-0.62	0.00	
2,332.0	26.15	182.35	2,206.3	622.9	-621.7	-38.2	0.61	0.15	1.35	
2,416.0	26.24	185.38	2,281.7	659.9	-658.7	-40.7	1.60	0.11	3.61	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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)	
2,502.0	25.93	185.42	2,358.9	697.7	-696.3	-44.2	0.36	-0.36	0.05	
2,588.0	25.40	184.32	2,436.4	735.0	-733.4	-47.4	0.83	-0.62	-1.28	
2,673.0	25.22	182.30	2,513.3	771.3	-769.7	-49.5	1.04	-0.21	-2.38	
2,757.0	24.79	183.31	2,589.4	806.8	-805.2	-51.3	0.72	-0.51	1.20	
2,841.0	25.54	181.84	2,665.4	842.5	-840.9	-52.8	1.16	0.89	-1.75	
2,926.0	25.09	183.49	2,742.3	878.8	-877.2	-54.5	0.98	-0.53	1.94	
3,010.0	23.95	181.12	2,818.7	913.7	-912.0	-56.0	1.79	-1.36	-2.82	
3,094.0	23.32	182.07	2,895.6	947.3	-945.7	-56.9	0.88	-0.75	1.13	
3,179.0	22.24	181.42	2,974.0	980.2	-978.5	-57.9	1.30	-1.27	-0.76	
3,265.0	21.75	180.03	3,053.7	1,012.4	-1,010.8	-58.3	0.83	-0.57	-1.62	
3,349.0	20.70	180.94	3,132.0	1,042.7	-1,041.2	-58.6	1.31	-1.25	1.08	
3,433.0	19.95	180.51	3,210.8	1,071.9	-1,070.3	-58.9	0.91	-0.89	-0.51	
3,518.0	16.74	183.36	3,291.5	1,098.6	-1,097.1	-59.8	3.92	-3.78	3.35	
3,602.0	14.02	185.07	3,372.5	1,120.9	-1,119.3	-61.4	3.28	-3.24	2.04	
3,687.0	10.85	181.29	3,455.5	1,139.1	-1,137.5	-62.5	3.85	-3.73	-4.45	
3,772.0	8.17	185.56	3,539.3	1,153.2	-1,151.6	-63.2	3.26	-3.15	5.02	
3,857.0	5.14	196.23	3,623.7	1,162.9	-1,161.2	-64.9	3.84	-3.56	12.55	
3,942.0	1.58	179.01	3,708.6	1,167.8	-1,166.0	-65.9	4.31	-4.19	-20.26	
4,011.4	1.08	124.28	3,778.0	1,169.1	-1,167.4	-65.4	1.87	-0.71	-78.82	
13C-18-07-95 TGT										
4,027.0	1.16	109.85	3,793.5	1,169.2	-1,167.5	-65.1	1.87	0.48	-92.74	
4,112.0	1.27	103.86	3,878.5	1,169.6	-1,168.0	-63.4	0.20	0.13	-7.05	
4,199.0	1.27	111.55	3,965.5	1,170.1	-1,168.6	-61.5	0.20	0.00	8.84	
4,287.0	1.21	141.83	4,053.5	1,171.1	-1,169.7	-60.1	0.74	-0.07	34.41	
4,375.0	1.10	149.43	4,141.5	1,172.5	-1,171.2	-59.1	0.21	-0.12	8.64	
4,464.0	1.12	154.06	4,230.4	1,173.9	-1,172.7	-58.2	0.10	0.02	5.20	
4,551.0	0.92	185.69	4,317.4	1,175.4	-1,174.1	-57.9	0.68	-0.23	36.36	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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)	
4,638.0	1.27	189.20	4,404.4	1,177.0	-1,175.8	-58.2	0.41	0.40	4.03	
4,726.0	1.14	33.86	4,492.4	1,177.2	-1,176.0	-57.8	2.68	-0.15	-176.52	
4,813.0	1.45	17.38	4,579.4	1,175.4	-1,174.3	-57.0	0.55	0.36	-18.94	
4,900.0	0.62	6.83	4,666.4	1,173.9	-1,172.7	-56.6	0.97	-0.95	-12.13	
4,988.0	0.48	264.66	4,754.4	1,173.4	-1,172.3	-56.9	0.98	-0.16	-116.10	
5,072.0	0.44	227.65	4,838.4	1,173.7	-1,172.5	-57.5	0.35	-0.05	-44.06	
5,157.0	0.35	244.40	4,923.4	1,174.1	-1,172.9	-58.0	0.17	-0.11	19.71	
5,241.0	0.75	258.94	5,007.4	1,174.4	-1,173.1	-58.8	0.50	0.48	17.31	
5,325.0	1.45	244.71	5,091.3	1,175.0	-1,173.7	-60.3	0.89	0.83	-16.94	
5,410.0	2.02	257.63	5,176.3	1,176.0	-1,174.4	-62.7	0.81	0.67	15.20	
5,498.0	1.14	7.71	5,264.3	1,175.5	-1,173.9	-64.1	3.00	-1.00	125.09	
5,582.0	1.10	352.06	5,348.3	1,173.9	-1,172.3	-64.1	0.37	-0.05	-18.63	
5,666.0	0.70	298.01	5,432.3	1,172.9	-1,171.2	-64.7	1.06	-0.48	-64.35	
5,753.0	1.21	284.49	5,519.2	1,172.5	-1,170.8	-66.0	0.64	0.59	-15.54	
5,837.0	1.36	271.51	5,603.2	1,172.4	-1,170.5	-67.9	0.39	0.18	-15.45	
5,921.0	1.71	268.30	5,687.2	1,172.6	-1,170.5	-70.1	0.43	0.42	-3.82	
6,006.0	2.64	252.26	5,772.1	1,173.4	-1,171.2	-73.3	1.30	1.09	-18.87	
6,092.0	2.99	242.51	5,858.0	1,175.3	-1,172.8	-77.2	0.69	0.41	-11.34	
6,178.0	3.23	244.56	5,943.9	1,177.7	-1,174.9	-81.3	0.31	0.28	2.38	
Last PZD Survey										
6,250.0	3.23	244.56	6,015.8	1,179.7	-1,176.6	-85.0	0.00	0.00	0.00	
Straightline Projection to TD										

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13C-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13C-18-07-95	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			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,747.0	1,675.8	-375.9	-24.0	Last PZD Surface Survey	
6,178.0	5,943.9	-1,174.9	-81.3	Last PZD Survey	
6,250.0	6,015.8	-1,176.6	-85.0	Straightline Projection to TD	

Checked By: _____ Approved By: _____ Date: _____

