



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 32C-13-07-96

Wellbore #1

Design: Actual

End of Well Report

13 August, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 32C-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 32C-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 32C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 32C-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 32C-13-07-96, SHL: Lat 39.438861859 Long -108.046749072				
Well Position	+N/-S	0.0 usft	Northing:	1,594,816.34 usft	Latitude:	39.438861859
	+E/-W	0.0 usft	Easting:	2,280,816.99 usft	Longitude:	-108.046749072
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	273.47

Survey Program		Date	8/13/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
113.0	6,875.0	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	
113.0	0.56	213.08	113.0	0.3	-0.5	-0.3	0.50	0.50	0.00	
143.0	0.70	213.81	143.0	0.4	-0.7	-0.5	0.47	0.47	2.43	
173.0	0.79	214.21	173.0	0.6	-1.1	-0.7	0.30	0.30	1.33	
204.0	0.48	232.27	204.0	0.8	-1.3	-0.9	1.18	-1.00	58.26	
233.0	0.69	269.91	233.0	1.1	-1.4	-1.2	1.47	0.72	129.79	
264.0	0.88	279.42	264.0	1.5	-1.4	-1.6	0.74	0.61	30.68	
294.0	1.54	271.03	294.0	2.2	-1.3	-2.2	2.27	2.20	-27.97	
324.0	2.20	273.05	324.0	3.1	-1.3	-3.2	2.21	2.20	6.73	
355.0	2.99	285.53	354.9	4.5	-1.0	-4.6	3.12	2.55	40.26	
385.0	3.74	268.74	384.9	6.3	-0.8	-6.3	4.10	2.50	-55.97	
415.0	4.57	272.22	414.8	8.4	-0.8	-8.5	2.89	2.77	11.60	
445.0	5.58	266.59	444.7	11.1	-0.8	-11.2	3.75	3.37	-18.77	
475.0	6.46	281.14	474.5	14.2	-0.6	-14.3	5.85	2.93	48.50	
505.0	7.56	269.40	504.3	17.8	-0.3	-17.9	6.00	3.67	-39.13	
536.0	8.48	278.72	535.0	22.2	0.0	-22.2	5.13	2.97	30.06	
566.0	9.50	278.40	564.6	26.8	0.7	-26.8	3.40	3.40	-1.07	
596.0	10.42	277.23	594.2	32.0	1.4	-32.0	3.14	3.07	-3.90	
627.0	11.43	275.42	624.6	37.9	2.1	-37.8	3.44	3.26	-5.84	
658.0	12.30	278.68	654.9	44.2	2.9	-44.1	3.54	2.81	10.52	
687.0	13.27	276.13	683.2	50.6	3.7	-50.5	3.87	3.34	-8.79	
718.0	14.06	272.79	713.4	57.9	4.2	-57.8	3.60	2.55	-10.77	
747.0	14.90	274.94	741.4	65.2	4.7	-65.0	3.44	2.90	7.41	
778.0	15.91	273.62	771.3	73.4	5.3	-73.2	3.45	3.26	-4.26	
808.0	16.83	273.67	800.1	81.9	5.9	-81.7	3.07	3.07	0.17	
838.0	18.02	272.83	828.7	90.9	6.4	-90.6	4.05	3.97	-2.80	
881.0	19.64	271.34	869.4	104.7	6.9	-104.5	3.93	3.77	-3.47	

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Site:	BMC B	MD Reference:	BMC B 32C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 32C-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)
923.0	21.40	271.38	908.8	119.4	7.2	-119.2	4.19	4.19	0.10
965.0	22.72	272.30	947.7	135.2	7.7	-135.0	3.25	3.14	2.19
1,007.0	24.13	271.91	986.2	151.9	8.4	-151.7	3.38	3.36	-0.93
1,049.0	25.40	271.86	1,024.4	169.5	8.9	-169.3	3.02	3.02	-0.12
1,091.0	26.76	272.00	1,062.1	188.0	9.6	-187.7	3.24	3.24	0.33
1,133.0	28.17	273.45	1,099.3	207.3	10.5	-207.1	3.72	3.36	3.45
1,176.0	29.79	274.11	1,137.0	228.2	11.9	-227.9	3.84	3.77	1.53
1,218.0	31.68	274.32	1,173.1	249.6	13.4	-249.3	4.51	4.50	0.50
1,260.0	33.40	273.75	1,208.5	272.2	15.0	-271.8	4.16	4.10	-1.36
1,302.0	34.94	273.71	1,243.2	295.8	16.6	-295.3	3.67	3.67	-0.10
1,344.0	36.43	273.53	1,277.3	320.3	18.1	-319.8	3.56	3.55	-0.43
1,386.0	38.10	273.49	1,310.7	345.7	19.7	-345.2	3.98	3.98	-0.10
1,428.0	39.86	273.31	1,343.4	372.1	21.2	-371.5	4.20	4.19	-0.43
1,470.0	41.66	273.23	1,375.2	399.6	22.8	-398.9	4.29	4.29	-0.19
1,513.0	43.11	273.05	1,407.0	428.5	24.4	-427.9	3.38	3.37	-0.42
1,555.0	43.68	272.83	1,437.5	457.4	25.9	-456.7	1.40	1.36	-0.52
1,597.0	43.59	272.61	1,467.9	486.4	27.2	-485.6	0.42	-0.21	-0.52
1,639.0	43.95	271.95	1,498.2	515.4	28.4	-514.7	1.38	0.86	-1.57
1,681.0	44.87	272.23	1,528.2	544.8	29.5	-544.0	2.24	2.19	0.67
1,723.0	45.21	272.38	1,557.9	574.5	30.7	-573.7	0.85	0.81	0.36
1,765.0	45.82	273.05	1,587.3	604.5	32.1	-603.6	1.85	1.45	1.60
1,808.0	45.66	273.20	1,617.3	635.3	33.8	-634.4	0.45	-0.37	0.35
1,850.0	45.40	272.79	1,646.8	665.2	35.3	-664.3	0.93	-0.62	-0.98
1,880.0	45.30	272.70	1,667.8	686.6	36.3	-685.6	0.40	-0.33	-0.30
Last PZD Surface Survey									
1,965.0	45.18	272.35	1,727.7	746.9	39.0	-745.9	0.32	-0.14	-0.41
2,051.0	45.38	272.75	1,788.2	808.0	41.7	-807.0	0.40	0.23	0.47

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Design:	Actual	Database:	EDM 5000.1 Single User Db

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2,135.0	44.56	273.93	1,847.6	867.4	45.2	-866.3	1.39	-0.98	1.40	
2,220.0	45.35	273.67	1,907.8	927.5	49.2	-926.2	0.95	0.93	-0.31	
2,304.0	45.00	273.84	1,967.0	987.0	53.1	-985.6	0.44	-0.42	0.20	
2,390.0	45.57	274.02	2,027.5	1,048.1	57.2	-1,046.6	0.68	0.66	0.21	
2,475.0	44.98	273.56	2,087.3	1,108.5	61.2	-1,106.9	0.79	-0.69	-0.54	
2,559.0	44.69	272.39	2,146.9	1,167.8	64.3	-1,166.0	1.04	-0.35	-1.39	
2,645.0	44.82	273.18	2,208.0	1,228.3	67.3	-1,226.5	0.66	0.15	0.92	
2,733.0	45.48	272.96	2,270.0	1,290.7	70.6	-1,288.8	0.77	0.75	-0.25	
2,818.0	45.04	272.83	2,329.9	1,351.1	73.6	-1,349.1	0.53	-0.52	-0.15	
2,902.0	44.60	271.34	2,389.4	1,410.2	75.8	-1,408.2	1.36	-0.52	-1.77	
2,988.0	44.96	273.18	2,450.5	1,470.8	78.2	-1,468.8	1.56	0.42	2.14	
3,073.0	44.96	274.28	2,510.6	1,530.9	82.1	-1,528.7	0.91	0.00	1.29	
3,157.0	44.38	273.62	2,570.4	1,589.9	86.2	-1,587.6	0.88	-0.69	-0.79	
3,241.0	45.40	274.46	2,629.9	1,649.2	90.4	-1,646.7	1.40	1.21	1.00	
3,326.0	44.34	272.22	2,690.1	1,709.2	93.9	-1,706.6	2.24	-1.25	-2.64	
3,410.0	43.77	273.93	2,750.5	1,767.6	97.0	-1,764.9	1.57	-0.68	2.04	
3,494.0	42.67	273.24	2,811.7	1,825.1	100.6	-1,822.3	1.43	-1.31	-0.82	
3,580.0	41.28	272.34	2,875.6	1,882.6	103.4	-1,879.8	1.76	-1.62	-1.05	
3,665.0	39.85	270.40	2,940.2	1,937.8	104.7	-1,935.0	2.24	-1.68	-2.28	
3,749.0	38.01	273.18	3,005.6	1,990.6	106.3	-1,987.8	3.02	-2.19	3.31	
3,834.0	36.96	272.44	3,073.0	2,042.3	108.9	-2,039.4	1.34	-1.24	-0.87	
3,918.0	36.61	274.46	3,140.3	2,092.6	111.9	-2,089.6	1.50	-0.42	2.40	
4,002.0	36.21	274.41	3,207.9	2,142.4	115.8	-2,139.4	0.48	-0.48	-0.06	
4,087.0	34.85	273.71	3,277.1	2,191.8	119.3	-2,188.6	1.67	-1.60	-0.82	
4,171.0	33.62	275.07	3,346.5	2,239.1	122.9	-2,235.7	1.72	-1.46	1.62	
4,255.0	32.78	274.85	3,416.8	2,285.1	126.9	-2,281.6	1.01	-1.00	-0.26	
4,340.0	31.42	273.49	3,488.8	2,330.2	130.1	-2,326.6	1.81	-1.60	-1.60	

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4,426.0	28.96	272.39	3,563.1	2,373.5	132.4	-2,369.8	2.93	-2.86	-1.28	
4,511.0	27.73	273.58	3,637.9	2,413.8	134.5	-2,410.1	1.59	-1.45	1.40	
4,599.0	24.79	273.97	3,716.8	2,452.7	137.0	-2,448.9	3.35	-3.34	0.44	
4,683.0	22.50	275.38	3,793.8	2,486.4	139.8	-2,482.5	2.81	-2.73	1.68	
4,707.1	21.77	275.13	3,816.1	2,495.5	140.6	-2,491.5	3.07	-3.05	-1.05	
32C-13-07-96 TGT										
4,771.0	19.82	274.37	3,875.9	2,518.2	142.5	-2,514.2	3.07	-3.04	-1.18	
4,855.0	17.01	274.90	3,955.5	2,544.7	144.6	-2,540.6	3.35	-3.35	0.63	
4,941.0	13.18	272.22	4,038.6	2,567.1	146.1	-2,562.9	4.53	-4.45	-3.12	
5,028.0	9.71	268.52	4,123.8	2,584.3	146.3	-2,580.2	4.07	-3.99	-4.25	
5,112.0	7.43	273.01	4,206.9	2,596.8	146.4	-2,592.7	2.83	-2.71	5.35	
5,196.0	4.57	283.03	4,290.4	2,605.5	147.4	-2,601.4	3.61	-3.40	11.93	
5,226.4	3.63	290.69	4,320.7	2,607.6	148.0	-2,603.5	3.58	-3.10	25.22	
32C-13-07-96										
5,281.0	2.29	319.24	4,375.3	2,610.1	149.5	-2,605.8	3.58	-2.45	52.27	
5,365.0	1.54	325.61	4,459.2	2,611.9	151.7	-2,607.5	0.93	-0.89	7.58	
5,449.0	1.49	309.52	4,543.2	2,613.5	153.3	-2,609.0	0.51	-0.06	-19.15	
5,536.0	1.76	287.86	4,630.1	2,615.7	154.4	-2,611.2	0.77	0.31	-24.90	
5,622.0	1.89	282.50	4,716.1	2,618.4	155.1	-2,613.8	0.25	0.15	-6.23	
5,710.0	0.35	142.36	4,804.1	2,619.6	155.2	-2,615.0	2.47	-1.75	-159.25	
5,795.0	0.90	155.81	4,889.1	2,619.2	154.4	-2,614.6	0.67	0.65	15.82	
5,879.0	1.30	210.93	4,973.1	2,619.3	153.0	-2,614.8	1.28	0.48	65.62	
5,963.0	1.41	226.60	5,057.0	2,620.4	151.5	-2,616.1	0.46	0.13	18.65	
6,050.0	2.02	223.57	5,144.0	2,622.2	149.6	-2,617.9	0.71	0.70	-3.48	
6,134.0	1.98	220.40	5,228.0	2,624.0	147.4	-2,619.9	0.14	-0.05	-3.77	
6,218.0	0.92	246.60	5,311.9	2,625.5	146.1	-2,621.4	1.46	-1.26	31.19	
6,302.0	1.32	57.72	5,395.9	2,625.3	146.3	-2,621.2	2.66	0.48	203.71	

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6,389.0	0.18	160.99	5,482.9	2,624.4	146.7	-2,620.3	1.58	-1.31	118.70
6,473.0	1.76	356.55	5,566.9	2,624.5	147.9	-2,620.4	2.30	1.88	-195.76
6,562.0	2.33	9.91	5,655.8	2,624.5	151.0	-2,620.1	0.83	0.64	15.01
6,646.0	1.58	2.35	5,739.8	2,624.3	153.9	-2,619.8	0.94	-0.89	-9.00
6,731.0	1.36	323.72	5,824.8	2,625.0	155.9	-2,620.3	1.17	-0.26	-45.45
6,815.0	1.54	325.35	5,908.7	2,626.3	157.6	-2,621.6	0.22	0.21	1.94
Last PZD Survey									
6,875.0	1.54	325.35	5,968.7	2,627.3	158.9	-2,622.5	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)		
1,880.0	1,667.8	36.3	-685.6	Last PZD Surface Survey	
6,815.0	5,908.7	157.6	-2,621.6	Last PZD Survey	
6,875.0	5,968.7	158.9	-2,622.5	Straightline Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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