



Ursa Operating Company, LLC

Rockies Region

BMC D

BMC D 31A-18-07-95

Wellbore #1

Design: Actual

End of Well Report

08 November, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC D 31A-18-07-95
Project:	Rockies Region	TVD Reference:	BMC D 31A-18-07-95 @ 5285.0usft (Plan KB)
Site:	BMC D	MD Reference:	BMC D 31A-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 31A-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 D			
Site Position:		Northing:		Latitude:	
From:	Lat/Long	Easting:		Longitude:	
Position Uncertainty:	0.0 usft	Slot Radius:		Grid Convergence:	
		1,595,755.80 usft		39.441572650	
		2,282,541.08 usft		-108.040739971	
		13-3/16 "		-1.60 °	

Well		BMC D 31A-18-07-95, SHL 39.441474212 -108.040910187				
Well Position	+N-S	0.0 usft	Northing:	1,595,721.31 usft	Latitude:	39.441474212
	+E-W	0.0 usft	Easting:	2,282,492.03 usft	Longitude:	-108.040910187
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	5,268.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/8/2017	9.67	65.53	51,456

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	38.27

Survey Program		Date	11/8/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
137.0	6,710.0	Actual (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	
137.0	2.15	313.36	137.0	0.2	1.8	-1.9	1.57	1.57	0.00	
166.0	2.29	303.21	165.9	0.2	2.5	-2.7	1.44	0.48	-35.00	
196.0	2.37	306.55	195.9	0.2	3.2	-3.7	0.53	0.27	11.13	
225.0	2.52	320.34	224.9	0.3	4.0	-4.6	2.09	0.52	47.55	
256.0	2.50	330.81	255.9	0.7	5.1	-5.4	1.48	-0.06	33.77	
285.0	2.68	349.31	284.8	1.4	6.3	-5.8	2.93	0.62	63.79	
315.0	2.99	357.44	314.8	2.4	7.8	-6.0	1.69	1.03	27.10	
345.0	3.74	6.54	344.7	3.8	9.6	-5.9	3.06	2.50	30.33	
375.0	4.13	16.42	374.7	5.7	11.6	-5.5	2.60	1.30	32.93	
405.0	4.70	22.44	404.6	7.9	13.7	-4.7	2.45	1.90	20.07	
435.0	5.14	25.61	434.5	10.3	16.1	-3.7	1.72	1.47	10.57	
465.0	5.84	31.28	464.3	13.2	18.6	-2.3	2.95	2.33	18.90	
495.0	6.51	31.79	494.2	16.4	21.4	-0.6	2.24	2.23	1.70	
524.0	7.69	34.92	522.9	19.9	24.3	1.4	4.28	4.07	10.79	
554.0	8.66	30.18	552.6	24.2	27.9	3.6	3.93	3.23	-15.80	
585.0	9.49	30.62	583.3	29.0	32.2	6.1	2.69	2.68	1.42	
615.0	10.42	33.08	612.8	34.2	36.6	8.9	3.41	3.10	8.20	
644.0	11.29	29.91	641.3	39.6	41.2	11.7	3.64	3.00	-10.93	
675.0	12.48	35.76	671.6	46.0	46.6	15.2	5.46	3.84	18.87	
705.0	13.40	32.24	700.9	52.7	52.1	18.9	4.04	3.07	-11.73	
736.0	14.81	30.31	730.9	60.1	58.6	22.8	4.79	4.55	-6.23	
766.0	16.13	30.13	759.8	68.1	65.5	26.9	4.40	4.40	-0.60	
797.0	17.23	32.20	789.5	76.9	73.1	31.5	4.03	3.55	6.68	
827.0	17.97	31.80	818.1	85.9	80.8	36.3	2.50	2.47	-1.33	
870.0	19.12	33.52	858.9	99.5	92.3	43.7	2.96	2.67	4.00	
912.0	20.43	34.97	898.4	113.7	104.1	51.7	3.33	3.12	3.45	

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Site:	BMC D	MD Reference:	BMC D 31A-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 31A-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)
956.0	21.75	38.13		939.5	129.5	116.8	61.1	3.96	3.00	7.18
998.0	22.90	40.43		978.3	145.5	129.1	71.2	3.44	2.74	5.48
1,040.0	24.08	40.81		1,016.8	162.2	141.8	82.1	2.83	2.81	0.90
1,085.0	25.36	40.68		1,057.7	181.0	156.1	94.4	2.85	2.84	-0.29
1,129.0	26.15	40.10		1,097.3	200.1	170.6	106.8	1.88	1.80	-1.32
1,173.0	26.98	39.14		1,136.7	219.8	185.8	119.3	2.12	1.89	-2.18
1,217.0	27.33	38.84		1,175.8	239.9	201.4	132.0	0.85	0.80	-0.68
1,259.0	27.51	38.26		1,213.1	259.2	216.5	144.0	0.77	0.43	-1.38
1,301.0	27.69	38.77		1,250.3	278.7	231.8	156.1	0.71	0.43	1.21
1,343.0	25.92	39.82		1,287.8	297.6	246.4	168.1	4.36	-4.21	2.50
1,385.0	25.37	38.90		1,325.7	315.8	260.5	179.6	1.62	-1.31	-2.19
1,427.0	25.40	38.57		1,363.6	333.8	274.5	190.9	0.34	0.07	-0.79
1,470.0	25.66	37.96		1,402.4	352.3	289.1	202.4	0.86	0.60	-1.42
1,512.0	25.93	38.00		1,440.3	370.6	303.5	213.6	0.64	0.64	0.10
1,554.0	25.53	39.41		1,478.1	388.8	317.7	225.0	1.74	-0.95	3.36
1,598.0	25.66	38.87		1,517.8	407.8	332.4	237.0	0.61	0.30	-1.23
1,642.0	26.02	38.40		1,557.4	427.0	347.4	249.0	0.94	0.82	-1.07
1,687.0	26.72	38.91		1,597.7	447.0	363.0	261.5	1.63	1.56	1.13
1,731.0	26.19	40.77		1,637.1	466.6	378.1	274.0	2.24	-1.20	4.23
1,757.0	26.24	41.03		1,660.4	478.0	386.8	281.6	0.48	0.19	1.00
Last Surface Survey										
1,841.0	26.37	39.85		1,735.7	515.2	415.1	305.7	0.64	0.15	-1.40
1,925.0	27.91	40.99		1,810.5	553.5	444.3	330.6	1.93	1.83	1.36
2,010.0	25.75	38.44		1,886.3	591.9	473.7	355.1	2.88	-2.54	-3.00
2,096.0	26.02	40.37		1,963.7	629.4	502.7	378.9	1.03	0.31	2.24
2,182.0	27.33	42.44		2,040.5	667.9	531.7	404.5	1.87	1.52	2.41
2,269.0	28.39	40.42		2,117.4	708.5	562.2	431.4	1.63	1.22	-2.32

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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
2,355.0	27.77	39.63	2,193.3	749.0	593.2	457.4	0.84	-0.72	-0.92	
2,442.0	27.33	39.71	2,270.5	789.2	624.1	483.1	0.51	-0.51	0.09	
2,528.0	28.83	39.93	2,346.3	829.7	655.2	509.0	1.75	1.74	0.26	
2,616.0	27.95	39.14	2,423.7	871.5	687.5	535.6	1.09	-1.00	-0.90	
2,702.0	28.61	39.49	2,499.5	912.2	719.0	561.5	0.79	0.77	0.41	
2,787.0	27.95	39.32	2,574.3	952.5	750.1	587.0	0.78	-0.78	-0.20	
2,861.0	27.55	39.58	2,639.8	987.0	776.7	608.9	0.56	-0.54	0.35	
2,955.0	26.76	38.40	2,723.5	1,029.9	810.1	635.9	1.02	-0.84	-1.26	
3,040.0	25.40	37.12	2,799.8	1,067.2	839.6	658.8	1.73	-1.60	-1.51	
3,124.0	25.25	39.05	2,875.7	1,103.1	867.9	681.0	1.00	-0.18	2.30	
3,211.0	25.40	41.03	2,954.4	1,140.3	896.4	704.9	0.99	0.17	2.28	
3,296.0	25.66	41.69	3,031.1	1,176.9	923.9	729.1	0.45	0.31	0.78	
3,381.0	26.50	39.23	3,107.4	1,214.3	952.3	753.3	1.61	0.99	-2.89	
3,465.0	25.71	36.46	3,182.9	1,251.2	981.5	776.0	1.73	-0.94	-3.30	
3,549.0	23.72	37.91	3,259.2	1,286.3	1,009.5	797.2	2.48	-2.37	1.73	
3,636.0	21.01	41.52	3,339.6	1,319.4	1,035.0	818.3	3.49	-3.11	4.15	
3,722.0	20.00	42.04	3,420.2	1,349.5	1,057.4	838.4	1.19	-1.17	0.60	
3,806.0	19.01	39.59	3,499.3	1,377.5	1,078.6	856.7	1.53	-1.18	-2.92	
3,893.0	17.97	38.18	3,581.9	1,405.1	1,100.1	874.1	1.30	-1.20	-1.62	
3,977.0	15.21	39.89	3,662.3	1,429.0	1,118.8	889.1	3.34	-3.29	2.04	
4,061.0	13.71	39.63	3,743.7	1,450.0	1,134.9	902.6	1.79	-1.79	-0.31	
4,145.0	11.91	37.69	3,825.6	1,468.6	1,149.4	914.2	2.20	-2.14	-2.31	
4,230.0	9.14	46.66	3,909.2	1,484.1	1,161.0	924.5	3.78	-3.26	10.55	
4,316.0	7.65	49.56	3,994.2	1,496.4	1,169.4	933.8	1.80	-1.73	3.37	
4,401.0	6.50	49.73	4,078.6	1,506.7	1,176.2	941.8	1.35	-1.35	0.20	
4,467.1	5.70	48.20	4,144.3	1,513.6	1,180.8	947.1	1.23	-1.20	-2.31	
31A-18-07-95 TGT										

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4,485.0	5.49	47.71	4,162.1	1,515.3	1,181.9	948.4	1.23	-1.20	-2.74	
4,569.0	4.39	47.89	4,245.8	1,522.5	1,186.8	953.7	1.31	-1.31	0.21	
4,654.0	3.30	48.06	4,330.6	1,528.1	1,190.6	958.0	1.28	-1.28	0.20	
4,738.0	2.64	47.98	4,414.5	1,532.4	1,193.5	961.2	0.79	-0.79	-0.10	
4,822.0	2.42	46.99	4,498.4	1,536.0	1,196.0	963.9	0.27	-0.26	-1.18	
4,909.0	1.93	50.53	4,585.4	1,539.3	1,198.2	966.4	0.58	-0.56	4.07	
4,995.0	1.49	47.78	4,671.3	1,541.8	1,199.9	968.4	0.52	-0.51	-3.20	
5,083.0	1.01	48.06	4,759.3	1,543.7	1,201.2	969.8	0.55	-0.55	0.32	
5,169.0	0.62	20.69	4,845.3	1,544.9	1,202.1	970.5	0.63	-0.45	-31.83	
5,253.0	0.18	0.52	4,929.3	1,545.4	1,202.7	970.7	0.54	-0.52	-24.01	
5,338.0	0.31	235.40	5,014.3	1,545.3	1,202.7	970.5	0.52	0.15	-147.20	
5,422.0	0.70	221.74	5,098.3	1,544.6	1,202.2	970.0	0.48	0.46	-16.26	
5,506.0	1.58	236.28	5,182.3	1,543.0	1,201.1	968.7	1.09	1.05	17.31	
5,591.0	1.93	235.10	5,267.2	1,540.5	1,199.7	966.5	0.41	0.41	-1.39	
5,677.0	2.77	228.72	5,353.2	1,537.1	1,197.5	963.8	1.02	0.98	-7.42	
5,761.0	1.41	220.33	5,437.1	1,534.0	1,195.3	961.6	1.66	-1.62	-9.99	
5,846.0	0.70	24.73	5,522.1	1,533.5	1,195.0	961.1	2.46	-0.84	193.41	
5,930.0	0.75	359.20	5,606.1	1,534.4	1,196.0	961.3	0.39	0.06	-30.39	
6,014.0	1.93	19.41	5,690.1	1,536.2	1,197.9	961.8	1.49	1.40	24.06	
6,099.0	1.10	2.19	5,775.0	1,538.2	1,200.1	962.3	1.10	-0.98	-20.26	
6,183.0	1.01	336.87	5,859.0	1,539.2	1,201.6	962.0	0.56	-0.11	-30.14	
6,267.0	1.41	313.76	5,943.0	1,539.6	1,203.0	961.0	0.74	0.48	-27.51	
6,351.0	1.58	294.47	6,027.0	1,539.5	1,204.2	959.2	0.63	0.20	-22.96	
6,436.0	1.19	303.17	6,111.9	1,539.1	1,205.1	957.4	0.52	-0.46	10.24	
6,520.0	1.10	338.72	6,195.9	1,539.4	1,206.4	956.3	0.84	-0.11	42.32	
6,604.0	1.14	298.64	6,279.9	1,539.7	1,207.5	955.3	0.91	0.05	-47.71	
Last PZD Survey										

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6,710.0	1.14	298.64	6,385.9	1,539.4	1,208.5	953.5	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)	
1,757.0	1,660.4	386.8	281.6	Last Surface Survey
6,604.0	6,279.9	1,207.5	955.3	Last PZD Survey
6,710.0	6,385.9	1,208.5	953.5	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

