



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 43C-13-07-96

Wellbore #1

Design: Actual

End of Well Report

13 June, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43C-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43C-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43C-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 43C-13-07-96, SHL: Lat 39.438802062 Long -108.046658401				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.85 usft	Latitude:	39.438802062
	+E/-W	0.0 usft	Easting:	2,280,841.98 usft	Longitude:	-108.046658401
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	6/13/2017	9.72	65.53	51,500

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	223.51

Survey Program		Date	6/13/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
138.0	6,500.0	Actual (Wellbore #1)	MWD	MWD - Standard	

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Site:	BMC B	MD Reference:	BMC B 43C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43C-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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
138.0	0.22	187.09	138.0	0.2	-0.3	0.0	0.16	0.16	0.00	
168.0	0.00	156.02	168.0	0.3	-0.3	0.0	0.73	-0.73	0.00	
198.0	0.35	151.28	198.0	0.3	-0.4	0.0	1.17	1.17	0.00	
228.0	0.18	103.06	228.0	0.3	-0.5	0.1	0.89	-0.57	-160.73	
259.0	0.40	193.51	259.0	0.4	-0.6	0.1	1.42	0.71	291.77	
289.0	0.70	235.96	289.0	0.6	-0.8	-0.1	1.62	1.00	141.50	
320.0	1.41	219.92	320.0	1.2	-1.2	-0.5	2.46	2.29	-51.74	
350.0	2.11	218.25	350.0	2.1	-1.9	-1.0	2.34	2.33	-5.57	
380.0	2.86	224.53	379.9	3.4	-2.9	-1.9	2.66	2.50	20.93	
411.0	3.56	224.58	410.9	5.1	-4.1	-3.1	2.26	2.26	0.16	
441.0	4.53	221.81	440.8	7.3	-5.7	-4.6	3.30	3.23	-9.23	
472.0	5.41	222.43	471.7	9.9	-7.7	-6.4	2.84	2.84	2.00	
502.0	6.53	226.67	501.5	13.1	-9.9	-8.6	4.01	3.73	14.13	
533.0	7.43	225.02	532.3	16.8	-12.5	-11.3	2.97	2.90	-5.32	
564.0	8.44	221.81	563.0	21.1	-15.6	-14.2	3.56	3.26	-10.35	
594.0	9.58	218.82	592.6	25.8	-19.2	-17.2	4.11	3.80	-9.97	
624.0	10.99	220.80	622.2	31.1	-23.3	-20.7	4.84	4.70	6.60	
655.0	12.33	222.87	652.5	37.4	-28.0	-24.8	4.53	4.32	6.68	
685.0	13.62	221.24	681.8	44.1	-33.0	-29.4	4.47	4.30	-5.43	
716.0	14.81	223.66	711.8	51.7	-38.6	-34.5	4.29	3.84	7.81	
747.0	15.56	226.88	741.7	59.9	-44.3	-40.3	3.64	2.42	10.39	
789.0	16.79	226.82	782.1	71.5	-52.3	-48.8	2.93	2.93	-0.14	
831.0	18.34	226.72	822.1	84.2	-61.0	-58.0	3.69	3.69	-0.24	
873.0	20.17	223.66	861.8	98.0	-70.8	-67.9	4.97	4.36	-7.29	
915.0	21.75	222.60	901.0	113.1	-81.7	-78.1	3.87	3.76	-2.52	
958.0	23.48	223.89	940.7	129.6	-93.8	-89.4	4.19	4.02	3.00	

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Site:	BMC B	MD Reference:	BMC B 43C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43C-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)
1,000.0	24.96	225.11	979.0	146.8	-106.0	-101.5	3.72	3.52	2.90
1,042.0	26.38	225.89	1,016.8	165.0	-118.8	-114.5	3.48	3.38	1.86
1,084.0	27.76	225.68	1,054.2	184.1	-132.1	-128.2	3.29	3.29	-0.50
1,126.0	28.65	223.08	1,091.2	203.9	-146.3	-142.1	3.61	2.12	-6.19
1,168.0	30.10	222.16	1,127.8	224.5	-161.5	-156.0	3.62	3.45	-2.19
1,210.0	31.82	222.73	1,163.8	246.1	-177.4	-170.6	4.15	4.10	1.36
1,253.0	33.57	224.05	1,200.0	269.4	-194.3	-186.6	4.39	4.07	3.07
1,295.0	35.07	223.26	1,234.7	293.0	-211.4	-202.9	3.73	3.57	-1.88
1,337.0	36.74	223.70	1,268.7	317.7	-229.3	-219.9	4.02	3.98	1.05
1,379.0	38.93	223.05	1,301.9	343.4	-248.0	-237.6	5.30	5.21	-1.55
1,421.0	40.56	223.30	1,334.2	370.3	-267.6	-255.9	3.90	3.88	0.60
1,463.0	40.61	223.04	1,366.1	397.6	-287.5	-274.6	0.42	0.12	-0.62
1,505.0	40.78	223.35	1,397.9	425.0	-307.5	-293.4	0.63	0.40	0.74
1,547.0	40.95	225.03	1,429.7	452.5	-327.2	-312.5	2.65	0.40	4.00
1,590.0	40.87	224.84	1,462.2	480.6	-347.1	-332.4	0.34	-0.19	-0.44
1,632.0	40.34	223.69	1,494.1	507.9	-366.7	-351.5	2.18	-1.26	-2.74
1,674.0	40.61	223.22	1,526.0	535.2	-386.5	-370.2	0.97	0.64	-1.12
1,758.0	38.72	221.81	1,590.7	588.8	-426.0	-406.5	2.49	-2.25	-1.68
1,842.0	37.40	219.17	1,656.8	640.5	-465.4	-440.1	2.49	-1.57	-3.14
1,875.0	37.62	219.04	1,683.0	660.6	-481.0	-452.8	0.71	0.67	-0.39
Last PZD Surface Survey									
1,976.0	38.50	217.20	1,762.5	722.5	-529.9	-491.2	1.42	0.87	-1.82
2,063.0	38.76	218.51	1,830.5	776.6	-572.8	-524.5	0.99	0.30	1.51
2,149.0	39.87	222.03	1,897.1	831.0	-614.4	-559.8	2.90	1.29	4.09
2,235.0	40.83	224.23	1,962.6	886.6	-655.0	-597.8	2.00	1.12	2.56
2,321.0	40.03	223.79	2,028.1	942.4	-695.1	-636.6	0.99	-0.93	-0.51
2,405.0	40.30	225.41	2,092.3	996.6	-733.7	-674.6	1.28	0.32	1.93

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Well:	BMC B 43C-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)
2,490.0	41.04	225.68	2,156.7	1,051.9	-772.5	-714.2	0.89	0.87	0.32
2,574.0	40.39	224.71	2,220.4	1,106.7	-811.1	-753.0	1.08	-0.77	-1.15
2,658.0	41.30	225.94	2,283.9	1,161.6	-849.7	-792.1	1.45	1.08	1.46
2,742.0	41.08	225.42	2,347.1	1,216.9	-888.4	-831.7	0.48	-0.26	-0.62
2,827.0	40.61	225.33	2,411.5	1,272.4	-927.4	-871.3	0.56	-0.55	-0.11
2,911.0	39.24	224.58	2,475.9	1,326.3	-965.6	-909.3	1.73	-1.63	-0.89
2,995.0	37.49	225.11	2,541.7	1,378.5	-1,002.5	-946.1	2.12	-2.08	0.63
3,081.0	35.29	224.62	2,611.0	1,429.5	-1,038.7	-982.1	2.58	-2.56	-0.57
3,166.0	32.78	224.31	2,681.4	1,477.0	-1,072.6	-1,015.4	2.96	-2.95	-0.36
3,250.0	32.12	223.39	2,752.3	1,522.1	-1,105.1	-1,046.6	0.98	-0.79	-1.10
3,335.0	30.28	224.80	2,825.0	1,566.1	-1,136.8	-1,077.3	2.33	-2.16	1.66
3,419.0	27.51	225.06	2,898.5	1,606.7	-1,165.5	-1,105.9	3.30	-3.30	0.31
3,503.0	24.52	225.06	2,974.0	1,643.5	-1,191.5	-1,132.0	3.56	-3.56	0.00
3,588.0	21.40	224.45	3,052.2	1,676.7	-1,215.0	-1,155.4	3.68	-3.67	-0.72
3,672.0	20.17	222.78	3,130.8	1,706.5	-1,236.6	-1,175.9	1.63	-1.46	-1.99
3,756.0	18.33	223.52	3,210.1	1,734.2	-1,256.8	-1,194.9	2.21	-2.19	0.88
3,841.0	16.17	223.30	3,291.3	1,759.4	-1,275.1	-1,212.2	2.54	-2.54	-0.26
3,925.0	13.54	224.75	3,372.4	1,780.9	-1,290.6	-1,227.1	3.16	-3.13	1.73
4,009.0	11.21	226.07	3,454.5	1,798.9	-1,303.3	-1,239.9	2.79	-2.77	1.57
4,093.0	7.97	226.30	3,537.3	1,812.9	-1,313.0	-1,250.0	3.86	-3.86	0.27
4,179.0	3.08	222.73	3,622.9	1,821.1	-1,318.8	-1,255.9	5.70	-5.69	-4.15
4,262.0	1.54	188.85	3,705.8	1,824.3	-1,321.5	-1,257.6	2.40	-1.86	-40.82
4,268.2	1.40	186.74	3,712.0	1,824.4	-1,321.7	-1,257.6	2.51	-2.35	-34.17
43C-13-07-96 TGT									
4,346.0	0.83	66.16	3,789.8	1,824.6	-1,322.4	-1,257.2	2.51	-0.73	-154.92
4,431.0	0.92	45.59	3,874.8	1,823.4	-1,321.7	-1,256.2	0.38	0.11	-24.20
4,515.0	0.48	45.15	3,958.8	1,822.4	-1,321.0	-1,255.4	0.52	-0.52	-0.52

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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)	
4,599.0	0.40	326.36	4,042.8	1,822.0	-1,320.5	-1,255.3	0.67	-0.10	-93.80	
4,686.0	0.35	261.54	4,129.8	1,822.1	-1,320.2	-1,255.8	0.46	-0.06	-74.51	
4,772.0	0.75	271.16	4,215.8	1,822.7	-1,320.3	-1,256.6	0.48	0.47	11.19	
4,856.0	1.41	267.91	4,299.8	1,823.8	-1,320.3	-1,258.2	0.79	0.79	-3.87	
4,943.0	1.27	248.09	4,386.7	1,825.4	-1,320.7	-1,260.1	0.55	-0.16	-22.78	
5,028.0	1.77	243.71	4,471.7	1,827.5	-1,321.6	-1,262.2	0.60	0.59	-5.15	
5,116.0	0.79	186.65	4,559.7	1,829.3	-1,322.8	-1,263.5	1.70	-1.11	-64.84	
5,202.0	0.79	167.77	4,645.7	1,830.1	-1,324.0	-1,263.4	0.30	0.00	-21.95	
5,286.0	0.83	95.63	4,729.7	1,830.0	-1,324.6	-1,262.7	1.14	0.05	-85.88	
5,371.0	0.44	90.06	4,814.7	1,829.4	-1,324.7	-1,261.8	0.46	-0.46	-6.55	
5,455.0	0.18	202.52	4,898.7	1,829.3	-1,324.8	-1,261.5	0.64	-0.31	133.88	
5,539.0	1.36	14.65	4,982.7	1,828.6	-1,324.0	-1,261.3	1.83	1.40	204.92	
5,623.0	0.92	11.05	5,066.6	1,827.1	-1,322.3	-1,260.9	0.53	-0.52	-4.29	
5,709.0	0.65	343.07	5,152.6	1,826.3	-1,321.2	-1,260.9	0.54	-0.31	-32.53	
5,796.0	0.40	307.28	5,239.6	1,826.1	-1,320.5	-1,261.3	0.46	-0.29	-41.14	
5,880.0	0.75	253.67	5,323.6	1,826.6	-1,320.5	-1,262.1	0.72	0.42	-63.82	
5,965.0	1.41	116.52	5,408.6	1,826.8	-1,321.1	-1,261.7	2.38	0.78	-161.35	
6,049.0	1.19	108.21	5,492.6	1,826.1	-1,321.9	-1,259.9	0.34	-0.26	-9.89	
6,133.0	0.35	91.86	5,576.6	1,825.6	-1,322.2	-1,258.8	1.02	-1.00	-19.46	
6,217.0	0.40	152.99	5,660.6	1,825.5	-1,322.4	-1,258.4	0.46	0.06	72.77	
6,302.0	0.62	177.03	5,745.6	1,825.9	-1,323.2	-1,258.3	0.36	0.26	28.28	
6,386.0	0.70	192.54	5,829.6	1,826.7	-1,324.1	-1,258.4	0.23	0.10	18.46	
6,440.0	1.05	187.80	5,883.6	1,827.4	-1,324.9	-1,258.5	0.66	0.65	-8.78	
Last PZD Survey										
6,500.0	1.05	187.80	5,943.6	1,828.3	-1,326.0	-1,258.7	0.00	0.00	0.00	
Straightline Projection to TD										

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Site:	BMC B	MD Reference:	BMC B 43C-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43C-13-07-96	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000.1 Single User Db

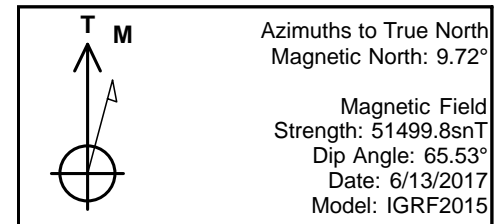
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,875.0	1,683.0	-481.0	-452.8	Last PZD Surface Survey
6,440.0	5,883.6	-1,324.9	-1,258.5	Last PZD Survey
6,500.0	5,943.6	-1,326.0	-1,258.7	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

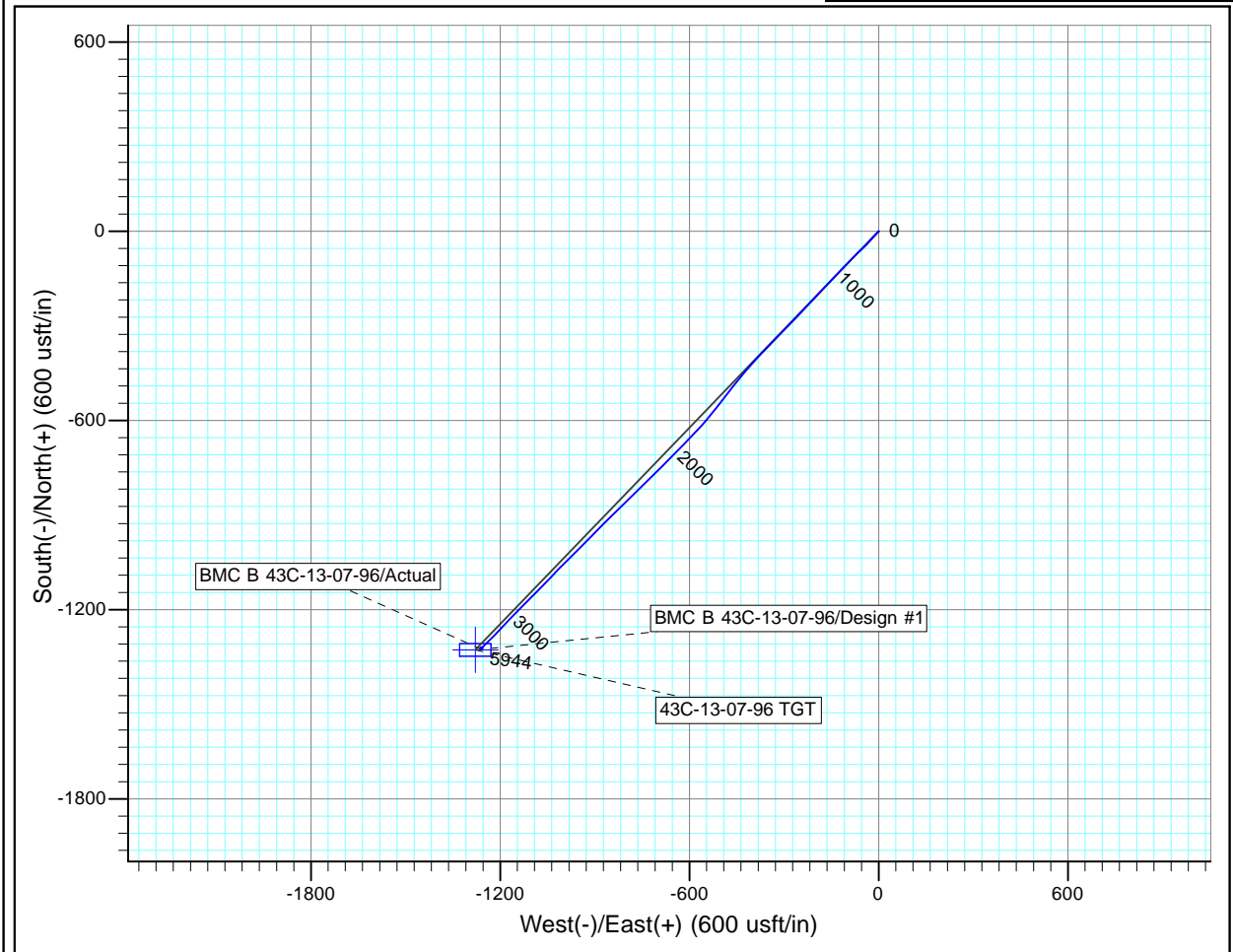
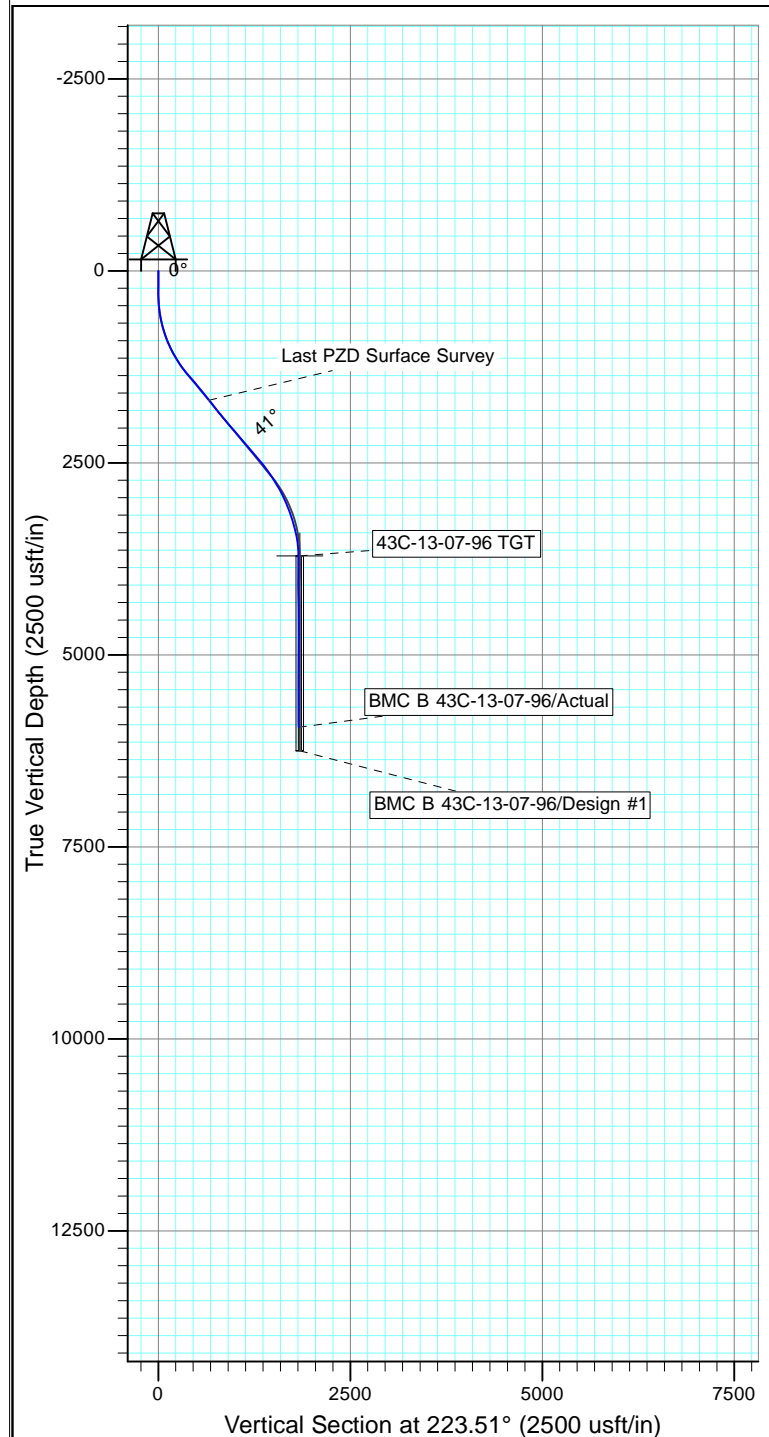


Project: Rockies Region
Site: BMC B
Well: BMC B 43C-13-07-96
Wellbore: Wellbore #1
Design: Actual



Azimuths to True North
Magnetic North: 9.72°

Magnetic Field
Strength: 51499.8snT
Dip Angle: 65.53°
Date: 6/13/2017
Model: IGRF2015



Design: Actual (BMC B 43C-13-07-96/Wellbore #1)

Created By: Derek Stephens Date: 9:48, June 13 2017

THIS SURVEY IS CORRECT TO THE BEST OF
MY KNOWLEDGE AND IS SUPPORTED
BY ACTUAL FIELD DATA