



Ursa Operating Company, LLC

Rockies Region

Speakman A

BAT 13B-24-07-96

Wellbore #1

Plan: Design #3

Standard Planning Report

18 September, 2013



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well BAT 13B-24-07-96
Company:	Ursa Operating Company, LLC	TVD Reference:	BAT 13B-24-07-96 @ 5197.9ft (Original Well Elev)
Project:	Rockies Region	MD Reference:	BAT 13B-24-07-96 @ 5197.9ft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 13B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

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		

Site		Speakman A			
Site Position:		Northing:	1,588,429.06 ft	Latitude:	39° 25' 15.663 N
From:	Lat/Long	Easting:	2,276,734.73 ft	Longitude:	108° 3' 38.016 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-1.61 °

Well	BAT 13B-24-07-96, SHL LAT: 39.420908067 LONG: -108.060321682					
Well Position	+N/-S	-39.9 ft	Northing:	1,588,387.30 ft	Latitude:	39° 25' 15.269 N
	+E/-W	67.3 ft	Easting:	2,276,800.92 ft	Longitude:	108° 3' 37.158 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	5,197.9 ft	Ground Level:	5,182.5 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	6/13/2013	10.08	65.63	52,047

Design	Design #3			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	277.36

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
442.9	5.00	290.00	442.7	2.1	-5.9	3.50	3.50	0.00	290.00	
910.9	21.22	277.03	897.0	19.6	-109.8	3.50	3.46	-2.77	-16.74	
3,132.0	21.22	277.03	2,967.6	117.9	-907.5	0.00	0.00	0.00	0.00	
3,738.1	0.00	0.00	3,560.0	131.5	-1,017.7	3.50	-3.50	0.00	180.00	BAT 13B-24-07-96 TC
5,960.1	0.00	0.00	5,782.0	131.5	-1,017.7	0.00	0.00	0.00	0.00	BAT 13B-24-07-96 BT

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Project:	Rockies Region	MD Reference:	BAT 13B-24-07-96 @ 5197.9ft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 13B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.50									
400.0	3.50	290.00	399.9	1.0	-2.9	3.0	3.50	3.50	0.00
442.9	5.00	290.00	442.7	2.1	-5.9	6.1	3.50	3.50	0.00
Start DLS 3.50 TFO -16.74									
500.0	6.94	285.23	499.5	3.9	-11.5	11.9	3.50	3.39	-8.35
600.0	10.39	281.19	598.4	7.2	-26.2	26.9	3.50	3.45	-4.03
700.0	13.86	279.16	696.1	10.9	-46.9	47.9	3.50	3.47	-2.03
800.0	17.35	277.93	792.4	14.8	-73.5	74.8	3.50	3.48	-1.23
900.0	20.84	277.10	886.9	19.1	-105.9	107.5	3.50	3.49	-0.83
910.9	21.22	277.03	897.0	19.6	-109.8	111.4	3.50	3.49	-0.68
Start 2221.1 hold at 910.9 MD									
1,000.0	21.22	277.03	980.1	23.5	-141.8	143.6	0.00	0.00	0.00
1,100.0	21.22	277.03	1,073.3	28.0	-177.7	179.8	0.00	0.00	0.00
1,200.0	21.22	277.03	1,166.6	32.4	-213.6	216.0	0.00	0.00	0.00
1,300.0	21.22	277.03	1,259.8	36.8	-249.5	252.2	0.00	0.00	0.00
1,400.0	21.22	277.03	1,353.0	41.2	-285.5	288.4	0.00	0.00	0.00
1,500.0	21.22	277.03	1,446.2	45.7	-321.4	324.6	0.00	0.00	0.00
1,600.0	21.22	277.03	1,539.5	50.1	-357.3	360.8	0.00	0.00	0.00
1,700.0	21.22	277.03	1,632.7	54.5	-393.2	397.0	0.00	0.00	0.00
1,800.0	21.22	277.03	1,725.9	58.9	-429.1	433.1	0.00	0.00	0.00
1,900.0	21.22	277.03	1,819.1	63.4	-465.0	469.3	0.00	0.00	0.00
2,000.0	21.22	277.03	1,912.3	67.8	-501.0	505.5	0.00	0.00	0.00
2,100.0	21.22	277.03	2,005.6	72.2	-536.9	541.7	0.00	0.00	0.00
2,200.0	21.22	277.03	2,098.8	76.7	-572.8	577.9	0.00	0.00	0.00
2,300.0	21.22	277.03	2,192.0	81.1	-608.7	614.1	0.00	0.00	0.00
2,400.0	21.22	277.03	2,285.2	85.5	-644.6	650.3	0.00	0.00	0.00
2,500.0	21.22	277.03	2,378.5	89.9	-680.6	686.5	0.00	0.00	0.00
2,600.0	21.22	277.03	2,471.7	94.4	-716.5	722.7	0.00	0.00	0.00
2,700.0	21.22	277.03	2,564.9	98.8	-752.4	758.8	0.00	0.00	0.00
2,718.3	21.22	277.03	2,582.0	99.6	-759.0	765.5	0.00	0.00	0.00
WF									
2,800.0	21.22	277.03	2,658.1	103.2	-788.3	795.0	0.00	0.00	0.00
2,900.0	21.22	277.03	2,751.3	107.6	-824.2	831.2	0.00	0.00	0.00
3,000.0	21.22	277.03	2,844.6	112.1	-860.1	867.4	0.00	0.00	0.00
3,100.0	21.22	277.03	2,937.8	116.5	-896.1	903.6	0.00	0.00	0.00
3,132.0	21.22	277.03	2,967.6	117.9	-907.5	915.2	0.00	0.00	0.00
Start Drop -3.50									
3,200.0	18.83	277.03	3,031.5	120.8	-930.7	938.5	3.50	-3.50	0.00
3,300.0	15.33	277.03	3,127.1	124.4	-959.8	967.8	3.50	-3.50	0.00
3,400.0	11.83	277.03	3,224.3	127.2	-983.1	991.3	3.50	-3.50	0.00
3,500.0	8.33	277.03	3,322.7	129.4	-1,000.5	1,008.8	3.50	-3.50	0.00
3,600.0	4.83	277.03	3,422.0	130.8	-1,011.9	1,020.3	3.50	-3.50	0.00
3,700.0	1.33	277.03	3,521.9	131.4	-1,017.2	1,025.7	3.50	-3.50	0.00
3,738.1	0.00	0.00	3,560.0	131.5	-1,017.7	1,026.1	3.50	-3.50	0.00
Start 2222.0 hold at 3738.1 MD - Top of Gas									
3,800.0	0.00	0.00	3,621.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
3,900.0	0.00	0.00	3,721.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00

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Project:	Rockies Region	MD Reference:	BAT 13B-24-07-96 @ 5197.9ft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 13B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,000.0	0.00	0.00	3,821.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,100.0	0.00	0.00	3,921.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,200.0	0.00	0.00	4,021.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,300.0	0.00	0.00	4,121.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,400.0	0.00	0.00	4,221.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,500.0	0.00	0.00	4,321.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,600.0	0.00	0.00	4,421.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,700.0	0.00	0.00	4,521.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,800.0	0.00	0.00	4,621.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
4,900.0	0.00	0.00	4,721.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,000.0	0.00	0.00	4,821.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,100.0	0.00	0.00	4,921.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,139.1	0.00	0.00	4,961.0	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
Cameo									
5,200.0	0.00	0.00	5,021.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,121.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,221.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,321.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,421.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,660.1	0.00	0.00	5,482.0	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
Rollins									
5,700.0	0.00	0.00	5,521.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,621.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,721.9	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
5,960.1	0.00	0.00	5,782.0	131.5	-1,017.7	1,026.1	0.00	0.00	0.00
TD at 5960.1									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,718.3	2,582.0	WF		0.00	
3,738.1	3,560.0	Top of Gas		0.00	
5,139.1	4,961.0	Cameo		0.00	
5,660.1	5,482.0	Rollins		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
300.0	300.0	0.0	0.0	Start Build 3.50
442.9	442.7	2.1	-5.9	Start DLS 3.50 TFO -16.74
910.9	897.0	19.6	-109.8	Start 2221.1 hold at 910.9 MD
3,132.0	2,967.6	117.9	-907.5	Start Drop -3.50
3,738.1	3,560.0	131.5	-1,017.7	Start 2222.0 hold at 3738.1 MD
5,960.1	5,782.0	131.5	-1,017.7	TD at 5960.1



Well Name: BAT 13B-24-07-96
Surface Location: Speakman A
North American Datum 1983 , US State Plane 1983, Colorado Central Zone
Ground Elevation: 5182.5
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1588387.30 2276800.92 39° 25' 15.269 N 108° 3' 37.158 W
Original Well Elev BAT 13B-24-07-96 @ 5197.9ft (Original Well Elev)



Azimuths to True North
Magnetic North: 10.08°
Magnetic Field
Strength: 52046.8nT
Dip Angle: 65.63°
Date: 6/13/2013
Model: IGRF200510

Speakman A
BAT 13B-24-07-96
Design #3
12:37, September 18 2013

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BAT 13B-24-07-96 TGT	3560.0	131.5	-1017.7	1588547.42	2275787.38	39° 25' 16.568 N	108° 3' 50.126 W	Rectangle (Sides: L40.0 W100.0)
BAT 13B-24-07-96 BHL	5782.0	131.5	-1017.7	1588547.42	2275787.38	39° 25' 16.568 N	108° 3' 50.126 W	Rectangle (Sides: L40.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	442.9	5.00	290.00	442.7	2.1	-5.9	3.50	290.00	6.1	
4	910.9	21.22	277.03	897.0	19.6	-109.8	3.50	-16.74	111.4	
5	3132.0	21.22	277.03	2967.6	117.9	-907.5	0.00	0.00	915.2	
6	3738.1	0.00	0.00	3560.0	131.5	-1017.7	3.50	180.00	1026.1	BAT 13B-24-07-96 TGT
7	5960.1	0.00	0.00	5782.0	131.5	-1017.7	0.00	0.00	1026.1	BAT 13B-24-07-96 BHL

ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.50
442.7	442.9	Start DLS 3.50 TFO -16.74
897.0	910.9	Start 2221.1 hold at 910.9 MD
2967.6	3132.0	Start Drop -3.50
3560.0	3738.1	Start 2222.0 hold at 3738.1 MD
5782.0	5960.1	TD at 5960.1

FORMATION TOP DETAILS

TVDP	MDP	Path	Formation
2582.0	2718.3	WF	WF
3560.0	3738.1		Top of Gas
4961.0	5139.1		Cameo
5482.0	5660.1		Rollins

