



# **Ursa Operating Company, LLC**

**Rockies Region**

**Speakman A**

**BAT 34D-24-07-96**

**Wellbore #1**

**Plan: Design #3**

## **Standard Planning Report**

**23 January, 2014**



<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well BAT 34D-24-07-96
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)
<b>Site:</b>	Speakman A	<b>North Reference:</b>	True
<b>Well:</b>	BAT 34D-24-07-96	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3		

<b>Project</b>	Rockies Region		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site		Speakman A			
Site Position:		Northing:	1,588,429.06 usft	Latitude:	39° 25' 15.663 N
From:	Lat/Long	Easting:	2,276,734.73 usft	Longitude:	108° 3' 38.016 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.61 °

Well	BAT 34D-24-07-96, SHL LAT:39.420568600 LONG:-108.060026500					
Well Position	+N/-S	-163.5 usft	Northing:	1,588,261.35 usft	Latitude:	39° 25' 14.047 N
	+E/-W	150.7 usft	Easting:	2,276,880.80 usft	Longitude:	108° 3' 36.095 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,197.9 usft	Ground Level:	5,182.5 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	6/15/2013	10.08	65.63	52,046

<b>Design</b>	Design #3				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	136.88	

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,298.1	38.43	136.88	1,217.6	-258.9	242.4	3.50	3.50	0.00	136.88	
3,110.7	38.43	136.88	2,637.4	-1,081.4	1,012.5	0.00	0.00	0.00	0.00	
4,208.8	0.00	0.00	3,655.0	-1,340.3	1,254.9	3.50	-3.50	0.00	180.00	BAT 34D-24-07-96 TC
6,401.7	0.00	0.00	5,848.0	-1,340.3	1,254.9	0.00	0.00	0.00	0.00	BAT 34D-24-07-96 Bf

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well BAT 34D-24-07-96
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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)
<b>Site:</b>	Speakman A	<b>North Reference:</b>	True
<b>Well:</b>	BAT 34D-24-07-96	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3		

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
<b>Start Build 3.50</b>									
300.0	3.50	136.88	299.9	-2.2	2.1	3.1	3.50	3.50	0.00
400.0	7.00	136.88	399.5	-8.9	8.3	12.2	3.50	3.50	0.00
500.0	10.50	136.88	498.3	-20.0	18.7	27.4	3.50	3.50	0.00
600.0	14.00	136.88	596.0	-35.5	33.2	48.6	3.50	3.50	0.00
700.0	17.50	136.88	692.3	-55.3	51.8	75.8	3.50	3.50	0.00
800.0	21.00	136.88	786.7	-79.4	74.3	108.7	3.50	3.50	0.00
900.0	24.50	136.88	878.9	-107.6	100.7	147.4	3.50	3.50	0.00
1,000.0	28.00	136.88	968.5	-139.9	131.0	191.6	3.50	3.50	0.00
1,100.0	31.50	136.88	1,055.3	-176.1	164.9	241.2	3.50	3.50	0.00
1,200.0	35.00	136.88	1,139.0	-216.1	202.3	296.1	3.50	3.50	0.00
1,298.1	38.43	136.88	1,217.6	-258.9	242.4	354.7	3.50	3.50	0.00
<b>Start 1812.6 hold at 1298.1 MD</b>									
1,300.0	38.43	136.88	1,219.1	-259.8	243.2	355.9	0.00	0.00	0.00
1,400.0	38.43	136.88	1,297.4	-305.2	285.7	418.0	0.00	0.00	0.00
1,500.0	38.43	136.88	1,375.7	-350.5	328.2	480.2	0.00	0.00	0.00
1,600.0	38.43	136.88	1,454.1	-395.9	370.7	542.4	0.00	0.00	0.00
1,700.0	38.43	136.88	1,532.4	-441.3	413.2	604.5	0.00	0.00	0.00
1,800.0	38.43	136.88	1,610.7	-486.7	455.7	666.7	0.00	0.00	0.00
1,900.0	38.43	136.88	1,689.1	-532.0	498.1	728.8	0.00	0.00	0.00
2,000.0	38.43	136.88	1,767.4	-577.4	540.6	791.0	0.00	0.00	0.00
2,100.0	38.43	136.88	1,845.7	-622.8	583.1	853.2	0.00	0.00	0.00
2,200.0	38.43	136.88	1,924.1	-668.2	625.6	915.3	0.00	0.00	0.00
2,300.0	38.43	136.88	2,002.4	-713.5	668.1	977.5	0.00	0.00	0.00
2,400.0	38.43	136.88	2,080.7	-758.9	710.6	1,039.6	0.00	0.00	0.00
2,500.0	38.43	136.88	2,159.1	-804.3	753.0	1,101.8	0.00	0.00	0.00
2,600.0	38.43	136.88	2,237.4	-849.7	795.5	1,164.0	0.00	0.00	0.00
2,700.0	38.43	136.88	2,315.7	-895.0	838.0	1,226.1	0.00	0.00	0.00
2,800.0	38.43	136.88	2,394.1	-940.4	880.5	1,288.3	0.00	0.00	0.00
2,900.0	38.43	136.88	2,472.4	-985.8	923.0	1,350.4	0.00	0.00	0.00
3,000.0	38.43	136.88	2,550.7	-1,031.2	965.5	1,412.6	0.00	0.00	0.00
3,100.0	38.43	136.88	2,629.1	-1,076.5	1,007.9	1,474.8	0.00	0.00	0.00
3,110.7	38.43	136.88	2,637.4	-1,081.4	1,012.5	1,481.4	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
3,124.1	37.96	136.88	2,648.0	-1,087.5	1,018.2	1,489.7	3.50	-3.50	0.00
<b>WF</b>									
3,200.0	35.31	136.88	2,708.9	-1,120.5	1,049.1	1,535.0	3.50	-3.50	0.00
3,300.0	31.81	136.88	2,792.2	-1,160.9	1,086.9	1,590.2	3.50	-3.50	0.00
3,400.0	28.31	136.88	2,878.7	-1,197.4	1,121.1	1,640.3	3.50	-3.50	0.00
3,500.0	24.81	136.88	2,968.2	-1,230.0	1,151.7	1,685.0	3.50	-3.50	0.00
3,600.0	21.31	136.88	3,060.2	-1,258.6	1,178.4	1,724.2	3.50	-3.50	0.00
3,700.0	17.81	136.88	3,154.4	-1,283.1	1,201.3	1,757.7	3.50	-3.50	0.00
3,800.0	14.31	136.88	3,250.5	-1,303.2	1,220.2	1,785.3	3.50	-3.50	0.00
3,900.0	10.81	136.88	3,348.1	-1,319.1	1,235.1	1,807.0	3.50	-3.50	0.00
4,000.0	7.31	136.88	3,446.8	-1,330.6	1,245.8	1,822.8	3.50	-3.50	0.00
4,100.0	3.81	136.88	3,546.3	-1,337.7	1,252.4	1,832.5	3.50	-3.50	0.00
4,208.8	0.00	0.00	3,655.0	-1,340.3	1,254.9	1,836.1	3.50	-3.50	0.00
<b>Start 2193.0 hold at 4208.8 MD - Top of Gas - BAT 34D-24-07-96 TGT</b>									

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)
<b>Site:</b>	Speakman A	<b>North Reference:</b>	True
<b>Well:</b>	BAT 34D-24-07-96	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,300.0	0.00	0.00	3,746.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,400.0	0.00	0.00	3,846.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,500.0	0.00	0.00	3,946.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,600.0	0.00	0.00	4,046.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,700.0	0.00	0.00	4,146.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,800.0	0.00	0.00	4,246.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
4,900.0	0.00	0.00	4,346.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,000.0	0.00	0.00	4,446.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,100.0	0.00	0.00	4,546.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,200.0	0.00	0.00	4,646.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,300.0	0.00	0.00	4,746.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,400.0	0.00	0.00	4,846.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,500.0	0.00	0.00	4,946.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,580.7	0.00	0.00	5,027.0	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
Cameo										
5,600.0	0.00	0.00	5,046.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,146.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,246.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,346.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
6,000.0	0.00	0.00	5,446.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
6,100.0	0.00	0.00	5,546.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
6,101.7	0.00	0.00	5,548.0	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
Rollins										
6,200.0	0.00	0.00	5,646.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
6,300.0	0.00	0.00	5,746.2	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
6,401.7	0.00	0.00	5,848.0	-1,340.3	1,254.9	1,836.1	0.00	0.00	0.00	
TD at 6401.7 - BAT 34D-24-07-96 BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
BAT 34D-24-07-96 TGT	0.00	0.00	3,655.0	-1,340.3	1,254.9	1,586,886.22	2,278,097.43	39° 25' 0.799 N	108° 3' 20.105 W	
- plan hits target center										
- Rectangle (sides W100.0 H40.0 D2,193.0)										
BAT 34D-24-07-96 BHL	0.00	0.00	5,848.0	-1,340.3	1,254.9	1,586,886.22	2,278,097.43	39° 25' 0.799 N	108° 3' 20.105 W	
- plan hits target center										
- Rectangle (sides W100.0 H40.0 D0.0)										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,124.1	2,648.0	WF		0.00		
4,208.8	3,655.0	Top of Gas		0.00		
5,580.7	5,027.0	Cameo		0.00		
6,101.7	5,548.0	Rollins		0.00		

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)
<b>Site:</b>	Speakman A	<b>North Reference:</b>	True
<b>Well:</b>	BAT 34D-24-07-96	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	Start Build 3.50
1,298.1	1,217.6	-258.9	242.4	Start 1812.6 hold at 1298.1 MD
3,110.7	2,637.4	-1,081.4	1,012.5	Start Drop -3.50
4,208.8	3,655.0	-1,340.3	1,254.9	Start 2193.0 hold at 4208.8 MD
6,401.7	5,848.0	-1,340.3	1,254.9	TD at 6401.7



Well Name: BAT 34D-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 1588261.35 2276880.80 39° 25' 14.047 N 108° 3' 36.095 W  
Original Well Elev BAT 34D-24-07-96 @ 5197.9usft (Original Well Elev)



Azimuths to True North  
Magnetic North: 10.08°  
Magnetic Field  
Strength: 52046.1nT  
Dip Angle: 65.63°  
Date: 6/15/2013  
Model: IGRF200510

Speakman A  
BAT 34D-24-07-96  
Design #3  
11:58, January 23 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BAT 34D-24-07-96 TGT	3655.0	-1340.3	1254.9	1586886.23	2278097.43	39° 25' 0.799 N	108° 3' 20.105 W	Rectangle (Sides: L40.0 W100.0)
BAT 34D-24-07-96 BHL	5848.0	-1340.3	1254.9	1586886.23	2278097.43	39° 25' 0.799 N	108° 3' 20.105 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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1298.1	38.43	136.88	1217.6	-258.9	242.4	3.50	136.88	354.7	
4	3110.7	38.43	136.88	2637.4	-1081.4	1012.5	0.00	0.00	1481.4	
5	4208.8	0.00	0.00	3655.0	-1340.3	1254.9	3.50	180.00	1836.1	BAT 34D-24-07-96 TGT
6	6401.7	0.00	0.00	5848.0	-1340.3	1254.9	0.00	0.00	1836.1	BAT 34D-24-07-96 BHL

#### ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	Start Build 3.50
1217.6	1298.1	Start 1812.6 hold at 1298.1 MD
2637.4	3110.7	Start Drop -3.50
3655.0	4208.8	Start 2193.0 hold at 4208.8 MD
5848.0	6401.7	TD at 6401.7

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
2648.0	3124.1	WF	0.00	
3655.0	4208.8	Top of Gas	0.00	
5027.0	5580.7	Cameo	0.00	
5548.0	6101.7	Rollins	0.00	

