



Ursa Operating Company, LLC

**Rockies Region
Speakman A
BAT 34B-24-07-96**

Wellbore #1

Plan: Design #4

Standard Planning Report

22 January, 2014



Database:	MasterDB	Local Co-ordinate Reference:	Well BAT 34B-24-07-96
Company:	Ursa Operating Company, LLC	TVD Reference:	BAT 34B-24-07-96 @ 5197.9usft (Original Well Elev)
Project:	Rockies Region	MD Reference:	BAT 34B-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 34B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #4		

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 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 34B-24-07-96, SHL LAT: 39.420660917 LONG: -108.060027909					
Well Position	+N/-S	-129.9 usft	Northing:	1,588,294.97 usft	Latitude:	39° 25' 14.379 N
	+E/-W	150.3 usft	Easting:	2,276,881.35 usft	Longitude:	108° 3' 36.100 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,197.9 usft	Ground Level:	5,182.5 usft

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

Design	Design #4				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	121.42	

Plan Sections										
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	
342.9	5.00	80.00	342.7	1.1	6.1	3.50	3.50	0.00	80.00	
1,079.3	29.26	122.46	1,042.6	-91.5	192.8	3.50	3.29	5.77	49.36	
3,172.7	29.26	122.46	2,868.8	-640.7	1,056.2	0.00	0.00	0.00	0.00	
4,008.7	0.00	0.00	3,669.0	-752.8	1,232.4	3.50	-3.50	0.00	180.00	BAT 34B-24-07-96 TC
6,201.7	0.00	0.00	5,862.0	-752.8	1,232.4	0.00	0.00	0.00	0.00	BAT 34B-24-07-96 Bt

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Project:	Rockies Region	MD Reference:	BAT 34B-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 34B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #4		

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
Start Build 3.50									
300.0	3.50	80.00	299.9	0.5	3.0	2.3	3.50	3.50	0.00
342.9	5.00	80.00	342.7	1.1	6.1	4.7	3.50	3.50	0.00
Start DLS 3.50 TFO 49.36									
400.0	6.48	93.57	399.5	1.3	11.8	9.4	3.50	2.59	23.74
500.0	9.54	106.03	498.6	-1.3	25.4	22.4	3.50	3.06	12.46
600.0	12.83	112.33	596.6	-7.8	43.6	41.3	3.50	3.28	6.30
700.0	16.20	116.06	693.4	-18.2	66.5	66.2	3.50	3.37	3.74
800.0	19.62	118.53	788.6	-32.3	93.7	96.9	3.50	3.42	2.47
900.0	23.06	120.29	881.7	-50.2	125.4	133.2	3.50	3.44	1.76
1,000.0	26.51	121.62	972.5	-71.8	161.3	175.1	3.50	3.46	1.32
1,079.3	29.26	122.46	1,042.6	-91.5	192.8	212.2	3.50	3.46	1.06
Start 2093.4 hold at 1079.3 MD									
1,100.0	29.26	122.46	1,060.6	-96.9	201.3	222.3	0.00	0.00	0.00
1,200.0	29.26	122.46	1,147.9	-123.2	242.5	271.2	0.00	0.00	0.00
1,300.0	29.26	122.46	1,235.1	-149.4	283.8	320.1	0.00	0.00	0.00
1,400.0	29.26	122.46	1,322.4	-175.6	325.0	368.9	0.00	0.00	0.00
1,500.0	29.26	122.46	1,409.6	-201.9	366.3	417.8	0.00	0.00	0.00
1,600.0	29.26	122.46	1,496.8	-228.1	407.5	466.7	0.00	0.00	0.00
1,700.0	29.26	122.46	1,584.1	-254.3	448.8	515.6	0.00	0.00	0.00
1,800.0	29.26	122.46	1,671.3	-280.6	490.0	564.4	0.00	0.00	0.00
1,900.0	29.26	122.46	1,758.6	-306.8	531.3	613.3	0.00	0.00	0.00
2,000.0	29.26	122.46	1,845.8	-333.0	572.5	662.2	0.00	0.00	0.00
2,100.0	29.26	122.46	1,933.0	-359.3	613.7	711.0	0.00	0.00	0.00
2,200.0	29.26	122.46	2,020.3	-385.5	655.0	759.9	0.00	0.00	0.00
2,300.0	29.26	122.46	2,107.5	-411.7	696.2	808.8	0.00	0.00	0.00
2,400.0	29.26	122.46	2,194.8	-438.0	737.5	857.7	0.00	0.00	0.00
2,500.0	29.26	122.46	2,282.0	-464.2	778.7	906.5	0.00	0.00	0.00
2,600.0	29.26	122.46	2,369.2	-490.4	820.0	955.4	0.00	0.00	0.00
2,700.0	29.26	122.46	2,456.5	-516.7	861.2	1,004.3	0.00	0.00	0.00
2,800.0	29.26	122.46	2,543.7	-542.9	902.4	1,053.1	0.00	0.00	0.00
2,900.0	29.26	122.46	2,631.0	-569.1	943.7	1,102.0	0.00	0.00	0.00
2,935.6	29.26	122.46	2,662.0	-578.5	958.4	1,119.4	0.00	0.00	0.00
WF									
3,000.0	29.26	122.46	2,718.2	-595.4	984.9	1,150.9	0.00	0.00	0.00
3,100.0	29.26	122.46	2,805.4	-621.6	1,026.2	1,199.7	0.00	0.00	0.00
3,172.7	29.26	122.46	2,868.8	-640.7	1,056.2	1,235.3	0.00	0.00	0.00
Start Drop -3.50									
3,200.0	28.30	122.46	2,892.8	-647.7	1,067.3	1,248.4	3.50	-3.50	0.00
3,300.0	24.80	122.46	2,982.2	-671.7	1,105.0	1,293.1	3.50	-3.50	0.00
3,400.0	21.30	122.46	3,074.2	-692.7	1,138.0	1,332.3	3.50	-3.50	0.00
3,500.0	17.80	122.46	3,168.4	-710.7	1,166.2	1,365.7	3.50	-3.50	0.00
3,600.0	14.30	122.46	3,264.5	-725.5	1,189.6	1,393.4	3.50	-3.50	0.00
3,700.0	10.80	122.46	3,362.1	-737.2	1,207.9	1,415.1	3.50	-3.50	0.00
3,800.0	7.30	122.46	3,460.9	-745.6	1,221.2	1,430.8	3.50	-3.50	0.00
3,900.0	3.80	122.46	3,560.4	-750.8	1,229.4	1,440.5	3.50	-3.50	0.00
4,008.7	0.00	0.00	3,669.0	-752.8	1,232.4	1,444.1	3.50	-3.50	0.00
Start 2193.0 hold at 4008.7 MD - Tof of Gas - BAT 34B-24-07-96 TGT									

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Project:	Rockies Region	MD Reference:	BAT 34B-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 34B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #4		

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)
4,100.0	0.00	0.00	3,760.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,200.0	0.00	0.00	3,860.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,300.0	0.00	0.00	3,960.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,400.0	0.00	0.00	4,060.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,500.0	0.00	0.00	4,160.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,600.0	0.00	0.00	4,260.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,700.0	0.00	0.00	4,360.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,800.0	0.00	0.00	4,460.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
4,900.0	0.00	0.00	4,560.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,000.0	0.00	0.00	4,660.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,100.0	0.00	0.00	4,760.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,200.0	0.00	0.00	4,860.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,300.0	0.00	0.00	4,960.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,380.7	0.00	0.00	5,041.0	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
Cameo									
5,400.0	0.00	0.00	5,060.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,160.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,260.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,360.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,460.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,560.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
5,901.7	0.00	0.00	5,562.0	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
Rollins									
6,000.0	0.00	0.00	5,660.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
6,100.0	0.00	0.00	5,760.3	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
6,201.7	0.00	0.00	5,862.0	-752.8	1,232.4	1,444.1	0.00	0.00	0.00
TD at 6201.7 - BAT 34B-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 34B-24-07-96 TGT	0.00	0.00	3,669.0	-752.8	1,232.4	1,587,507.78	2,278,092.05	39° 25' 6.939 N	108° 3' 20.396 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,193.0)									
BAT 34B-24-07-96 BHL	0.00	0.00	5,862.0	-752.8	1,232.4	1,587,507.78	2,278,092.05	39° 25' 6.939 N	108° 3' 20.396 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 (°)	
2,935.6	2,662.0	WF		0.00		
4,008.7	3,669.0	Tof of Gas		0.00		
5,380.7	5,041.0	Cameo		0.00		
5,901.7	5,562.0	Rollins		0.00		

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Project:	Rockies Region	MD Reference:	BAT 34B-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 34B-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #4		

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
342.9	342.7	1.1	6.1	Start DLS 3.50 TFO 49.36
1,079.3	1,042.6	-91.5	192.8	Start 2093.4 hold at 1079.3 MD
3,172.7	2,868.8	-640.7	1,056.2	Start Drop -3.50
4,008.7	3,669.0	-752.8	1,232.4	Start 2193.0 hold at 4008.7 MD
6,201.7	5,862.0	-752.8	1,232.4	TD at 6201.7



Well Name: BAT 34B-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 1588294.98 2276881.34 39° 25' 14.379 N 108° 3' 36.100 W
Original Well Elev BAT 34B-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 34B-24-07-96
Design #4
19:29, January 22 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BAT 34B-24-07-96	3669.0	-752.8	1232.4	1587507.79	2278092.05	39° 25' 6.939 N	108° 3' 20.396 W	Rectangle (Sides: L40.0 W100.0)
BAT 34B-24-07-96	5862.0	-752.8	1232.4	1587507.79	2278092.05	39° 25' 6.939 N	108° 3' 20.396 W	Rectangle (Sides: L40.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	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	342.9	5.00	80.00	342.7	1.1	6.1	3.50	80.00	4.7	
4	1079.3	29.26	122.46	1042.6	-91.5	192.8	3.50	49.36	212.2	
5	3172.7	29.26	122.46	2868.8	-640.7	1056.2	0.00	0.00	1235.3	
6	4008.7	0.00	0.00	3669.0	-752.8	1232.4	3.50	180.00	1444.1	BAT 34B-24-07-96 TGT
7	6201.7	0.00	0.00	5862.0	-752.8	1232.4	0.00	0.00	1444.1	BAT 34B-24-07-96 BHL

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	Start Build 3.50
342.7	342.9	Start DLS 3.50 TFO 49.36
1042.6	1079.3	Start 2093.4 hold at 1079.3 MD
2868.8	3172.7	Start Drop -3.50
3669.0	4008.7	Start 2193.0 hold at 4008.7 MD
5862.0	6201.7	TD at 6201.7

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
2662.0	2935.6	WF	0.00	
3669.0	4008.7	Tof of Gas	0.00	
5041.0	5380.7	Cameo	0.00	
5562.0	5901.7	Rollins	0.00	

