



Ursa Operating Company, LLC

Rockies Region

Speakman A

BAT 14A-24-07-96

Wellbore #1

Plan: Design #3

Standard Planning Report

22 January, 2014



Database:	MasterDB	Local Co-ordinate Reference:	Well BAT 14A-24-07-96
Company:	Ursa Operating Company, LLC	TVD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Project:	Rockies Region	MD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 14A-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 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 14A-24-07-96, SHL LAT: 39.420686136 LONG: -108.060057886					
Well Position	+N/-S	-120.7 usft	Northing:	1,588,304.39 usft	Latitude:	39° 25' 14.470 N
	+E/-W	141.9 usft	Easting:	2,276,873.14 usft	Longitude:	108° 3' 36.208 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 #3				
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	236.40	

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	
946.8	26.14	236.40	921.2	-92.7	-139.5	3.50	3.50	0.00	236.40	
3,082.9	26.14	236.40	2,838.8	-613.5	-923.3	0.00	0.00	0.00	0.00	
3,829.8	0.00	0.00	3,560.0	-706.1	-1,062.7	3.50	-3.50	0.00	180.00	BAT 14A-24-07-96 TC
6,022.7	0.00	0.00	5,753.0	-706.1	-1,062.7	0.00	0.00	0.00	0.00	BAT 14A-24-07-96 BT

Database:	MasterDB	Local Co-ordinate Reference:	Well BAT 14A-24-07-96
Company:	Ursa Operating Company, LLC	TVD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Project:	Rockies Region	MD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 14A-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	
Start Build 3.50										
300.0	3.50	236.40	299.9	-1.7	-2.5	3.1	3.50	3.50	0.00	
400.0	7.00	236.40	399.5	-6.8	-10.2	12.2	3.50	3.50	0.00	
500.0	10.50	236.40	498.3	-15.2	-22.8	27.4	3.50	3.50	0.00	
600.0	14.00	236.40	596.0	-26.9	-40.5	48.6	3.50	3.50	0.00	
700.0	17.50	236.40	692.3	-41.9	-63.1	75.8	3.50	3.50	0.00	
800.0	21.00	236.40	786.7	-60.2	-90.6	108.7	3.50	3.50	0.00	
900.0	24.50	236.40	878.9	-81.6	-122.8	147.4	3.50	3.50	0.00	
946.8	26.14	236.40	921.2	-92.7	-139.5	167.4	3.50	3.50	0.00	
Start 2136.1 hold at 946.8 MD										
1,000.0	26.14	236.40	968.9	-105.6	-159.0	190.8	0.00	0.00	0.00	
1,100.0	26.14	236.40	1,058.7	-130.0	-195.7	234.9	0.00	0.00	0.00	
1,200.0	26.14	236.40	1,148.5	-154.4	-232.3	279.0	0.00	0.00	0.00	
1,300.0	26.14	236.40	1,238.2	-178.8	-269.0	323.0	0.00	0.00	0.00	
1,400.0	26.14	236.40	1,328.0	-203.1	-305.7	367.1	0.00	0.00	0.00	
1,500.0	26.14	236.40	1,417.8	-227.5	-342.4	411.1	0.00	0.00	0.00	
1,600.0	26.14	236.40	1,507.6	-251.9	-379.1	455.2	0.00	0.00	0.00	
1,700.0	26.14	236.40	1,597.3	-276.3	-415.8	499.2	0.00	0.00	0.00	
1,800.0	26.14	236.40	1,687.1	-300.7	-452.5	543.3	0.00	0.00	0.00	
1,900.0	26.14	236.40	1,776.9	-325.1	-489.2	587.4	0.00	0.00	0.00	
2,000.0	26.14	236.40	1,866.6	-349.4	-525.9	631.4	0.00	0.00	0.00	
2,100.0	26.14	236.40	1,956.4	-373.8	-562.6	675.5	0.00	0.00	0.00	
2,200.0	26.14	236.40	2,046.2	-398.2	-599.3	719.5	0.00	0.00	0.00	
2,300.0	26.14	236.40	2,136.0	-422.6	-636.0	763.6	0.00	0.00	0.00	
2,400.0	26.14	236.40	2,225.7	-447.0	-672.7	807.6	0.00	0.00	0.00	
2,500.0	26.14	236.40	2,315.5	-471.3	-709.4	851.7	0.00	0.00	0.00	
2,600.0	26.14	236.40	2,405.3	-495.7	-746.1	895.7	0.00	0.00	0.00	
2,700.0	26.14	236.40	2,495.1	-520.1	-782.8	939.8	0.00	0.00	0.00	
2,764.5	26.14	236.40	2,553.0	-535.8	-806.4	968.2	0.00	0.00	0.00	
WF										
2,800.0	26.14	236.40	2,584.8	-544.5	-819.5	983.9	0.00	0.00	0.00	
2,900.0	26.14	236.40	2,674.6	-568.9	-856.2	1,027.9	0.00	0.00	0.00	
3,000.0	26.14	236.40	2,764.4	-593.2	-892.8	1,072.0	0.00	0.00	0.00	
3,082.9	26.14	236.40	2,838.8	-613.5	-923.3	1,108.5	0.00	0.00	0.00	
Start Drop -3.50										
3,100.0	25.54	236.40	2,854.2	-617.6	-929.5	1,115.9	3.50	-3.50	0.00	
3,200.0	22.04	236.40	2,945.7	-639.9	-963.1	1,156.3	3.50	-3.50	0.00	
3,300.0	18.54	236.40	3,039.4	-659.1	-992.0	1,191.0	3.50	-3.50	0.00	
3,400.0	15.04	236.40	3,135.2	-675.1	-1,016.0	1,219.8	3.50	-3.50	0.00	
3,500.0	11.54	236.40	3,232.5	-687.8	-1,035.2	1,242.8	3.50	-3.50	0.00	
3,600.0	8.04	236.40	3,331.0	-697.2	-1,049.3	1,259.8	3.50	-3.50	0.00	
3,700.0	4.54	236.40	3,430.4	-703.3	-1,058.4	1,270.8	3.50	-3.50	0.00	
3,800.0	1.04	236.40	3,530.3	-706.0	-1,062.5	1,275.7	3.50	-3.50	0.00	
3,829.8	0.00	0.00	3,560.0	-706.1	-1,062.7	1,275.9	3.50	-3.50	0.00	
Start 2193.0 hold at 3829.8 MD - Top of Gas - BAT 14A-24-07-96 TGT										
3,900.0	0.00	0.00	3,630.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,000.0	0.00	0.00	3,730.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,100.0	0.00	0.00	3,830.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	

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Project:	Rockies Region	MD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 14A-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)	
4,200.0	0.00	0.00	3,930.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,300.0	0.00	0.00	4,030.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,400.0	0.00	0.00	4,130.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,500.0	0.00	0.00	4,230.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,600.0	0.00	0.00	4,330.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,700.0	0.00	0.00	4,430.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,800.0	0.00	0.00	4,530.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
4,900.0	0.00	0.00	4,630.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,000.0	0.00	0.00	4,730.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,100.0	0.00	0.00	4,830.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,200.0	0.00	0.00	4,930.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,201.7	0.00	0.00	4,932.0	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
Cameo										
5,300.0	0.00	0.00	5,030.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,400.0	0.00	0.00	5,130.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,500.0	0.00	0.00	5,230.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,330.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,430.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,722.7	0.00	0.00	5,453.0	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
Rollins										
5,800.0	0.00	0.00	5,530.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,630.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
6,000.0	0.00	0.00	5,730.2	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
6,022.7	0.00	0.00	5,753.0	-706.1	-1,062.7	1,275.9	0.00	0.00	0.00	
TD at 6022.7 - BAT 14A-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
BAT 14A-24-07-96 TGT	0.00	0.00	3,560.0	-706.1	-1,062.7	1,587,628.50	2,275,790.94	39° 25' 7.491 N	108° 3' 49.751 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,193.0)									
BAT 14A-24-07-96 BHL	0.00	0.00	5,753.0	-706.1	-1,062.7	1,587,628.50	2,275,790.94	39° 25' 7.491 N	108° 3' 49.751 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 (°)	
2,764.5	2,553.0	WF		0.00		
3,829.8	3,560.0	Top of Gas		0.00		
5,201.7	4,932.0	Cameo		0.00		
5,722.7	5,453.0	Rollins		0.00		

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Project:	Rockies Region	MD Reference:	BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)
Site:	Speakman A	North Reference:	True
Well:	BAT 14A-24-07-96	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
946.8	921.2	-92.7	-139.5	Start 2136.1 hold at 946.8 MD
3,082.9	2,838.8	-613.5	-923.3	Start Drop -3.50
3,829.8	3,560.0	-706.1	-1,062.7	Start 2193.0 hold at 3829.8 MD
6,022.7	5,753.0	-706.1	-1,062.7	TD at 6022.7



Well Name: BAT 14A-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 1588304.40 2276873.14 39° 25' 14.470 N 108° 3' 36.208 W
Original Well Elev BAT 14A-24-07-96 @ 5197.9usft (Original Well Elev)



Azimuths to True North
Magnetic North: 10.08°
Magnetic Field
Strength: 52046.2snT
Dip Angle: 65.63°
Date: 6/15/2013
Model: IGRF200510

Speakman A
BAT 14A-24-07-96
Design #3
19:42, January 22 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BAT 14A-24-07-96	3560.0	-706.1	-1062.7	1587628.50	2275790.94	39° 25' 7.491 N	108° 3' 49.751 W	Rectangle (Sides: L40.0 W100.0)
BAT 14A-24-07-96	5753.0	-706.1	-1062.7	1587628.50	2275790.94	39° 25' 7.491 N	108° 3' 49.751 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	946.8	26.14	236.40	921.2	-92.7	-139.5	3.50	236.40	167.4	
4	3082.9	26.14	236.40	2838.8	-613.5	-923.3	0.00	0.00	1108.5	
5	3829.8	0.00	0.00	3560.0	-706.1	-1062.7	3.50	180.00	1275.9	BAT 14A-24-07-96 TGT
6	6022.7	0.00	0.00	5753.0	-706.1	-1062.7	0.00	0.00	1275.9	BAT 14A-24-07-96 BHL

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	Start Build 3.50
921.2	946.8	Start 2136.1 hold at 946.8 MD
2838.8	3082.9	Start Drop -3.50
3560.0	3829.8	Start 2193.0 hold at 3829.8 MD
5753.0	6022.7	TD at 6022.7

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
2553.0	2764.5	WF	0.00	
3560.0	3829.8	Top of Gas	0.00	
4932.0	5201.7	Cameo	0.00	
5453.0	5722.7	Rollins	0.00	

