



# **Ursa Operating Company, LLC**

**Rockies Region**

**Tompkins**

**BAT 41AWI-08-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Ursa Operating Company LLC Planning Report**

**21 August, 2014**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BAT 41AWI-08-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BAT 41AWI-08-07-95 @ 5547.4usft (PAD Est KB)
<b>Site:</b>	Tompkins	<b>MD Reference:</b>	BAT 41AWI-08-07-95 @ 5547.4usft (PAD Est KB)
<b>Well:</b>	BAT 41AWI-08-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

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		Tompkins			
Site Position:		Northing:		1,602,267.16	usft
From:	Lat/Long	Easting:		2,290,225.27	usft
Position Uncertainty:	0.0	Slot Radius:		13-3/16	"
		Grid Convergence:		-1.59	°

Well	BAT 41AWI-08-07-95, SHL LAT: 39.459959300 LONG: -108.013739500					
Well Position	+N/-S	0.0 usft	Northing:	1,602,238.19 usft	Latitude:	39° 27' 35.853 N
	+E/-W	0.0 usft	Easting:	2,290,348.86 usft	Longitude:	108° 0' 49.462 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,547.4 usft	Ground Level:	5,532.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/21/2014	9.95	65.62	51,911

Design	Design #1			
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	207.40

Survey Tool Program		Date	8/21/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	8,130.3	Design #1 (Wellbore #1)	MWD	MWD - Standard	

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)		TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.00	0.0	-5,547.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
100.0	0.00	0.00	0.00	100.0	-5,447.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
200.0	0.00	0.00	0.00	200.0	-5,347.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
300.0	0.00	0.00	0.00	300.0	-5,247.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
400.0	0.00	0.00	0.00	400.0	-5,147.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
500.0	0.00	0.00	0.00	500.0	-5,047.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
600.0	0.00	0.00	0.00	600.0	-4,947.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
700.0	0.00	0.00	0.00	700.0	-4,847.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
800.0	0.00	0.00	0.00	800.0	-4,747.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
900.0	0.00	0.00	0.00	900.0	-4,647.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,000.0	0.00	0.00	0.00	1,000.0	-4,547.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,100.0	0.00	0.00	0.00	1,100.0	-4,447.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,200.0	0.00	0.00	0.00	1,200.0	-4,347.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,300.0	0.00	0.00	0.00	1,300.0	-4,247.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,400.0	0.00	0.00	0.00	1,400.0	-4,147.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
1,500.0	0.00	0.00	0.00	1,500.0	-4,047.4	0.0	0.0	0.0	0.00	1,602,238.19	2,290,348.86
Start Build 3.00											
1,600.0	3.00	207.40		1,600.0	-3,947.4	-2.3	-1.2	2.6	3.00	1,602,235.90	2,290,347.59
1,700.0	6.00	207.40		1,699.6	-3,847.8	-9.3	-4.8	10.5	3.00	1,602,229.03	2,290,343.79
1,700.4	6.01	207.40		1,700.0	-3,847.4	-9.3	-4.8	10.5	3.00	1,602,229.00	2,290,343.77
Surface Casing											
1,800.0	9.00	207.40		1,798.8	-3,748.6	-20.9	-10.8	23.5	3.00	1,602,217.62	2,290,337.46
1,900.0	12.00	207.40		1,897.1	-3,650.3	-37.1	-19.2	41.7	3.00	1,602,201.68	2,290,328.63
2,000.0	15.00	207.40		1,994.3	-3,553.1	-57.8	-29.9	65.1	3.00	1,602,181.26	2,290,317.32
2,100.0	18.00	207.40		2,090.2	-3,457.2	-83.0	-43.0	93.5	3.00	1,602,156.42	2,290,303.56
2,200.0	21.00	207.40		2,184.4	-3,363.0	-112.6	-58.4	126.9	3.00	1,602,127.22	2,290,287.39
2,291.0	23.73	207.40		2,268.6	-3,278.8	-143.4	-74.3	161.5	3.00	1,602,096.92	2,290,270.61
Start 3399.2 hold at 2291.0 MD											

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<b>Site:</b>	Tompkins	<b>MD Reference:</b>	BAT 41AWI-08-07-95 @ 5547.4usft (PAD Est KB)
<b>Well:</b>	BAT 41AWI-08-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

## Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2,300.0	23.73	207.40	2,276.8	-3,270.6	-146.6	-76.0	165.1	0.00	1,602,093.77	2,290,268.86
2,400.0	23.73	207.40	2,368.4	-3,179.0	-182.3	-94.5	205.3	0.00	1,602,058.56	2,290,249.36
2,500.0	23.73	207.40	2,459.9	-3,087.5	-218.0	-113.0	245.6	0.00	1,602,023.36	2,290,229.86
2,600.0	23.73	207.40	2,551.5	-2,995.9	-253.8	-131.5	285.8	0.00	1,601,988.15	2,290,210.36
2,700.0	23.73	207.40	2,643.0	-2,904.4	-289.5	-150.0	326.1	0.00	1,601,952.95	2,290,190.85
2,800.0	23.73	207.40	2,734.5	-2,812.9	-325.2	-168.6	366.3	0.00	1,601,917.75	2,290,171.35
2,900.0	23.73	207.40	2,826.1	-2,721.3	-361.0	-187.1	406.6	0.00	1,601,882.54	2,290,151.85
3,000.0	23.73	207.40	2,917.6	-2,629.8	-396.7	-205.6	446.8	0.00	1,601,847.34	2,290,132.35
3,100.0	23.73	207.40	3,009.2	-2,538.2	-432.4	-224.1	487.0	0.00	1,601,812.13	2,290,112.85
3,200.0	23.73	207.40	3,100.7	-2,446.7	-468.1	-242.6	527.3	0.00	1,601,776.93	2,290,093.35
3,300.0	23.73	207.40	3,192.3	-2,355.1	-503.9	-261.2	567.5	0.00	1,601,741.73	2,290,073.85
3,400.0	23.73	207.40	3,283.8	-2,263.6	-539.6	-279.7	607.8	0.00	1,601,706.52	2,290,054.35
3,500.0	23.73	207.40	3,375.4	-2,172.0	-575.3	-298.2	648.0	0.00	1,601,671.32	2,290,034.85
3,600.0	23.73	207.40	3,466.9	-2,080.5	-611.1	-316.7	688.3	0.00	1,601,636.12	2,290,015.35
3,700.0	23.73	207.40	3,558.4	-1,989.0	-646.8	-335.2	728.5	0.00	1,601,600.91	2,289,995.85
3,746.9	23.73	207.40	3,601.4	-1,946.0	-663.6	-343.9	747.4	0.00	1,601,584.39	2,289,986.70
<b>Williams Fork</b>										
3,800.0	23.73	207.40	3,650.0	-1,897.4	-682.5	-353.8	768.8	0.00	1,601,565.71	2,289,976.35
3,900.0	23.73	207.40	3,741.5	-1,805.9	-718.3	-372.3	809.0	0.00	1,601,530.50	2,289,956.85
4,000.0	23.73	207.40	3,833.1	-1,714.3	-754.0	-390.8	849.2	0.00	1,601,495.30	2,289,937.35
4,100.0	23.73	207.40	3,924.6	-1,622.8	-789.7	-409.3	889.5	0.00	1,601,460.10	2,289,917.85
4,200.0	23.73	207.40	4,016.2	-1,531.2	-825.4	-427.8	929.7	0.00	1,601,424.89	2,289,898.35
4,300.0	23.73	207.40	4,107.7	-1,439.7	-861.2	-446.4	970.0	0.00	1,601,389.69	2,289,878.85
4,400.0	23.73	207.40	4,199.3	-1,348.1	-896.9	-464.9	1,010.2	0.00	1,601,354.48	2,289,859.35
4,500.0	23.73	207.40	4,290.8	-1,256.6	-932.6	-483.4	1,050.5	0.00	1,601,319.28	2,289,839.85
4,600.0	23.73	207.40	4,382.3	-1,165.1	-968.4	-501.9	1,090.7	0.00	1,601,284.08	2,289,820.35
4,700.0	23.73	207.40	4,473.9	-1,073.5	-1,004.1	-520.4	1,131.0	0.00	1,601,248.87	2,289,800.85

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<b>Well:</b>	BAT 41AWI-08-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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## Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
4,800.0	23.73	207.40	4,565.4	-982.0	-1,039.8	-538.9	1,171.2	0.00	1,601,213.67	2,289,781.34
4,873.2	23.73	207.40	4,632.4	-915.0	-1,066.0	-552.5	1,200.6	0.00	1,601,187.92	2,289,767.08
<b>Top of Gas</b>										
4,900.0	23.73	207.40	4,657.0	-890.4	-1,075.6	-557.5	1,211.4	0.00	1,601,178.46	2,289,761.84
5,000.0	23.73	207.40	4,748.5	-798.9	-1,111.3	-576.0	1,251.7	0.00	1,601,143.26	2,289,742.34
5,100.0	23.73	207.40	4,840.1	-707.3	-1,147.0	-594.5	1,291.9	0.00	1,601,108.06	2,289,722.84
5,200.0	23.73	207.40	4,931.6	-615.8	-1,182.7	-613.0	1,332.2	0.00	1,601,072.85	2,289,703.34
5,300.0	23.73	207.40	5,023.2	-524.2	-1,218.5	-631.5	1,372.4	0.00	1,601,037.65	2,289,683.84
5,400.0	23.73	207.40	5,114.7	-432.7	-1,254.2	-650.1	1,412.7	0.00	1,601,002.44	2,289,664.34
5,500.0	23.73	207.40	5,206.2	-341.2	-1,289.9	-668.6	1,452.9	0.00	1,600,967.24	2,289,644.84
5,600.0	23.73	207.40	5,297.8	-249.6	-1,325.7	-687.1	1,493.2	0.00	1,600,932.04	2,289,625.34
5,690.2	23.73	207.40	5,380.4	-167.0	-1,357.9	-703.8	1,529.5	0.00	1,600,900.27	2,289,607.74
<b>Start Drop -3.00</b>										
5,700.0	23.44	207.40	5,389.3	-158.1	-1,361.4	-705.6	1,533.4	3.00	1,600,896.85	2,289,605.85
5,800.0	20.44	207.40	5,482.1	-65.3	-1,394.5	-722.8	1,570.7	3.00	1,600,864.18	2,289,587.75
5,900.0	17.44	207.40	5,576.7	29.3	-1,423.4	-737.7	1,603.2	3.00	1,600,835.79	2,289,572.03
6,000.0	14.44	207.40	5,672.8	125.4	-1,447.7	-750.4	1,630.6	3.00	1,600,811.77	2,289,558.72
6,100.0	11.44	207.40	5,770.3	222.9	-1,467.6	-760.7	1,653.0	3.00	1,600,792.19	2,289,547.87
6,200.0	8.44	207.40	5,868.8	321.4	-1,482.9	-768.6	1,670.3	3.00	1,600,777.09	2,289,539.51
6,300.0	5.44	207.40	5,968.0	420.6	-1,493.6	-774.2	1,682.4	3.00	1,600,766.53	2,289,533.66
6,400.0	2.44	207.40	6,067.8	520.4	-1,499.7	-777.3	1,689.2	3.00	1,600,760.52	2,289,530.33
6,481.3	0.00	0.00	6,149.0	601.6	-1,501.3	-778.1	1,691.0	3.00	1,600,759.01	2,289,529.50
<b>Back to Vertical - Start 1649.0 hold at 6481.3 MD - BAT 41AWI-08-07-95 TGT</b>										
6,481.7	0.00	0.00	6,149.4	602.0	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
<b>Cameo</b>										
6,500.0	0.00	0.00	6,167.7	620.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
6,600.0	0.00	0.00	6,267.7	720.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
6,700.0	0.00	0.00	6,367.7	820.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50

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Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
6,800.0	0.00	0.00	6,467.7	920.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
6,900.0	0.00	0.00	6,567.7	1,020.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
6,981.7	0.00	0.00	6,649.4	1,102.0	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
<b>Rollins</b>										
7,000.0	0.00	0.00	6,667.7	1,120.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,100.0	0.00	0.00	6,767.7	1,220.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,200.0	0.00	0.00	6,867.7	1,320.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,300.0	0.00	0.00	6,967.7	1,420.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,400.0	0.00	0.00	7,067.7	1,520.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,500.0	0.00	0.00	7,167.7	1,620.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,600.0	0.00	0.00	7,267.7	1,720.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,700.0	0.00	0.00	7,367.7	1,820.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,800.0	0.00	0.00	7,467.7	1,920.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
7,900.0	0.00	0.00	7,567.7	2,020.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
8,000.0	0.00	0.00	7,667.7	2,120.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
8,100.0	0.00	0.00	7,767.7	2,220.3	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
8,130.3	0.00	0.00	7,798.0	2,250.6	-1,501.3	-778.1	1,691.0	0.00	1,600,759.01	2,289,529.50
<b>TD at 8130.3</b>										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,981.7	6,649.4	Rollins		0.00		
4,873.2	4,632.4	Top of Gas		0.00		
6,481.7	6,149.4	Cameo		0.00		
3,746.9	3,601.4	Williams Fork		0.00		

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BAT 41AWI-08-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BAT 41AWI-08-07-95 @ 5547.4usft (PAD Est KB)
<b>Site:</b>	Tompkins	<b>MD Reference:</b>	BAT 41AWI-08-07-95 @ 5547.4usft (PAD Est KB)
<b>Well:</b>	BAT 41AWI-08-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	MasterDB

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.0	1,500.0	0.0	0.0	Start Build 3.00
1,700.4	1,700.0	-9.3	-4.8	Surface Casing
2,291.0	2,268.6	-143.4	-74.3	Start 3399.2 hold at 2291.0 MD
5,690.2	5,380.4	-1,357.9	-703.8	Start Drop -3.00
6,481.3	6,149.0	-1,501.3	-778.1	Back to Vertical
6,481.3	6,149.0	-1,501.3	-778.1	Start 1649.0 hold at 6481.3 MD
8,130.3	7,798.0	-1,501.3	-778.1	TD at 8130.3

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_