



# **Ursa Operating Company, LLC**

**Rockies Region**

**Tompkins**

**Tompkins 21A-08-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**29 January, 2015**



<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well Tompkins 21A-08-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)
<b>Site:</b>	Tompkins	<b>North Reference:</b>	True
<b>Well:</b>	Tompkins 21A-08-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<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		

<b>Site</b>	Tompkins				
<b>Site Position:</b>		<b>Northing:</b>	1,602,267.15 usft	<b>Latitude:</b>	39° 27' 36.106 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,290,225.27 usft	<b>Longitude:</b>	108° 0' 51.048 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-1.59 °

<b>Well</b>	Tompkins 21A-08-07-95, SHL LAT: 39.460031918 LONG: -108.014312594					
<b>Well Position</b>	<b>+N/-S</b>	0.9 usft	<b>Northing:</b>	1,602,269.09 usft	<b>Latitude:</b>	39° 27' 36.115 N
	<b>+E/-W</b>	-37.5 usft	<b>Easting:</b>	2,290,187.84 usft	<b>Longitude:</b>	108° 0' 51.525 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	5,547.0 usft	<b>Ground Level:</b>	5,532.0 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>
	IGRF2010	1/29/2015	9.89	65.61	51,866

<b>Design</b>	Design #1			
<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	246.86

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	
1,226.3	35.92	246.86	1,160.4	-122.4	-286.3	3.50	3.50	0.00	246.86	
5,053.3	35.92	246.86	4,259.6	-1,004.8	-2,350.8	0.00	0.00	0.00	0.00	
6,079.7	0.00	0.00	5,220.0	-1,127.2	-2,637.0	3.50	-3.50	0.00	180.00	
7,834.7	0.00	0.00	6,975.0	-1,127.2	-2,637.0	0.00	0.00	0.00	0.00	

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well Tompkins 21A-08-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)
<b>Site:</b>	Tompkins	<b>North Reference:</b>	True
<b>Well:</b>	Tompkins 21A-08-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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	0.00
100.0	0.00	0.00	100.0	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	0.0	0.00	0.00	0.00	0.00
<b>Start Build 3.50</b>										
300.0	3.50	246.86	299.9	-1.2	-2.8	3.1	3.50	3.50	0.00	0.00
400.0	7.00	246.86	399.5	-4.8	-11.2	12.2	3.50	3.50	0.00	0.00
500.0	10.50	246.86	498.3	-10.8	-25.2	27.4	3.50	3.50	0.00	0.00
600.0	14.00	246.86	596.0	-19.1	-44.7	48.6	3.50	3.50	0.00	0.00
700.0	17.50	246.86	692.3	-29.8	-69.7	75.8	3.50	3.50	0.00	0.00
800.0	21.00	246.86	786.7	-42.7	-100.0	108.7	3.50	3.50	0.00	0.00
900.0	24.50	246.86	878.9	-57.9	-135.5	147.4	3.50	3.50	0.00	0.00
1,000.0	28.00	246.86	968.5	-75.3	-176.2	191.6	3.50	3.50	0.00	0.00
1,100.0	31.50	246.86	1,055.3	-94.8	-221.8	241.2	3.50	3.50	0.00	0.00
1,200.0	35.00	246.86	1,139.0	-116.4	-272.2	296.1	3.50	3.50	0.00	0.00
1,226.3	35.92	246.86	1,160.4	-122.4	-286.3	311.3	3.50	3.50	0.00	0.00
<b>Start 3827.0 hold at 1226.3 MD</b>										
1,300.0	35.92	246.86	1,220.1	-139.4	-326.0	354.5	0.00	0.00	0.00	0.00
1,400.0	35.92	246.86	1,301.0	-162.4	-380.0	413.2	0.00	0.00	0.00	0.00
1,500.0	35.92	246.86	1,382.0	-185.5	-433.9	471.9	0.00	0.00	0.00	0.00
1,600.0	35.92	246.86	1,463.0	-208.5	-487.9	530.5	0.00	0.00	0.00	0.00
1,700.0	35.92	246.86	1,544.0	-231.6	-541.8	589.2	0.00	0.00	0.00	0.00
1,800.0	35.92	246.86	1,625.0	-254.6	-595.7	647.9	0.00	0.00	0.00	0.00
1,892.6	35.92	246.86	1,700.0	-276.0	-645.7	702.2	0.00	0.00	0.00	0.00
<b>Surface Casing</b>										
1,900.0	35.92	246.86	1,706.0	-277.7	-649.7	706.6	0.00	0.00	0.00	0.00
2,000.0	35.92	246.86	1,786.9	-300.8	-703.6	765.2	0.00	0.00	0.00	0.00
2,100.0	35.92	246.86	1,867.9	-323.8	-757.6	823.9	0.00	0.00	0.00	0.00
2,200.0	35.92	246.86	1,948.9	-346.9	-811.5	882.6	0.00	0.00	0.00	0.00
2,300.0	35.92	246.86	2,029.9	-369.9	-865.5	941.2	0.00	0.00	0.00	0.00
2,400.0	35.92	246.86	2,110.9	-393.0	-919.4	999.9	0.00	0.00	0.00	0.00
2,500.0	35.92	246.86	2,191.9	-416.1	-973.4	1,058.6	0.00	0.00	0.00	0.00
2,600.0	35.92	246.86	2,272.8	-439.1	-1,027.3	1,117.2	0.00	0.00	0.00	0.00
2,700.0	35.92	246.86	2,353.8	-462.2	-1,081.3	1,175.9	0.00	0.00	0.00	0.00
2,800.0	35.92	246.86	2,434.8	-485.2	-1,135.2	1,234.6	0.00	0.00	0.00	0.00
2,900.0	35.92	246.86	2,515.8	-508.3	-1,189.1	1,293.2	0.00	0.00	0.00	0.00
3,000.0	35.92	246.86	2,596.8	-531.4	-1,243.1	1,351.9	0.00	0.00	0.00	0.00
3,100.0	35.92	246.86	2,677.7	-554.4	-1,297.0	1,410.6	0.00	0.00	0.00	0.00
3,200.0	35.92	246.86	2,758.7	-577.5	-1,351.0	1,469.2	0.00	0.00	0.00	0.00
3,300.0	35.92	246.86	2,839.7	-600.5	-1,404.9	1,527.9	0.00	0.00	0.00	0.00
3,400.0	35.92	246.86	2,920.7	-623.6	-1,458.9	1,586.6	0.00	0.00	0.00	0.00
3,500.0	35.92	246.86	3,001.7	-646.7	-1,512.8	1,645.2	0.00	0.00	0.00	0.00
3,600.0	35.92	246.86	3,082.7	-669.7	-1,566.8	1,703.9	0.00	0.00	0.00	0.00
3,700.0	35.92	246.86	3,163.6	-692.8	-1,620.7	1,762.6	0.00	0.00	0.00	0.00
3,800.0	35.92	246.86	3,244.6	-715.8	-1,674.7	1,821.2	0.00	0.00	0.00	0.00
3,900.0	35.92	246.86	3,325.6	-738.9	-1,728.6	1,879.9	0.00	0.00	0.00	0.00
4,000.0	35.92	246.86	3,406.6	-761.9	-1,782.5	1,938.6	0.00	0.00	0.00	0.00
4,100.0	35.92	246.86	3,487.6	-785.0	-1,836.5	1,997.2	0.00	0.00	0.00	0.00
4,200.0	35.92	246.86	3,568.5	-808.1	-1,890.4	2,055.9	0.00	0.00	0.00	0.00
4,274.6	35.92	246.86	3,629.0	-825.3	-1,930.7	2,099.7	0.00	0.00	0.00	0.00
<b>Williams Fork</b>										
4,300.0	35.92	246.86	3,649.5	-831.1	-1,944.4	2,114.6	0.00	0.00	0.00	0.00
4,400.0	35.92	246.86	3,730.5	-854.2	-1,998.3	2,173.2	0.00	0.00	0.00	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)
<b>Site:</b>	Tompkins	<b>North Reference:</b>	True
<b>Well:</b>	Tompkins 21A-08-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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)	
4,500.0	35.92	246.86	3,811.5	-877.2	-2,052.3	2,231.9	0.00	0.00	0.00	
4,600.0	35.92	246.86	3,892.5	-900.3	-2,106.2	2,290.6	0.00	0.00	0.00	
4,700.0	35.92	246.86	3,973.5	-923.4	-2,160.2	2,349.2	0.00	0.00	0.00	
4,800.0	35.92	246.86	4,054.4	-946.4	-2,214.1	2,407.9	0.00	0.00	0.00	
4,900.0	35.92	246.86	4,135.4	-969.5	-2,268.1	2,466.6	0.00	0.00	0.00	
5,000.0	35.92	246.86	4,216.4	-992.5	-2,322.0	2,525.2	0.00	0.00	0.00	
5,053.3	35.92	246.86	4,259.6	-1,004.8	-2,350.8	2,556.5	0.00	0.00	0.00	
<b>Start Drop -3.50</b>										
5,100.0	34.29	246.86	4,297.8	-1,015.4	-2,375.5	2,583.4	3.50	-3.50	0.00	
5,200.0	30.79	246.86	4,382.1	-1,036.5	-2,424.9	2,637.1	3.50	-3.50	0.00	
5,300.0	27.29	246.86	4,469.5	-1,055.6	-2,469.5	2,685.7	3.50	-3.50	0.00	
5,400.0	23.79	246.86	4,559.7	-1,072.5	-2,509.2	2,728.8	3.50	-3.50	0.00	
5,500.0	20.29	246.86	4,652.4	-1,087.3	-2,543.7	2,766.3	3.50	-3.50	0.00	
5,508.1	20.00	246.86	4,660.0	-1,088.4	-2,546.2	2,769.1	3.50	-3.50	0.00	
<b>Top of Gas</b>										
5,600.0	16.79	246.86	4,747.2	-1,099.8	-2,572.9	2,798.1	3.50	-3.50	0.00	
5,700.0	13.29	246.86	4,843.7	-1,110.0	-2,596.7	2,824.0	3.50	-3.50	0.00	
5,800.0	9.79	246.86	4,941.7	-1,117.8	-2,615.1	2,844.0	3.50	-3.50	0.00	
5,900.0	6.29	246.86	5,040.7	-1,123.3	-2,628.0	2,858.0	3.50	-3.50	0.00	
6,000.0	2.79	246.86	5,140.4	-1,126.4	-2,635.3	2,865.9	3.50	-3.50	0.00	
6,079.7	0.00	0.00	5,220.0	-1,127.2	-2,637.0	2,867.9	3.50	-3.50	0.00	
<b>Start 1755.0 hold at 6079.7 MD - Back to Vertical</b>										
6,100.0	0.00	0.00	5,240.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,200.0	0.00	0.00	5,340.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,300.0	0.00	0.00	5,440.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,400.0	0.00	0.00	5,540.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,500.0	0.00	0.00	5,640.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,600.0	0.00	0.00	5,740.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,700.0	0.00	0.00	5,840.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,800.0	0.00	0.00	5,940.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,040.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,000.0	0.00	0.00	6,140.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,036.7	0.00	0.00	6,177.0	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
<b>Cameo</b>										
7,100.0	0.00	0.00	6,240.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,200.0	0.00	0.00	6,340.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,300.0	0.00	0.00	6,440.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,400.0	0.00	0.00	6,540.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,500.0	0.00	0.00	6,640.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,536.7	0.00	0.00	6,677.0	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
<b>Rollins</b>										
7,600.0	0.00	0.00	6,740.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,700.0	0.00	0.00	6,840.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,800.0	0.00	0.00	6,940.3	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
7,834.7	0.00	0.00	6,975.0	-1,127.2	-2,637.0	2,867.9	0.00	0.00	0.00	
<b>TD at 7834.7</b>										

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<b>Site:</b>	Tompkins	<b>North Reference:</b>	True
<b>Well:</b>	Tompkins 21A-08-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
21A-08-07-95 TGT	0.00	0.00	4,660.0	-1,127.2	-2,637.0	1,601,215.30	2,287,520.61	39° 27' 24.972 N	108° 1' 25.147 W
- plan misses target center by 93.1usft at 5539.3usft MD (4689.4 TVD, -1092.5 N, -2555.8 E)									
- Rectangle (sides W100.0 H40.0 D2,315.0)									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
4,274.6	3,629.0	Williams Fork		0.00		
5,508.1	4,660.0	Top of Gas		0.00		
7,036.7	6,177.0	Cameo		0.00		
7,536.7	6,677.0	Rollins		0.00		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
200.0	200.0	0.0	0.0	Start Build 3.50	
1,226.3	1,160.4	-122.4	-286.3	Start 3827.0 hold at 1226.3 MD	
1,892.6	1,700.0	-276.0	-645.7	Surface Casing	
5,053.3	4,259.6	-1,004.8	-2,350.8	Start Drop -3.50	
6,079.7	5,220.0	-1,127.2	-2,637.0	Start 1755.0 hold at 6079.7 MD	
6,079.7	5,220.0	-1,127.2	-2,637.0	Back to Vertical	
7,834.7	6,975.0	-1,127.2	-2,637.0	TD at 7834.7	



Well Name: Tompkins 21A-08-07-95  
 Surface Location: Tompkins  
 North American Datum 1983, US State Plane 1983, Colorado Central Zone  
 Ground Elevation: 5532.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1602269.10 2290187.84 39° 27' 36.115 N 108° 0' 51.525 W  
 PAD Est KB Tompkins 21A-08-07-95 @ 5547.0usft (PAD Est KB)



Azimuths to True North  
 Magnetic North: 9.89°  
 Magnetic Field  
 Strength: 51866.2snT  
 Dip Angle: 65.61°  
 Date: 1/29/2015  
 Model: IGRF2010

Tompkins  
 Tompkins 21A-08-07-95  
 Design #1  
 20:15, January 29 2015

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
21A-08-07-95 TGT4660.0		-1127.2	-2637.0	1601215.30	2287520.61	39° 27' 24.972 N	108° 1' 25.147 W	Rectangle (Sides: L40.0 W100.0)

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	Start Build 3.50
1160.4	1226.3	Start 3827.0 hold at 1226.3 MD
1700.0	1892.6	Surface Casing
4259.6	5053.3	Start Drop -3.50
5220.0	6079.7	Start 1755.0 hold at 6079.7 MD
5220.0	6079.7	Back to Vertical
6975.0	7834.7	TD at 7834.7

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	1226.3	35.92	246.86	1160.4	-122.4	-286.3	3.50	246.86	311.3	
4	5053.3	35.92	246.86	4259.6	-1004.8	-2350.8	0.00	0.00	2556.5	
5	6079.7	0.00	0.00	5220.0	-1127.2	-2637.0	3.50	180.00	2867.9	
6	7834.7	0.00	0.00	6975.0	-1127.2	-2637.0	0.00	0.00	2867.9	

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation	DipAngle	DipDir
3629.0	4274.6	Williams Fork	0.00	
4660.0	5508.1	Top of Gas	0.00	
6177.0	7036.7	Cameo	0.00	
6677.0	7536.7	Rollins	0.00	

