



# **Ursa Operating Company, LLC**

**Rockies Region**

**Yater**

**YATER 43D-18-07-95**

**Wellbore #1**

**Plan: Design #1**

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

**28 October, 2014**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well YATER 43D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	YATER 43D-18-07-95 @ 5532.0usft (EST KB)
<b>Site:</b>	Yater	<b>MD Reference:</b>	YATER 43D-18-07-95 @ 5532.0usft (EST KB)
<b>Well:</b>	YATER 43D-18-07-95	<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		Yater			
Site Position:		Northing:		1,593,358.14 usft	
From:	Lat/Long	Easting:		2,286,525.77 usft	
Position Uncertainty:	0.0 usft	Slot Radius:		13-3/16 "	
				Latitude:	39° 26' 7.071 N
				Longitude:	108° 1' 35.041 W
				Grid Convergence:	-1.59 °

Well	YATER 43D-18-07-95, SHL LAT: 39.435056026 LONG: -108.026472616					
Well Position	+N/-S	0.0 usft	Northing:	1,593,270.78 usft	Latitude:	39° 26' 6.202 N
	+E/-W	0.0 usft	Easting:	2,286,502.88 usft	Longitude:	108° 1' 35.301 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,532.0 usft	Ground Level:	5,519.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/23/2014	9.93	65.59	51,878

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	262.30

Survey Tool Program		Date	10/23/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	7,033.5	Design #1 (Wellbore #1)	MWD	MWD - Standard	

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<b>Well:</b>	YATER 43D-18-07-95	<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)
0.0	0.00	0.00	0.0	-5,532.0	0.0	0.0	0.0	0.00	1,593,270.78	2,286,502.88
100.0	0.00	0.00	100.0	-5,432.0	0.0	0.0	0.0	0.00	1,593,270.78	2,286,502.88
200.0	0.00	0.00	200.0	-5,332.0	0.0	0.0	0.0	0.00	1,593,270.78	2,286,502.88
300.0	0.00	0.00	300.0	-5,232.0	0.0	0.0	0.0	0.00	1,593,270.78	2,286,502.88
<b>Start Build 3.00</b>										
400.0	3.00	262.30	400.0	-5,132.0	-0.4	-2.6	2.6	3.00	1,593,270.50	2,286,500.28
500.0	6.00	262.30	499.6	-5,032.4	-1.4	-10.4	10.5	3.00	1,593,269.66	2,286,492.48
600.0	9.00	262.30	598.8	-4,933.2	-3.1	-23.3	23.5	3.00	1,593,268.27	2,286,479.50
700.0	12.00	262.30	697.1	-4,834.9	-5.6	-41.4	41.7	3.00	1,593,266.34	2,286,461.38
800.0	15.00	262.30	794.3	-4,737.7	-8.7	-64.5	65.1	3.00	1,593,263.85	2,286,438.17
900.0	18.00	262.30	890.2	-4,641.8	-12.5	-92.6	93.5	3.00	1,593,260.83	2,286,409.94
1,000.0	21.00	262.30	984.4	-4,547.6	-17.0	-125.7	126.9	3.00	1,593,257.28	2,286,376.75
1,100.0	24.00	262.30	1,076.8	-4,455.2	-22.1	-163.6	165.1	3.00	1,593,253.22	2,286,338.70
1,200.0	27.00	262.30	1,167.1	-4,364.9	-27.9	-206.3	208.2	3.00	1,593,248.64	2,286,295.90
1,300.0	30.00	262.30	1,254.9	-4,277.1	-34.3	-253.6	255.9	3.00	1,593,243.56	2,286,248.46
1,327.3	30.82	262.30	1,278.4	-4,253.6	-36.1	-267.2	269.7	3.00	1,593,242.10	2,286,234.74
<b>Start 2421.0 hold at 1327.3 MD</b>										
1,400.0	30.82	262.30	1,340.9	-4,191.1	-41.1	-304.2	306.9	0.00	1,593,238.13	2,286,197.69
1,500.0	30.82	262.30	1,426.8	-4,105.2	-48.0	-354.9	358.2	0.00	1,593,232.68	2,286,146.75
1,600.0	30.82	262.30	1,512.7	-4,019.3	-54.8	-405.7	409.4	0.00	1,593,227.24	2,286,095.81
1,700.0	30.82	262.30	1,598.5	-3,933.5	-61.7	-456.5	460.6	0.00	1,593,221.79	2,286,044.87
1,800.0	30.82	262.30	1,684.4	-3,847.6	-68.6	-507.2	511.9	0.00	1,593,216.34	2,285,993.93
1,818.1	30.82	262.30	1,700.0	-3,832.0	-69.8	-516.5	521.1	0.00	1,593,215.35	2,285,984.69
<b>Surface Casing</b>										
1,900.0	30.82	262.30	1,770.3	-3,761.7	-75.4	-558.0	563.1	0.00	1,593,210.89	2,285,942.99
2,000.0	30.82	262.30	1,856.2	-3,675.8	-82.3	-608.8	614.3	0.00	1,593,205.44	2,285,892.05
2,100.0	30.82	262.30	1,942.1	-3,589.9	-89.2	-659.6	665.6	0.00	1,593,199.99	2,285,841.10
2,200.0	30.82	262.30	2,028.0	-3,504.0	-96.0	-710.3	716.8	0.00	1,593,194.54	2,285,790.16

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<b>Well:</b>	YATER 43D-18-07-95	<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	30.82	262.30	2,113.8	-3,418.2	-102.9	-761.1	768.0	0.00	1,593,189.10	2,285,739.22
2,400.0	30.82	262.30	2,199.7	-3,332.3	-109.7	-811.9	819.2	0.00	1,593,183.65	2,285,688.28
2,500.0	30.82	262.30	2,285.6	-3,246.4	-116.6	-862.6	870.5	0.00	1,593,178.20	2,285,637.34
2,600.0	30.82	262.30	2,371.5	-3,160.5	-123.5	-913.4	921.7	0.00	1,593,172.75	2,285,586.40
2,700.0	30.82	262.30	2,457.4	-3,074.6	-130.3	-964.2	972.9	0.00	1,593,167.30	2,285,535.46
2,800.0	30.82	262.30	2,543.2	-2,988.8	-137.2	-1,014.9	1,024.2	0.00	1,593,161.85	2,285,484.52
2,900.0	30.82	262.30	2,629.1	-2,902.9	-144.1	-1,065.7	1,075.4	0.00	1,593,156.40	2,285,433.58
3,000.0	30.82	262.30	2,715.0	-2,817.0	-150.9	-1,116.5	1,126.6	0.00	1,593,150.96	2,285,382.64
3,100.0	30.82	262.30	2,800.9	-2,731.1	-157.8	-1,167.2	1,177.9	0.00	1,593,145.51	2,285,331.70
3,200.0	30.82	262.30	2,886.8	-2,645.2	-164.6	-1,218.0	1,229.1	0.00	1,593,140.06	2,285,280.76
3,300.0	30.82	262.30	2,972.6	-2,559.4	-171.5	-1,268.8	1,280.3	0.00	1,593,134.61	2,285,229.82
3,400.0	30.82	262.30	3,058.5	-2,473.5	-178.4	-1,319.5	1,331.6	0.00	1,593,129.16	2,285,178.88
3,500.0	30.82	262.30	3,144.4	-2,387.6	-185.2	-1,370.3	1,382.8	0.00	1,593,123.71	2,285,127.94
3,600.0	30.82	262.30	3,230.3	-2,301.7	-192.1	-1,421.1	1,434.0	0.00	1,593,118.27	2,285,077.00
3,700.0	30.82	262.30	3,316.2	-2,215.8	-199.0	-1,471.9	1,485.2	0.00	1,593,112.82	2,285,026.06
3,740.6	30.82	262.30	3,351.0	-2,181.0	-201.7	-1,492.5	1,506.0	0.00	1,593,110.61	2,285,005.39
<b>Williams Fork</b>										
3,748.2	30.82	262.30	3,357.6	-2,174.4	-202.3	-1,496.3	1,509.9	0.00	1,593,110.19	2,285,001.50
<b>Start Drop -3.00</b>										
3,800.0	29.26	262.30	3,402.4	-2,129.6	-205.7	-1,522.0	1,535.9	3.00	1,593,107.43	2,284,975.72
3,900.0	26.26	262.30	3,490.9	-2,041.1	-212.0	-1,568.2	1,582.4	3.00	1,593,102.48	2,284,929.41
4,000.0	23.26	262.30	3,581.7	-1,950.3	-217.6	-1,609.7	1,624.3	3.00	1,593,098.02	2,284,887.76
4,100.0	20.26	262.30	3,674.5	-1,857.5	-222.6	-1,646.4	1,661.4	3.00	1,593,094.08	2,284,850.90
4,200.0	17.26	262.30	3,769.2	-1,762.8	-226.9	-1,678.3	1,693.6	3.00	1,593,090.66	2,284,818.92
4,300.0	14.26	262.30	3,865.4	-1,666.6	-230.5	-1,705.2	1,720.7	3.00	1,593,087.77	2,284,791.91
4,400.0	11.26	262.30	3,962.9	-1,569.1	-233.5	-1,727.1	1,742.8	3.00	1,593,085.42	2,284,769.94
4,500.0	8.26	262.30	4,061.5	-1,470.5	-235.7	-1,743.9	1,759.8	3.00	1,593,083.62	2,284,753.08

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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)	
4,600.0	5.26	262.30	4,160.8	-1,371.2	-237.3	-1,755.6	1,771.6	3.00	1,593,082.37	2,284,741.37	
4,700.0	2.26	262.30	4,260.5	-1,271.5	-238.2	-1,762.1	1,778.1	3.00	1,593,081.67	2,284,734.84	
4,775.5	0.00	0.00	4,336.0	-1,196.0	-238.4	-1,763.6	1,779.6	3.00	1,593,081.51	2,284,733.36	
Back to Vertical - Start 2258.0 hold at 4775.5 MD - Top of Gas - 43D-18-07-95 TGT											
4,800.0	0.00	0.00	4,360.5	-1,171.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
4,900.0	0.00	0.00	4,460.5	-1,071.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,000.0	0.00	0.00	4,560.5	-971.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,100.0	0.00	0.00	4,660.5	-871.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,200.0	0.00	0.00	4,760.5	-771.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,300.0	0.00	0.00	4,860.5	-671.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,400.0	0.00	0.00	4,960.5	-571.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,500.0	0.00	0.00	5,060.5	-471.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,600.0	0.00	0.00	5,160.5	-371.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,700.0	0.00	0.00	5,260.5	-271.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,800.0	0.00	0.00	5,360.5	-171.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
5,900.0	0.00	0.00	5,460.5	-71.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,000.0	0.00	0.00	5,560.5	28.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,100.0	0.00	0.00	5,660.5	128.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,200.0	0.00	0.00	5,760.5	228.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,222.5	0.00	0.00	5,783.0	251.0	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
Cameo											
6,300.0	0.00	0.00	5,860.5	328.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,400.0	0.00	0.00	5,960.5	428.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,500.0	0.00	0.00	6,060.5	528.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,600.0	0.00	0.00	6,160.5	628.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,700.0	0.00	0.00	6,260.5	728.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
6,733.5	0.00	0.00	6,294.0	762.0	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36	
Rollins											

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Planned Survey										
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6,800.0	0.00	0.00	6,360.5	828.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36
6,900.0	0.00	0.00	6,460.5	928.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36
7,000.0	0.00	0.00	6,560.5	1,028.5	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36
7,033.5	0.00	0.00	6,594.0	1,062.0	-238.4	-1,763.6	1,779.6	0.00	1,593,081.51	2,284,733.36
TD at 7033.5										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,740.6	3,351.0	Williams Fork		0.00		
4,775.5	4,336.0	Top of Gas		0.00		
6,222.5	5,783.0	Cameo		0.00		
6,733.5	6,294.0	Rollins		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.0	300.0	0.0	0.0	Start Build 3.00	
1,327.3	1,278.4	-36.1	-267.2	Start 2421.0 hold at 1327.3 MD	
1,818.1	1,700.0	-69.8	-516.5	Surface Casing	
3,748.2	3,357.6	-202.3	-1,496.3	Start Drop -3.00	
4,775.5	4,336.0	-238.4	-1,763.6	Back to Vertical	
4,775.5	4,336.0	-238.4	-1,763.6	Start 2258.0 hold at 4775.5 MD	
7,033.5	6,594.0	-238.4	-1,763.6	TD at 7033.5	

Checked By: _____	Approved By: _____	Date: _____
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Well Name: YATER 43D-18-07-95  
Surface Location: Yater  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5519.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1593270.78 2286502.88 39° 26' 6.202 N 108° 1' 35.301 W  
EST KB YATER 43D-18-07-95 @ 5532.0usft (EST KB)



Azimuths to True North  
Magnetic North: 9.93°  
Magnetic Field  
Strength: 51878.3snT  
Dip Angle: 65.59°  
Date: 10/23/2014  
Model: IGRF2010

Yater  
YATER 43D-18-07-95  
Design #1  
20:38, October 28 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
43D-18-07-95 TGT4336.0		-238.4	-1763.6	1593081.51	2284733.36	39° 26' 3.845 N	108° 1' 57.779 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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	1327.3	30.82	262.30	1278.4	-36.1	-267.2	3.00	262.30	269.7	
4	3748.2	30.82	262.30	3357.6	-202.3	-1496.3	0.00	0.00	1509.9	
5	4775.5	0.00	0.00	4336.0	-238.4	-1763.6	3.00	180.00	1779.6	43D-18-07-95 TGT
6	7033.5	0.00	0.00	6594.0	-238.4	-1763.6	0.00	0.00	1779.6	

#### ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.00
1278.4	1327.3	Start 2421.0 hold at 1327.3 MD
1700.0	1818.1	Surface Casing
3357.6	3748.2	Start Drop -3.00
4336.0	4775.5	Back to Vertical
4336.0	4775.5	Start 2258.0 hold at 4775.5 MD
6594.0	7033.5	TD at 7033.5

#### FORMATION TOP DETAILS

TVDPPath	MDPath	Formation	DipAngle	DipDir
3351.0	3740.6	Williams Fork	0.00	
4336.0	4775.5	Top of Gas	0.00	
5783.0	6222.5	Cameo	0.00	
6294.0	6733.5	Rollins	0.00	

