



## **Ursa Operating Company, LLC**

**Rockies Region**

**Yater**

**YATER 21C-17-07-95**

**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 21C-17-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	YATER 21C-17-07-95 @ 5532.0usft (EST KB)
<b>Site:</b>	Yater	<b>MD Reference:</b>	YATER 21C-17-07-95 @ 5532.0usft (EST KB)
<b>Well:</b>	YATER 21C-17-07-95	<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 21C-17-07-95, SHL LAT: 39.435331805 LONG: -108.026401252				
Well Position	+N/-S	0.0 usft	Northing:	1,593,370.62 usft	Latitude:	39° 26' 7.194 N
	+E/-W	0.0 usft	Easting:	2,286,525.82 usft	Longitude:	108° 1' 35.045 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	17.36

Survey Tool Program		Date	10/27/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	7,611.3	Design #1 (Wellbore #1)	MWD	MWD - Standard	

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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	1,593,370.62	2,286,525.82
100.0	0.00	0.00	100.0	-5,432.0	0.0	0.0	0.0	0.00	1,593,370.62	2,286,525.82
200.0	0.00	0.00	200.0	-5,332.0	0.0	0.0	0.0	0.00	1,593,370.62	2,286,525.82
300.0	0.00	0.00	300.0	-5,232.0	0.0	0.0	0.0	0.00	1,593,370.62	2,286,525.82
<b>Start Build 3.50</b>										
400.0	3.50	17.36	399.9	-5,132.1	2.9	0.9	3.1	3.50	1,593,373.51	2,286,526.82
500.0	7.00	17.36	499.5	-5,032.5	11.6	3.6	12.2	3.50	1,593,382.16	2,286,529.79
600.0	10.50	17.36	598.3	-4,933.7	26.2	8.2	27.4	3.50	1,593,396.55	2,286,534.73
700.0	14.00	17.36	696.0	-4,836.0	46.4	14.5	48.6	3.50	1,593,416.61	2,286,541.62
800.0	17.50	17.36	792.3	-4,739.7	72.3	22.6	75.8	3.50	1,593,442.28	2,286,550.43
900.0	21.00	17.36	886.7	-4,645.3	103.8	32.4	108.7	3.50	1,593,473.46	2,286,561.14
1,000.0	24.50	17.36	978.9	-4,553.1	140.7	44.0	147.4	3.50	1,593,510.03	2,286,573.70
1,100.0	28.00	17.36	1,068.5	-4,463.5	182.9	57.2	191.6	3.50	1,593,551.85	2,286,588.06
1,200.0	31.50	17.36	1,155.3	-4,376.7	230.2	72.0	241.2	3.50	1,593,598.78	2,286,604.18
1,300.0	35.00	17.36	1,239.0	-4,293.0	282.6	88.3	296.1	3.50	1,593,650.62	2,286,621.98
1,320.7	35.72	17.36	1,255.8	-4,276.2	294.0	91.9	308.0	3.50	1,593,661.93	2,286,625.87
<b>Start 3681.0 hold at 1320.7 MD</b>										
1,400.0	35.72	17.36	1,320.2	-4,211.8	338.2	105.7	354.3	0.00	1,593,705.74	2,286,640.91
1,500.0	35.72	17.36	1,401.4	-4,130.6	393.9	123.1	412.7	0.00	1,593,760.97	2,286,659.88
1,600.0	35.72	17.36	1,482.6	-4,049.4	449.6	140.6	471.1	0.00	1,593,816.19	2,286,678.84
1,700.0	35.72	17.36	1,563.8	-3,968.2	505.4	158.0	529.5	0.00	1,593,871.41	2,286,697.81
1,800.0	35.72	17.36	1,645.0	-3,887.0	561.1	175.4	587.9	0.00	1,593,926.63	2,286,716.77
1,867.8	35.72	17.36	1,700.0	-3,832.0	598.9	187.2	627.5	0.00	1,593,964.07	2,286,729.63
<b>Surface Casing</b>										
1,900.0	35.72	17.36	1,726.1	-3,805.9	616.8	192.8	646.3	0.00	1,593,981.85	2,286,735.74
2,000.0	35.72	17.36	1,807.3	-3,724.7	672.6	210.3	704.7	0.00	1,594,037.07	2,286,754.70
2,100.0	35.72	17.36	1,888.5	-3,643.5	728.3	227.7	763.0	0.00	1,594,092.29	2,286,773.67
2,200.0	35.72	17.36	1,969.7	-3,562.3	784.0	245.1	821.4	0.00	1,594,147.51	2,286,792.63

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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)
2,300.0	35.72	17.36	2,050.9	-3,481.1	839.7	262.5	879.8	0.00	1,594,202.73	2,286,811.59
2,400.0	35.72	17.36	2,132.1	-3,399.9	895.5	279.9	938.2	0.00	1,594,257.95	2,286,830.56
2,500.0	35.72	17.36	2,213.3	-3,318.7	951.2	297.4	996.6	0.00	1,594,313.17	2,286,849.52
2,600.0	35.72	17.36	2,294.4	-3,237.6	1,006.9	314.8	1,055.0	0.00	1,594,368.39	2,286,868.49
2,700.0	35.72	17.36	2,375.6	-3,156.4	1,062.6	332.2	1,113.4	0.00	1,594,423.62	2,286,887.45
2,800.0	35.72	17.36	2,456.8	-3,075.2	1,118.4	349.6	1,171.7	0.00	1,594,478.84	2,286,906.42
2,900.0	35.72	17.36	2,538.0	-2,994.0	1,174.1	367.1	1,230.1	0.00	1,594,534.06	2,286,925.38
3,000.0	35.72	17.36	2,619.2	-2,912.8	1,229.8	384.5	1,288.5	0.00	1,594,589.28	2,286,944.35
3,100.0	35.72	17.36	2,700.4	-2,831.6	1,285.5	401.9	1,346.9	0.00	1,594,644.50	2,286,963.31
3,200.0	35.72	17.36	2,781.5	-2,750.5	1,341.3	419.3	1,405.3	0.00	1,594,699.72	2,286,982.27
3,300.0	35.72	17.36	2,862.7	-2,669.3	1,397.0	436.7	1,463.7	0.00	1,594,754.94	2,287,001.24
3,400.0	35.72	17.36	2,943.9	-2,588.1	1,452.7	454.2	1,522.1	0.00	1,594,810.16	2,287,020.20
3,500.0	35.72	17.36	3,025.1	-2,506.9	1,508.5	471.6	1,580.5	0.00	1,594,865.38	2,287,039.17
3,600.0	35.72	17.36	3,106.3	-2,425.7	1,564.2	489.0	1,638.8	0.00	1,594,920.60	2,287,058.13
3,700.0	35.72	17.36	3,187.5	-2,344.5	1,619.9	506.4	1,697.2	0.00	1,594,975.82	2,287,077.10
3,800.0	35.72	17.36	3,268.7	-2,263.3	1,675.6	523.8	1,755.6	0.00	1,595,031.04	2,287,096.06
3,900.0	35.72	17.36	3,349.8	-2,182.2	1,731.4	541.3	1,814.0	0.00	1,595,086.26	2,287,115.03
4,000.0	35.72	17.36	3,431.0	-2,101.0	1,787.1	558.7	1,872.4	0.00	1,595,141.49	2,287,133.99
4,100.0	35.72	17.36	3,512.2	-2,019.8	1,842.8	576.1	1,930.8	0.00	1,595,196.71	2,287,152.96
4,141.6	35.72	17.36	3,546.0	-1,986.0	1,866.0	583.4	1,955.1	0.00	1,595,219.69	2,287,160.85
<b>Williams Fork</b>										
4,200.0	35.72	17.36	3,593.4	-1,938.6	1,898.5	593.5	1,989.2	0.00	1,595,251.93	2,287,171.92
4,300.0	35.72	17.36	3,674.6	-1,857.4	1,954.3	611.0	2,047.5	0.00	1,595,307.15	2,287,190.88
4,400.0	35.72	17.36	3,755.8	-1,776.2	2,010.0	628.4	2,105.9	0.00	1,595,362.37	2,287,209.85
4,500.0	35.72	17.36	3,837.0	-1,695.0	2,065.7	645.8	2,164.3	0.00	1,595,417.59	2,287,228.81
4,600.0	35.72	17.36	3,918.1	-1,613.9	2,121.4	663.2	2,222.7	0.00	1,595,472.81	2,287,247.78
4,700.0	35.72	17.36	3,999.3	-1,532.7	2,177.2	680.6	2,281.1	0.00	1,595,528.03	2,287,266.74

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<b>Well:</b>	YATER 21C-17-07-95	<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	35.72	17.36	4,080.5	-1,451.5	2,232.9	698.1	2,339.5	0.00	1,595,583.25	2,287,285.71
4,900.0	35.72	17.36	4,161.7	-1,370.3	2,288.6	715.5	2,397.9	0.00	1,595,638.47	2,287,304.67
5,001.6	35.72	17.36	4,244.2	-1,287.8	2,345.3	733.2	2,457.2	0.00	1,595,694.59	2,287,323.94
Start Drop -3.50										
5,100.0	32.28	17.36	4,325.7	-1,206.3	2,397.8	749.6	2,512.2	3.50	1,595,746.61	2,287,341.81
5,200.0	28.78	17.36	4,411.9	-1,120.1	2,446.2	764.8	2,563.0	3.50	1,595,794.65	2,287,358.31
5,300.0	25.28	17.36	4,500.9	-1,031.1	2,489.6	778.3	2,608.4	3.50	1,595,837.62	2,287,373.07
5,333.1	24.12	17.36	4,531.0	-1,001.0	2,502.8	782.4	2,622.3	3.50	1,595,850.71	2,287,377.56
Top of Gas										
5,388.8	22.17	17.36	4,582.3	-949.7	2,523.7	789.0	2,644.2	3.50	1,595,871.43	2,287,384.67
21C-17-07-95 TGT										
5,400.0	21.78	17.36	4,592.6	-939.4	2,527.7	790.2	2,648.3	3.50	1,595,875.38	2,287,386.03
5,500.0	18.28	17.36	4,686.5	-845.5	2,560.4	800.4	2,682.6	3.50	1,595,907.76	2,287,397.15
5,600.0	14.78	17.36	4,782.4	-749.6	2,587.5	808.9	2,711.0	3.50	1,595,934.67	2,287,406.39
5,700.0	11.28	17.36	4,879.8	-652.2	2,609.1	815.7	2,733.6	3.50	1,595,955.99	2,287,413.72
5,800.0	7.78	17.36	4,978.4	-553.6	2,624.9	820.6	2,750.1	3.50	1,595,971.65	2,287,419.09
5,900.0	4.28	17.36	5,077.8	-454.2	2,634.9	823.7	2,760.6	3.50	1,595,981.58	2,287,422.50
6,000.0	0.78	17.36	5,177.7	-354.3	2,639.1	825.1	2,765.1	3.50	1,595,985.75	2,287,423.94
6,022.3	0.00	0.00	5,200.0	-332.0	2,639.2	825.1	2,765.2	3.50	1,595,985.90	2,287,423.99
Start 1589.0 hold at 6022.3 MD - Back to Vertical										
6,100.0	0.00	0.00	5,277.7	-254.3	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,200.0	0.00	0.00	5,377.7	-154.3	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,300.0	0.00	0.00	5,477.7	-54.3	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,400.0	0.00	0.00	5,577.7	45.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,500.0	0.00	0.00	5,677.7	145.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,600.0	0.00	0.00	5,777.7	245.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,700.0	0.00	0.00	5,877.7	345.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
6,800.0	0.00	0.00	5,977.7	445.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99

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Planned Survey										
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6,800.3	0.00	0.00	5,978.0	446.0	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
<b>Cameo</b>										
6,900.0	0.00	0.00	6,077.7	545.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,000.0	0.00	0.00	6,177.7	645.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,100.0	0.00	0.00	6,277.7	745.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,200.0	0.00	0.00	6,377.7	845.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,300.0	0.00	0.00	6,477.7	945.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,311.3	0.00	0.00	6,489.0	957.0	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
<b>Rollins</b>										
7,400.0	0.00	0.00	6,577.7	1,045.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,500.0	0.00	0.00	6,677.7	1,145.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,600.0	0.00	0.00	6,777.7	1,245.7	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
7,611.3	0.00	0.00	6,789.0	1,257.0	2,639.2	825.1	2,765.2	0.00	1,595,985.90	2,287,423.99
<b>TD at 7611.3</b>										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,141.6	3,546.0	Williams Fork		0.00		
5,333.1	4,531.0	Top of Gas		0.00		
7,311.3	6,489.0	Rollins		0.00		
6,800.3	5,978.0	Cameo		0.00		

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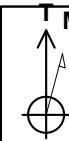
## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.0	300.0	0.0	0.0	Start Build 3.50
1,320.7	1,255.8	294.0	91.9	Start 3681.0 hold at 1320.7 MD
1,867.8	1,700.0	598.9	187.2	Surface Casing
5,001.6	4,244.2	2,345.3	733.2	Start Drop -3.50
6,022.3	5,200.0	2,639.2	825.1	Start 1589.0 hold at 6022.3 MD
6,022.3	5,200.0	2,639.2	825.1	Back to Vertical
7,611.3	6,789.0	2,639.2	825.1	TD at 7611.3

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



Well Name: YATER 21C-17-07-95  
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 1593370.62 2286525.82 39° 26' 7.194 N 108° 1' 35.045 W  
EST KB YATER 21C-17-07-95 @ 5532.0usft (EST KB)



Azimuths to True North  
Magnetic North: 9.93°  
Magnetic Field  
Strength: 51878.4snT  
Dip Angle: 65.59°  
Date: 10/23/2014  
Model: IGRF2010

Yater  
YATER 21C-17-07-95  
Design #1  
10:37, October 28 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
21C-17-07-95 TGT4531.0		2639.2	825.1	1595985.90	2287423.99	39° 26' 33.280 N	108° 1' 24.527 W	Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	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	1320.7	35.72	17.36	1255.8	294.0	91.9	3.50	17.36	308.0	
4	5001.6	35.72	17.36	4244.2	2345.3	733.2	0.00	0.00	2457.2	
5	6022.3	0.00	0.00	5200.0	2639.2	825.1	3.50	180.00	2765.2	
6	7611.3	0.00	0.00	6789.0	2639.2	825.1	0.00	0.00	2765.2	

#### ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.50
1255.8	1320.7	Start 3681.0 hold at 1320.7 MD
1700.0	1867.8	Surface Casing
4244.2	5001.6	Start Drop -3.50
5200.0	6022.3	Back to Vertical
5200.0	6022.3	Start 1589.0 hold at 6022.3 MD
6789.0	7611.3	TD at 7611.3

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3546.0	4141.6	Williams Fork	0.00	
4531.0	5333.1	Top of Gas	0.00	
5978.0	6800.3	Cameo	0.00	
6489.0	7311.3	Rollins	0.00	

