



Ursa Operating Company, LLC

Rockies Region

Yater

YATER 43B-18-07-95

Wellbore #1

Plan: Design #1

Ursa Operating Company LLC Planning Report

28 October, 2014



Company: Ursa Operating Company, LLC	Local Co-ordinate Reference: Well YATER 43B-18-07-95
Project: Rockies Region	TVD Reference: YATER 43B-18-07-95 @ 5532.0usft (EST KB)
Site: Yater	MD Reference: YATER 43B-18-07-95 @ 5532.0usft (EST KB)
Well: YATER 43B-18-07-95	North Reference: True
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Design #1	Database: 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	Latitude: 39° 26' 7.071 N
From: Lat/Long	Easting:	2,286,525.77 usft	Longitude: 108° 1' 35.041 W
Position Uncertainty: 0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: -1.59 °

Well	YATER 43B-18-07-95, SHL LAT: 39.435124611 LONG: -108.026474675		
Well Position	+N/-S	0.0 usft	Northing: 1,593,295.76 usft
	+E/-W	0.0 usft	Easting: 2,286,502.99 usft
Position Uncertainty	0.0 usft		Latitude: 39° 26' 6.448 N
			Longitude: 108° 1' 35.309 W
			Wellhead Elevation: 5,532.0 usft
			Ground Level: 5,519.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	10/23/2014	9.93
			Dip Angle (°) 65.59
			Field Strength (nT) 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)
	0.0	0.0	0.0
			Direction (°) 282.61

Survey Tool Program	Date 10/23/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.0	7,059.4	Design #1 (Wellbore #1)	MWD
			Description MWD - Standard

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Well:	YATER 43B-18-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	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)
0.0	0.00	0.00	0.0	-5,532.0	0.0	0.0	0.0	0.00	1,593,295.76	2,286,502.99
100.0	0.00	0.00	100.0	-5,432.0	0.0	0.0	0.0	0.00	1,593,295.76	2,286,502.99
200.0	0.00	0.00	200.0	-5,332.0	0.0	0.0	0.0	0.00	1,593,295.76	2,286,502.99
300.0	0.00	0.00	300.0	-5,232.0	0.0	0.0	0.0	0.00	1,593,295.76	2,286,502.99
Start Build 3.00										
400.0	3.00	282.61	400.0	-5,132.0	0.6	-2.6	2.6	3.00	1,593,296.41	2,286,500.46
500.0	6.00	282.61	499.6	-5,032.4	2.3	-10.2	10.5	3.00	1,593,298.33	2,286,492.85
600.0	9.00	282.61	598.8	-4,933.2	5.1	-22.9	23.5	3.00	1,593,301.53	2,286,480.20
700.0	12.00	282.61	697.1	-4,834.9	9.1	-40.7	41.7	3.00	1,593,306.00	2,286,462.54
800.0	15.00	282.61	794.3	-4,737.7	14.2	-63.5	65.1	3.00	1,593,311.73	2,286,439.91
900.0	18.00	282.61	890.2	-4,641.8	20.4	-91.2	93.5	3.00	1,593,318.70	2,286,412.38
1,000.0	21.00	282.61	984.4	-4,547.6	27.7	-123.8	126.9	3.00	1,593,326.89	2,286,380.02
1,100.0	24.00	282.61	1,076.8	-4,455.2	36.1	-161.1	165.1	3.00	1,593,336.28	2,286,342.93
1,200.0	27.00	282.61	1,167.1	-4,364.9	45.4	-203.1	208.2	3.00	1,593,346.84	2,286,301.20
1,300.0	30.00	282.61	1,254.9	-4,277.1	55.9	-249.7	255.9	3.00	1,593,358.55	2,286,254.95
1,347.5	31.42	282.61	1,295.7	-4,236.3	61.2	-273.4	280.1	3.00	1,593,364.50	2,286,231.45
Start 2406.5 hold at 1347.5 MD										
1,400.0	31.42	282.61	1,340.6	-4,191.4	67.1	-300.1	307.5	0.00	1,593,371.22	2,286,204.89
1,500.0	31.42	282.61	1,425.9	-4,106.1	78.5	-351.0	359.6	0.00	1,593,384.01	2,286,154.35
1,600.0	31.42	282.61	1,511.2	-4,020.8	89.9	-401.8	411.8	0.00	1,593,396.81	2,286,103.81
1,700.0	31.42	282.61	1,596.6	-3,935.4	101.3	-452.7	463.9	0.00	1,593,409.60	2,286,053.27
1,800.0	31.42	282.61	1,681.9	-3,850.1	112.7	-503.6	516.1	0.00	1,593,422.40	2,286,002.72
1,821.2	31.42	282.61	1,700.0	-3,832.0	115.1	-514.4	527.1	0.00	1,593,425.11	2,285,992.00
Surface Casing										
1,900.0	31.42	282.61	1,767.2	-3,764.8	124.1	-554.5	568.2	0.00	1,593,435.19	2,285,952.18
2,000.0	31.42	282.61	1,852.6	-3,679.4	135.4	-605.4	620.3	0.00	1,593,447.98	2,285,901.64
2,100.0	31.42	282.61	1,937.9	-3,594.1	146.8	-656.2	672.5	0.00	1,593,460.78	2,285,851.10
2,200.0	31.42	282.61	2,023.2	-3,508.8	158.2	-707.1	724.6	0.00	1,593,473.57	2,285,800.55

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Site:	Yater	MD Reference:	YATER 43B-18-07-95 @ 5532.0usft (EST KB)
Well:	YATER 43B-18-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	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	31.42	282.61	2,108.6	-3,423.4	169.6	-758.0	776.7	0.00	1,593,486.36	2,285,750.01
2,400.0	31.42	282.61	2,193.9	-3,338.1	181.0	-808.9	828.9	0.00	1,593,499.16	2,285,699.47
2,500.0	31.42	282.61	2,279.2	-3,252.8	192.4	-859.8	881.0	0.00	1,593,511.95	2,285,648.93
2,600.0	31.42	282.61	2,364.6	-3,167.4	203.7	-910.6	933.1	0.00	1,593,524.75	2,285,598.38
2,700.0	31.42	282.61	2,449.9	-3,082.1	215.1	-961.5	985.3	0.00	1,593,537.54	2,285,547.84
2,800.0	31.42	282.61	2,535.2	-2,996.8	226.5	-1,012.4	1,037.4	0.00	1,593,550.33	2,285,497.30
2,900.0	31.42	282.61	2,620.6	-2,911.4	237.9	-1,063.3	1,089.6	0.00	1,593,563.13	2,285,446.75
3,000.0	31.42	282.61	2,705.9	-2,826.1	249.3	-1,114.1	1,141.7	0.00	1,593,575.92	2,285,396.21
3,100.0	31.42	282.61	2,791.2	-2,740.8	260.7	-1,165.0	1,193.8	0.00	1,593,588.71	2,285,345.67
3,200.0	31.42	282.61	2,876.6	-2,655.4	272.0	-1,215.9	1,246.0	0.00	1,593,601.51	2,285,295.13
3,300.0	31.42	282.61	2,961.9	-2,570.1	283.4	-1,266.8	1,298.1	0.00	1,593,614.30	2,285,244.58
3,400.0	31.42	282.61	3,047.2	-2,484.8	294.8	-1,317.7	1,350.2	0.00	1,593,627.09	2,285,194.04
3,500.0	31.42	282.61	3,132.6	-2,399.4	306.2	-1,368.5	1,402.4	0.00	1,593,639.89	2,285,143.50
3,600.0	31.42	282.61	3,217.9	-2,314.1	317.6	-1,419.4	1,454.5	0.00	1,593,652.68	2,285,092.96
3,700.0	31.42	282.61	3,303.2	-2,228.8	329.0	-1,470.3	1,506.6	0.00	1,593,665.48	2,285,042.41
3,753.9	31.42	282.61	3,349.3	-2,182.7	335.1	-1,497.7	1,534.8	0.00	1,593,672.38	2,285,015.15
Start Drop -3.00										
3,766.5	31.05	282.61	3,360.0	-2,172.0	336.5	-1,504.1	1,541.3	3.00	1,593,673.98	2,285,008.84
Williams Fork										
3,800.0	30.04	282.61	3,388.9	-2,143.1	340.2	-1,520.7	1,558.3	3.00	1,593,678.15	2,284,992.33
3,900.0	27.04	282.61	3,476.7	-2,055.3	350.7	-1,567.3	1,606.1	3.00	1,593,689.88	2,284,946.02
4,000.0	24.04	282.61	3,566.9	-1,965.1	360.1	-1,609.4	1,649.2	3.00	1,593,700.46	2,284,904.22
4,100.0	21.04	282.61	3,659.3	-1,872.7	368.4	-1,646.8	1,687.5	3.00	1,593,709.86	2,284,867.06
4,200.0	18.04	282.61	3,753.5	-1,778.5	375.8	-1,679.5	1,721.0	3.00	1,593,718.07	2,284,834.64
4,300.0	15.04	282.61	3,849.3	-1,682.7	382.0	-1,707.2	1,749.4	3.00	1,593,725.06	2,284,807.04
4,400.0	12.04	282.61	3,946.5	-1,585.5	387.1	-1,730.1	1,772.9	3.00	1,593,730.80	2,284,784.34
4,500.0	9.04	282.61	4,044.8	-1,487.2	391.1	-1,747.9	1,791.1	3.00	1,593,735.29	2,284,766.61

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Site:	Yater	MD Reference:	YATER 43B-18-07-95 @ 5532.0usft (EST KB)
Well:	YATER 43B-18-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	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)
4,600.0	6.04	282.61	4,144.0	-1,388.0	393.9	-1,760.7	1,804.3	3.00	1,593,738.51	2,284,753.89
4,700.0	3.04	282.61	4,243.6	-1,288.4	395.7	-1,768.5	1,812.2	3.00	1,593,740.45	2,284,746.21
4,801.4	0.00	0.00	4,345.0	-1,187.0	396.3	-1,771.1	1,814.9	3.00	1,593,741.11	2,284,743.60
Back to Vertical - Start 2258.0 hold at 4801.4 MD - Top of Gas - 43B-18-07-95 TGT										
4,900.0	0.00	0.00	4,443.6	-1,088.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,000.0	0.00	0.00	4,543.6	-988.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,100.0	0.00	0.00	4,643.6	-888.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,200.0	0.00	0.00	4,743.6	-788.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,300.0	0.00	0.00	4,843.6	-688.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,400.0	0.00	0.00	4,943.6	-588.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,500.0	0.00	0.00	5,043.6	-488.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,600.0	0.00	0.00	5,143.6	-388.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,700.0	0.00	0.00	5,243.6	-288.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,800.0	0.00	0.00	5,343.6	-188.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
5,900.0	0.00	0.00	5,443.6	-88.4	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,000.0	0.00	0.00	5,543.6	11.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,100.0	0.00	0.00	5,643.6	111.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,200.0	0.00	0.00	5,743.6	211.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,248.4	0.00	0.00	5,792.0	260.0	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
Cameo										
6,300.0	0.00	0.00	5,843.6	311.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,400.0	0.00	0.00	5,943.6	411.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,500.0	0.00	0.00	6,043.6	511.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,600.0	0.00	0.00	6,143.6	611.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,700.0	0.00	0.00	6,243.6	711.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
6,759.4	0.00	0.00	6,303.0	771.0	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60
Rollins										
6,800.0	0.00	0.00	6,343.6	811.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60

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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)	
6,900.0	0.00	0.00	6,443.6	911.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60	
7,000.0	0.00	0.00	6,543.6	1,011.6	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60	
7,059.4	0.00	0.00	6,603.0	1,071.0	396.3	-1,771.1	1,814.9	0.00	1,593,741.11	2,284,743.60	
TD at 7059.4											

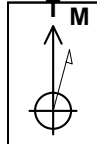
Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,759.4	6,303.0	Rollins		0.00		
6,248.4	5,792.0	Cameo		0.00		
4,801.4	4,345.0	Top of Gas		0.00		
3,766.5	3,360.0	Williams Fork		0.00		

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 3.00	
1,347.5	1,295.7	61.2	-273.4	Start 2406.5 hold at 1347.5 MD	
1,821.2	1,700.0	115.1	-514.4	Surface Casing	
3,753.9	3,349.3	335.1	-1,497.7	Start Drop -3.00	
4,801.4	4,345.0	396.3	-1,771.1	Back to Vertical	
4,801.4	4,345.0	396.3	-1,771.1	Start 2258.0 hold at 4801.4 MD	
7,059.4	6,603.0	396.3	-1,771.1	TD at 7059.4	

Checked By: _____	Approved By: _____	Date: _____
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Well Name: YATER 43B-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 1593295.76 2286502.99 39° 26' 6.448 N 108° 1' 35.309 W
 EST KB YATER 43B-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 43B-18-07-95
 Design #1
 20:14, October 28 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
43B-18-07-95 TGT4345.0		396.3	-1771.1	1593741.11	2284743.60	39° 26' 10.364 N	108° 1' 57.883 W	Rectangle (Sides: L40.0 W100.0)

ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.00
1295.7	1347.5	Start 2406.5 hold at 1347.5 MD
1700.0	1821.2	Surface Casing
3349.3	3753.9	Start Drop -3.00
4345.0	4801.4	Back to Vertical
4345.0	4801.4	Start 2258.0 hold at 4801.4 MD
6603.0	7059.4	TD at 7059.4

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	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	1347.5	31.42	282.61	1295.7	61.2	-273.4	3.00	282.61	280.1	
4	3753.9	31.42	282.61	3349.3	335.1	-1497.7	0.00	0.00	1534.8	
5	4801.4	0.00	0.00	4345.0	396.3	-1771.1	3.00	180.00	1814.9	43B-18-07-95 TGT
6	7059.4	0.00	0.00	6603.0	396.3	-1771.1	0.00	0.00	1814.9	

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation	DipAngle	DipDir
3360.0	3766.5	Williams Fork	0.00	
4345.0	4801.4	Top of Gas	0.00	
5792.0	6248.4	Cameo	0.00	
6303.0	6759.4	Rollins	0.00	

