



# **Ursa Operating Company, LLC**

**Rockies Region**

**Watson Ranch B**

**WATSON RANCH B 33B-17-07-95**

**Wellbore #1**

**Plan: Design #1**

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

**20 November, 2014**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well WATSON RANCH B 33B-17-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	WATSON RANCH B 33B-17-07-95 @ 5598.0usft (PAD
<b>Site:</b>	Watson Ranch B	<b>MD Reference:</b>	WATSON RANCH B 33B-17-07-95 @ 5598.0usft (PAD
<b>Well:</b>	WATSON RANCH B 33B-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	Watson Ranch B				
Site Position:		Northing:	1,592,643.01 usft	Latitude:	39° 26' 0.219 N
From:	Lat/Long	Easting:	2,287,301.12 usft	Longitude:	108° 1' 24.909 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.59 °

Well		WATSON RANCH B 33B-17-07-95, SHL LAT: 39.433393452 LONG: -108.023630036				
Well Position	+N/-S	0.0 usft	Northing:	1,592,643.13 usft	Latitude:	39° 26' 0.216 N
	+E/-W	0.0 usft	Easting:	2,287,288.62 usft	Longitude:	108° 1' 25.068 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,598.0 usft	Ground Level:	5,585.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2014	9.92	65.59	51,870

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	54.23

Survey Tool Program		Date	11/20/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	7,189.5	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	0.0	-5,598.0	0.0	0.0	0.0	0.00	1,592,643.13	2,287,288.62
100.0	0.00	0.00	100.0	-5,498.0	0.0	0.0	0.0	0.00	1,592,643.13	2,287,288.62
200.0	0.00	0.00	200.0	-5,398.0	0.0	0.0	0.0	0.00	1,592,643.13	2,287,288.62
300.0	0.00	0.00	300.0	-5,298.0	0.0	0.0	0.0	0.00	1,592,643.13	2,287,288.62
<b>Start Build 3.00</b>										
400.0	3.00	54.23	400.0	-5,198.0	1.5	2.1	2.6	3.00	1,592,644.60	2,287,290.79
500.0	6.00	54.23	499.6	-5,098.4	6.1	8.5	10.5	3.00	1,592,649.01	2,287,297.28
600.0	9.00	54.23	598.8	-4,999.2	13.7	19.1	23.5	3.00	1,592,656.34	2,287,308.08
700.0	12.00	54.23	697.1	-4,900.9	24.4	33.9	41.7	3.00	1,592,666.58	2,287,323.15
800.0	15.00	54.23	794.3	-4,803.7	38.0	52.8	65.1	3.00	1,592,679.69	2,287,342.46
900.0	18.00	54.23	890.2	-4,707.8	54.6	75.8	93.5	3.00	1,592,695.65	2,287,365.95
1,000.0	21.00	54.23	984.4	-4,613.6	74.2	102.9	126.9	3.00	1,592,714.40	2,287,393.56
1,100.0	24.00	54.23	1,076.8	-4,521.2	96.5	134.0	165.1	3.00	1,592,735.90	2,287,425.22
1,200.0	27.00	54.23	1,167.1	-4,430.9	121.7	168.9	208.2	3.00	1,592,760.08	2,287,460.83
1,216.2	27.49	54.23	1,181.5	-4,416.5	126.0	174.9	215.6	3.00	1,592,764.26	2,287,466.98
<b>Start 2799.0 hold at 1216.2 MD</b>										
1,300.0	27.49	54.23	1,255.8	-4,342.2	148.6	206.3	254.3	0.00	1,592,785.98	2,287,498.96
1,400.0	27.49	54.23	1,344.5	-4,253.5	175.6	243.7	300.4	0.00	1,592,811.91	2,287,537.14
1,500.0	27.49	54.23	1,433.2	-4,164.8	202.6	281.2	346.6	0.00	1,592,837.84	2,287,575.32
1,600.0	27.49	54.23	1,521.9	-4,076.1	229.6	318.6	392.7	0.00	1,592,863.77	2,287,613.50
1,700.0	27.49	54.23	1,610.6	-3,987.4	256.6	356.1	438.9	0.00	1,592,889.70	2,287,651.69
1,800.0	27.49	54.23	1,699.4	-3,898.6	283.5	393.5	485.0	0.00	1,592,915.63	2,287,689.87
1,800.7	27.49	54.23	1,700.0	-3,898.0	283.7	393.8	485.4	0.00	1,592,915.82	2,287,690.15
<b>Surface Casing</b>										
1,900.0	27.49	54.23	1,788.1	-3,809.9	310.5	431.0	531.2	0.00	1,592,941.57	2,287,728.05
2,000.0	27.49	54.23	1,876.8	-3,721.2	337.5	468.4	577.3	0.00	1,592,967.50	2,287,766.23
2,100.0	27.49	54.23	1,965.5	-3,632.5	364.5	505.9	623.5	0.00	1,592,993.43	2,287,804.42
2,200.0	27.49	54.23	2,054.2	-3,543.8	391.5	543.3	669.7	0.00	1,593,019.36	2,287,842.60

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<b>Well:</b>	WATSON RANCH B 33B-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

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	27.49	54.23	2,142.9	-3,455.1	418.5	580.8	715.8	0.00	1,593,045.29	2,287,880.78
2,400.0	27.49	54.23	2,231.6	-3,366.4	445.4	618.2	762.0	0.00	1,593,071.22	2,287,918.96
2,500.0	27.49	54.23	2,320.3	-3,277.7	472.4	655.7	808.1	0.00	1,593,097.15	2,287,957.14
2,600.0	27.49	54.23	2,409.0	-3,189.0	499.4	693.1	854.3	0.00	1,593,123.08	2,287,995.33
2,700.0	27.49	54.23	2,497.8	-3,100.2	526.4	730.5	900.4	0.00	1,593,149.01	2,288,033.51
2,800.0	27.49	54.23	2,586.5	-3,011.5	553.4	768.0	946.6	0.00	1,593,174.95	2,288,071.69
2,900.0	27.49	54.23	2,675.2	-2,922.8	580.3	805.4	992.7	0.00	1,593,200.88	2,288,109.87
3,000.0	27.49	54.23	2,763.9	-2,834.1	607.3	842.9	1,038.9	0.00	1,593,226.81	2,288,148.06
3,100.0	27.49	54.23	2,852.6	-2,745.4	634.3	880.3	1,085.0	0.00	1,593,252.74	2,288,186.24
3,200.0	27.49	54.23	2,941.3	-2,656.7	661.3	917.8	1,131.2	0.00	1,593,278.67	2,288,224.42
3,300.0	27.49	54.23	3,030.0	-2,568.0	688.3	955.2	1,177.4	0.00	1,593,304.60	2,288,262.60
3,400.0	27.49	54.23	3,118.7	-2,479.3	715.2	992.7	1,223.5	0.00	1,593,330.53	2,288,300.78
3,500.0	27.49	54.23	3,207.5	-2,390.5	742.2	1,030.1	1,269.7	0.00	1,593,356.46	2,288,338.97
3,600.0	27.49	54.23	3,296.2	-2,301.8	769.2	1,067.6	1,315.8	0.00	1,593,382.39	2,288,377.15
3,700.0	27.49	54.23	3,384.9	-2,213.1	796.2	1,105.0	1,362.0	0.00	1,593,408.33	2,288,415.33
3,800.0	27.49	54.23	3,473.6	-2,124.4	823.2	1,142.5	1,408.1	0.00	1,593,434.26	2,288,453.51
3,898.5	27.49	54.23	3,561.0	-2,037.0	849.8	1,179.4	1,453.6	0.00	1,593,459.81	2,288,491.14
<b>Williams Fork</b>										
3,900.0	27.49	54.23	3,562.3	-2,035.7	850.2	1,179.9	1,454.3	0.00	1,593,460.19	2,288,491.69
4,000.0	27.49	54.23	3,651.0	-1,947.0	877.1	1,217.4	1,500.4	0.00	1,593,486.12	2,288,529.88
4,015.2	27.49	54.23	3,664.5	-1,933.5	881.2	1,223.1	1,507.5	0.00	1,593,490.06	2,288,535.68
<b>Start Drop -3.00</b>										
4,100.0	24.94	54.23	3,740.6	-1,857.4	903.1	1,253.4	1,544.9	3.00	1,593,511.11	2,288,566.67
4,200.0	21.94	54.23	3,832.3	-1,765.7	926.4	1,285.7	1,584.7	3.00	1,593,533.45	2,288,599.58
4,300.0	18.94	54.23	3,926.0	-1,672.0	946.8	1,314.1	1,619.6	3.00	1,593,553.08	2,288,628.47
4,400.0	15.94	54.23	4,021.4	-1,576.6	964.3	1,338.4	1,649.6	3.00	1,593,569.92	2,288,653.26
4,500.0	12.94	54.23	4,118.2	-1,479.8	978.9	1,358.6	1,674.5	3.00	1,593,583.93	2,288,673.89

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<b>Well:</b>	WATSON RANCH B 33B-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)
4,600.0	9.94	54.23	4,216.2	-1,381.8	990.5	1,374.7	1,694.4	3.00	1,593,595.07	2,288,690.31
4,700.0	6.94	54.23	4,315.1	-1,282.9	999.1	1,386.6	1,709.1	3.00	1,593,603.32	2,288,702.45
4,800.0	3.94	54.23	4,414.6	-1,183.4	1,004.6	1,394.3	1,718.5	3.00	1,593,608.65	2,288,710.30
4,900.0	0.94	54.23	4,514.5	-1,083.5	1,007.1	1,397.8	1,722.8	3.00	1,593,611.05	2,288,713.82
4,931.5	0.00	0.00	4,546.0	-1,052.0	1,007.3	1,398.0	1,723.1	3.00	1,593,611.19	2,288,714.04
<b>Back to Vertical - Start 2258.0 hold at 4931.5 MD - Top of Gas - 33B-17-07-95 TGT</b>										
5,000.0	0.00	0.00	4,614.5	-983.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,100.0	0.00	0.00	4,714.5	-883.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,200.0	0.00	0.00	4,814.5	-783.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,300.0	0.00	0.00	4,914.5	-683.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,400.0	0.00	0.00	5,014.5	-583.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,500.0	0.00	0.00	5,114.5	-483.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,600.0	0.00	0.00	5,214.5	-383.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,700.0	0.00	0.00	5,314.5	-283.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,800.0	0.00	0.00	5,414.5	-183.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
5,900.0	0.00	0.00	5,514.5	-83.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,000.0	0.00	0.00	5,614.5	16.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,100.0	0.00	0.00	5,714.5	116.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,200.0	0.00	0.00	5,814.5	216.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,300.0	0.00	0.00	5,914.5	316.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,378.5	0.00	0.00	5,993.0	395.0	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
<b>Cameo</b>										
6,400.0	0.00	0.00	6,014.5	416.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,500.0	0.00	0.00	6,114.5	516.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,600.0	0.00	0.00	6,214.5	616.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,700.0	0.00	0.00	6,314.5	716.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
6,800.0	0.00	0.00	6,414.5	816.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04

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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)
6,889.5	0.00	0.00		6,504.0	906.0	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
Rollins											
6,900.0	0.00	0.00		6,514.5	916.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
7,000.0	0.00	0.00		6,614.5	1,016.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
7,100.0	0.00	0.00		6,714.5	1,116.5	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
7,189.5	0.00	0.00		6,804.0	1,206.0	1,007.3	1,398.0	1,723.1	0.00	1,593,611.19	2,288,714.04
TD at 7189.5											

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,378.5	5,993.0	Cameo		0.00		
4,931.5	4,546.0	Top of Gas		0.00		
3,898.5	3,561.0	Williams Fork		0.00		
6,889.5	6,504.0	Rollins		0.00		

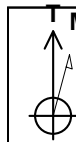
Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.0	300.0	0.0	0.0	Start Build 3.00	
1,216.2	1,181.5	126.0	174.9	Start 2799.0 hold at 1216.2 MD	
1,800.7	1,700.0	283.7	393.8	Surface Casing	
4,015.2	3,664.5	881.2	1,223.1	Start Drop -3.00	
4,931.5	4,546.0	1,007.3	1,398.0	Back to Vertical	
4,931.5	4,546.0	1,007.3	1,398.0	Start 2258.0 hold at 4931.5 MD	
7,189.5	6,804.0	1,007.3	1,398.0	TD at 7189.5	

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<b>Well:</b>	WATSON RANCH B 33B-17-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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Checked By: _____	Approved By: _____	Date: _____
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Well Name: WATSON RANCH B 33B-17-07-95  
Surface Location: Watson Ranch B  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5585.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1592643.13 2287288.62 39° 26' 0.216 N 108° 1' 25.068 W  
PAD Est KB WATSON RANCH B 33B-17-07-95 @ 5598.0usft (PAD Est KB)



Azimuths to True North  
Magnetic North: 9.91°  
Magnetic Field  
Strength: 51869.7snT  
Dip Angle: 65.59°  
Date: 11/19/2014  
Model: IGRF2010

Watson Ranch B  
WATSON RANCH B 33B-17-07-95  
Design #1  
18:44, November 20 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
33B-17-07-95 TGT4546.0		1007.3	1398.0	1593611.19	2288714.04	39° 26' 10.172 N	108° 1' 7.249 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	1216.2	27.49	54.23	1181.5	126.0	174.9	3.00	54.23	215.6	
4	4015.2	27.49	54.23	3664.5	881.2	1223.1	0.00	0.00	1507.5	
5	4931.5	0.00	0.00	4546.0	1007.3	1398.0	3.00	180.00	1723.1	33B-17-07-95 TGT
6	7189.5	0.00	0.00	6804.0	1007.3	1398.0	0.00	0.00	1723.1	

#### ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.00
1181.5	1216.2	Start 2799.0 hold at 1216.2 MD
1700.0	1800.7	Surface Casing
3664.5	4015.2	Start Drop -3.00
4546.0	4931.5	Back to Vertical
4546.0	4931.5	Start 2258.0 hold at 4931.5 MD
6804.0	7189.5	TD at 7189.5

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3561.0	3898.5	Williams Fork	0.00	
4546.0	4931.5	Top of Gas	0.00	
5993.0	6378.5	Cameo	0.00	
6504.0	6889.5	Rollins	0.00	

