



# **Ursa Operating Company, LLC**

**Rockies Region**

**Watson Ranch B**

**WATSON RANCH B 24C-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 24C-17-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD)
<b>Site:</b>	Watson Ranch B	<b>MD Reference:</b>	WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD)
<b>Well:</b>	WATSON RANCH B 24C-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

<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>	Watson Ranch B		
<b>Site Position:</b>		<b>Northing:</b>	1,592,643.01 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,287,301.12 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	39° 26' 0.219 N
		<b>Longitude:</b>	108° 1' 24.909 W
		<b>Grid Convergence:</b>	-1.59 °

<b>Well</b>	WATSON RANCH B 24C-17-07-95, SHL LAT: 39.433334106 LONG: -108.023451740					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,592,620.13 usft	<b>Latitude:</b>	39° 26' 0.003 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,287,338.36 usft	<b>Longitude:</b>	108° 1' 24.426 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	5,598.0 usft	<b>Ground Level:</b>	5,585.0 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	11/19/2014	9.92	65.59	51,870

<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	176.72

<b>Survey Tool Program</b>	Date 11/20/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	6,751.6	Design #1 (Wellbore #1)	MWD	MWD - Standard

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<b>Site:</b>	Watson Ranch B	<b>MD Reference:</b>	WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD
<b>Well:</b>	WATSON RANCH B 24C-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)
0.0	0.00	0.00	0.0	-5,598.0	0.0	0.0	0.0	0.00	1,592,620.13	2,287,338.36
100.0	0.00	0.00	100.0	-5,498.0	0.0	0.0	0.0	0.00	1,592,620.13	2,287,338.36
200.0	0.00	0.00	200.0	-5,398.0	0.0	0.0	0.0	0.00	1,592,620.13	2,287,338.36
300.0	0.00	0.00	300.0	-5,298.0	0.0	0.0	0.0	0.00	1,592,620.13	2,287,338.36
<b>Start Build 3.00</b>										
400.0	3.00	176.72	400.0	-5,198.0	-2.6	0.1	2.6	3.00	1,592,617.51	2,287,338.44
500.0	6.00	176.72	499.6	-5,098.4	-10.4	0.6	10.5	3.00	1,592,609.67	2,287,338.67
589.4	8.68	176.72	588.3	-5,009.7	-21.8	1.3	21.9	3.00	1,592,598.25	2,287,339.01
<b>Start 3614.8 hold at 589.4 MD</b>										
600.0	8.68	176.72	598.8	-4,999.2	-23.4	1.3	23.5	0.00	1,592,596.65	2,287,339.06
700.0	8.68	176.72	697.6	-4,900.4	-38.5	2.2	38.6	0.00	1,592,581.56	2,287,339.50
800.0	8.68	176.72	796.5	-4,801.5	-53.6	3.1	53.7	0.00	1,592,566.47	2,287,339.95
900.0	8.68	176.72	895.3	-4,702.7	-68.7	3.9	68.8	0.00	1,592,551.39	2,287,340.39
1,000.0	8.68	176.72	994.2	-4,603.8	-83.7	4.8	83.9	0.00	1,592,536.30	2,287,340.84
1,100.0	8.68	176.72	1,093.0	-4,505.0	-98.8	5.7	99.0	0.00	1,592,521.21	2,287,341.28
1,200.0	8.68	176.72	1,191.9	-4,406.1	-113.9	6.5	114.1	0.00	1,592,506.12	2,287,341.73
1,300.0	8.68	176.72	1,290.8	-4,307.2	-128.9	7.4	129.1	0.00	1,592,491.03	2,287,342.17
1,400.0	8.68	176.72	1,389.6	-4,208.4	-144.0	8.3	144.2	0.00	1,592,475.95	2,287,342.62
1,500.0	8.68	176.72	1,488.5	-4,109.5	-159.1	9.1	159.3	0.00	1,592,460.86	2,287,343.06
1,600.0	8.68	176.72	1,587.3	-4,010.7	-174.1	10.0	174.4	0.00	1,592,445.77	2,287,343.51
1,700.0	8.68	176.72	1,686.2	-3,911.8	-189.2	10.8	189.5	0.00	1,592,430.68	2,287,343.95
1,714.0	8.68	176.72	1,700.0	-3,898.0	-191.3	11.0	191.6	0.00	1,592,428.57	2,287,344.01
<b>Surface Casing</b>										
1,800.0	8.68	176.72	1,785.0	-3,813.0	-204.3	11.7	204.6	0.00	1,592,415.59	2,287,344.40
1,900.0	8.68	176.72	1,883.9	-3,714.1	-219.4	12.6	219.7	0.00	1,592,400.51	2,287,344.84
2,000.0	8.68	176.72	1,982.7	-3,615.3	-234.4	13.4	234.8	0.00	1,592,385.42	2,287,345.29
2,100.0	8.68	176.72	2,081.6	-3,516.4	-249.5	14.3	249.9	0.00	1,592,370.33	2,287,345.73
2,200.0	8.68	176.72	2,180.4	-3,417.6	-264.6	15.2	265.0	0.00	1,592,355.24	2,287,346.18

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<b>Site:</b> Watson Ranch B	<b>MD Reference:</b> WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD)
<b>Well:</b> WATSON RANCH B 24C-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	8.68	176.72	2,279.3	-3,318.7	-279.6	16.0	280.1	0.00	1,592,340.15	2,287,346.62
2,400.0	8.68	176.72	2,378.1	-3,219.9	-294.7	16.9	295.2	0.00	1,592,325.07	2,287,347.07
2,500.0	8.68	176.72	2,477.0	-3,121.0	-309.8	17.8	310.3	0.00	1,592,309.98	2,287,347.51
2,600.0	8.68	176.72	2,575.9	-3,022.1	-324.8	18.6	325.4	0.00	1,592,294.89	2,287,347.96
2,700.0	8.68	176.72	2,674.7	-2,923.3	-339.9	19.5	340.5	0.00	1,592,279.80	2,287,348.40
2,800.0	8.68	176.72	2,773.6	-2,824.4	-355.0	20.4	355.6	0.00	1,592,264.71	2,287,348.85
2,900.0	8.68	176.72	2,872.4	-2,725.6	-370.1	21.2	370.7	0.00	1,592,249.63	2,287,349.29
3,000.0	8.68	176.72	2,971.3	-2,626.7	-385.1	22.1	385.8	0.00	1,592,234.54	2,287,349.74
3,100.0	8.68	176.72	3,070.1	-2,527.9	-400.2	22.9	400.9	0.00	1,592,219.45	2,287,350.18
3,200.0	8.68	176.72	3,169.0	-2,429.0	-415.3	23.8	415.9	0.00	1,592,204.36	2,287,350.63
3,300.0	8.68	176.72	3,267.8	-2,330.2	-430.3	24.7	431.0	0.00	1,592,189.27	2,287,351.07
3,400.0	8.68	176.72	3,366.7	-2,231.3	-445.4	25.5	446.1	0.00	1,592,174.18	2,287,351.52
3,499.4	8.68	176.72	3,465.0	-2,133.0	-460.4	26.4	461.1	0.00	1,592,159.18	2,287,351.96
<b>Williams Fork</b>										
3,500.0	8.68	176.72	3,465.5	-2,132.5	-460.5	26.4	461.2	0.00	1,592,159.10	2,287,351.96
3,600.0	8.68	176.72	3,564.4	-2,033.6	-475.5	27.3	476.3	0.00	1,592,144.01	2,287,352.41
3,700.0	8.68	176.72	3,663.3	-1,934.7	-490.6	28.1	491.4	0.00	1,592,128.92	2,287,352.85
3,800.0	8.68	176.72	3,762.1	-1,835.9	-505.7	29.0	506.5	0.00	1,592,113.83	2,287,353.30
3,900.0	8.68	176.72	3,861.0	-1,737.0	-520.8	29.9	521.6	0.00	1,592,098.74	2,287,353.74
4,000.0	8.68	176.72	3,959.8	-1,638.2	-535.8	30.7	536.7	0.00	1,592,083.66	2,287,354.19
4,100.0	8.68	176.72	4,058.7	-1,539.3	-550.9	31.6	551.8	0.00	1,592,068.57	2,287,354.64
4,204.2	8.68	176.72	4,161.7	-1,436.3	-566.6	32.5	567.5	0.00	1,592,052.84	2,287,355.10
<b>Start Drop -3.00</b>										
4,300.0	5.81	176.72	4,256.7	-1,341.3	-578.7	33.2	579.6	3.00	1,592,040.77	2,287,355.46
4,400.0	2.81	176.72	4,356.4	-1,241.6	-586.2	33.6	587.1	3.00	1,592,033.26	2,287,355.68
4,493.6	0.00	0.00	4,450.0	-1,148.0	-588.4	33.7	589.4	3.00	1,592,030.97	2,287,355.74
<b>Back to Vertical - Start 2258.0 hold at 4493.6 MD - Top of Gas - 24C-17-07-95 TGT</b>										
4,500.0	0.00	0.00	4,456.4	-1,141.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74

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<b>Site:</b>	Watson Ranch B	<b>MD Reference:</b>	WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD
<b>Well:</b>	WATSON RANCH B 24C-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)
4,600.0	0.00	0.00	4,556.4	-1,041.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
4,700.0	0.00	0.00	4,656.4	-941.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
4,800.0	0.00	0.00	4,756.4	-841.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
4,900.0	0.00	0.00	4,856.4	-741.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,000.0	0.00	0.00	4,956.4	-641.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,100.0	0.00	0.00	5,056.4	-541.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,200.0	0.00	0.00	5,156.4	-441.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,300.0	0.00	0.00	5,256.4	-341.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,400.0	0.00	0.00	5,356.4	-241.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,500.0	0.00	0.00	5,456.4	-141.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,600.0	0.00	0.00	5,556.4	-41.6	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,700.0	0.00	0.00	5,656.4	58.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,800.0	0.00	0.00	5,756.4	158.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,900.0	0.00	0.00	5,856.4	258.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
5,940.6	0.00	0.00	5,897.0	299.0	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
<b>Cameo</b>										
6,000.0	0.00	0.00	5,956.4	358.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,100.0	0.00	0.00	6,056.4	458.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,200.0	0.00	0.00	6,156.4	558.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,300.0	0.00	0.00	6,256.4	658.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,400.0	0.00	0.00	6,356.4	758.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,451.6	0.00	0.00	6,408.0	810.0	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
<b>Rollins</b>										
6,500.0	0.00	0.00	6,456.4	858.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,600.0	0.00	0.00	6,556.4	958.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74
6,700.0	0.00	0.00	6,656.4	1,058.4	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74

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<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)	
6,751.6	0.00	0.00	6,708.0	1,110.0	-588.4	33.7	589.4	0.00	1,592,030.97	2,287,355.74	
<b>TD at 6751.6</b>											

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,493.6	4,450.0	Top of Gas		0.00		
3,499.4	3,465.0	Williams Fork		0.00		
5,940.6	5,897.0	Cameo		0.00		
6,451.6	6,408.0	Rollins		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	
589.4	588.3	-21.8	1.3	Start 3614.8 hold at 589.4 MD	
1,714.0	1,700.0	-191.3	11.0	Surface Casing	
4,204.2	4,161.7	-566.6	32.5	Start Drop -3.00	
4,493.6	4,450.0	-588.4	33.7	Back to Vertical	
4,493.6	4,450.0	-588.4	33.7	Start 2258.0 hold at 4493.6 MD	
6,751.6	6,708.0	-588.4	33.7	TD at 6751.6	

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



Well Name: WATSON RANCH B 24C-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 1592620.13 2287338.36 39° 26' 0.003 N 108° 1' 24.426 W  
 PAD Est KB WATSON RANCH B 24C-17-07-95 @ 5598.0usft (PAD Est KB)

**M**  
 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 24C-17-07-95  
 Design #1  
 15:23, November 20 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
24C-17-07-95 TGT4450.0		-588.4	33.7	1592030.97	2287355.74	39° 25' 54.187 N	108° 1' 23.996 W	Rectangle (Sides: L40.0 W100.0)

ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	Start Build 3.00
588.3	589.4	Start 3614.8 hold at 589.4 MD
1700.0	1714.0	Surface Casing
4161.7	4204.2	Start Drop -3.00
4450.0	4493.6	Back to Vertical
4450.0	4493.6	Start 2258.0 hold at 4493.6 MD
6708.0	6751.6	TD at 6751.6

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	589.4	8.68	176.72	588.3	-21.8	1.3	3.00	176.72	21.9	
4	4204.2	8.68	176.72	4161.7	-566.6	32.5	0.00	0.00	567.5	
5	4493.6	0.00	0.00	4450.0	-588.4	33.7	3.00	180.00	589.4	24C-17-07-95 TGT
6	6751.6	0.00	0.00	6708.0	-588.4	33.7	0.00	0.00	589.4	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3465.0	3499.4	Williams Fork	0.00	
4450.0	4493.6	Top of Gas	0.00	
5897.0	5940.6	Cameo	0.00	
6408.0	6451.6	Rollins	0.00	

