



# **Ursa Operating Company, LLC**

**Rockies Region**

**Frei A**

**Frei A3**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**06 August, 2013**



<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Frei A3
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Frei A3 @ 5611.9ft (PAD EST KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Frei A3 @ 5611.9ft (PAD EST KB)
<b>Site:</b>	Frei A	<b>North Reference:</b>	True
<b>Well:</b>	Frei A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<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		

Site		Frei A			
Site Position:		Northing:	1,626,942.75 ft	Latitude:	39° 32' 9.196 N
From:	Lat/Long	Easting:	2,406,826.15 ft	Longitude:	107° 36' 12.020 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-1.33 °

Well	Frei A3, SHL LAT: 39.535820000, LONG: -107.603352000					
Well Position	+N/-S	-24.7 ft	Northing:	1,626,918.14 ft	Latitude:	39° 32' 8.952 N
	+E/-W	-3.7 ft	Easting:	2,406,821.89 ft	Longitude:	107° 36' 12.067 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	5,611.9 ft	Ground Level:	5,596.5 ft

<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>
	IGRF200510	8/6/2013	9.87	65.80	52,148

<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)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	144.77

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,299.8	28.49	144.77	1,261.2	-189.0	133.4	3.00	3.00	0.00	144.77	
3,423.8	28.49	144.77	3,127.8	-1,016.7	717.9	0.00	0.00	0.00	0.00	
4,373.6	0.00	0.00	4,039.0	-1,205.7	851.4	3.00	-3.00	0.00	180.00	Frei A3 TGT
7,197.6	0.00	0.00	6,863.0	-1,205.7	851.4	0.00	0.00	0.00	0.00	

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Frei A3 @ 5611.9ft (PAD EST KB)
<b>Site:</b>	Frei A	<b>North Reference:</b>	True
<b>Well:</b>	Frei A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.00									
400.0	1.50	144.77	400.0	-0.5	0.4	0.7	3.00	3.00	0.00
500.0	4.50	144.77	499.8	-4.8	3.4	5.9	3.00	3.00	0.00
600.0	7.50	144.77	599.3	-13.3	9.4	16.3	3.00	3.00	0.00
700.0	10.50	144.77	698.0	-26.1	18.4	32.0	3.00	3.00	0.00
800.0	13.50	144.77	795.8	-43.1	30.4	52.8	3.00	3.00	0.00
900.0	16.50	144.77	892.4	-64.2	45.4	78.6	3.00	3.00	0.00
1,000.0	19.50	144.77	987.5	-89.5	63.2	109.5	3.00	3.00	0.00
1,100.0	22.50	144.77	1,080.9	-118.8	83.9	145.4	3.00	3.00	0.00
1,200.0	25.50	144.77	1,172.2	-152.0	107.3	186.0	3.00	3.00	0.00
1,299.8	28.49	144.77	1,261.2	-189.0	133.4	231.4	3.00	3.00	0.00
Start 2124.0 hold at 1299.8 MD									
1,400.0	28.49	144.77	1,349.2	-228.0	161.0	279.1	0.00	0.00	0.00
1,500.0	28.49	144.77	1,437.1	-267.0	188.5	326.9	0.00	0.00	0.00
1,600.0	28.49	144.77	1,525.0	-306.0	216.1	374.6	0.00	0.00	0.00
1,700.0	28.49	144.77	1,612.9	-344.9	243.6	422.3	0.00	0.00	0.00
1,800.0	28.49	144.77	1,700.7	-383.9	271.1	470.0	0.00	0.00	0.00
1,900.0	28.49	144.77	1,788.6	-422.9	298.6	517.7	0.00	0.00	0.00
2,000.0	28.49	144.77	1,876.5	-461.9	326.1	565.4	0.00	0.00	0.00
2,100.0	28.49	144.77	1,964.4	-500.8	353.6	613.1	0.00	0.00	0.00
2,200.0	28.49	144.77	2,052.3	-539.8	381.2	660.8	0.00	0.00	0.00
2,300.0	28.49	144.77	2,140.2	-578.8	408.7	708.5	0.00	0.00	0.00
2,400.0	28.49	144.77	2,228.1	-617.7	436.2	756.2	0.00	0.00	0.00
2,500.0	28.49	144.77	2,315.9	-656.7	463.7	803.9	0.00	0.00	0.00
2,600.0	28.49	144.77	2,403.8	-695.7	491.2	851.6	0.00	0.00	0.00
2,700.0	28.49	144.77	2,491.7	-734.7	518.8	899.3	0.00	0.00	0.00
2,800.0	28.49	144.77	2,579.6	-773.6	546.3	947.1	0.00	0.00	0.00
2,900.0	28.49	144.77	2,667.5	-812.6	573.8	994.8	0.00	0.00	0.00
3,000.0	28.49	144.77	2,755.4	-851.6	601.3	1,042.5	0.00	0.00	0.00
3,100.0	28.49	144.77	2,843.3	-890.5	628.8	1,090.2	0.00	0.00	0.00
3,141.7	28.49	144.77	2,879.9	-906.8	640.3	1,110.1	0.00	0.00	0.00
WF									
3,200.0	28.49	144.77	2,931.1	-929.5	656.3	1,137.9	0.00	0.00	0.00
3,300.0	28.49	144.77	3,019.0	-968.5	683.9	1,185.6	0.00	0.00	0.00
3,400.0	28.49	144.77	3,106.9	-1,007.5	711.4	1,233.3	0.00	0.00	0.00
3,423.8	28.49	144.77	3,127.8	-1,016.7	717.9	1,244.7	0.00	0.00	0.00
Start Drop -3.00									
3,500.0	26.21	144.77	3,195.5	-1,045.3	738.1	1,279.7	3.00	-3.00	0.00
3,600.0	23.21	144.77	3,286.3	-1,079.5	762.2	1,321.5	3.00	-3.00	0.00
3,700.0	20.21	144.77	3,379.2	-1,109.7	783.6	1,358.4	3.00	-3.00	0.00
3,800.0	17.21	144.77	3,473.9	-1,135.9	802.1	1,390.5	3.00	-3.00	0.00
3,900.0	14.21	144.77	3,570.2	-1,158.0	817.7	1,417.6	3.00	-3.00	0.00
4,000.0	11.21	144.77	3,667.7	-1,176.0	830.4	1,439.6	3.00	-3.00	0.00
4,100.0	8.21	144.77	3,766.3	-1,189.7	840.1	1,456.5	3.00	-3.00	0.00
4,200.0	5.21	144.77	3,865.6	-1,199.3	846.8	1,468.1	3.00	-3.00	0.00
4,300.0	2.21	144.77	3,965.4	-1,204.6	850.6	1,474.6	3.00	-3.00	0.00
4,373.5	0.00	144.77	4,038.9	-1,205.7	851.4	1,476.0	3.00	-3.00	0.00
Top of Gas									

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Frei A3 @ 5611.9ft (PAD EST KB)
<b>Site:</b>	Frei A	<b>North Reference:</b>	True
<b>Well:</b>	Frei A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,373.6	0.00	0.00	4,039.0	-1,205.7	851.4	1,476.0	3.00	-3.00	0.00
Start 2824.0 hold at 4373.6 MD									
4,400.0	0.00	0.00	4,065.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,165.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,265.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,365.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,465.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,565.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,665.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,100.0	0.00	0.00	4,765.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,200.0	0.00	0.00	4,865.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,300.0	0.00	0.00	4,965.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,065.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,165.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,265.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,365.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,722.5	0.00	0.00	5,387.9	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
Cameo									
5,800.0	0.00	0.00	5,465.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,565.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,665.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,100.0	0.00	0.00	5,765.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,200.0	0.00	0.00	5,865.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,300.0	0.00	0.00	5,965.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,065.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,165.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,265.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,365.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,465.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
6,897.5	0.00	0.00	6,562.9	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
Rollins									
6,900.0	0.00	0.00	6,565.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,665.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
7,100.0	0.00	0.00	6,765.4	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
7,197.6	0.00	0.00	6,863.0	-1,205.7	851.4	1,476.0	0.00	0.00	0.00
TD at 7197.6									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,141.7	2,879.9	WF		0.00	
4,373.5	4,038.9	Top of Gas		0.00	
5,722.5	5,387.9	Cameo		0.00	
6,897.5	6,562.9	Rollins		0.00	

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	Frei A3 @ 5611.9ft (PAD EST KB)
<b>Site:</b>	Frei A	<b>North Reference:</b>	True
<b>Well:</b>	Frei A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
350.0	350.0	0.0	0.0	Start Build 3.00
1,299.8	1,261.2	-189.0	133.4	Start 2124.0 hold at 1299.8 MD
3,423.8	3,127.8	-1,016.7	717.9	Start Drop -3.00
4,373.6	4,039.0	-1,205.7	851.4	Start 2824.0 hold at 4373.6 MD
7,197.6	6,863.0	-1,205.7	851.4	TD at 7197.6



Well Name: Frei A3  
Surface Location: Frei A  
North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
Ground Elevation: 5596.5  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1626918.14 2406821.89 39° 32' 8.952 N 107° 36' 12.067 W  
PAD EST KB Frei A3 @ 5611.9ft (PAD EST KB)



Azimuths to True North  
Magnetic North: 9.87°  
Magnetic Field  
Strength: 52148.2snT  
Dip Angle: 65.80°  
Date: 8/6/2013  
Model: IGRF200510

Frei A  
Frei A3  
Design #1  
20:39, August 06 2013

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Frei A3 TGT	4039.0	-1205.7	851.4	1625693.01	2407645.12	39° 31' 57.035 N	107° 36' 1.201 W	Point

#### 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	350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.0	
3	1299.8	28.49	144.77	1261.2	-189.0	133.4	3.00	144.77	231.4	
4	3423.8	28.49	144.77	3127.8	-1016.7	717.9	0.00	0.00	1244.7	
5	4373.6	0.00	0.00	4039.0	-1205.7	851.4	3.00	180.00	1476.0	Frei A3 TGT
6	7197.6	0.00	0.00	6863.0	-1205.7	851.4	0.00	0.00	1476.0	

#### ANNOTATIONS

TVD	MD	Annotation
350.0	350.0	Start Build 3.00
1261.2	1299.8	Start 2124.0 hold at 1299.8 MD
3127.8	3423.8	Start Drop -3.00
4039.0	4373.6	Start 2824.0 hold at 4373.6 MD
6863.0	7197.6	TD at 7197.6

#### FORMATION TOP DETAILS

TVDP	MDP	Path	Formation
2879.9	3141.7	WF	WF
4038.9	4373.5	Top of Gas	Top of Gas
5387.9	5722.5	Cameo	Cameo
6562.9	6897.5	Rollins	Rollins

