



# **Ursa Operating Company, LLC**

**Rockies Region**

**CSF I**

**CSF I 14B-09-07-91**

**Wellbore #1**

**Plan: Design #2**

## **Standard Planning Report**

**24 July, 2016**



<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 14B-09-07-91
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	CSF I 14B-09-07-91 @ 7860.0usft (PAD Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 14B-09-07-91 @ 7860.0usft (PAD Est KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 14B-09-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

<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	CSF I				
Site Position:		Northing:	1,597,123.56 usft	Latitude:	39° 27' 17.600 N
From:	Lat/Long	Easting:	2,420,307.03 usft	Longitude:	107° 33' 11.391 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.29 °

Well	CSF I 14B-09-07-91, SHL LAT: 39.453623702 LONG: -107.552950098					
Well Position	+N/-S	-460.8 usft	Northing:	1,596,661.47 usft	Latitude:	39° 27' 13.045 N
	+E/-W	60.5 usft	Easting:	2,420,357.06 usft	Longitude:	107° 33' 10.620 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	7,860.0 usft	Ground Level:	7,845.0 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>
	IGRF2015	7/24/2016	9.59	65.65	51,647

<b>Design</b>	Design #2			
<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	290.56

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,428.5	36.00	290.56	1,362.2	109.8	-292.7	3.50	3.50	0.00	290.56	
6,806.1	36.00	290.56	5,712.8	1,219.6	-3,252.2	0.00	0.00	0.00	0.00	
7,834.6	0.00	0.00	6,675.0	1,329.3	-3,544.9	3.50	-3.50	0.00	180.00	
9,232.6	0.00	0.00	8,073.0	1,329.3	-3,544.9	0.00	0.00	0.00	0.00	

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 14B-09-07-91
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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 14B-09-07-91 @ 7860.0usft (PAD Est KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 14B-09-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.50									
500.0	3.50	290.56	499.9	1.1	-2.9	3.1	3.50	3.50	0.00
600.0	7.00	290.56	599.5	4.3	-11.4	12.2	3.50	3.50	0.00
700.0	10.50	290.56	698.3	9.6	-25.7	27.4	3.50	3.50	0.00
800.0	14.00	290.56	796.0	17.1	-45.5	48.6	3.50	3.50	0.00
900.0	17.50	290.56	892.3	26.6	-70.9	75.8	3.50	3.50	0.00
1,000.0	21.00	290.56	986.7	38.2	-101.8	108.7	3.50	3.50	0.00
1,100.0	24.50	290.56	1,078.9	51.8	-138.0	147.4	3.50	3.50	0.00
1,123.3	25.32	290.56	1,100.0	55.2	-147.2	157.2	3.50	3.50	0.00
Surface Casing									
1,200.0	28.00	290.56	1,168.5	67.3	-179.4	191.6	3.50	3.50	0.00
1,300.0	31.50	290.56	1,255.3	84.7	-225.9	241.2	3.50	3.50	0.00
1,400.0	35.00	290.56	1,339.0	104.0	-277.2	296.1	3.50	3.50	0.00
1,428.5	36.00	290.56	1,362.2	109.8	-292.7	312.6	3.50	3.50	0.00
Start 5377.6 hold at 1428.5 MD									
1,500.0	36.00	290.56	1,420.0	124.5	-332.0	354.6	0.00	0.00	0.00
1,600.0	36.00	290.56	1,500.9	145.2	-387.1	413.4	0.00	0.00	0.00
1,700.0	36.00	290.56	1,581.8	165.8	-442.1	472.2	0.00	0.00	0.00
1,800.0	36.00	290.56	1,662.7	186.4	-497.1	531.0	0.00	0.00	0.00
1,900.0	36.00	290.56	1,743.6	207.1	-552.2	589.7	0.00	0.00	0.00
2,000.0	36.00	290.56	1,824.5	227.7	-607.2	648.5	0.00	0.00	0.00
2,100.0	36.00	290.56	1,905.4	248.3	-662.3	707.3	0.00	0.00	0.00
2,200.0	36.00	290.56	1,986.3	269.0	-717.3	766.1	0.00	0.00	0.00
2,300.0	36.00	290.56	2,067.2	289.6	-772.3	824.8	0.00	0.00	0.00
2,400.0	36.00	290.56	2,148.1	310.3	-827.4	883.6	0.00	0.00	0.00
2,500.0	36.00	290.56	2,229.0	330.9	-882.4	942.4	0.00	0.00	0.00
2,600.0	36.00	290.56	2,309.9	351.5	-937.4	1,001.2	0.00	0.00	0.00
2,700.0	36.00	290.56	2,390.8	372.2	-992.5	1,059.9	0.00	0.00	0.00
2,800.0	36.00	290.56	2,471.7	392.8	-1,047.5	1,118.7	0.00	0.00	0.00
2,900.0	36.00	290.56	2,552.7	413.4	-1,102.5	1,177.5	0.00	0.00	0.00
3,000.0	36.00	290.56	2,633.6	434.1	-1,157.6	1,236.3	0.00	0.00	0.00
3,100.0	36.00	290.56	2,714.5	454.7	-1,212.6	1,295.0	0.00	0.00	0.00
3,200.0	36.00	290.56	2,795.4	475.4	-1,267.6	1,353.8	0.00	0.00	0.00
3,300.0	36.00	290.56	2,876.3	496.0	-1,322.7	1,412.6	0.00	0.00	0.00
3,400.0	36.00	290.56	2,957.2	516.6	-1,377.7	1,471.4	0.00	0.00	0.00
3,500.0	36.00	290.56	3,038.1	537.3	-1,432.7	1,530.2	0.00	0.00	0.00
3,600.0	36.00	290.56	3,119.0	557.9	-1,487.8	1,588.9	0.00	0.00	0.00
3,700.0	36.00	290.56	3,199.9	578.5	-1,542.8	1,647.7	0.00	0.00	0.00
3,800.0	36.00	290.56	3,280.8	599.2	-1,597.8	1,706.5	0.00	0.00	0.00
3,900.0	36.00	290.56	3,361.7	619.8	-1,652.9	1,765.3	0.00	0.00	0.00
4,000.0	36.00	290.56	3,442.6	640.5	-1,707.9	1,824.0	0.00	0.00	0.00
4,100.0	36.00	290.56	3,523.5	661.1	-1,762.9	1,882.8	0.00	0.00	0.00
4,200.0	36.00	290.56	3,604.4	681.7	-1,818.0	1,941.6	0.00	0.00	0.00
4,300.0	36.00	290.56	3,685.3	702.4	-1,873.0	2,000.4	0.00	0.00	0.00
4,400.0	36.00	290.56	3,766.2	723.0	-1,928.0	2,059.1	0.00	0.00	0.00
4,500.0	36.00	290.56	3,847.1	743.7	-1,983.1	2,117.9	0.00	0.00	0.00
4,511.0	36.00	290.56	3,856.0	745.9	-1,989.1	2,124.4	0.00	0.00	0.00

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<b>Well:</b>	CSF I 14B-09-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>Williams Fork</b>									
4,600.0	36.00	290.56	3,928.0	764.3	-2,038.1	2,176.7	0.00	0.00	0.00
4,700.0	36.00	290.56	4,008.9	784.9	-2,093.1	2,235.5	0.00	0.00	0.00
4,800.0	36.00	290.56	4,089.8	805.6	-2,148.2	2,294.2	0.00	0.00	0.00
4,900.0	36.00	290.56	4,170.7	826.2	-2,203.2	2,353.0	0.00	0.00	0.00
5,000.0	36.00	290.56	4,251.6	846.8	-2,258.2	2,411.8	0.00	0.00	0.00
5,100.0	36.00	290.56	4,332.5	867.5	-2,313.3	2,470.6	0.00	0.00	0.00
5,200.0	36.00	290.56	4,413.4	888.1	-2,368.3	2,529.4	0.00	0.00	0.00
5,300.0	36.00	290.56	4,494.3	908.8	-2,423.3	2,588.1	0.00	0.00	0.00
5,400.0	36.00	290.56	4,575.2	929.4	-2,478.4	2,646.9	0.00	0.00	0.00
5,500.0	36.00	290.56	4,656.1	950.0	-2,533.4	2,705.7	0.00	0.00	0.00
5,600.0	36.00	290.56	4,737.0	970.7	-2,588.4	2,764.5	0.00	0.00	0.00
5,700.0	36.00	290.56	4,817.9	991.3	-2,643.5	2,823.2	0.00	0.00	0.00
5,800.0	36.00	290.56	4,898.8	1,011.9	-2,698.5	2,882.0	0.00	0.00	0.00
5,900.0	36.00	290.56	4,979.8	1,032.6	-2,753.5	2,940.8	0.00	0.00	0.00
6,000.0	36.00	290.56	5,060.7	1,053.2	-2,808.6	2,999.6	0.00	0.00	0.00
6,100.0	36.00	290.56	5,141.6	1,073.9	-2,863.6	3,058.3	0.00	0.00	0.00
6,200.0	36.00	290.56	5,222.5	1,094.5	-2,918.6	3,117.1	0.00	0.00	0.00
6,300.0	36.00	290.56	5,303.4	1,115.1	-2,973.7	3,175.9	0.00	0.00	0.00
6,400.0	36.00	290.56	5,384.3	1,135.8	-3,028.7	3,234.7	0.00	0.00	0.00
6,500.0	36.00	290.56	5,465.2	1,156.4	-3,083.7	3,293.4	0.00	0.00	0.00
6,600.0	36.00	290.56	5,546.1	1,177.0	-3,138.8	3,352.2	0.00	0.00	0.00
6,700.0	36.00	290.56	5,627.0	1,197.7	-3,193.8	3,411.0	0.00	0.00	0.00
6,806.1	36.00	290.56	5,712.8	1,219.6	-3,252.2	3,473.4	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
6,900.0	32.71	290.56	5,790.3	1,238.2	-3,301.8	3,526.3	3.50	-3.50	0.00
6,959.5	30.63	290.56	5,841.0	1,249.2	-3,331.1	3,557.6	3.50	-3.50	0.00
<b>Top of Gas</b>									
7,000.0	29.21	290.56	5,876.1	1,256.2	-3,350.0	3,577.8	3.50	-3.50	0.00
7,100.0	25.71	290.56	5,964.8	1,272.4	-3,393.2	3,623.9	3.50	-3.50	0.00
7,200.0	22.21	290.56	6,056.1	1,286.7	-3,431.2	3,664.5	3.50	-3.50	0.00
7,300.0	18.71	290.56	6,149.8	1,299.0	-3,463.9	3,699.4	3.50	-3.50	0.00
7,400.0	15.21	290.56	6,245.5	1,309.2	-3,491.2	3,728.6	3.50	-3.50	0.00
7,500.0	11.71	290.56	6,342.7	1,317.4	-3,513.0	3,751.9	3.50	-3.50	0.00
7,600.0	8.21	290.56	6,441.2	1,323.5	-3,529.2	3,769.2	3.50	-3.50	0.00
7,700.0	4.71	290.56	6,540.5	1,327.4	-3,539.7	3,780.4	3.50	-3.50	0.00
7,800.0	1.21	290.56	6,640.4	1,329.2	-3,544.6	3,785.6	3.50	-3.50	0.00
7,834.6	0.00	0.00	6,675.0	1,329.3	-3,544.9	3,786.0	3.50	-3.50	0.00
<b>Start 1398.0 hold at 7834.6 MD - Back to Vertical</b>									
7,852.6	0.00	0.00	6,693.0	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
<b>Cameo</b>									
7,900.0	0.00	0.00	6,740.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,000.0	0.00	0.00	6,840.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,100.0	0.00	0.00	6,940.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,200.0	0.00	0.00	7,040.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,300.0	0.00	0.00	7,140.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,400.0	0.00	0.00	7,240.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,500.0	0.00	0.00	7,340.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,600.0	0.00	0.00	7,440.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,700.0	0.00	0.00	7,540.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,800.0	0.00	0.00	7,640.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00

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<b>Well:</b>	CSF I 14B-09-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,900.0	0.00	0.00	7,740.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
8,932.6	0.00	0.00	7,773.0	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
<b>Rollins</b>									
9,000.0	0.00	0.00	7,840.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
9,100.0	0.00	0.00	7,940.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
9,200.0	0.00	0.00	8,040.4	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
9,232.6	0.00	0.00	8,073.0	1,329.3	-3,544.9	3,786.0	0.00	0.00	0.00
<b>TD at 9232.6</b>									

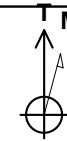
Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
14B-09-07-91 TGT	0.00	0.00	5,841.0	1,329.3	-3,544.9	1,598,070.58	2,416,843.08	39° 27' 26.182 N	107° 33' 55.818 W
- hit/miss target									
- Shape									
- plan misses target center by 200.2usft at 7064.9usft MD (5933.3 TVD, 1267.0 N, -3378.6 E)									
- Rectangle (sides W100.0 H40.0 D2,232.0)									

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,511.0	3,856.0	Williams Fork		0.00	
6,959.5	5,841.0	Top of Gas		0.00	
7,852.6	6,693.0	Cameo		0.00	
8,932.6	7,773.0	Rollins		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
400.0	400.0	0.0	0.0	Start Build 3.50
1,123.3	1,100.0	55.2	-147.2	Surface Casing
1,428.5	1,362.2	109.8	-292.7	Start 5377.6 hold at 1428.5 MD
6,806.1	5,712.8	1,219.6	-3,252.2	Start Drop -3.50
7,834.6	6,675.0	1,329.3	-3,544.9	Start 1398.0 hold at 7834.6 MD
7,834.6	6,675.0	1,329.3	-3,544.9	Back to Vertical
9,232.6	8,073.0	1,329.3	-3,544.9	TD at 9232.6



Well Name: CSF I 14B-09-07-91  
Surface Location: CSF I  
North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
Ground Elevation: 7845.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1596661.48 2420357.05 39° 27' 13.045 N 107° 33' 10.620 W  
PAD Est KB CSF I 14B-09-07-91 @ 7860.0usft (PAD Est KB)



Azimuths to True North  
Magnetic North: 9.59°  
Magnetic Field  
Strength: 51647.3snT  
Dip Angle: 65.65°  
Date: 7/24/2016  
Model: IGRF2015

CSF I  
CSF I 14B-09-07-91  
Design #2  
17:09, July 24 2016

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
14B-09-07-91 TGT5841.0		1329.3	-3544.9	1598070.59	2416843.07	39° 27' 26.182 N 107° 33' 55.818 W		Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1428.5	36.00	290.56	1362.2	109.8	-292.7	3.50	290.56	312.6	
4	6806.1	36.00	290.56	5712.8	1219.6	-3252.2	0.00	0.00	3473.4	
5	7834.6	0.00	0.00	6675.0	1329.3	-3544.9	3.50	180.00	3786.0	
6	9232.6	0.00	0.00	8073.0	1329.3	-3544.9	0.00	0.00	3786.0	

#### ANNOTATIONS

TVD	MD	Annotation
400.0	400.0	Start Build 3.50
1100.0	1123.3	Surface Casing
1362.2	1428.5	Start 5377.6 hold at 1428.5 MD
5712.8	6806.1	Start Drop -3.50
6675.0	7834.6	Start 1398.0 hold at 7834.6 MD
6675.0	7834.6	Back to Vertical
8073.0	9232.6	TD at 9232.6

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3856.0	4511.0	Williams Fork	0.00	
5841.0	6959.5	Top of Gas	0.00	
6693.0	7852.6	Cameo	0.00	
7773.0	8932.6	Rollins	0.00	

