



# **Ursa Operating Company, LLC**

**Rockies Region**

**CSF I**

**CSF I 21A-16-07-91**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**16 December, 2014**



<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 21A-16-07-91
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 21A-16-07-91	<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		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 21A-16-07-91, SHL LAT: 39.454853100 LONG: -107.553335115					
Well Position	+N/-S	-13.0 usft	Northing:	1,597,111.61 usft	Latitude:	39° 27' 17.471 N
	+E/-W	-48.3 usft	Easting:	2,420,258.49 usft	Longitude:	107° 33' 12.006 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>
	IGRF2010	12/12/2014	9.69	65.69	51,916

<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	263.93	

<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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,040.2	29.41	263.93	2,003.8	-22.3	-209.7	3.50	3.50	0.00	263.93	
5,478.6	29.41	263.93	4,999.2	-200.8	-1,888.5	0.00	0.00	0.00	0.00	
6,318.8	0.00	0.00	5,803.0	-223.1	-2,098.3	3.50	-3.50	0.00	180.00	21A-16-07-91 TGT
8,550.8	0.00	0.00	8,035.0	-223.1	-2,098.3	0.00	0.00	0.00	0.00	

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 21A-16-07-91
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 21A-16-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
Surface Casing										
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
Start Build 3.50										
1,300.0	3.50	263.93	1,299.9	-0.3	-3.0	3.1	3.50	3.50	0.00	
1,400.0	7.00	263.93	1,399.5	-1.3	-12.1	12.2	3.50	3.50	0.00	
1,500.0	10.50	263.93	1,498.3	-2.9	-27.3	27.4	3.50	3.50	0.00	
1,600.0	14.00	263.93	1,596.0	-5.1	-48.4	48.6	3.50	3.50	0.00	
1,700.0	17.50	263.93	1,692.3	-8.0	-75.3	75.8	3.50	3.50	0.00	
1,800.0	21.00	263.93	1,786.7	-11.5	-108.1	108.7	3.50	3.50	0.00	
1,900.0	24.50	263.93	1,878.9	-15.6	-146.6	147.4	3.50	3.50	0.00	
2,000.0	28.00	263.93	1,968.5	-20.3	-190.5	191.6	3.50	3.50	0.00	
2,040.2	29.41	263.93	2,003.8	-22.3	-209.7	210.9	3.50	3.50	0.00	
Start 3438.5 hold at 2040.2 MD										
2,100.0	29.41	263.93	2,055.9	-25.4	-238.9	240.3	0.00	0.00	0.00	
2,200.0	29.41	263.93	2,143.0	-30.6	-287.8	289.4	0.00	0.00	0.00	
2,300.0	29.41	263.93	2,230.1	-35.8	-336.6	338.5	0.00	0.00	0.00	
2,400.0	29.41	263.93	2,317.2	-41.0	-385.4	387.6	0.00	0.00	0.00	
2,500.0	29.41	263.93	2,404.4	-46.2	-434.2	436.7	0.00	0.00	0.00	
2,600.0	29.41	263.93	2,491.5	-51.4	-483.1	485.8	0.00	0.00	0.00	
2,700.0	29.41	263.93	2,578.6	-56.6	-531.9	534.9	0.00	0.00	0.00	
2,800.0	29.41	263.93	2,665.7	-61.8	-580.7	584.0	0.00	0.00	0.00	
2,900.0	29.41	263.93	2,752.8	-66.9	-629.5	633.1	0.00	0.00	0.00	
3,000.0	29.41	263.93	2,839.9	-72.1	-678.4	682.2	0.00	0.00	0.00	
3,100.0	29.41	263.93	2,927.1	-77.3	-727.2	731.3	0.00	0.00	0.00	
3,200.0	29.41	263.93	3,014.2	-82.5	-776.0	780.4	0.00	0.00	0.00	
3,300.0	29.41	263.93	3,101.3	-87.7	-824.8	829.5	0.00	0.00	0.00	
3,400.0	29.41	263.93	3,188.4	-92.9	-873.7	878.6	0.00	0.00	0.00	
3,500.0	29.41	263.93	3,275.5	-98.1	-922.5	927.7	0.00	0.00	0.00	
3,600.0	29.41	263.93	3,362.6	-103.3	-971.3	976.8	0.00	0.00	0.00	
3,700.0	29.41	263.93	3,449.7	-108.5	-1,020.1	1,025.9	0.00	0.00	0.00	
3,800.0	29.41	263.93	3,536.9	-113.7	-1,069.0	1,075.0	0.00	0.00	0.00	
3,900.0	29.41	263.93	3,624.0	-118.9	-1,117.8	1,124.1	0.00	0.00	0.00	
4,000.0	29.41	263.93	3,711.1	-124.1	-1,166.6	1,173.2	0.00	0.00	0.00	
4,100.0	29.41	263.93	3,798.2	-129.3	-1,215.4	1,222.3	0.00	0.00	0.00	
4,122.7	29.41	263.93	3,818.0	-130.4	-1,226.5	1,233.4	0.00	0.00	0.00	
Williams Fork										
4,200.0	29.41	263.93	3,885.3	-134.4	-1,264.3	1,271.4	0.00	0.00	0.00	
4,300.0	29.41	263.93	3,972.4	-139.6	-1,313.1	1,320.5	0.00	0.00	0.00	
4,400.0	29.41	263.93	4,059.6	-144.8	-1,361.9	1,369.6	0.00	0.00	0.00	
4,500.0	29.41	263.93	4,146.7	-150.0	-1,410.7	1,418.7	0.00	0.00	0.00	

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 21A-16-07-91
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 21A-16-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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)	
4,600.0	29.41	263.93	4,233.8	-155.2	-1,459.6	1,467.8	0.00	0.00	0.00	
4,700.0	29.41	263.93	4,320.9	-160.4	-1,508.4	1,516.9	0.00	0.00	0.00	
4,800.0	29.41	263.93	4,408.0	-165.6	-1,557.2	1,566.0	0.00	0.00	0.00	
4,900.0	29.41	263.93	4,495.1	-170.8	-1,606.0	1,615.1	0.00	0.00	0.00	
5,000.0	29.41	263.93	4,582.3	-176.0	-1,654.8	1,664.2	0.00	0.00	0.00	
5,100.0	29.41	263.93	4,669.4	-181.2	-1,703.7	1,713.3	0.00	0.00	0.00	
5,200.0	29.41	263.93	4,756.5	-186.4	-1,752.5	1,762.4	0.00	0.00	0.00	
5,300.0	29.41	263.93	4,843.6	-191.6	-1,801.3	1,811.5	0.00	0.00	0.00	
5,400.0	29.41	263.93	4,930.7	-196.8	-1,850.1	1,860.6	0.00	0.00	0.00	
5,478.6	29.41	263.93	4,999.2	-200.8	-1,888.5	1,899.2	0.00	0.00	0.00	
Start Drop -3.50										
5,500.0	28.66	263.93	5,017.9	-201.9	-1,898.9	1,909.6	3.50	-3.50	0.00	
5,600.0	25.16	263.93	5,107.1	-206.7	-1,943.8	1,954.8	3.50	-3.50	0.00	
5,700.0	21.66	263.93	5,198.8	-210.9	-1,983.3	1,994.5	3.50	-3.50	0.00	
5,800.0	18.16	263.93	5,292.8	-214.5	-2,017.2	2,028.6	3.50	-3.50	0.00	
5,900.0	14.66	263.93	5,388.7	-217.5	-2,045.3	2,056.8	3.50	-3.50	0.00	
6,000.0	11.16	263.93	5,486.2	-219.9	-2,067.5	2,079.2	3.50	-3.50	0.00	
6,100.0	7.66	263.93	5,584.8	-221.6	-2,083.8	2,095.5	3.50	-3.50	0.00	
6,200.0	4.16	263.93	5,684.3	-222.7	-2,094.0	2,105.8	3.50	-3.50	0.00	
6,300.0	0.66	263.93	5,784.2	-223.1	-2,098.2	2,110.0	3.50	-3.50	0.00	
6,318.8	0.00	0.00	5,803.0	-223.1	-2,098.3	2,110.1	3.50	-3.50	510.63	
Back to Vertical - Start 2232.0 hold at 6318.8 MD - Top of Gas										
6,400.0	0.00	0.00	5,884.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
6,500.0	0.00	0.00	5,984.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,084.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,184.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,284.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,384.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,000.0	0.00	0.00	6,484.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,100.0	0.00	0.00	6,584.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,170.8	0.00	0.00	6,655.0	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
Cameo										
7,200.0	0.00	0.00	6,684.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,300.0	0.00	0.00	6,784.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,400.0	0.00	0.00	6,884.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,500.0	0.00	0.00	6,984.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,084.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,184.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,284.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
7,900.0	0.00	0.00	7,384.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,000.0	0.00	0.00	7,484.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,100.0	0.00	0.00	7,584.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,200.0	0.00	0.00	7,684.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,250.8	0.00	0.00	7,735.0	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
Rollins										
8,300.0	0.00	0.00	7,784.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,400.0	0.00	0.00	7,884.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,500.0	0.00	0.00	7,984.2	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
8,550.8	0.00	0.00	8,035.0	-223.1	-2,098.3	2,110.1	0.00	0.00	0.00	
TD at 8550.8										

<b>Database:</b>	MasterDB	<b>Local Co-ordinate Reference:</b>	Well CSF I 21A-16-07-91
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)
<b>Site:</b>	CSF I	<b>North Reference:</b>	True
<b>Well:</b>	CSF I 21A-16-07-91	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

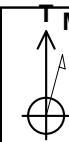
Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
21A-16-07-91 TGT	0.00	0.00	5,803.0	-223.1	-2,098.3	1,596,935.94	2,418,155.71	39° 27' 15.265 N	107° 33' 38.758 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,232.0)									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
4,122.7	3,818.0	Williams Fork		0.00		
6,318.8	5,803.0	Top of Gas		0.00		
7,170.8	6,655.0	Cameo		0.00		
8,250.8	7,735.0	Rollins		0.00		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W	Comment	
(usft)	(usft)	(usft)	(usft)		
1,100.0	1,100.0	0.0	0.0	Surface Casing	
1,200.0	1,200.0	0.0	0.0	Start Build 3.50	
2,040.2	2,003.8	-22.3	-209.7	Start 3438.5 hold at 2040.2 MD	
5,478.6	4,999.2	-200.8	-1,888.5	Start Drop -3.50	
6,318.8	5,803.0	-223.1	-2,098.3	Back to Vertical	
6,318.8	5,803.0	-223.1	-2,098.3	Start 2232.0 hold at 6318.8 MD	
8,550.8	8,035.0	-223.1	-2,098.3	TD at 8550.8	



Well Name: CSF I 21A-16-07-91  
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 1597111.61 2420258.48 39° 27' 17.471 N 107° 33' 12.006 W  
EST Pad KB CSF I 21A-16-07-91 @ 7860.0usft (EST Pad KB)



Azimuths to True North  
Magnetic North: 9.69°  
Magnetic Field  
Strength: 51916.3nT  
Dip Angle: 65.69°  
Date: 12/12/2014  
Model: IGRF2010

CSF I  
CSF I 21A-16-07-91  
Design #1  
17:43, December 16 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
21A-16-07-91 TGT5803.0		-223.1	-2098.3	1596935.94	2418155.70	39° 27' 15.265 N 107° 33' 38.758 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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	2040.2	29.41	263.93	2003.8	-22.3	-209.7	3.50	263.93	210.9	
4	5478.6	29.41	263.93	4999.2	-200.8	-1888.5	0.00	0.00	1899.2	
5	6318.8	0.00	0.00	5803.0	-223.1	-2098.3	3.50	180.00	2110.1	21A-16-07-91 TGT
6	8550.8	0.00	0.00	8035.0	-223.1	-2098.3	0.00	0.00	2110.1	

#### ANNOTATIONS

TVD	MD	Annotation
1100.0	1100.0	Surface Casing
1200.0	1200.0	Start Build 3.50
2003.8	2040.2	Start 3438.5 hold at 2040.2 MD
4999.2	5478.6	Start Drop -3.50
5803.0	6318.8	Back to Vertical
5803.0	6318.8	Start 2232.0 hold at 6318.8 MD
8035.0	8550.8	TD at 8550.8

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3818.0	4122.7	Williams Fork	0.00	
5803.0	6318.8	Top of Gas	0.00	
6655.0	7170.8	Cameo	0.00	
7735.0	8250.8	Rollins	0.00	

