



Ursa Operating Company, LLC

Rockies Region

CSF I

CSF I 31D-16-07-91

Wellbore #1

Plan: Design #1

Standard Planning Report

16 December, 2014



Database:	MasterDB	Local Co-ordinate Reference:	Well CSF I 31D-16-07-91
Company:	Ursa Operating Company, LLC	TVD Reference:	CSF I 31D-16-07-91 @ 7860.0usft (PAD Est KB)
Project:	Rockies Region	MD Reference:	CSF I 31D-16-07-91 @ 7860.0usft (PAD Est KB)
Site:	CSF I	North Reference:	True
Well:	CSF I 31D-16-07-91	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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		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 31D-16-07-91, SHL LAT: 39.454845940 LONG: -107.553369296					
Well Position	+N/-S	-15.7 usft	Northing:	1,597,109.22 usft	Latitude:	39° 27' 17.445 N
	+E/-W	-57.9 usft	Easting:	2,420,248.78 usft	Longitude:	107° 33' 12.129 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	7,860.0 usft	Ground Level:	7,845.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/15/2014	9.69	65.69	51,915

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	216.50

Plan Sections										
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	
1,175.0	0.00	0.00	1,175.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,670.2	17.33	216.50	1,662.7	-59.7	-44.2	3.50	3.50	0.00	216.50	
5,492.4	17.33	216.50	5,311.3	-975.0	-721.5	0.00	0.00	0.00	0.00	
5,987.6	0.00	0.00	5,799.0	-1,034.8	-765.7	3.50	-3.50	0.00	180.00	31D-16-07-91 TGT
8,219.6	0.00	0.00	8,031.0	-1,034.8	-765.7	0.00	0.00	0.00	0.00	

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Project:	Rockies Region	MD Reference:	CSF I 31D-16-07-91 @ 7860.0usft (PAD Est KB)
Site:	CSF I	North Reference:	True
Well:	CSF I 31D-16-07-91	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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									
1,175.0	0.00	0.00	1,175.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.50									
1,200.0	0.88	216.50	1,200.0	-0.2	-0.1	0.2	3.50	3.50	0.00
1,300.0	4.38	216.50	1,299.9	-3.8	-2.8	4.8	3.50	3.50	0.00
1,400.0	7.88	216.50	1,399.3	-12.4	-9.2	15.4	3.50	3.50	0.00
1,500.0	11.38	216.50	1,497.9	-25.8	-19.1	32.2	3.50	3.50	0.00
1,600.0	14.88	216.50	1,595.2	-44.1	-32.6	54.9	3.50	3.50	0.00
1,670.2	17.33	216.50	1,662.7	-59.7	-44.2	74.3	3.50	3.50	0.00
Start 3822.2 hold at 1670.2 MD									
1,700.0	17.33	216.50	1,691.1	-66.9	-49.5	83.2	0.00	0.00	0.00
1,800.0	17.33	216.50	1,786.6	-90.8	-67.2	113.0	0.00	0.00	0.00
1,900.0	17.33	216.50	1,882.0	-114.8	-84.9	142.8	0.00	0.00	0.00
2,000.0	17.33	216.50	1,977.5	-138.7	-102.7	172.6	0.00	0.00	0.00
2,100.0	17.33	216.50	2,073.0	-162.7	-120.4	202.4	0.00	0.00	0.00
2,200.0	17.33	216.50	2,168.4	-186.6	-138.1	232.2	0.00	0.00	0.00
2,300.0	17.33	216.50	2,263.9	-210.6	-155.8	261.9	0.00	0.00	0.00
2,400.0	17.33	216.50	2,359.3	-234.5	-173.5	291.7	0.00	0.00	0.00
2,500.0	17.33	216.50	2,454.8	-258.5	-191.2	321.5	0.00	0.00	0.00
2,600.0	17.33	216.50	2,550.3	-282.4	-209.0	351.3	0.00	0.00	0.00
2,700.0	17.33	216.50	2,645.7	-306.3	-226.7	381.1	0.00	0.00	0.00
2,800.0	17.33	216.50	2,741.2	-330.3	-244.4	410.9	0.00	0.00	0.00
2,900.0	17.33	216.50	2,836.6	-354.2	-262.1	440.7	0.00	0.00	0.00
3,000.0	17.33	216.50	2,932.1	-378.2	-279.8	470.5	0.00	0.00	0.00
3,100.0	17.33	216.50	3,027.6	-402.1	-297.6	500.3	0.00	0.00	0.00
3,200.0	17.33	216.50	3,123.0	-426.1	-315.3	530.0	0.00	0.00	0.00
3,300.0	17.33	216.50	3,218.5	-450.0	-333.0	559.8	0.00	0.00	0.00
3,400.0	17.33	216.50	3,313.9	-474.0	-350.7	589.6	0.00	0.00	0.00
3,500.0	17.33	216.50	3,409.4	-497.9	-368.4	619.4	0.00	0.00	0.00
3,600.0	17.33	216.50	3,504.9	-521.9	-386.2	649.2	0.00	0.00	0.00
3,700.0	17.33	216.50	3,600.3	-545.8	-403.9	679.0	0.00	0.00	0.00
3,800.0	17.33	216.50	3,695.8	-569.7	-421.6	708.8	0.00	0.00	0.00
3,900.0	17.33	216.50	3,791.2	-593.7	-439.3	738.6	0.00	0.00	0.00
3,923.8	17.33	216.50	3,814.0	-599.4	-443.5	745.7	0.00	0.00	0.00
Williams Fork									
4,000.0	17.33	216.50	3,886.7	-617.6	-457.0	768.4	0.00	0.00	0.00
4,100.0	17.33	216.50	3,982.2	-641.6	-474.8	798.1	0.00	0.00	0.00
4,200.0	17.33	216.50	4,077.6	-665.5	-492.5	827.9	0.00	0.00	0.00
4,300.0	17.33	216.50	4,173.1	-689.5	-510.2	857.7	0.00	0.00	0.00
4,400.0	17.33	216.50	4,268.5	-713.4	-527.9	887.5	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
Design:	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)
4,500.0	17.33	216.50	4,364.0	-737.4	-545.6	917.3	0.00	0.00	0.00
4,600.0	17.33	216.50	4,459.5	-761.3	-563.4	947.1	0.00	0.00	0.00
4,700.0	17.33	216.50	4,554.9	-785.3	-581.1	976.9	0.00	0.00	0.00
4,800.0	17.33	216.50	4,650.4	-809.2	-598.8	1,006.7	0.00	0.00	0.00
4,900.0	17.33	216.50	4,745.8	-833.2	-616.5	1,036.5	0.00	0.00	0.00
5,000.0	17.33	216.50	4,841.3	-857.1	-634.2	1,066.2	0.00	0.00	0.00
5,100.0	17.33	216.50	4,936.8	-881.0	-652.0	1,096.0	0.00	0.00	0.00
5,200.0	17.33	216.50	5,032.2	-905.0	-669.7	1,125.8	0.00	0.00	0.00
5,300.0	17.33	216.50	5,127.7	-928.9	-687.4	1,155.6	0.00	0.00	0.00
5,400.0	17.33	216.50	5,223.1	-952.9	-705.1	1,185.4	0.00	0.00	0.00
5,492.4	17.33	216.50	5,311.3	-975.0	-721.5	1,212.9	0.00	0.00	0.00
Start Drop -3.50									
5,500.0	17.06	216.50	5,318.6	-976.8	-722.8	1,215.2	3.50	-3.50	0.00
5,600.0	13.56	216.50	5,415.0	-998.0	-738.5	1,241.6	3.50	-3.50	0.00
5,700.0	10.06	216.50	5,512.9	-1,014.5	-750.7	1,262.1	3.50	-3.50	0.00
5,800.0	6.56	216.50	5,611.8	-1,026.1	-759.3	1,276.5	3.50	-3.50	0.00
5,900.0	3.06	216.50	5,711.5	-1,032.9	-764.3	1,284.9	3.50	-3.50	0.00
5,987.6	0.00	0.00	5,799.0	-1,034.8	-765.7	1,287.2	3.50	-3.50	163.88
Back to Vertical - Start 2232.0 hold at 5987.6 MD - Top of Gas									
6,000.0	0.00	0.00	5,811.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,100.0	0.00	0.00	5,911.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,011.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,111.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,211.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,500.0	0.00	0.00	6,311.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,411.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,700.0	0.00	0.00	6,511.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,611.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
6,839.6	0.00	0.00	6,651.0	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
Cameo									
6,900.0	0.00	0.00	6,711.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,811.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,100.0	0.00	0.00	6,911.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,200.0	0.00	0.00	7,011.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,300.0	0.00	0.00	7,111.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,400.0	0.00	0.00	7,211.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,500.0	0.00	0.00	7,311.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,600.0	0.00	0.00	7,411.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,700.0	0.00	0.00	7,511.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,800.0	0.00	0.00	7,611.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,900.0	0.00	0.00	7,711.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
7,919.6	0.00	0.00	7,731.0	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
Rollins									
8,000.0	0.00	0.00	7,811.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
8,100.0	0.00	0.00	7,911.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
8,200.0	0.00	0.00	8,011.4	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
8,219.6	0.00	0.00	8,031.0	-1,034.8	-765.7	1,287.2	0.00	0.00	0.00
TD at 8219.6									

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Project:	Rockies Region	MD Reference:	CSF I 31D-16-07-91 @ 7860.0usft (PAD Est KB)
Site:	CSF I	North Reference:	True
Well:	CSF I 31D-16-07-91	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
31D-16-07-91 TGT	0.00	0.00	5,799.0	-1,034.8	-765.7	1,596,092.04	2,419,459.89	39° 27' 7.218 N	107° 33' 21.891 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,232.0)									

Formations

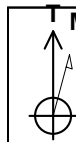
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,923.8	3,814.0	Williams Fork		0.00	
5,987.6	5,799.0	Top of Gas		0.00	
6,839.6	6,651.0	Cameo		0.00	
7,919.6	7,731.0	Rollins		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,100.0	1,100.0	0.0	0.0	Surface Casing
1,175.0	1,175.0	0.0	0.0	Start Build 3.50
1,670.2	1,662.7	-59.7	-44.2	Start 3822.2 hold at 1670.2 MD
5,492.4	5,311.3	-975.0	-721.5	Start Drop -3.50
5,987.6	5,799.0	-1,034.8	-765.7	Back to Vertical
5,987.6	5,799.0	-1,034.8	-765.7	Start 2232.0 hold at 5987.6 MD
8,219.6	8,031.0	-1,034.8	-765.7	TD at 8219.6



Well Name: CSF I 31D-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 1597109.22 2420248.77 39° 27' 17.445 N 107° 33' 12.129 W
PAD Est KB CSF I 31D-16-07-91 @ 7860.0usft (PAD Est KB)



Azimuths to True North
Magnetic North: 9.69°
Magnetic Field
Strength: 51915.5nT
Dip Angle: 65.69°
Date: 12/15/2014
Model: IGRF2010

CSF I
CSF I 31D-16-07-91
Design #1
19:19, December 16 2014

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
31D-16-07-91 TGT5799.0		-1034.8	-765.7	1596092.04	2419459.89	39° 27' 7.218 N 107° 33' 21.891 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	1175.0	0.00	0.00	1175.0	0.0	0.0	0.00	0.00	0.0	
3	1670.2	17.33	216.50	1662.7	-59.7	-44.2	3.50	216.50	74.3	
4	5492.4	17.33	216.50	5311.3	-975.0	-721.5	0.00	0.00	1212.9	
5	5987.6	0.00	0.00	5799.0	-1034.8	-765.7	3.50	180.00	1287.2	31D-16-07-91 TGT
6	8219.6	0.00	0.00	8031.0	-1034.8	-765.7	0.00	0.00	1287.2	

ANNOTATIONS

TVD	MD	Annotation
1100.0	1100.0	Surface Casing
1175.0	1175.0	Start Build 3.50
1662.7	1670.2	Start 3822.2 hold at 1670.2 MD
5311.3	5492.4	Start Drop -3.50
5799.0	5987.6	Back to Vertical
5799.0	5987.6	Start 2232.0 hold at 5987.6 MD
8031.0	8219.6	TD at 8219.6

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3814.0	3923.8	Williams Fork	0.00	
5799.0	5987.6	Top of Gas	0.00	
6651.0	6839.6	Cameo	0.00	
7731.0	7919.6	Rollins	0.00	

