



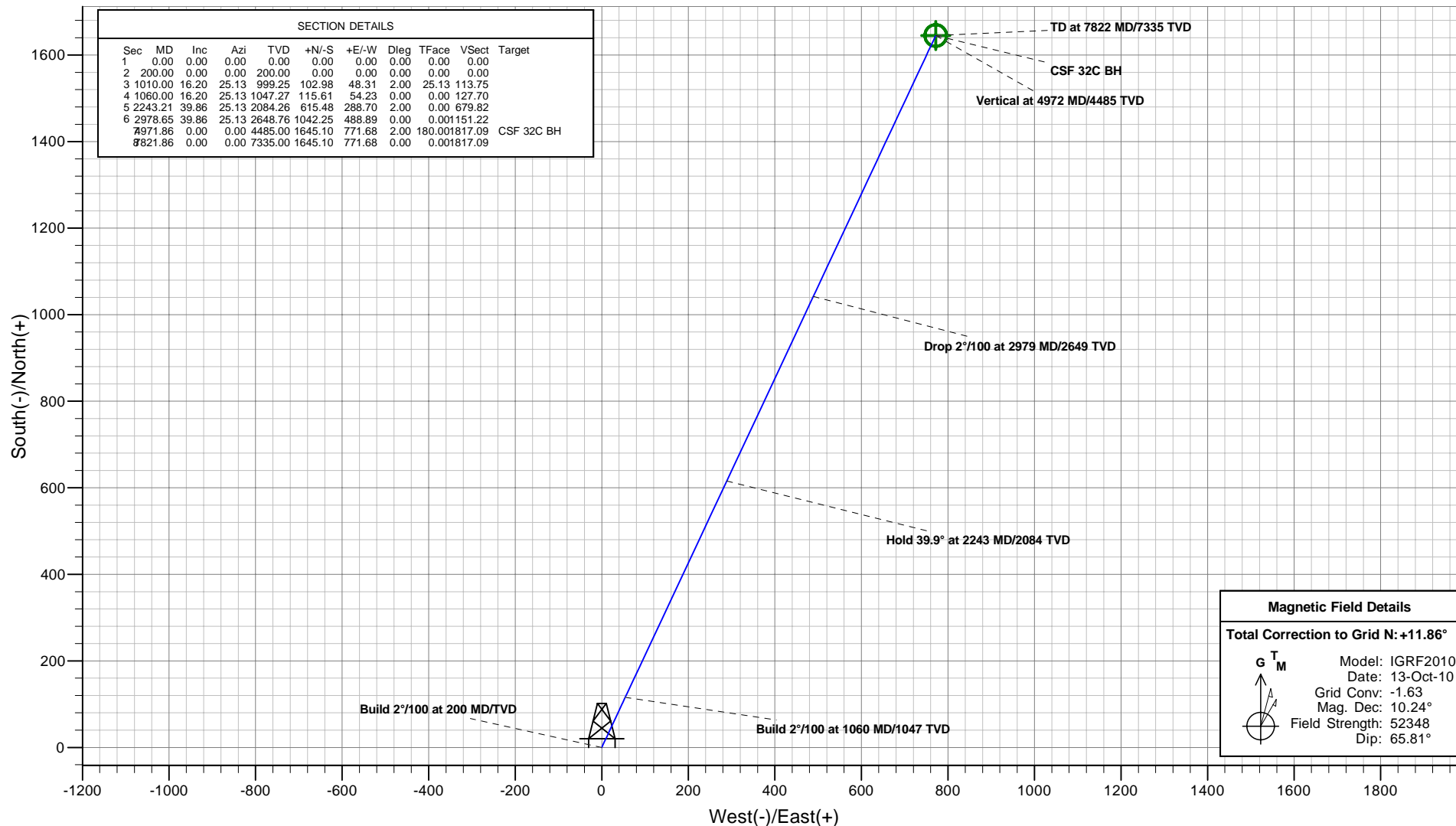
# Antero Resources

## CSF 32C



### PLAN VIEW

Project: Castle Springs Federal Project (E Pad)  
Site: Frontier 12  
Well: CSF 32C-09-07-91 (111195)  
Wellbore: CSF 32C  
Design: CSF 32C P01



Plan: CSF 32C P01  
Created By: ARK Directional Services  
Date: 16:11, July 13 2010

PROJECT DETAILS: Castle Springs Federal Project (E Pad)

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)  
System Datum: Mean Sea Level

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CSF 32C-09-07-91 (111195), Grid North  
Vertical (TVD) Reference: KB @ 6831.00ft (Original Well Elev)  
Section (VS) Reference: Slot - (0.00N, 0.00E)  
Measured Depth Reference: KB @ 6831.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature



## VERTICAL SECTION VIEW

## REFERENCE INFORMATION

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Section (VS) Reference: Slot - (0.00N, 0.00E)  
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Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)  
System Datum: Mean Sea Level

Plan: CSF 32C P01

Created By: ARK Directional Services

Date: 16:14, July 13 2010

## Magnetic Field Details

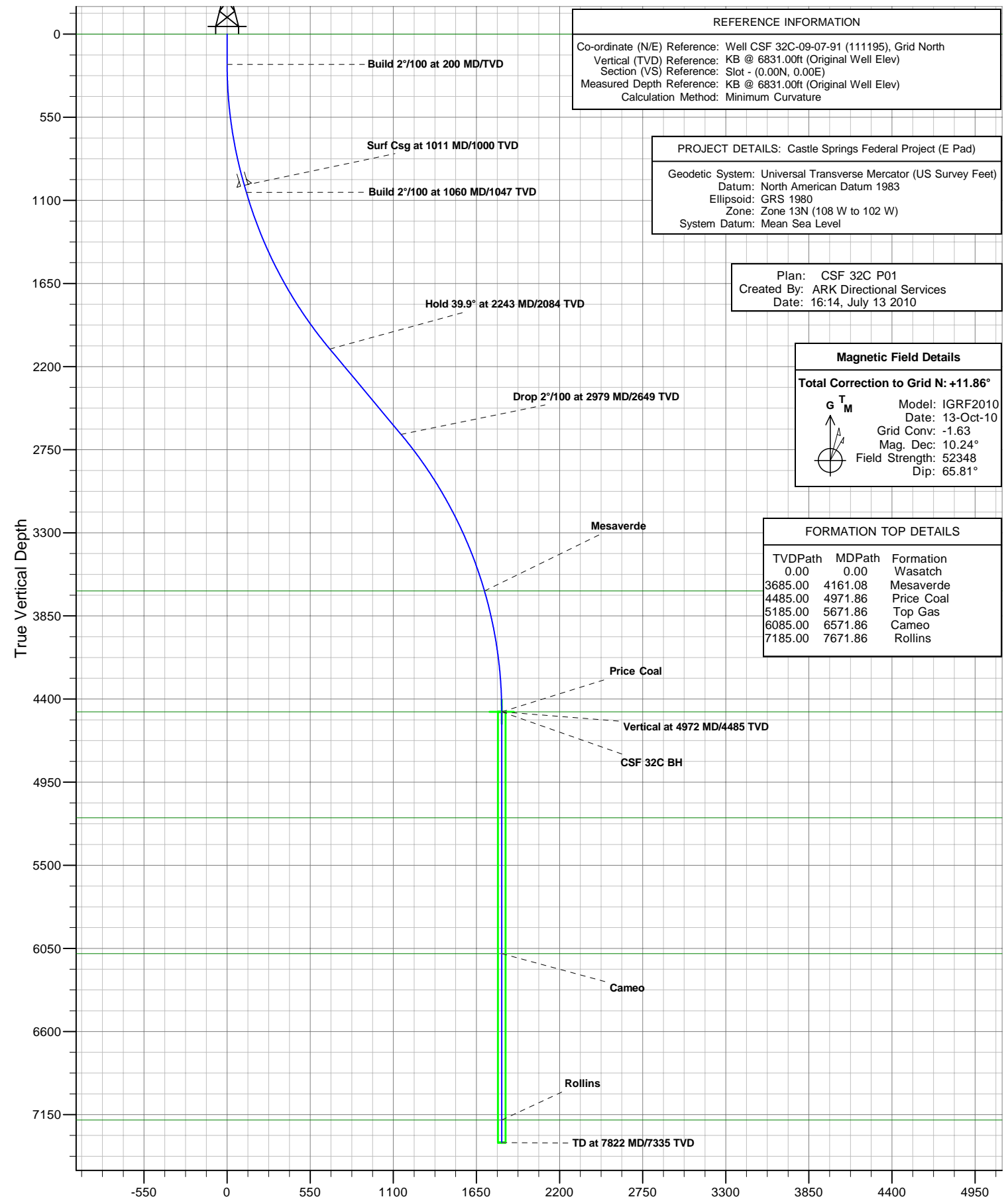
Total Correction to Grid N: +11.86°



Model: IGRF2010  
Date: 13-Oct-10  
Grid Conv: -1.63  
Mag. Dec: 10.24°  
Field Strength: 52348  
Dip: 65.81°

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
0.00	0.00	Wasatch
3685.00	4161.08	Mesaverde
4485.00	4971.86	Price Coal
5185.00	5671.86	Top Gas
6085.00	6571.86	Cameo
7185.00	7671.86	Rollins



Vertical Section at 25.13°

# **Antero Resources**

**Castle Springs Federal Project (E Pad)**

**Frontier 12**

**CSF 32C-09-07-91 (111195)**

**CSF 32C**

**Plan: CSF 32C P01**

## **Standard Planning Report - Geographic**

**13 July, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well CSF 32C-09-07-91 (111195)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 6831.00ft (Original Well Elev)
<b>Project:</b>	Castle Springs Federal Project (E Pad)	<b>MD Reference:</b>	KB @ 6831.00ft (Original Well Elev)
<b>Site:</b>	Frontier 12	<b>North Reference:</b>	Grid
<b>Well:</b>	CSF 32C-09-07-91 (111195)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	CSF 32C		
<b>Design:</b>	CSF 32C P01		

<b>Project</b>	Castle Springs Federal Project (E Pad)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		Frontier 12			
Site Position:		Northing:	14,339,810.145 usft	Latitude:	39.458485832°N
From:	Lat/Long	Easting:	918,106.443 usft	Longitude:	107.558944712°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.63 °

Well	CSF 32C-09-07-91 (111195)					
Well Position	+N/-S	0.00 ft	Northing:	14,339,819.763 usft	Latitude:	39.458513118°N
	+E/-W	0.00 ft	Easting:	918,117.953 usft	Longitude:	107.558904939°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	6,807.00 ft

<b>Wellbore</b>	CSF 32C				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/10/13	10.24	65.81	52,348

<b>Design</b>	CSF 32C P01			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	4,485.00	0.00	0.00	25.13

<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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,010.00	16.20	25.13	999.25	102.98	48.31	2.00	2.00	0.00	25.13	
1,060.00	16.20	25.13	1,047.27	115.61	54.23	0.00	0.00	0.00	0.00	
2,243.21	39.86	25.13	2,084.26	615.48	288.70	2.00	2.00	0.00	0.00	
2,978.65	39.86	25.13	2,648.76	1,042.25	488.89	0.00	0.00	0.00	0.00	
4,971.86	0.00	0.00	4,485.00	1,645.10	771.68	2.00	-2.00	0.00	180.00	CSF 32C BH
7,821.86	0.00	0.00	7,335.00	1,645.10	771.68	0.00	0.00	0.00	0.00	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well CSF 32C-09-07-91 (111195)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 6831.00ft (Original Well Elev)
<b>Project:</b>	Castle Springs Federal Project (E Pad)	<b>MD Reference:</b>	KB @ 6831.00ft (Original Well Elev)
<b>Site:</b>	Frontier 12	<b>North Reference:</b>	Grid
<b>Well:</b>	CSF 32C-09-07-91 (111195)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	CSF 32C		
<b>Design:</b>	CSF 32C P01		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,339,819.763	918,117.953	39.458513118°N	107.558904939°W	
Wasatch										
200.00	0.00	0.00	200.00	0.00	0.00	14,339,819.763	918,117.953	39.458513118°N	107.558904939°W	
Build 2°/100 at 200 MD/TVD										
1,010.00	16.20	25.13	999.25	102.98	48.31	14,339,922.746	918,166.260	39.458799438°N	107.558744314°W	
1,010.78	16.20	25.13	1,000.00	103.18	48.40	14,339,922.943	918,166.352	39.458799986°N	107.558744007°W	
Surf Csg at 1011 MD/1000 TVD										
1,060.00	16.20	25.13	1,047.27	115.61	54.23	14,339,935.375	918,172.184	39.458834550°N	107.558724616°W	
Build 2°/100 at 1060 MD/1047 TVD										
2,243.21	39.86	25.13	2,084.26	615.48	288.70	14,340,435.238	918,406.658	39.460224294°N	107.557944945°W	
Hold 39.9° at 2243 MD/2084 TVD										
2,978.65	39.86	25.13	2,648.76	1,042.25	488.89	14,340,862.012	918,606.847	39.461410831°N	107.557279252°W	
Drop 2°/100 at 2979 MD/2649 TVD										
4,161.08	16.22	25.13	3,685.00	1,541.92	723.28	14,341,361.676	918,841.228	39.462800014°N	107.556499835°W	
Mesaverde										
4,971.86	0.00	0.00	4,485.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	
Vertical at 4972 MD/4485 TVD - Price Coal										
5,671.86	0.00	0.00	5,185.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	
Top Gas										
6,571.86	0.00	0.00	6,085.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	
Cameo										
7,671.86	0.00	0.00	7,185.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	
Rollins										
7,821.86	0.00	0.00	7,335.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
CSF 32C BH - plan hits target center - Circle (radius 25.00)	0.00	0.00	4,485.00	1,645.10	771.68	14,341,464.856	918,889.627	39.463086879°N	107.556338883°W	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (in)	Hole Diameter (in)
1,010.78	1,000.00	Surf Csg at 1011 MD/1000 TVD		5.50	6.00

# ARK Directional Services

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<b>Site:</b>	Frontier 12	<b>North Reference:</b>	Grid
<b>Well:</b>	CSF 32C-09-07-91 (111195)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	CSF 32C		
<b>Design:</b>	CSF 32C P01		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
0.00	0.00	Wasatch				
4,161.08	3,685.00	Mesaverde				
4,971.86	4,485.00	Price Coal				
5,671.86	5,185.00	Top Gas				
6,571.86	6,085.00	Cameo				
7,671.86	7,185.00	Rollins				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.00	200.00	0.00	0.00	Build 2°/100 at 200 MD/TVD	
1,060.00	1,047.27	102.98	48.31	Build 2°/100 at 1060 MD/1047 TVD	
2,243.21	2,084.26	115.61	54.23	Hold 39.9° at 2243 MD/2084 TVD	
2,978.65	2,648.76	615.48	288.70	Drop 2°/100 at 2979 MD/2649 TVD	
4,971.86	4,485.00	1,042.25	488.89	Vertical at 4972 MD/4485 TVD	
7,821.86	7,335.00	1,645.10	771.68	TD at 7822 MD/7335 TVD	