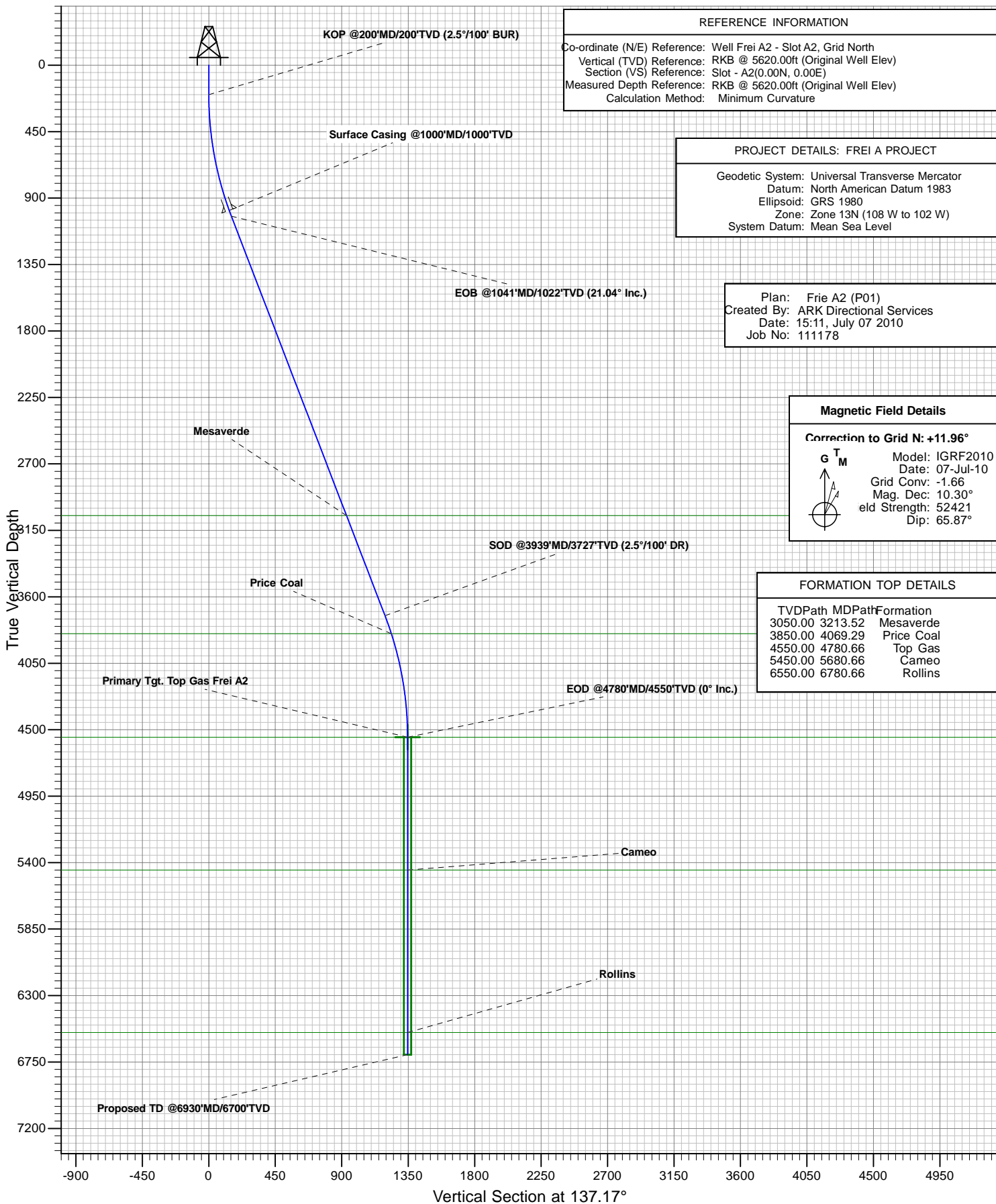




# Antero Resources

Frei A2



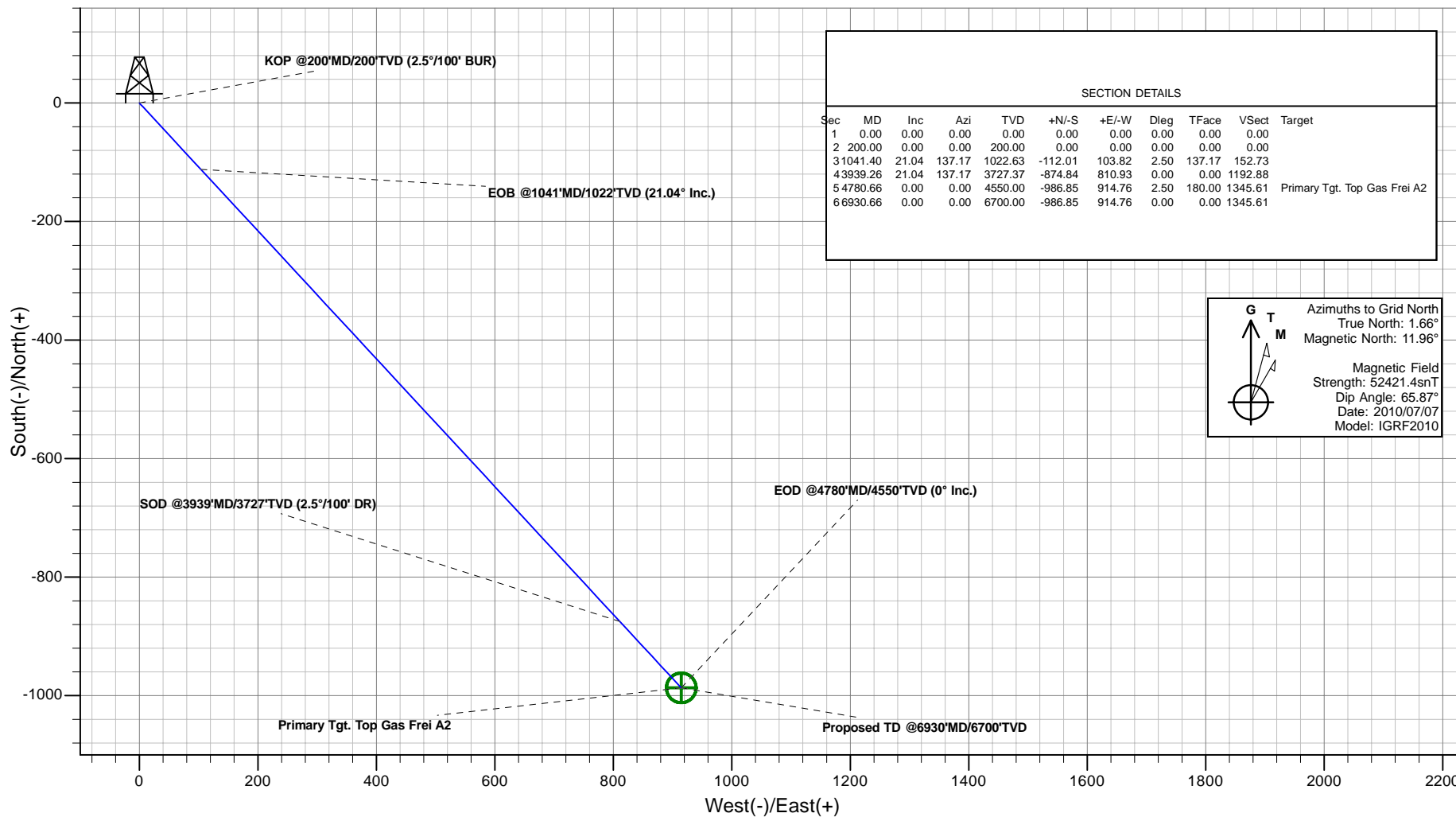


## Antero Resources



### PLAN VIEW

Project: FREI A PROJECT  
Site: FRONTIER 12  
Well: Frei A2  
Wellbore: Frei A2  
Design: Frie A2 (P01)  
JOB # 111178



Plan: Frie A2 (P01)  
Created By: ARK Directional Services  
Date: 15:15, July 07 2010

#### PROJECT DETAILS: FREI A PROJECT

Geodetic System: Universal Transverse Mercator  
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 Frei A2, Grid North  
Vertical (TVD) Reference: RKB @ 5620.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A2(0.00N, 0.00E)  
Measured Depth Reference: RKB @ 5620.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

# **Antero Resources**

**FREI A PROJECT  
FRONTIER 12**

**Plan: Frie A2 (P01)**

## **Standard Planning Report - Geographic**

**07 July, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A2 - Slot A2
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A2		
<b>Design:</b>	Frie A2 (P01)		

<b>Project</b>	FREI A PROJECT		
<b>Map System:</b>	Universal Transverse Mercator	<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:	14,368,390.50 usft	Latitude:	39.535980489°N
From:	Lat/Long	Easting:	906,417.64 usft	Longitude:	107.603240409°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.66 °

Well	Frei A2 - Slot A2					
Well Position	+N/-S	0.00 ft	Northing:	14,368,365.89 usft	Latitude:	39.535912623°N
	+E/-W	0.00 ft	Easting:	906,413.23 usft	Longitude:	107.603253503°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

<b>Wellbore</b>	Frei A2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/07/07	10.30	65.87	52,421

<b>Design</b>	Frie A2 (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>	
	0.00	0.00	0.00	137.17	

<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	
1,041.40	21.04	137.17	1,022.63	-112.01	103.82	2.50	2.50	0.00	137.17	
3,939.26	21.04	137.17	3,727.37	-874.84	810.93	0.00	0.00	0.00	0.00	
4,780.66	0.00	0.00	4,550.00	-986.85	914.76	2.50	-2.50	0.00	180.00	Primary Tgt. Top Gas
6,930.66	0.00	0.00	6,700.00	-986.85	914.76	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 Frei A2 - Slot A2
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A2		
<b>Design:</b>	Frie A2 (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	14,368,365.89	906,413.23	39.535912623°N	107.603253503°W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,365.89	906,413.23	39.535912623°N	107.603253503°W
<b>KOP @200'MD/200'TVD (2.5°/100' BUR)</b>									
1,000.00	20.00	137.17	983.85	-101.36	93.96	14,368,264.53	906,507.19	39.535641983°N	107.602910191°W
<b>Surface Casing @1000'MD/1000'TVD</b>									
1,041.40	21.04	137.17	1,022.63	-112.01	103.82	14,368,253.88	906,517.06	39.535613570°N	107.602874149°W
<b>EOB @1041'MD/1022'TVD (21.04° Inc.)</b>									
3,213.52	21.04	137.17	3,050.00	-683.80	633.85	14,367,682.09	907,047.08	39.534086880°N	107.600937590°W
<b>Mesaverde</b>									
3,939.26	21.04	137.17	3,727.37	-874.84	810.93	14,367,491.05	907,224.16	39.533576783°N	107.600290577°W
<b>SOD @3939'MD/3727'TVD (2.5°/100' DR)</b>									
4,069.29	17.78	137.17	3,850.00	-906.53	840.31	14,367,459.36	907,253.54	39.533492177°N	107.600183263°W
<b>Price Coal</b>									
4,780.66	0.00	0.00	4,550.00	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W
<b>EOD @4780'MD/4550'TVD (0° Inc.) - Top Gas - Primary Tgt. Top Gas Frei A2</b>									
5,680.66	0.00	0.00	5,450.00	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W
<b>Cameo</b>									
6,780.66	0.00	0.00	6,550.00	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W
<b>Rollins</b>									
6,930.63	0.00	0.00	6,699.97	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W
<b>Proposed TD @6930'MD/6700'TVD</b>									
6,930.66	0.00	0.00	6,700.00	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Primary Tgt. Top Gas Fr	0.00	0.00	4,550.00	-986.85	914.76	14,367,379.04	907,327.99	39.533277720°N	107.599911248°W
- plan hits target center									
- Circle (radius 25.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	983.85	Surface Casing @1000'MD/1000'TVD	5.50	6.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,213.52	3,050.00	Mesaverde		0.00		
4,069.29	3,850.00	Price Coal		0.00		
4,780.66	4,550.00	Top Gas		0.00		
5,680.66	5,450.00	Cameo		0.00		
6,780.66	6,550.00	Rollins		0.00		

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A2 - Slot A2
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A2		
<b>Design:</b>	Frie A2 (P01)		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
200.00	200.00	0.00	0.00	KOP @200'MD/200'TVD (2.5°/100' BUR)	
1,041.40	1,022.63	-112.01	103.82	EOB @1041'MD/1022'TVD (21.04° Inc.)	
3,939.26	3,727.37	-874.84	810.93	SOD @3939'MD/3727'TVD (2.5°/100' DR)	
4,780.66	4,550.00	-986.85	914.76	EOD @4780'MD/4550'TVD (0° Inc.)	
6,930.63	6,699.97	-986.85	914.76	Proposed TD @6930'MD/6700'TVD	