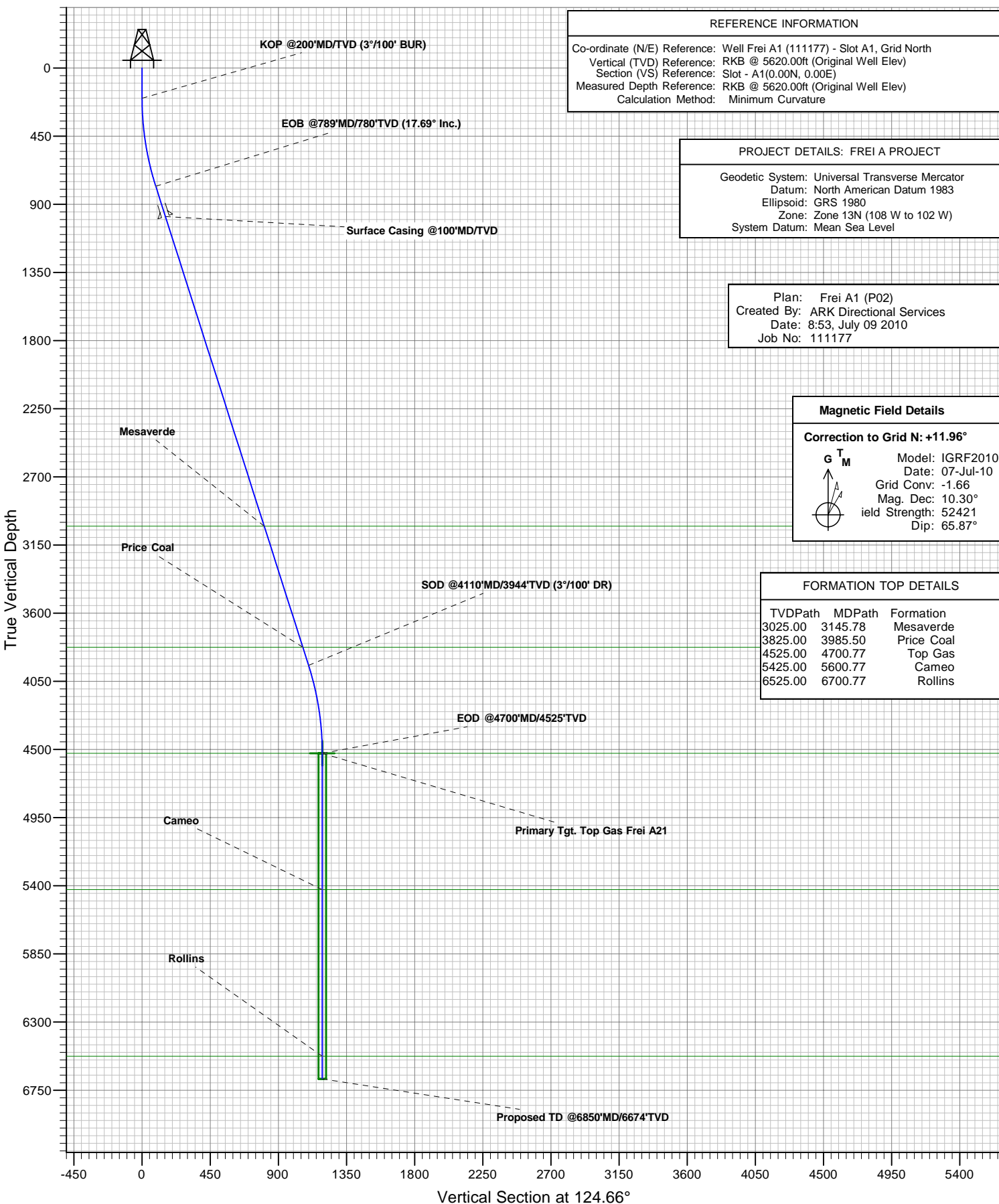




# Antero Resources

Frei A1



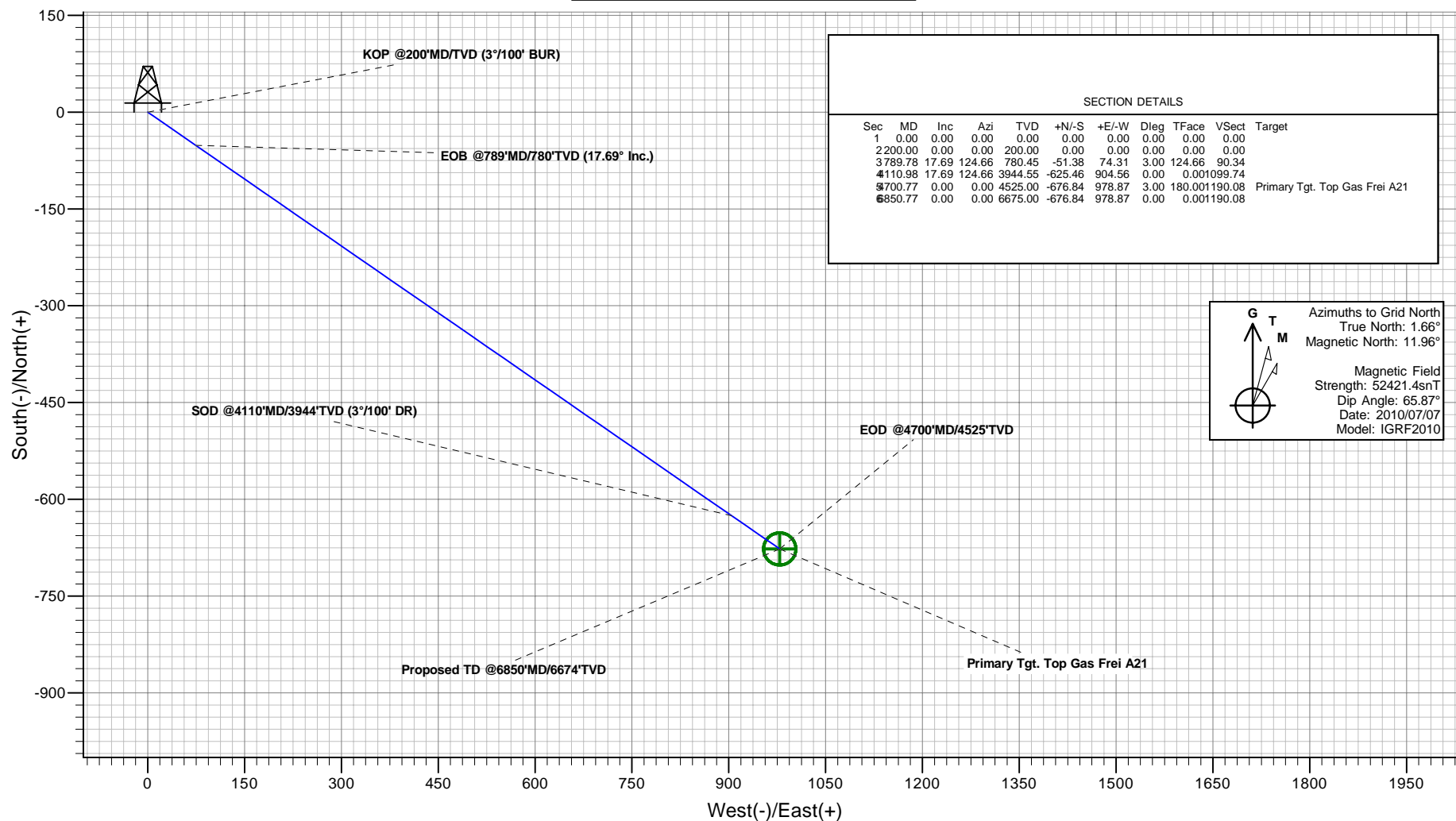


## Antero Resources



### PLAN VIEW

Project: FREI A PROJECT  
Site: FRONTIER 12  
Well: Frei A1 (111177)  
Wellbore: Frei A1  
Design: Frei A1 (P02)  
JOB # 111177



Plan: Frei A1 (P02)  
Created By: ARK Directional Services  
Date: 8:55, July 09 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 A1 (111177), Grid North  
Vertical (TVD) Reference: RKB @ 5620.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A1(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: Frei A1 (P02)**

## **Standard Planning Report - Geographic**

**09 July, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A1 (111177) - Slot A1
<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 A1 (111177)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A1		
<b>Design:</b>	Frei A1 (P02)		

<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 A1 (111177) - Slot A1					
Well Position	+N/-S	0.00 ft	Northing:	14,368,378.19 usft	Latitude:	39.535946555°N
	+E/-W	0.00 ft	Easting:	906,415.44 usft	Longitude:	107.603246956°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

<b>Wellbore</b>	Frei A1				
<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>	Frei A1 (P02)				
<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)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	124.66	

<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	
789.78	17.69	124.66	780.45	-51.38	74.31	3.00	3.00	0.00	124.66	
4,110.98	17.69	124.66	3,944.55	-625.46	904.56	0.00	0.00	0.00	0.00	
4,700.77	0.00	0.00	4,525.00	-676.84	978.87	3.00	-3.00	0.00	180.00	Primary Tgt. Top Gas
6,850.77	0.00	0.00	6,675.00	-676.84	978.87	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 A1 (111177) - Slot A1
<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 A1 (111177)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A1		
<b>Design:</b>	Frei A1 (P02)		

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	14,368,378.19	906,415.44	39.535946555°N	107.603246956°W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,378.19	906,415.44	39.535946555°N	107.603246956°W
<b>KOP @200'MD/TVD (3°/100' BUR)</b>									
789.78	17.69	124.66	780.45	-51.38	74.31	14,368,326.81	906,489.74	39.535811488°N	107.602978394°W
<b>EOB @789'MD/780'TVD (17.69° Inc.)</b>									
1,000.00	17.69	124.66	980.73	-87.72	126.86	14,368,290.48	906,542.30	39.535715967°N	107.602788466°W
<b>Surface Casing @100'MD/TVD</b>									
3,145.78	17.69	124.66	3,025.00	-458.62	663.27	14,367,919.57	907,078.71	39.534740941°N	107.600849844°W
<b>Mesaverde</b>									
3,985.50	17.69	124.66	3,825.00	-603.77	873.19	14,367,774.43	907,288.63	39.534359367°N	107.600091203°W
<b>Price Coal</b>									
4,110.98	17.69	124.66	3,944.54	-625.46	904.56	14,367,752.74	907,319.99	39.534302348°N	107.599977840°W
<b>SOD @4110'MD/3944'TVD (3°/100' DR)</b>									
4,700.77	0.00	0.00	4,525.00	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°W
<b>EOD @4700'MD/4525'TVD - Top Gas</b>									
5,600.77	0.00	0.00	5,425.00	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°W
<b>Cameo</b>									
6,700.77	0.00	0.00	6,525.00	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°W
<b>Rollins</b>									
6,850.74	0.00	0.00	6,674.97	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°W
<b>Proposed TD @6850'MD/6674'TVD</b>									
6,850.77	0.00	0.00	6,675.00	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°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	360.00	4,525.00	-676.84	978.87	14,367,701.36	907,394.31	39.534167271°N	107.599709286°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	980.73	Surface Casing @100'MD/TVD	5.50	6.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,145.78	3,025.00	Mesaverde		0.00		
3,985.50	3,825.00	Price Coal		0.00		
4,700.77	4,525.00	Top Gas		0.00		
5,600.77	5,425.00	Cameo		0.00		
6,700.77	6,525.00	Rollins		0.00		

# ARK Directional Services

## Planning Report - Geographic

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<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 A1 (111177)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A1		
<b>Design:</b>	Frei A1 (P02)		

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/TVD (3°/100' BUR)	
789.78	780.45	-51.38	74.31	EOB @789'MD/780'TVD (17.69° Inc.)	
4,110.98	3,944.54	-625.46	904.56	SOD @4110'MD/3944'TVD (3°/100' DR)	
4,700.77	4,525.00	-676.84	978.87	EOD @4700'MD/4525'TVD	
6,850.74	6,674.97	-676.84	978.87	Proposed TD @6850'MD/6674'TVD	