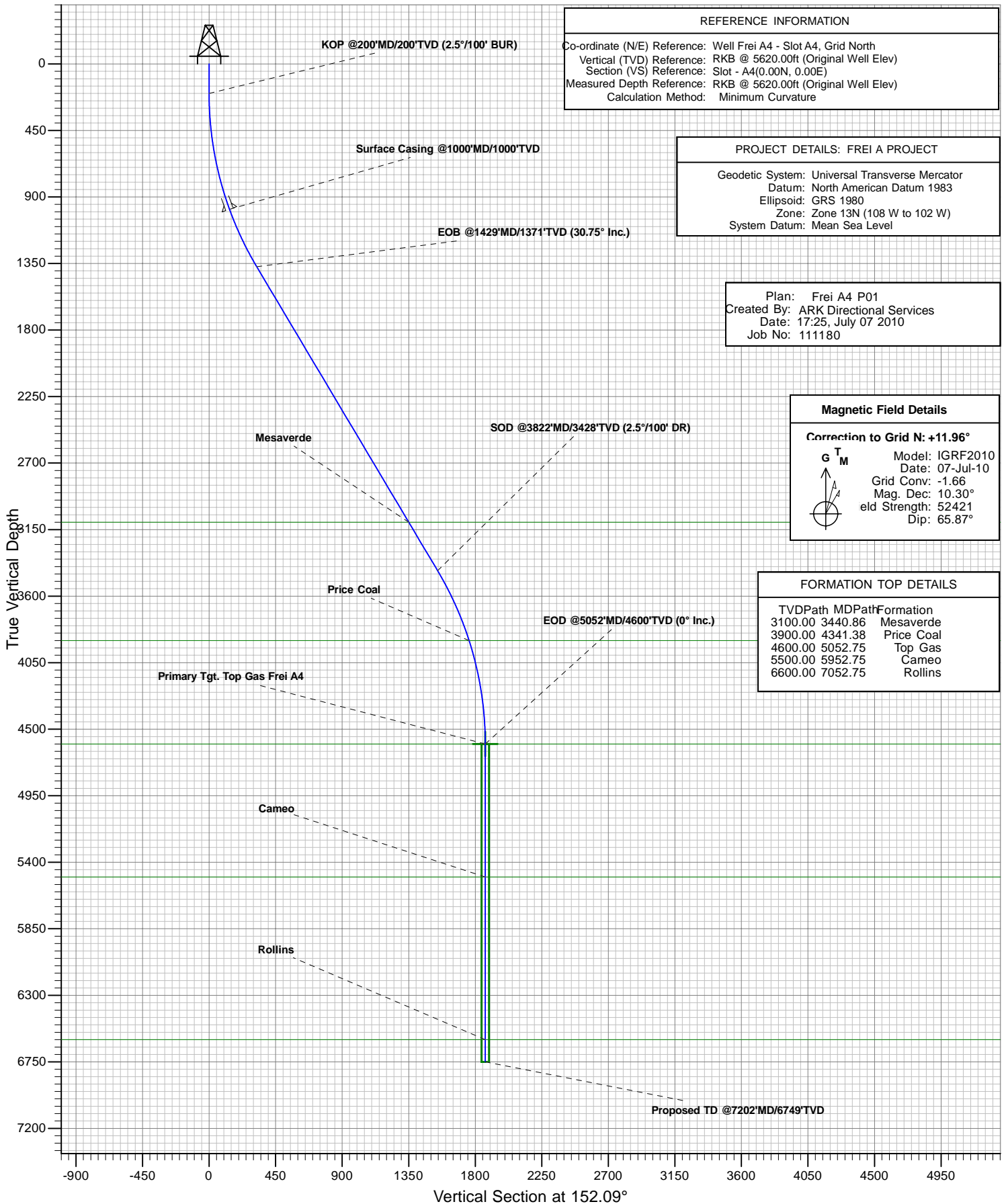




Antero Resources

Frei A4

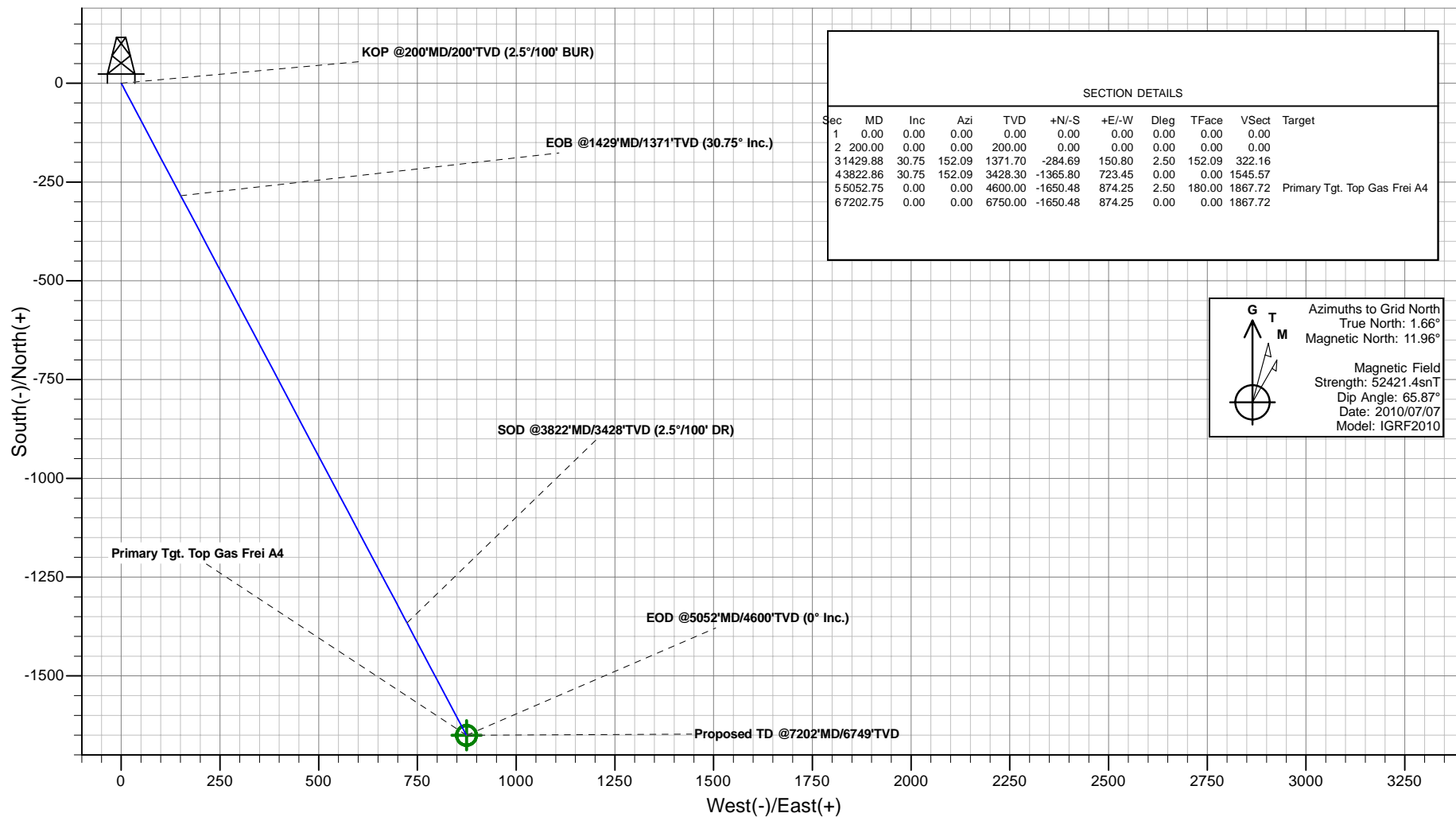




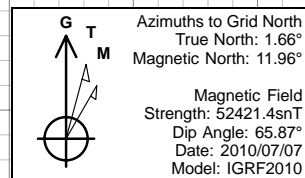
PLAN VIEW

Antero Resources

Project: FREI A PROJECT
Site: FRONTIER 12
Well: Frei A4
Wellbore: Frei A4
Design: Frei A4 P01
JOB # 111180



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1429.88	30.75	152.09	1371.70	-284.69	150.80	2.50	152.09	322.16	
4	3822.86	30.75	152.09	3428.30	-1365.80	723.45	0.00	0.00	1545.57	
5	5052.75	0.00	0.00	4600.00	-1650.48	874.25	2.50	180.00	1867.72	Primary Tgt. Top Gas Frei A4
6	7202.75	0.00	0.00	6750.00	-1650.48	874.25	0.00	0.00	1867.72	



Plan: Frei A4 P01
Created By: ARK Directional Services
Date: 17:27, 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 A4, Grid North
Vertical (TVD) Reference: RKB @ 5620.00ft (Original Well Elev)
Section (VS) Reference: Slot - A4(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 A4 P01

Standard Planning Report - Geographic

07 July, 2010

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well Frei A4 - Slot A4
Company:	Antero Resources	TVD Reference:	RKB @ 5620.00ft (Original Well Elev)
Project:	FREI A PROJECT	MD Reference:	RKB @ 5620.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	Frei A4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Frei A4		
Design:	Frei A4 P01		

Project	FREI A PROJECT		
Map System:	Universal Transverse Mercator	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 A4 - Slot A4					
Well Position	+N/-S	0.00 ft	Northing:	14,368,341.28 usft	Latitude:	39.535844759°N
	+E/-W	0.00 ft	Easting:	906,408.82 usft	Longitude:	107.603266602°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

Wellbore	Frei A4				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2010/07/07	10.30	65.87	52,421

Design	Frei A4 P01				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	152.09	

Plan Sections										
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	
1,429.88	30.75	152.09	1,371.70	-284.69	150.80	2.50	2.50	0.00	152.09	
3,822.86	30.75	152.09	3,428.30	-1,365.80	723.45	0.00	0.00	0.00	0.00	
5,052.75	0.00	0.00	4,600.00	-1,650.48	874.25	2.50	-2.50	0.00	180.00	Primary Tgt. Top Gas
7,202.75	0.00	0.00	6,750.00	-1,650.48	874.25	0.00	0.00	0.00	0.00	

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well Frei A4 - Slot A4
Company:	Antero Resources	TVD Reference:	RKB @ 5620.00ft (Original Well Elev)
Project:	FREI A PROJECT	MD Reference:	RKB @ 5620.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	Frei A4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Frei A4		
Design:	Frei A4 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	14,368,341.28	906,408.82	39.535844759°N	107.603266602°W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,341.28	906,408.82	39.535844759°N	107.603266602°W
KOP @200'MD/200'TVD (2.5°/100' BUR)									
1,000.00	20.00	152.09	983.85	-122.14	64.70	14,368,219.14	906,473.52	39.535514802°N	107.603024848°W
Surface Casing @1000'MD/1000'TVD									
1,429.88	30.75	152.09	1,371.69	-284.68	150.79	14,368,056.60	906,559.62	39.535075681°N	107.602703117°W
EOB @1429'MD/1371'TVD (30.75° Inc.)									
3,440.87	30.75	152.09	3,100.00	-1,193.21	632.04	14,367,148.07	907,040.86	39.532621254°N	107.600904918°W
Mesaverde									
3,822.86	30.75	152.09	3,428.30	-1,365.79	723.45	14,366,975.49	907,132.27	39.532155022°N	107.600563358°W
SOD @3822'MD/3428'TVD (2.5°/100' DR)									
4,341.38	17.78	152.09	3,900.00	-1,553.70	822.98	14,366,787.58	907,231.80	39.531647376°N	107.600191464°W
Price Coal									
5,052.75	0.00	0.00	4,600.00	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°W
EOD @5052'MD/4600'TVD (0° Inc.) - Top Gas - Primary Tgt. Top Gas Frei A4									
5,952.75	0.00	0.00	5,500.00	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°W
Cameo									
7,052.75	0.00	0.00	6,600.00	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°W
Rollins									
7,202.72	0.00	0.00	6,749.97	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°W
Proposed TD @7202'MD/6749'TVD									
7,202.75	0.00	0.00	6,750.00	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°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	4,600.00	-1,650.48	874.25	14,366,690.80	907,283.07	39.531385919°N	107.599999927°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 (°)	
3,440.87	3,100.00	Mesaverde		0.00		
4,341.38	3,900.00	Price Coal		0.00		
5,052.75	4,600.00	Top Gas		0.00		
5,952.75	5,500.00	Cameo		0.00		
7,052.75	6,600.00	Rollins		0.00		

ARK Directional Services

Planning Report - Geographic

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Company:	Antero Resources	TVD Reference:	RKB @ 5620.00ft (Original Well Elev)
Project:	FREI A PROJECT	MD Reference:	RKB @ 5620.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	Frei A4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Frei A4		
Design:	Frei A4 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)
1,429.88	1,371.69	-284.68	150.79	EOB @1429'MD/1371'TVD (30.75° Inc.)
3,822.86	3,428.30	-1,365.79	723.45	SOD @3822'MD/3428'TVD (2.5°/100' DR)
5,052.75	4,600.00	-1,650.48	874.25	EOD @5052'MD/4600'TVD (0° Inc.)
7,202.72	6,749.97	-1,650.48	874.25	Proposed TD @7202'MD/6749'TVD