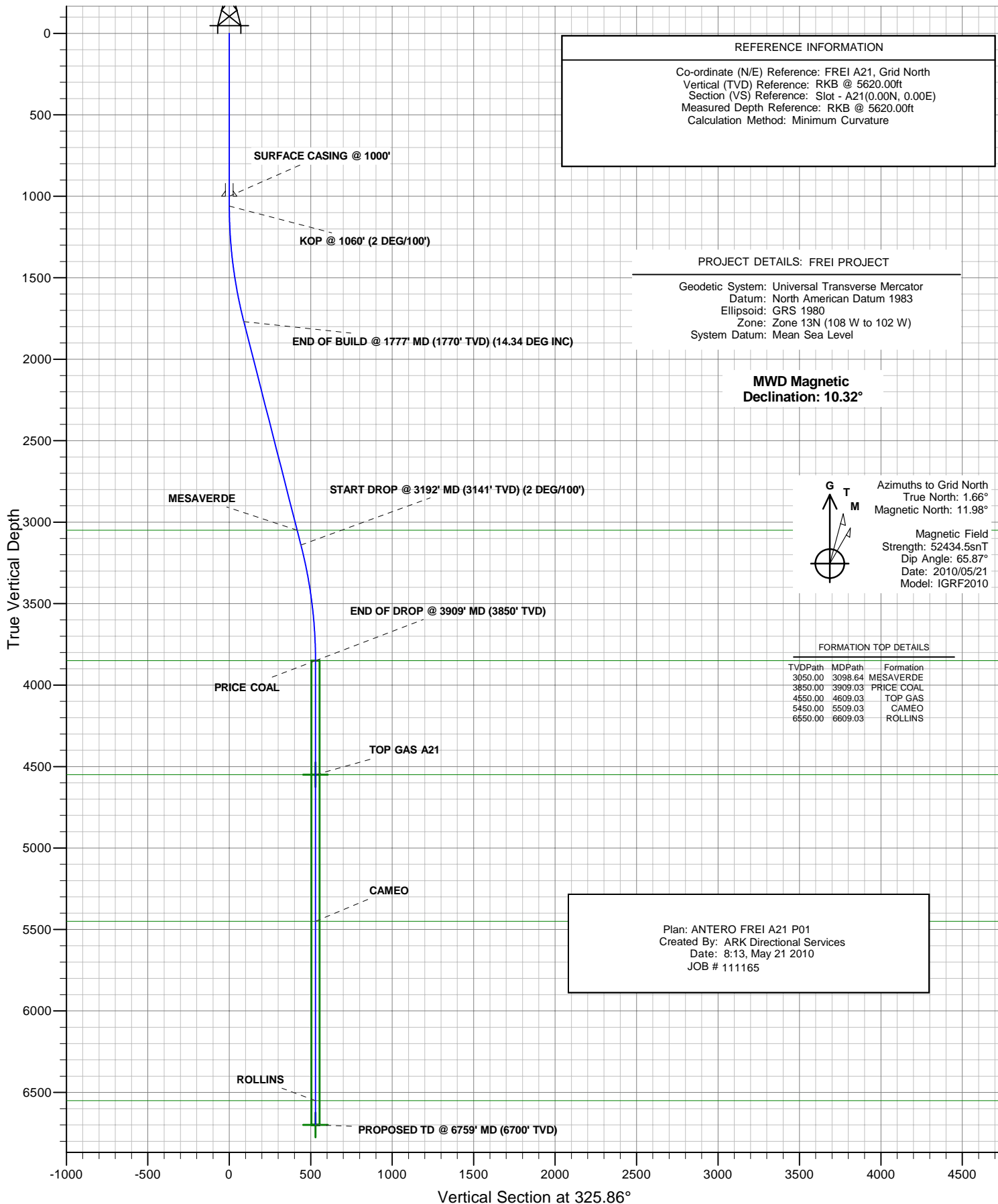




ANTERO RESOURCES

ANTERO FREI A21

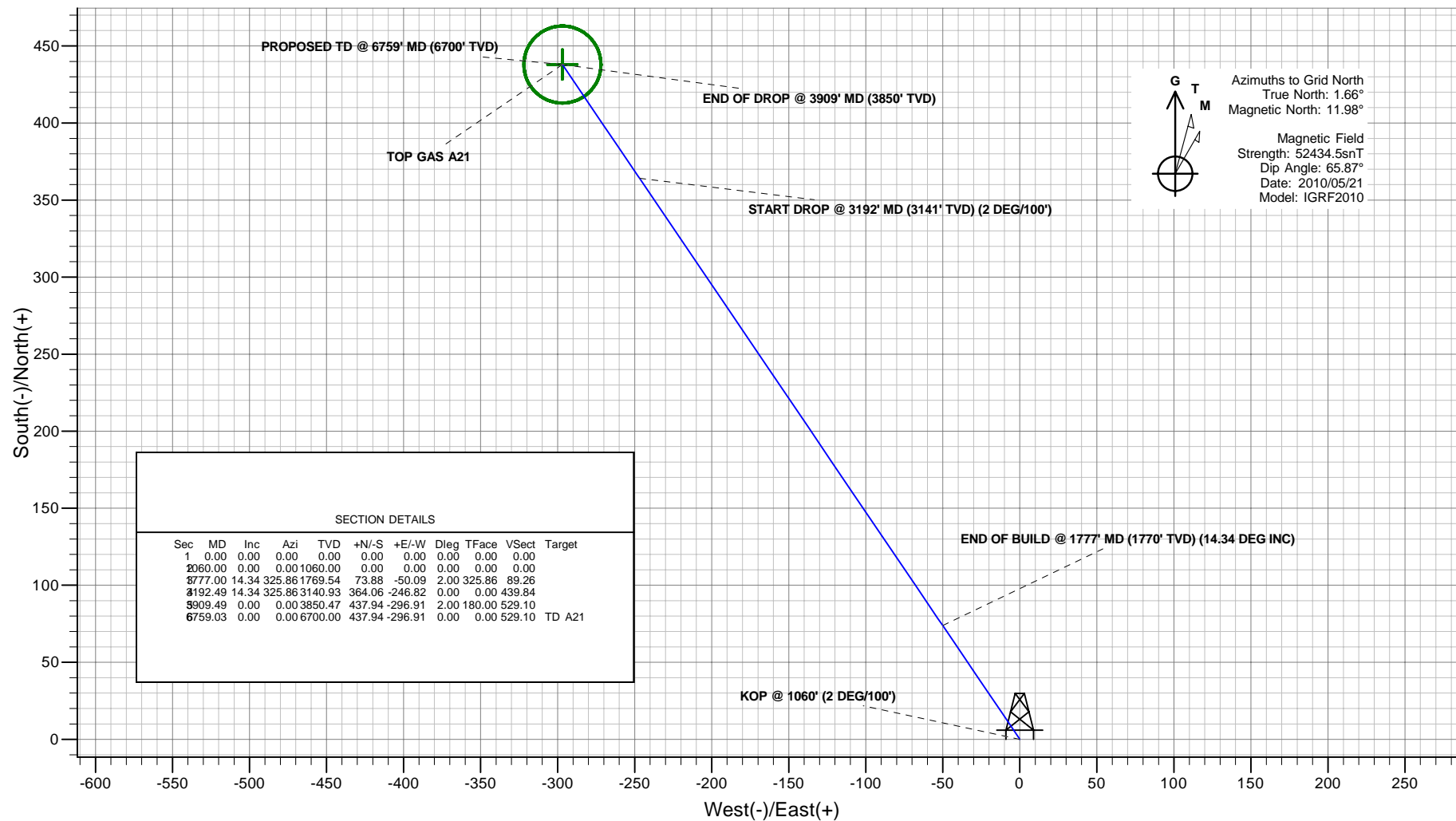




PLAN VIEW

ANTERO RESOURCES

Project: FREI PROJECT
Site: FRONTIER 12
Well: FREI A21
Wellbore: ANTERO FREI A21
Design: ANTERO FREI A21 P01
JOB # 111165



Plan: ANTERO FREI A21 P01
Created By: ARK Directional Services
Date: 8:15, May 21 2010

PROJECT DETAILS: FREI 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: FREI A21, Grid North
Vertical (TVD) Reference: RKB @ 5620.00ft
Section (VS) Reference: Slot - A21(0.00N, 0.00E)
Measured Depth Reference: RKB @ 5620.00ft
Calculation Method: Minimum Curvature

ANTERO RESOURCES

**FREI PROJECT
FRONTIER 12**

Plan: ANTERO FREI A21 P01

Standard Planning Report - Geographic

21 May, 2010

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well FREI A21 - Slot A21
Company:	ANTERO RESOURCES	TVD Reference:	RKB @ 5620.00ft
Project:	FREI PROJECT	MD Reference:	RKB @ 5620.00ft
Site:	FRONTIER 12	North Reference:	Grid
Well:	FREI A21	Survey Calculation Method:	Minimum Curvature
Wellbore:	ANTERO FREI A21		
Design:	ANTERO FREI A21 P01		

Project	FREI 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° 32' 9.530 N
From:	Lat/Long	Easting:	906,417.64 usft	Longitude:	107° 36' 11.665 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.66 °

Well		FREI A21 - Slot A21				
Well Position	+N/-S	0.00 ft	Northing:	14,368,390.50 usft	Latitude:	39° 32' 9.530 N
	+E/-W	0.00 ft	Easting:	906,417.64 usft	Longitude:	107° 36' 11.665 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

Wellbore	ANTERO FREI A21				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2010/05/21	10.32	65.87	52,435

Design	ANTERO FREI A21 P01				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	325.86	

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	
1,060.00	0.00	0.00	1,060.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,777.00	14.34	325.86	1,769.54	73.88	-50.09	2.00	2.00	0.00	325.86	
3,192.49	14.34	325.86	3,140.93	364.06	-246.82	0.00	0.00	0.00	0.00	
3,909.49	0.00	0.00	3,850.47	437.94	-296.91	2.00	-2.00	0.00	180.00	
6,759.03	0.00	0.00	6,700.00	437.94	-296.91	0.00	0.00	0.00	0.00	TD A21

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well FREI A21 - Slot A21
Company:	ANTERO RESOURCES	TVD Reference:	RKB @ 5620.00ft
Project:	FREI PROJECT	MD Reference:	RKB @ 5620.00ft
Site:	FRONTIER 12	North Reference:	Grid
Well:	FREI A21	Survey Calculation Method:	Minimum Curvature
Wellbore:	ANTERO FREI A21		
Design:	ANTERO FREI A21 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	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
100.00	0.00	0.00	100.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
300.00	0.00	0.00	300.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
400.00	0.00	0.00	400.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
500.00	0.00	0.00	500.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
600.00	0.00	0.00	600.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
700.00	0.00	0.00	700.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
800.00	0.00	0.00	800.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
900.00	0.00	0.00	900.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
SURFACE CASING @ 1000'									
1,060.00	0.00	0.00	1,060.00	0.00	0.00	14,368,390.50	906,417.64	39° 32' 9.530 N	107° 36' 11.665 W
KOP @ 1060' (2 DEG/100')									
1,100.00	0.80	325.86	1,100.00	0.23	-0.16	14,368,390.73	906,417.48	39° 32' 9.532 N	107° 36' 11.668 W
1,200.00	2.80	325.86	1,199.94	2.83	-1.92	14,368,393.33	906,415.72	39° 32' 9.557 N	107° 36' 11.691 W
1,300.00	4.80	325.86	1,299.72	8.32	-5.64	14,368,398.82	906,412.00	39° 32' 9.610 N	107° 36' 11.740 W
1,400.00	6.80	325.86	1,399.20	16.68	-11.31	14,368,407.18	906,406.33	39° 32' 9.691 N	107° 36' 11.816 W
1,500.00	8.80	325.86	1,498.27	27.91	-18.92	14,368,418.41	906,398.71	39° 32' 9.800 N	107° 36' 11.917 W
1,600.00	10.80	325.86	1,596.81	42.00	-28.48	14,368,432.50	906,389.16	39° 32' 9.936 N	107° 36' 12.044 W
1,700.00	12.80	325.86	1,694.69	58.93	-39.95	14,368,449.42	906,377.69	39° 32' 10.100 N	107° 36' 12.197 W
1,777.00	14.34	325.86	1,769.54	73.88	-50.09	14,368,464.38	906,367.55	39° 32' 10.245 N	107° 36' 12.332 W
END OF BUILD @ 1777' MD (1770' TVD) (14.34 DEG INC)									
1,800.00	14.34	325.86	1,791.82	78.59	-53.29	14,368,469.09	906,364.35	39° 32' 10.291 N	107° 36' 12.374 W
1,900.00	14.34	325.86	1,888.71	99.09	-67.18	14,368,489.59	906,350.46	39° 32' 10.489 N	107° 36' 12.559 W
2,000.00	14.34	325.86	1,985.59	119.59	-81.08	14,368,510.09	906,336.56	39° 32' 10.688 N	107° 36' 12.744 W
2,100.00	14.34	325.86	2,082.47	140.09	-94.98	14,368,530.59	906,322.66	39° 32' 10.886 N	107° 36' 12.929 W
2,200.00	14.34	325.86	2,179.36	160.59	-108.88	14,368,551.09	906,308.76	39° 32' 11.085 N	107° 36' 13.114 W
2,300.00	14.34	325.86	2,276.24	181.10	-122.78	14,368,571.59	906,294.86	39° 32' 11.283 N	107° 36' 13.298 W
2,400.00	14.34	325.86	2,373.13	201.60	-136.68	14,368,592.09	906,280.96	39° 32' 11.482 N	107° 36' 13.483 W
2,500.00	14.34	325.86	2,470.01	222.10	-150.58	14,368,612.59	906,267.06	39° 32' 11.680 N	107° 36' 13.668 W
2,600.00	14.34	325.86	2,566.90	242.60	-164.47	14,368,633.09	906,253.16	39° 32' 11.879 N	107° 36' 13.853 W
2,700.00	14.34	325.86	2,663.78	263.10	-178.37	14,368,653.59	906,239.27	39° 32' 12.077 N	107° 36' 14.038 W
2,800.00	14.34	325.86	2,760.66	283.60	-192.27	14,368,674.09	906,225.37	39° 32' 12.276 N	107° 36' 14.223 W
2,900.00	14.34	325.86	2,857.55	304.10	-206.17	14,368,694.59	906,211.47	39° 32' 12.474 N	107° 36' 14.408 W
3,000.00	14.34	325.86	2,954.43	324.60	-220.07	14,368,715.09	906,197.57	39° 32' 12.673 N	107° 36' 14.592 W
3,098.64	14.34	325.86	3,050.00	344.82	-233.78	14,368,735.32	906,183.86	39° 32' 12.869 N	107° 36' 14.775 W
MESAVERDE									
3,100.00	14.34	325.86	3,051.32	345.10	-233.97	14,368,735.59	906,183.67	39° 32' 12.871 N	107° 36' 14.777 W
3,192.49	14.34	325.86	3,140.93	364.06	-246.82	14,368,754.56	906,170.82	39° 32' 13.055 N	107° 36' 14.948 W
START DROP @ 3192' MD (3141' TVD) (2 DEG/100')									
3,200.00	14.19	325.86	3,148.20	365.59	-247.86	14,368,756.09	906,169.78	39° 32' 13.070 N	107° 36' 14.962 W
3,300.00	12.19	325.86	3,245.56	384.47	-260.67	14,368,774.97	906,156.97	39° 32' 13.253 N	107° 36' 15.132 W
3,400.00	10.19	325.86	3,343.66	400.54	-271.56	14,368,791.03	906,146.08	39° 32' 13.408 N	107° 36' 15.277 W
3,500.00	8.19	325.86	3,442.37	413.75	-280.52	14,368,804.25	906,137.12	39° 32' 13.536 N	107° 36' 15.396 W
3,600.00	6.19	325.86	3,541.58	424.11	-287.54	14,368,814.61	906,130.10	39° 32' 13.636 N	107° 36' 15.490 W
3,700.00	4.19	325.86	3,641.16	431.60	-292.62	14,368,822.10	906,125.02	39° 32' 13.709 N	107° 36' 15.557 W
3,800.00	2.19	325.86	3,741.00	436.21	-295.74	14,368,826.70	906,121.90	39° 32' 13.754 N	107° 36' 15.599 W
3,909.03	0.01	325.86	3,850.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
PRICE COAL									
3,909.49	0.00	325.86	3,850.46	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
END OF DROP @ 3909' MD (3850' TVD)									
4,000.00	0.00	0.00	3,940.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,100.00	0.00	0.00	4,040.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well FREI A21 - Slot A21
Company:	ANTERO RESOURCES	TVD Reference:	RKB @ 5620.00ft
Project:	FREI PROJECT	MD Reference:	RKB @ 5620.00ft
Site:	FRONTIER 12	North Reference:	Grid
Well:	FREI A21	Survey Calculation Method:	Minimum Curvature
Wellbore:	ANTERO FREI A21		
Design:	ANTERO FREI A21 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
4,200.00	0.00	0.00	4,140.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,300.00	0.00	0.00	4,240.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,400.00	0.00	0.00	4,340.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,500.00	0.00	0.00	4,440.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,600.00	0.00	0.00	4,540.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,609.03	0.00	0.00	4,550.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
TOP GAS - TOP GAS A21									
4,700.00	0.00	0.00	4,640.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,800.00	0.00	0.00	4,740.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
4,900.00	0.00	0.00	4,840.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,000.00	0.00	0.00	4,940.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,100.00	0.00	0.00	5,040.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,200.00	0.00	0.00	5,140.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,300.00	0.00	0.00	5,240.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,400.00	0.00	0.00	5,340.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,500.00	0.00	0.00	5,440.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,509.03	0.00	0.00	5,450.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
CAMEO									
5,600.00	0.00	0.00	5,540.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,700.00	0.00	0.00	5,640.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,800.00	0.00	0.00	5,740.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
5,900.00	0.00	0.00	5,840.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,000.00	0.00	0.00	5,940.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,100.00	0.00	0.00	6,040.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,200.00	0.00	0.00	6,140.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,300.00	0.00	0.00	6,240.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,400.00	0.00	0.00	6,340.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,500.00	0.00	0.00	6,440.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,600.00	0.00	0.00	6,540.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,609.03	0.00	0.00	6,550.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
ROLLINS									
6,700.00	0.00	0.00	6,640.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
6,759.00	0.00	0.00	6,699.97	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
PROPOSED TD @ 6759' MD (6700' TVD)									
6,759.03	0.00	0.00	6,700.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
TD A21									

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									
TOP GAS A21	0.00	360.00	4,550.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
- plan hits target center									
- Circle (radius 25.00)									
TD A21	0.00	0.00	6,700.00	437.94	-296.91	14,368,828.44	906,120.73	39° 32' 13.770 N	107° 36' 15.614 W
- plan hits target center									
- Circle (radius 25.00)									

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well FREI A21 - Slot A21
Company:	ANTERO RESOURCES	TVD Reference:	RKB @ 5620.00ft
Project:	FREI PROJECT	MD Reference:	RKB @ 5620.00ft
Site:	FRONTIER 12	North Reference:	Grid
Well:	FREI A21	Survey Calculation Method:	Minimum Curvature
Wellbore:	ANTERO FREI A21		
Design:	ANTERO FREI A21 P01		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	1,000.00	SURFACE CASING @ 1000'	9.62	12.25	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,098.64	3,050.00	MESAVERDE		0.00	
3,909.03	3,850.00	PRICE COAL		0.00	
4,609.03	4,550.00	TOP GAS		0.00	
5,509.03	5,450.00	CAMEO		0.00	
6,609.03	6,550.00	ROLLINS		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,060.00	1,060.00	0.00	0.00	KOP @ 1060' (2 DEG/100')	
1,777.00	1,769.54	73.88	-50.09	END OF BUILD @ 1777' MD (1770' TVD) (14.34 DEG INC)	
3,192.49	3,140.93	364.06	-246.82	START DROP @ 3192' MD (3141' TVD) (2 DEG/100')	
3,909.49	3,850.46	437.94	-296.91	END OF DROP @ 3909' MD (3850' TVD)	
6,759.00	6,699.97	437.94	-296.91	PROPOSED TD @ 6759' MD (6700' TVD)	