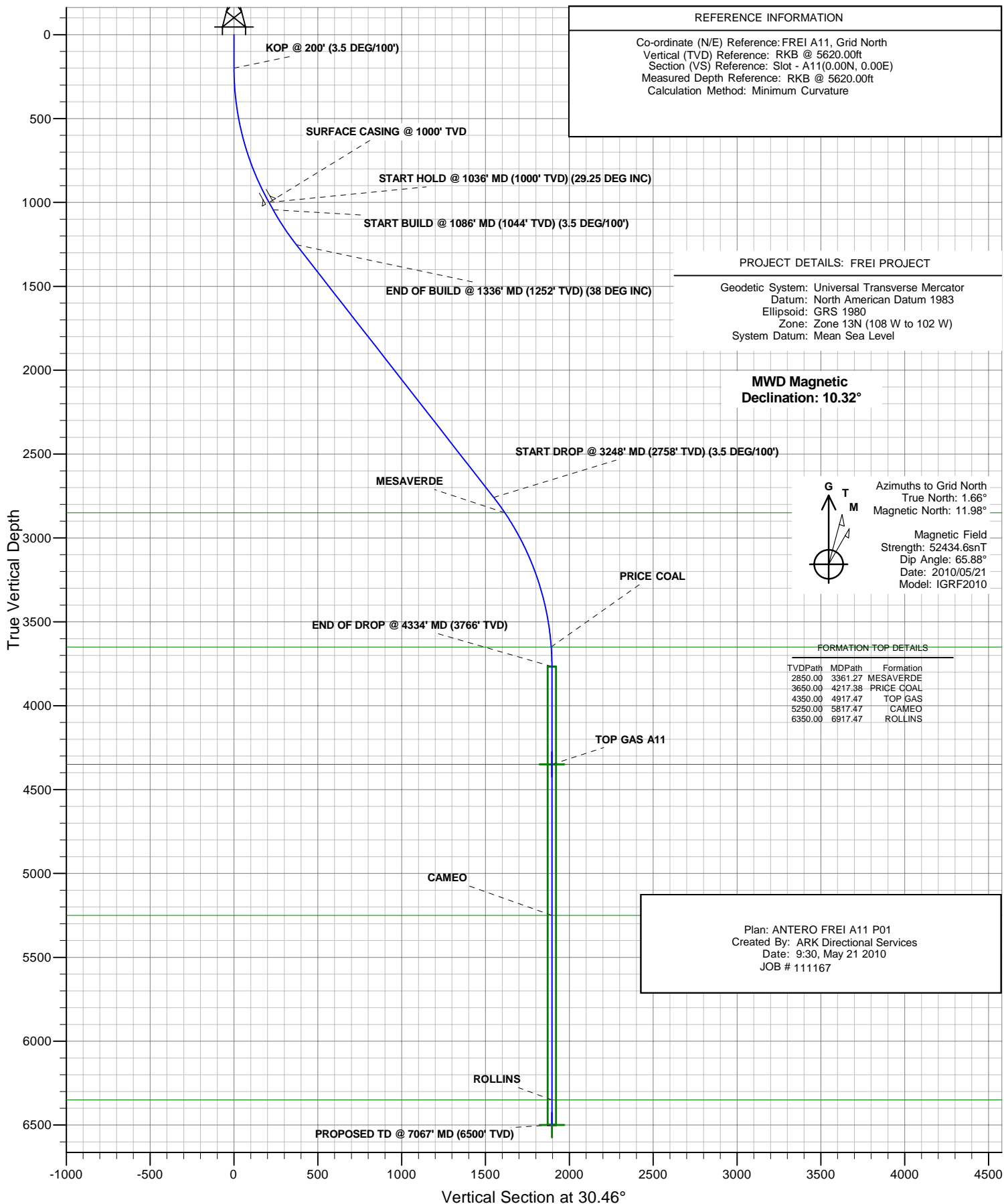




# ANTERO RESOURCES

## ANTERO FREI A11



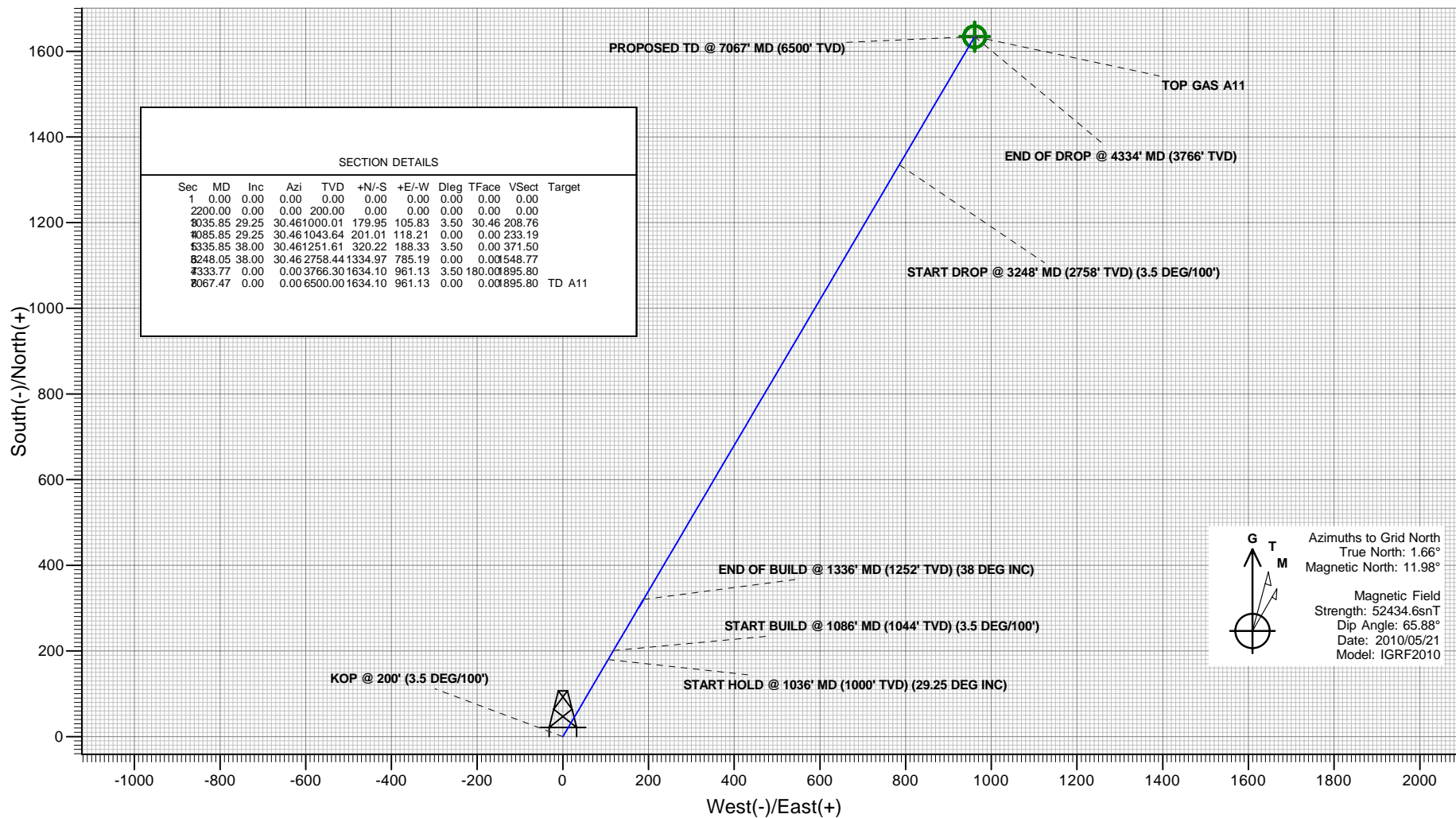


## ANTERO RESOURCES



### PLAN VIEW

Project: FREI PROJECT  
Site: FRONTIER 12  
Well: FREI A11 (111167)  
Wellbore: ANTERO FREI A11  
Design: ANTERO FREI A11 P01  
JOB # 111167



#### 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 A11, Grid North  
Vertical (TVD) Reference: RKB @ 5620.00ft  
Section (VS) Reference: Slot - A11(0.00N, 0.00E)  
Measured Depth Reference: RKB @ 5620.00ft  
Calculation Method: Minimum Curvature

Plan: ANTERO FREI A11 P01  
Created By: ARK Directional Services  
Date: 9:33, May 21 2010

# **ANTERO RESOURCES**

**FREI PROJECT  
FRONTIER 12**

**Plan: ANTERO FREI A11 P01**

## **Standard Planning Report - Geographic**

**21 May, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<b>Company:</b>	ANTERO RESOURCES	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Project:</b>	FREI PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	FREI A11 (111167)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ANTERO FREI A11		
<b>Design:</b>	ANTERO FREI A11 P01		

<b>Project</b>	FREI 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° 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 A11 (111167) - Slot A11					
Well Position	+N/-S	0.00 ft	Northing:	14,368,427.41 usft	Latitude:	39° 32' 9.896 N
	+E/-W	0.00 ft	Easting:	906,424.25 usft	Longitude:	107° 36' 11.595 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

<b>Wellbore</b>	ANTERO FREI A11				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/05/21	10.32	65.88	52,435

<b>Design</b>	ANTERO FREI A11 P01				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	30.46	

<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	
1,035.85	29.25	30.46	1,000.01	179.95	105.83	3.50	3.50	0.00	30.46	
1,085.85	29.25	30.46	1,043.64	201.01	118.21	0.00	0.00	0.00	0.00	
1,335.85	38.00	30.46	1,251.61	320.22	188.33	3.50	3.50	0.00	0.00	
3,248.05	38.00	30.46	2,758.44	1,334.97	785.19	0.00	0.00	0.00	0.00	
4,333.77	0.00	0.00	3,766.30	1,634.10	961.13	3.50	-3.50	0.00	180.00	
7,067.47	0.00	0.00	6,500.00	1,634.10	961.13	0.00	0.00	0.00	0.00	TD A11

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<b>Company:</b>	ANTERO RESOURCES	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Project:</b>	FREI PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	FREI A11 (111167)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ANTERO FREI A11		
<b>Design:</b>	ANTERO FREI A11 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	14,368,427.41	906,424.25	39° 32' 9.896 N	107° 36' 11.595 W
100.00	0.00	0.00	100.00	0.00	0.00	14,368,427.41	906,424.25	39° 32' 9.896 N	107° 36' 11.595 W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,427.41	906,424.25	39° 32' 9.896 N	107° 36' 11.595 W
<b>KOP @ 200' (3.5 DEG/100')</b>									
300.00	3.50	30.46	299.94	2.63	1.55	14,368,430.04	906,425.80	39° 32' 9.923 N	107° 36' 11.576 W
400.00	7.00	30.46	399.50	10.52	6.18	14,368,437.93	906,430.43	39° 32' 10.002 N	107° 36' 11.520 W
500.00	10.50	30.46	498.32	23.62	13.89	14,368,451.04	906,438.14	39° 32' 10.134 N	107° 36' 11.426 W
600.00	14.00	30.46	596.03	41.91	24.65	14,368,469.32	906,448.90	39° 32' 10.317 N	107° 36' 11.296 W
700.00	17.50	30.46	692.26	65.30	38.40	14,368,492.71	906,462.65	39° 32' 10.552 N	107° 36' 11.129 W
800.00	21.00	30.46	786.66	93.71	55.11	14,368,521.12	906,479.36	39° 32' 10.838 N	107° 36' 10.926 W
900.00	24.50	30.46	878.87	127.03	74.71	14,368,554.44	906,498.96	39° 32' 11.172 N	107° 36' 10.689 W
1,000.00	28.00	30.46	968.55	165.15	97.12	14,368,592.56	906,521.37	39° 32' 11.555 N	107° 36' 10.417 W
1,035.83	29.25	30.46	1,000.00	179.94	105.82	14,368,607.35	906,530.07	39° 32' 11.704 N	107° 36' 10.311 W
<b>SURFACE CASING @ 1000' TVD</b>									
1,035.85	29.25	30.46	1,000.01	179.95	105.83	14,368,607.36	906,530.08	39° 32' 11.704 N	107° 36' 10.311 W
<b>START HOLD @ 1036' MD (1000' TVD) (29.25 DEG INC)</b>									
1,085.85	29.25	30.46	1,043.64	201.01	118.21	14,368,628.42	906,542.46	39° 32' 11.915 N	107° 36' 10.161 W
<b>START BUILD @ 1086' MD (1044' TVD) (3.5 DEG/100')</b>									
1,100.00	29.75	30.46	1,055.95	207.01	121.75	14,368,634.42	906,546.00	39° 32' 11.976 N	107° 36' 10.118 W
1,200.00	33.25	30.46	1,141.21	252.04	148.23	14,368,679.45	906,572.48	39° 32' 12.428 N	107° 36' 9.797 W
1,300.00	36.75	30.46	1,223.12	301.47	177.29	14,368,728.88	906,601.54	39° 32' 12.924 N	107° 36' 9.445 W
1,335.85	38.00	30.46	1,251.61	320.22	188.33	14,368,747.63	906,612.58	39° 32' 13.113 N	107° 36' 9.311 W
<b>END OF BUILD @ 1336' MD (1252' TVD) (38 DEG INC)</b>									
1,400.00	38.00	30.46	1,302.16	354.26	208.35	14,368,781.67	906,632.60	39° 32' 13.455 N	107° 36' 9.068 W
1,500.00	38.00	30.46	1,380.96	407.33	239.57	14,368,834.74	906,663.82	39° 32' 13.988 N	107° 36' 8.689 W
1,600.00	38.00	30.46	1,459.76	460.40	270.78	14,368,887.81	906,695.03	39° 32' 14.521 N	107° 36' 8.311 W
1,700.00	38.00	30.46	1,538.56	513.46	301.99	14,368,940.87	906,726.24	39° 32' 15.054 N	107° 36' 7.932 W
1,800.00	38.00	30.46	1,617.36	566.53	333.21	14,368,993.94	906,757.46	39° 32' 15.587 N	107° 36' 7.554 W
1,900.00	38.00	30.46	1,696.16	619.60	364.42	14,369,047.01	906,788.67	39° 32' 16.120 N	107° 36' 7.175 W
2,000.00	38.00	30.46	1,774.96	672.67	395.63	14,369,100.08	906,819.88	39° 32' 16.653 N	107° 36' 6.796 W
2,100.00	38.00	30.46	1,853.76	725.73	426.85	14,369,153.14	906,851.10	39° 32' 17.186 N	107° 36' 6.418 W
2,200.00	38.00	30.46	1,932.57	778.80	458.06	14,369,206.21	906,882.31	39° 32' 17.719 N	107° 36' 6.039 W
2,300.00	38.00	30.46	2,011.37	831.87	489.27	14,369,259.28	906,913.52	39° 32' 18.252 N	107° 36' 5.661 W
2,400.00	38.00	30.46	2,090.17	884.93	520.49	14,369,312.34	906,944.74	39° 32' 18.785 N	107° 36' 5.282 W
2,500.00	38.00	30.46	2,168.97	938.00	551.70	14,369,365.41	906,975.95	39° 32' 19.318 N	107° 36' 4.904 W
2,600.00	38.00	30.46	2,247.77	991.07	582.91	14,369,418.48	907,007.16	39° 32' 19.851 N	107° 36' 4.525 W
2,700.00	38.00	30.46	2,326.57	1,044.14	614.13	14,369,471.55	907,038.37	39° 32' 20.384 N	107° 36' 4.146 W
2,800.00	38.00	30.46	2,405.37	1,097.20	645.34	14,369,524.61	907,069.59	39° 32' 20.918 N	107° 36' 3.768 W
2,900.00	38.00	30.46	2,484.17	1,150.27	676.55	14,369,577.68	907,100.80	39° 32' 21.451 N	107° 36' 3.389 W
3,000.00	38.00	30.46	2,562.97	1,203.34	707.77	14,369,630.75	907,132.01	39° 32' 21.984 N	107° 36' 3.011 W
3,100.00	38.00	30.46	2,641.78	1,256.41	738.98	14,369,683.81	907,163.23	39° 32' 22.517 N	107° 36' 2.632 W
3,200.00	38.00	30.46	2,720.58	1,309.47	770.19	14,369,736.88	907,194.44	39° 32' 23.050 N	107° 36' 2.253 W
3,248.05	38.00	30.46	2,758.44	1,334.97	785.19	14,369,762.38	907,209.44	39° 32' 23.306 N	107° 36' 2.072 W
<b>START DROP @ 3248' MD (2758' TVD) (3.5 DEG/100')</b>									
3,300.00	36.18	30.46	2,799.88	1,361.98	801.07	14,369,789.38	907,225.32	39° 32' 23.577 N	107° 36' 1.879 W
3,361.27	34.04	30.46	2,850.00	1,392.35	818.94	14,369,819.76	907,243.19	39° 32' 23.882 N	107° 36' 1.662 W
<b>MESAVERDE</b>									
3,400.00	32.68	30.46	2,882.35	1,410.70	829.73	14,369,838.11	907,253.98	39° 32' 24.067 N	107° 36' 1.531 W
3,500.00	29.18	30.46	2,968.11	1,455.00	855.79	14,369,882.41	907,280.04	39° 32' 24.512 N	107° 36' 1.215 W
3,600.00	25.68	30.46	3,056.85	1,494.71	879.14	14,369,922.12	907,303.39	39° 32' 24.910 N	107° 36' 0.932 W
3,700.00	22.18	30.46	3,148.24	1,529.67	899.71	14,369,957.08	907,323.95	39° 32' 25.262 N	107° 36' 0.683 W
3,800.00	18.68	30.46	3,241.93	1,559.75	917.40	14,369,987.16	907,341.65	39° 32' 25.564 N	107° 36' 0.468 W
3,900.00	15.18	30.46	3,337.58	1,584.85	932.16	14,370,012.26	907,356.41	39° 32' 25.816 N	107° 36' 0.289 W
4,000.00	11.68	30.46	3,434.83	1,604.87	943.94	14,370,032.28	907,368.19	39° 32' 26.017 N	107° 36' 0.146 W

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<b>Company:</b>	ANTERO RESOURCES	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Project:</b>	FREI PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	FREI A11 (111167)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ANTERO FREI A11		
<b>Design:</b>	ANTERO FREI A11 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
4,100.00	8.18	30.46	3,533.32	1,619.74	952.68	14,370,047.14	907,376.93	39° 32' 26.166 N	107° 36' 0.040 W
4,200.00	4.68	30.46	3,632.68	1,629.39	958.36	14,370,056.80	907,382.61	39° 32' 26.263 N	107° 35' 59.971 W
4,217.38	4.07	30.46	3,650.00	1,630.53	959.03	14,370,057.94	907,383.28	39° 32' 26.275 N	107° 35' 59.963 W
<b>PRICE COAL</b>									
4,300.00	1.18	30.46	3,732.53	1,633.80	960.95	14,370,061.21	907,385.20	39° 32' 26.308 N	107° 35' 59.940 W
4,333.77	0.00	0.00	3,766.30	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>END OF DROP @ 4334' MD (3766' TVD)</b>									
4,400.00	0.00	0.00	3,832.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,500.00	0.00	0.00	3,932.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,600.00	0.00	0.00	4,032.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,700.00	0.00	0.00	4,132.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,800.00	0.00	0.00	4,232.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,900.00	0.00	0.00	4,332.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
4,917.47	0.00	0.00	4,350.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>TOP GAS - TOP GAS A11</b>									
5,000.00	0.00	0.00	4,432.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,100.00	0.00	0.00	4,532.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,200.00	0.00	0.00	4,632.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,300.00	0.00	0.00	4,732.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,400.00	0.00	0.00	4,832.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,500.00	0.00	0.00	4,932.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,600.00	0.00	0.00	5,032.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,700.00	0.00	0.00	5,132.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,800.00	0.00	0.00	5,232.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
5,817.47	0.00	0.00	5,250.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>CAMEO</b>									
5,900.00	0.00	0.00	5,332.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,000.00	0.00	0.00	5,432.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,100.00	0.00	0.00	5,532.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,200.00	0.00	0.00	5,632.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,300.00	0.00	0.00	5,732.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,400.00	0.00	0.00	5,832.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,500.00	0.00	0.00	5,932.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,600.00	0.00	0.00	6,032.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,700.00	0.00	0.00	6,132.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,800.00	0.00	0.00	6,232.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,900.00	0.00	0.00	6,332.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
6,917.47	0.00	0.00	6,350.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>ROLLINS</b>									
7,000.00	0.00	0.00	6,432.53	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
7,067.44	0.00	0.00	6,499.97	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>PROPOSED TD @ 7067' MD (6500' TVD)</b>									
7,067.47	0.00	0.00	6,500.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
<b>TD A11</b>									

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<b>Company:</b>	ANTERO RESOURCES	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Project:</b>	FREI PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	FREI A11 (111167)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ANTERO FREI A11		
<b>Design:</b>	ANTERO FREI A11 P01		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
TOP GAS A11	0.00	360.00	4,350.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
- plan hits target center									
- Circle (radius 25.00)									
TD A11	0.00	360.00	6,500.00	1,634.10	961.13	14,370,061.51	907,385.38	39° 32' 26.311 N	107° 35' 59.938 W
- plan hits target center									
- Circle (radius 25.00)									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(in)	(in)
1,035.83	1,000.00	SURFACE CASING @ 1000' TVD	9.62	12.25

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
3,361.27	2,850.00	MESAVERDE		0.00	
4,217.38	3,650.00	PRICE COAL		0.00	
4,917.47	4,350.00	TOP GAS		0.00	
5,817.47	5,250.00	CAMEO		0.00	
6,917.47	6,350.00	ROLLINS		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	KOP @ 200' (3.5 DEG/100')
1,035.85	1,000.01	179.95	105.83	START HOLD @ 1036' MD (1000' TVD) (29.25 DEG INC)
1,085.85	1,043.64	201.01	118.21	START BUILD @ 1086' MD (1044' TVD) (3.5 DEG/100')
1,335.85	1,251.61	320.22	188.33	END OF BUILD @ 1336' MD (1252' TVD) (38 DEG INC)
3,248.05	2,758.44	1,334.97	785.19	START DROP @ 3248' MD (2758' TVD) (3.5 DEG/100')
4,333.77	3,766.30	1,634.10	961.13	END OF DROP @ 4334' MD (3766' TVD)
7,067.44	6,499.97	1,634.10	961.13	PROPOSED TD @ 7067' MD (6500' TVD)