



# End of Well Report

Prepared for



## Frei A21

July 9, 2010

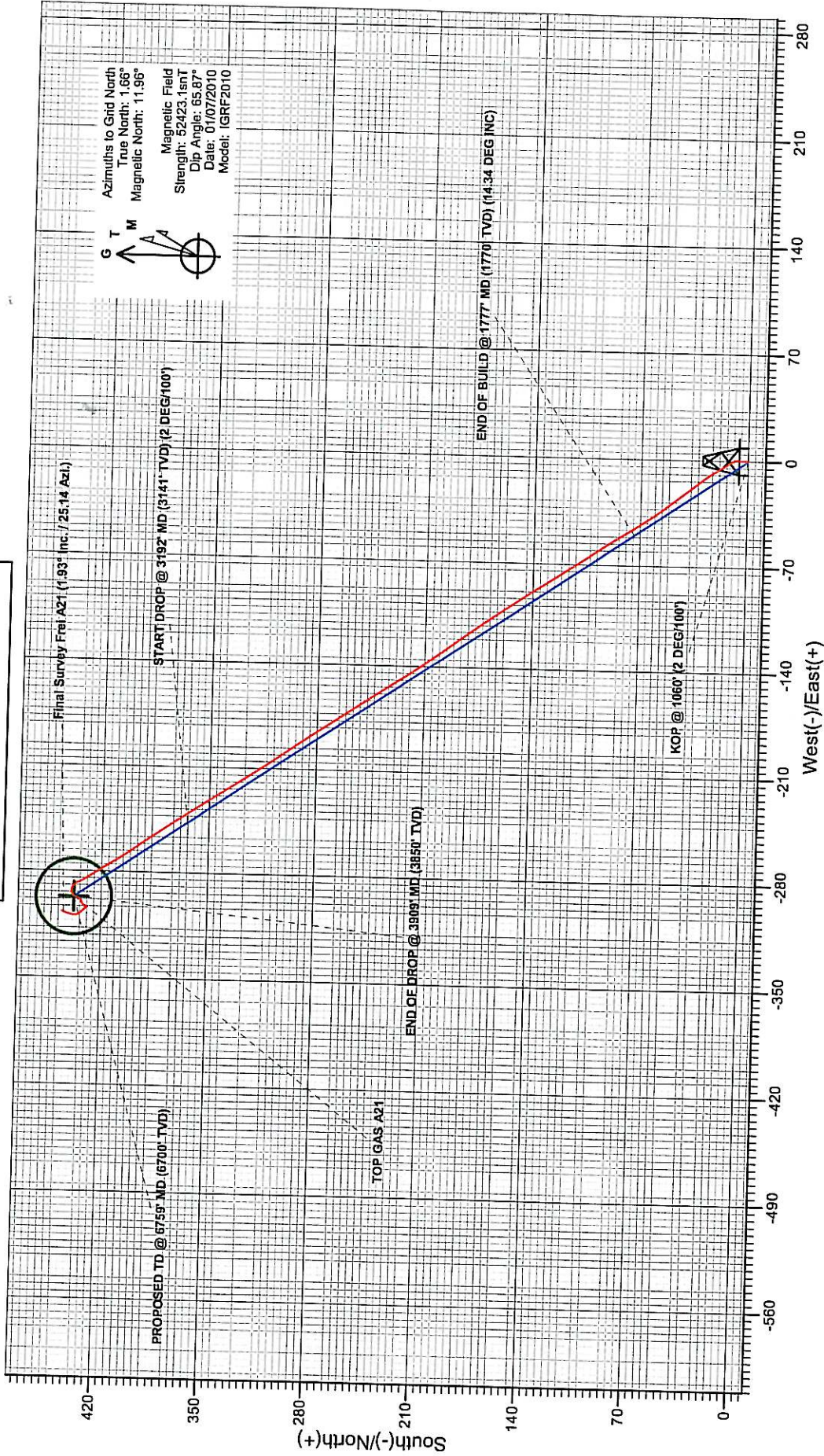
ARK Directional Services Inc  
191 University Blvd, # 601  
Denver, CO 80206



# Antero Resources

Project: FREI A PROJECT  
Site: FRONTIER 12  
Well: FREI A21 (111165)  
Wellbore: ANTERO FREI A21  
Design: ANTERO FREI A21  
JOB # 111165

## PLAN VIEW



### 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 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

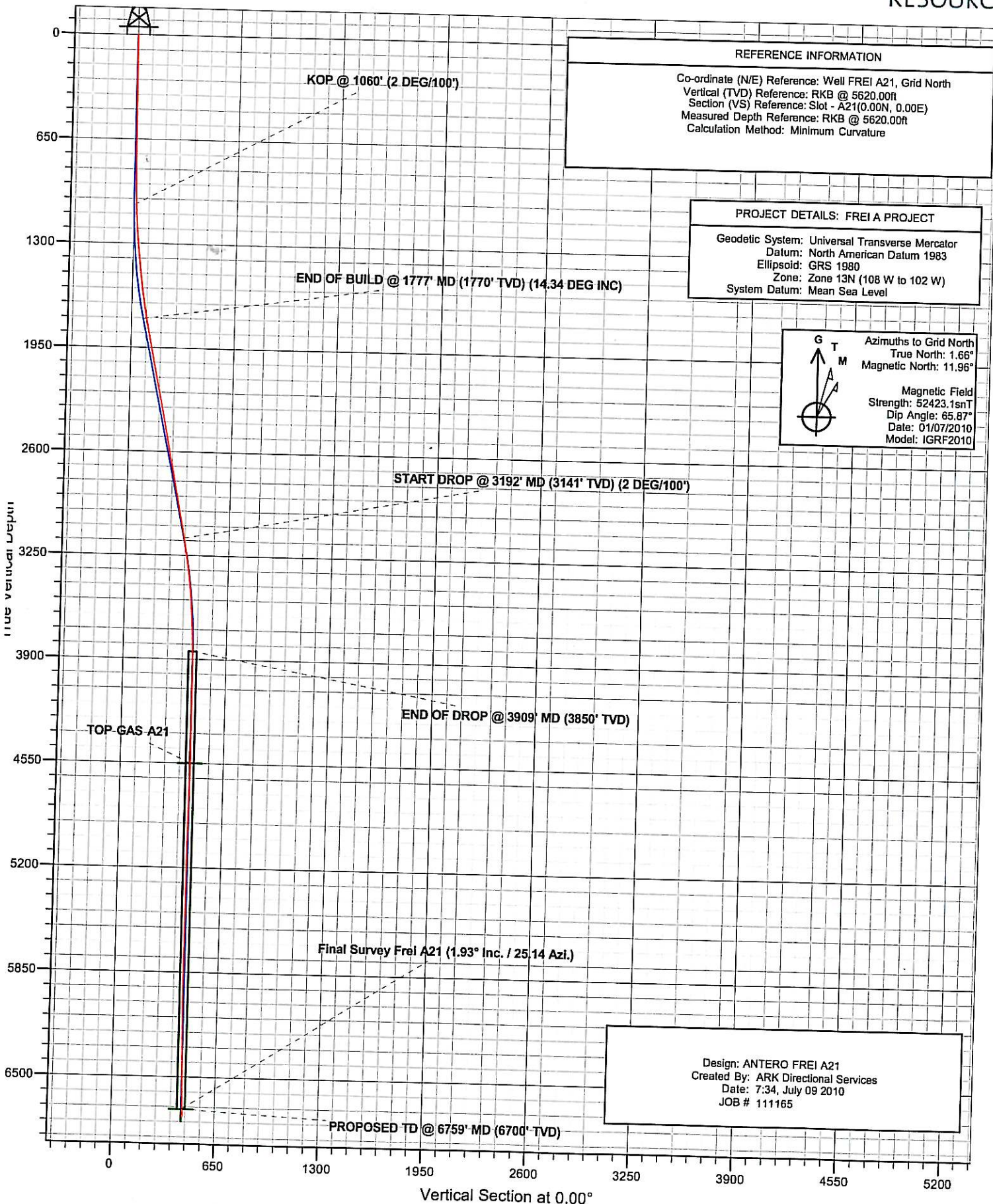
RO FREI A21 (FREI A21 (111165)ANTERO FREI A21)

Created By: ARK Directional Services  
Date: 7:37, July 09 2010





Antero Resources  
ANTERO FREI A21  
PLANNED VS ACTUAL





# **Antero Resources**

**FREI A PROJECT**

**FRONTIER 12**

**FREI A21 (111165) - Slot A21**

**ANTERO FREI A21**

**Design: ANTERO FREI A21**

## **Survey Report - Geographic**

**22 July, 2010**



# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A21 (111165) - Slot A21
<b>Project:</b>	FREI A PROJECT	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Well:</b>	FREI A21 (111165)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A21	<b>Database:</b>	EDM SERVER DB

<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)		

<b>Site</b>	FRONTIER 12		
<b>Site Position:</b>		<b>Northing:</b>	14,368,390.497 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	906,417.639 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39.535980489°N
		<b>Longitude:</b>	107.603240409°W
		<b>Grid Convergence:</b>	-1.66 °

<b>Well</b>	FREI A21 (111165) - Slot A21		
<b>Well Position</b>	+N-S	0.00 ft	<b>Northing:</b> 14,368,390.497 usft
	+E-W	0.00 ft	<b>Easting:</b> 906,417.639 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39.535980489°N
		<b>Longitude:</b>	107.603240409°W
		<b>Ground Level:</b>	5,596.00 ft

<b>Wellbore</b>	ANTERO FREI A21				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	2010/07/01	(°)	(°)	(nT)
			10.30	65.87	52,423

<b>Design</b>	ANTERO FREI A21			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N-S</b>	<b>+E-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	0.00

<b>Survey Program</b>	<b>Date</b>	2010/07/22		
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
(ft)	(ft)			
163.00	6,603.00	Survey #2 (ANTERO FREI A21)	MWD	MWD - Standard
6,697.00	6,800.00	Survey #3 (ANTERO FREI A21)	MWD	MWD - Standard

<b>Survey</b>									
<b>Measured</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical</b>	<b>+N-S</b>	<b>+E-W</b>	<b>Map</b>	<b>Map</b>	<b>Latitude</b>	<b>Longitude</b>
<b>Depth</b>	<b>(°)</b>	<b>(°)</b>	<b>Depth</b>	<b>(ft)</b>	<b>(ft)</b>	<b>Northing</b>	<b>Easting</b>		
<b>(ft)</b>			<b>(ft)</b>			<b>(usft)</b>	<b>(usft)</b>		
0.00	0.00	0.00	0.00	0.00	0.00	14,368,390.497	906,417.639	39.535980489°N	107.603240409°W
163.00	0.44	32.09	163.00	0.53	0.33	14,368,391.028	906,417.971	39.535981970°N	107.603239285°W
254.00	0.53	342.08	254.00	1.23	0.39	14,368,391.724	906,418.028	39.535983886°N	107.603239157°W
347.00	0.70	6.60	346.99	2.20	0.32	14,368,392.698	906,417.960	39.535986551°N	107.603239495°W
441.00	0.62	351.90	440.98	3.27	0.32	14,368,393.772	906,417.955	39.535989497°N	107.603239625°W
534.00	0.53	357.55	533.98	4.20	0.23	14,368,394.700	906,417.866	39.535992036°N	107.603240037°W
628.00	0.79	0.97	627.97	5.28	0.22	14,368,395.782	906,417.858	39.535995005°N	107.603240174°W
720.00	0.70	33.05	719.97	6.39	0.54	14,368,396.887	906,418.175	39.535998062°N	107.603239164°W
814.00	1.23	355.26	813.95	7.88	0.77	14,368,398.374	906,418.405	39.536002159°N	107.603238502°W
906.00	1.49	328.37	905.93	9.88	0.06	14,368,400.376	906,417.696	39.536007597°N	107.603241219°W
961.00	1.93	327.40	960.90	11.27	-0.82	14,368,401.765	906,416.822	39.536011339°N	107.603244458°W



# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A21 (111165) - Slot A21
<b>Project:</b>	FREI A PROJECT	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Well:</b>	FREI A21 (111165)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A21	<b>Database:</b>	EDM SERVER DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,028.00	2.02	324.50	1,027.86	13.18	-2.11	14,368,403.677	906,415.528	39.536016481°N	107.603249238°W
1,123.00	3.16	328.37	1,122.76	16.77	-4.46	14,368,407.270	906,413.183	39.536026151°N	107.603257917°W
1,218.00	6.24	327.14	1,217.43	23.34	-8.63	14,368,413.838	906,409.007	39.536043839°N	107.603273385°W
1,312.00	7.47	321.60	1,310.76	32.42	-15.20	14,368,422.918	906,402.440	39.536068230°N	107.603297587°W
1,406.00	8.17	322.04	1,403.89	42.48	-23.10	14,368,432.973	906,394.536	39.536095189°N	107.603326624°W
1,501.00	8.79	322.83	1,497.85	53.58	-31.64	14,368,444.079	906,385.998	39.536124982°N	107.603358014°W
1,595.00	9.67	326.08	1,590.63	65.86	-40.39	14,368,456.354	906,377.253	39.536157964°N	107.603390259°W
1,689.00	10.81	328.37	1,683.13	79.91	-49.41	14,368,470.411	906,368.224	39.536195814°N	107.603423691°W
1,784.00	12.83	326.26	1,776.11	96.27	-59.95	14,368,486.769	906,357.693	39.536239858°N	107.603462685°W
1,878.00	13.71	326.50	1,867.60	114.24	-71.89	14,368,504.737	906,345.747	39.536288206°N	107.603506853°W
1,973.00	13.18	327.17	1,960.00	132.73	-83.98	14,368,523.226	906,333.662	39.536337971°N	107.603551570°W
2,067.00	13.80	326.26	2,051.40	151.06	-96.01	14,368,541.554	906,321.625	39.536387299°N	107.603596100°W
2,162.00	14.06	324.96	2,143.61	169.93	-108.93	14,368,560.424	906,308.706	39.536438044°N	107.603643809°W
2,256.00	14.50	323.36	2,234.71	188.72	-122.51	14,368,579.215	906,295.128	39.536488521°N	107.603693849°W
2,351.00	13.70	323.88	2,326.84	207.35	-136.24	14,368,597.846	906,281.398	39.536538545°N	107.603744406°W
2,446.00	13.18	327.14	2,419.24	225.53	-148.75	14,368,616.031	906,268.890	39.536587444°N	107.603790591°W
2,540.00	13.27	326.70	2,510.75	243.55	-160.49	14,368,634.050	906,257.152	39.536635948°N	107.603834029°W
2,635.00	13.10	325.82	2,603.25	261.57	-172.52	14,368,652.069	906,245.118	39.536684430°N	107.603878518°W
2,729.00	13.54	326.26	2,694.72	279.54	-184.62	14,368,670.033	906,233.022	39.536732752°N	107.603923222°W
2,823.00	13.27	324.59	2,786.16	297.48	-196.98	14,368,687.976	906,220.659	39.536780999°N	107.603968867°W
2,918.00	13.01	326.34	2,878.67	315.27	-209.23	14,368,705.763	906,208.414	39.536828826°N	107.604014077°W
3,012.00	13.27	327.66	2,970.21	333.19	-220.86	14,368,723.684	906,196.779	39.536877071°N	107.604057144°W
3,093.96	13.12	327.21	3,050.00	348.96	-230.93	14,368,739.452	906,186.709	39.536919530°N	107.604094440°W
3,107.00	13.10	327.14	3,062.70	351.44	-232.53	14,368,741.937	906,185.106	39.536926222°N	107.604100376°W
3,201.00	12.04	326.43	3,154.45	368.56	-243.74	14,368,759.055	906,173.904	39.536972295°N	107.604141822°W
3,296.00	10.90	325.73	3,247.55	384.24	-254.27	14,368,774.734	906,163.367	39.537014474°N	107.604180766°W
3,390.00	10.20	323.97	3,339.96	398.31	-264.17	14,368,788.809	906,153.467	39.537052305°N	107.604217289°W
3,485.00	7.56	328.63	3,433.82	410.45	-272.37	14,368,800.950	906,145.265	39.537084962°N	107.604247598°W
3,579.00	5.60	327.75	3,527.19	419.61	-278.04	14,368,810.109	906,139.598	39.537109641°N	107.604268617°W
3,674.00	4.31	326.53	3,621.84	426.51	-282.48	14,368,817.007	906,135.156	39.537128214°N	107.604285065°W
3,768.00	3.50	329.60	3,715.62	431.93	-285.88	14,368,822.429	906,131.756	39.537142817°N	107.604297668°W
3,863.00	1.58	339.44	3,810.52	435.66	-287.81	14,368,826.156	906,129.828	39.537152892°N	107.604304880°W
3,902.50	1.52	332.00	3,850.00	436.63	-288.25	14,368,827.129	906,129.391	39.537155525°N	107.604306529°W
3,957.00	1.49	321.07	3,904.49	437.82	-289.03	14,368,828.318	906,128.606	39.537158726°N	107.604309431°W
4,052.00	1.76	288.90	3,999.45	439.26	-291.19	14,368,829.752	906,126.450	39.537162487°N	107.604317219°W
4,146.00	0.53	249.44	4,093.43	439.57	-292.96	14,368,830.067	906,124.677	39.537163210°N	107.604323533°W
4,241.00	0.44	276.69	4,188.43	439.46	-293.74	14,368,829.955	906,123.903	39.537162842°N	107.604326263°W
4,335.00	0.18	6.07	4,282.43	439.65	-294.08	14,368,830.144	906,123.560	39.537163333°N	107.604327497°W
4,429.00	0.26	19.34	4,376.43	440.00	-293.99	14,368,830.492	906,123.647	39.537164295°N	107.604327227°W
4,523.00	0.97	228.08	4,470.42	439.66	-294.51	14,368,830.161	906,123.125	39.537163347°N	107.604329041°W
4,602.59	0.82	230.71	4,550.00	438.85	-295.46	14,368,829.351	906,122.183	39.537161048°N	107.604332295°W
4,602.61	0.82	230.71	4,550.02	438.85	-295.46	14,368,829.350	906,122.183	39.537161047°N	107.604332296°W
TOP GAS A21									
4,618.00	0.79	231.34	4,565.41	438.72	-295.62	14,368,829.214	906,122.015	39.537160661°N	107.604332878°W
4,712.00	0.26	209.17	4,659.41	438.13	-296.23	14,368,828.623	906,121.405	39.537158991°N	107.604334978°W
4,807.00	1.14	215.95	4,754.40	437.17	-296.89	14,368,827.670	906,120.745	39.537156323°N	107.604337219°W
4,901.00	0.79	186.77	4,848.39	435.77	-297.52	14,368,826.270	906,120.120	39.537152431°N	107.604339291°W
4,996.00	0.97	228.08	4,943.37	434.59	-298.20	14,368,825.082	906,119.444	39.537149119°N	107.604341563°W
5,090.00	0.53	190.03	5,037.37	433.63	-298.86	14,368,824.122	906,118.776	39.537146433°N	107.604343830°W
5,185.00	0.88	265.17	5,132.36	433.13	-299.67	14,368,823.628	906,117.973	39.537145014°N	107.604346626°W
5,279.00	0.70	244.78	5,226.35	432.83	-300.91	14,368,823.323	906,116.734	39.537144077°N	107.604350984°W
5,374.00	0.09	226.94	5,321.35	432.53	-301.48	14,368,823.025	906,116.155	39.537143213°N	107.604353007°W
5,468.00	0.06	14.60	5,415.35	432.53	-301.53	14,368,823.022	906,116.113	39.537143202°N	107.604353154°W
5,562.00	1.23	227.12	5,509.34	431.89	-302.25	14,368,822.383	906,115.386	39.537141392°N	107.604355664°W
5,657.00	0.79	223.60	5,604.33	430.72	-303.45	14,368,821.215	906,114.187	39.537138092°N	107.604359792°W



# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A21 (111165) - Slot A21
<b>Project:</b>	FREI A PROJECT	<b>TVD Reference:</b>	RKB @ 5620.00ft
<b>Site:</b>	FRONTIER 12	<b>MD Reference:</b>	RKB @ 5620.00ft
<b>Well:</b>	FREI A21 (111165)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A21	<b>Database:</b>	EDM SERVER DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,752.00	0.26	177.19	5,699.32	430.03	-303.89	14,368,820.525	906,113.746	39.537136165°N	107.604361284°W
5,846.00	0.26	88.60	5,793.32	429.82	-303.67	14,368,820.317	906,113.970	39.537135612°N	107.604360470°W
5,941.00	0.53	158.30	5,888.32	429.42	-303.29	14,368,819.914	906,114.348	39.537134537°N	107.604359090°W
6,035.00	1.23	307.45	5,982.32	429.63	-303.93	14,368,820.124	906,113.708	39.537135061°N	107.604361380°W
6,130.00	1.23	320.46	6,077.29	431.03	-305.39	14,368,821.530	906,112.249	39.537138803°N	107.604366692°W
6,224.00	1.32	317.38	6,171.27	432.61	-306.77	14,368,823.105	906,110.874	39.537143015°N	107.604371727°W
6,319.00	1.41	322.48	6,266.24	434.34	-308.22	14,368,824.837	906,109.421	39.537147652°N	107.604377053°W
6,414.00	1.14	350.08	6,361.22	436.20	-309.09	14,368,826.695	906,108.546	39.537152680°N	107.604380342°W
6,508.00	1.32	6.25	6,455.20	438.20	-309.14	14,368,828.693	906,108.503	39.537158156°N	107.604380700°W
6,602.83	1.49	11.25	6,550.00	440.49	-308.78	14,368,830.988	906,108.863	39.537164481°N	107.604379662°W
6,603.00	1.49	11.26	6,550.17	440.50	-308.78	14,368,830.992	906,108.863	39.537164493°N	107.604379660°W
6,697.00	1.76	22.24	6,644.13	443.03	-307.99	14,368,833.527	906,109.648	39.537171510°N	107.604377138°W
6,750.00	1.93	25.14	6,697.11	444.59	-307.30	14,368,835.088	906,110.336	39.537175848°N	107.604374864°W
TD A21									
6,800.00	1.93	25.14	6,747.08	446.12	-306.59	14,368,836.612	906,111.051	39.537180087°N	107.604372485°W
Proj to TD at 6800 MD/6747 TVD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,800.00	6,747.08	446.12	-306.59	Proj to TD at 6800 MD/6747 TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_