



# End of Well Report

Prepared for



## Frei A11

July 27, 2010

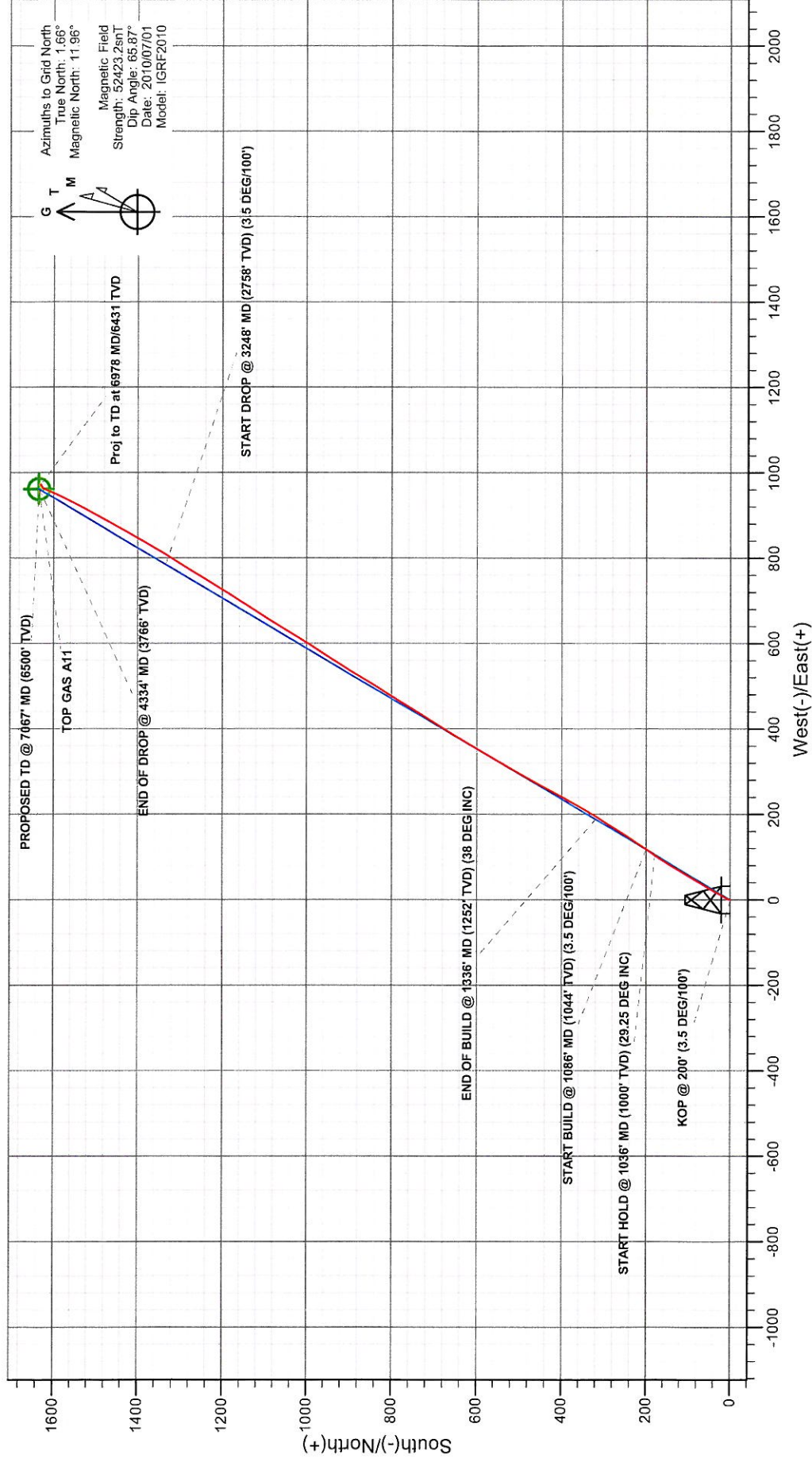
ARK Directional Services Inc  
191 University Blvd, # 601  
Denver, CO 80206



## Antero Resources

Project: FREIA PROJECT  
Site: FRONTIER 12  
Well: FREI A11 (111167)  
Wellbore: ANTERO FREI A11  
Design: ANTERO FREI A11

## PLAN VIEW



### PROJECT DETAILS: FREIA 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 A11 (111167) - Slot 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

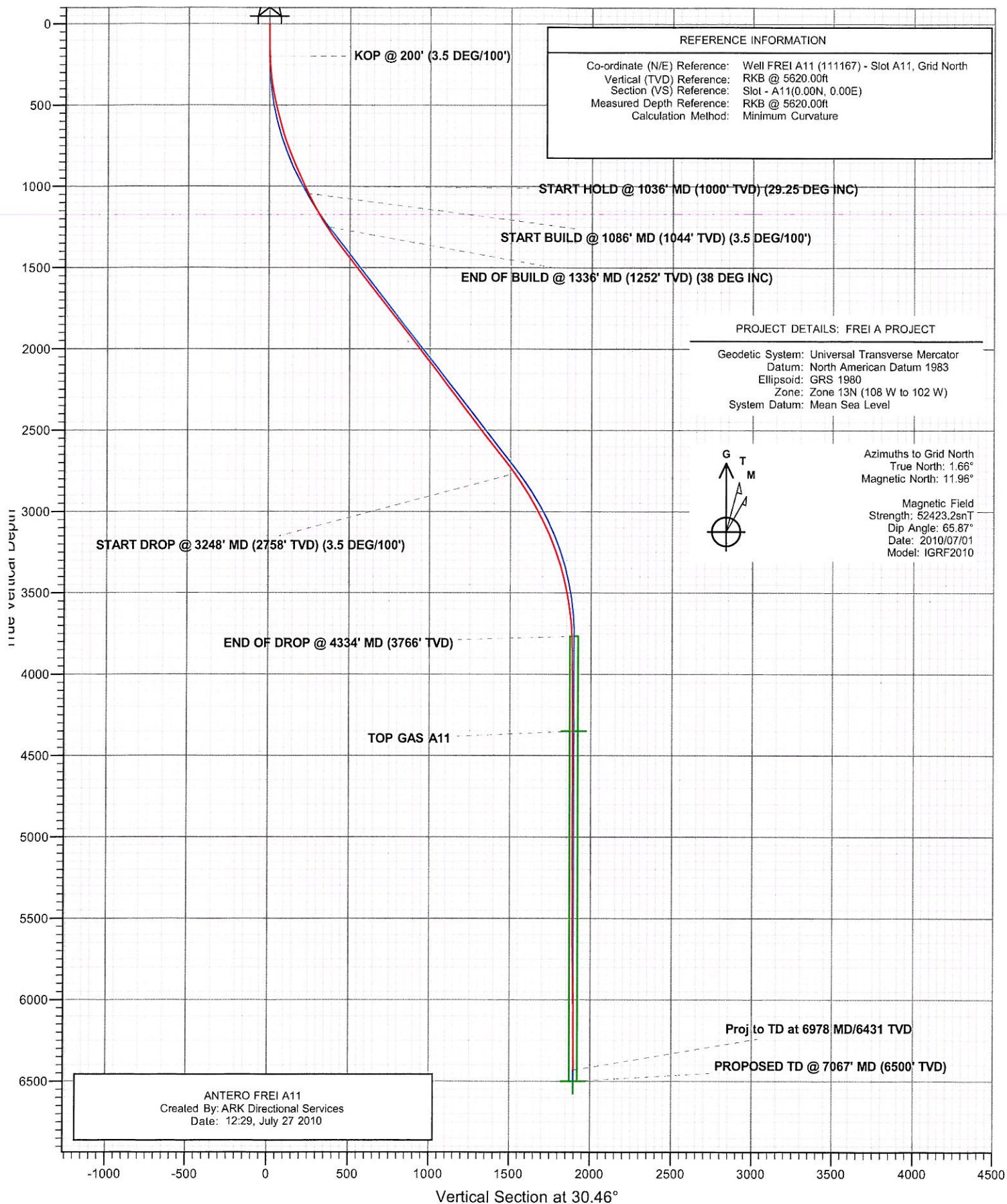
ANTERO FREI A11  
Created By: ARK Directional Services  
Date: 12/27, July 27 2010



# Antero Resources

## ANTERO FREI A11

### PLANNED VS ACTUAL





# **Antero Resources**

**FREI A PROJECT**

**FRONTIER 12**

**FREI A11 (111167) - Slot A11**

**ANTERO FREI A11**

**Survey: Antero Frei A11**

## **Survey Report - Geographic**

**27 July, 2010**

# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<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 A11 (111167)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A11	<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)		

Site	FRONTIER 12				
Site Position:		Northing:	14,368,390.497 usft	Latitude:	39.535980489°N
From:	Lat/Long	Easting:	906,417.639 usft	Longitude:	107.603240409°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:	14,368,427.410 usft	Latitude:	39.536082285°N
	+E/-W	0.00 ft	Easting:	906,424.250 usft	Longitude:	107.603220769°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	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	2010/07/01	10.30	65.87	52,423

<b>Design</b>	ANTERO FREI A11				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	30.46	

<b>Survey Program</b>	<b>Date</b>	2010/07/27			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
131.00	6,978.00	Antero Frei A11 (ANTERO FREI A11)	MWD	MWD - Standard	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.00	0.00	0.00	0.00	0.00	0.00	14,368,427.410	906,424.250	39.536082285°N	107.603220769°W
131.00	0.79	359.10	131.00	0.90	-0.01	14,368,428.313	906,424.236	39.536084761°N	107.603220912°W
163.00	1.23	7.30	162.99	1.46	0.03	14,368,428.874	906,424.276	39.536086304°N	107.603220827°W
194.00	2.11	15.65	193.98	2.34	0.22	14,368,429.753	906,424.472	39.536088733°N	107.603220222°W
225.00	2.90	20.92	224.95	3.63	0.66	14,368,431.035	906,424.906	39.536092285°N	107.603218816°W
255.00	4.04	25.76	254.89	5.29	1.39	14,368,432.696	906,425.636	39.536096899°N	107.603216399°W
287.00	5.19	26.55	286.79	7.60	2.52	14,368,435.006	906,426.773	39.536103327°N	107.603212608°W
318.00	6.42	28.57	317.63	10.37	3.98	14,368,437.783	906,428.229	39.536111060°N	107.603207735°W
349.00	7.56	30.24	348.40	13.66	5.83	14,368,441.067	906,430.085	39.536120217°N	107.603201496°W
379.00	8.80	28.92	378.09	17.37	7.94	14,368,444.780	906,432.189	39.536130573°N	107.603194423°W
411.00	9.93	28.75	409.66	21.93	10.45	14,368,449.342	906,434.699	39.536143288°N	107.603185994°W
442.00	10.99	27.78	440.15	26.89	13.11	14,368,454.300	906,437.362	39.536157101°N	107.603177067°W



# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<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 A11 (111167)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A11	<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
473.00	11.87	29.45	470.53	32.28	16.06	14,368,459.690	906,440.307	39.536172125°N	107.603167186°W
504.00	12.92	30.07	500.81	38.06	19.36	14,368,465.466	906,443.611	39.536188233°N	107.603156071°W
535.00	13.80	30.33	530.97	44.25	22.96	14,368,471.657	906,447.215	39.536205503°N	107.603143937°W
566.00	14.50	29.63	561.03	50.81	26.75	14,368,478.221	906,451.001	39.536223815°N	107.603131196°W
597.00	15.12	30.15	591.00	57.68	30.70	14,368,485.091	906,454.950	39.536242976°N	107.603117907°W
628.00	15.56	30.33	620.90	64.77	34.83	14,368,492.176	906,459.080	39.536262741°N	107.603103999°W
659.00	16.17	30.68	650.72	72.07	39.13	14,368,499.477	906,463.382	39.536283114°N	107.603089504°W
690.00	17.23	30.33	680.41	79.74	43.65	14,368,507.152	906,467.904	39.536304531°N	107.603074272°W
721.00	18.28	30.68	709.93	87.89	48.45	14,368,515.297	906,472.703	39.536327257°N	107.603058102°W
752.00	19.60	30.77	739.25	96.54	53.59	14,368,523.946	906,477.844	39.536351395°N	107.603040773°W
783.00	21.01	30.24	768.32	105.81	59.05	14,368,533.215	906,483.303	39.536377258°N	107.603022381°W
814.00	21.71	30.33	797.20	115.56	64.75	14,368,542.965	906,488.997	39.536404460°N	107.603003205°W
845.00	22.76	28.75	825.89	125.76	70.53	14,368,553.171	906,494.777	39.536432921°N	107.602983773°W
876.00	23.29	30.33	854.42	136.31	76.51	14,368,563.718	906,500.756	39.536462333°N	107.602963669°W
907.00	23.64	30.86	882.86	146.93	82.79	14,368,574.343	906,507.039	39.536491982°N	107.602942496°W
938.00	24.17	32.26	911.20	157.64	89.36	14,368,585.046	906,513.614	39.536521867°N	107.602920295°W
969.00	24.96	32.44	939.39	168.52	96.26	14,368,595.933	906,520.511	39.536552284°N	107.602896976°W
1,027.00	25.31	35.43	991.90	188.95	110.01	14,368,616.364	906,534.263	39.536609429°N	107.602885034°W
1,090.00	26.10	33.67	1,048.67	211.46	125.50	14,368,638.871	906,549.753	39.536672409°N	107.602797766°W
1,121.00	26.72	33.84	1,076.43	222.93	133.16	14,368,650.335	906,557.415	39.536704469°N	107.602771794°W
1,153.00	27.69	33.58	1,104.89	235.10	141.28	14,368,662.504	906,565.533	39.536738503°N	107.602744275°W
1,184.00	28.74	33.49	1,132.21	247.31	149.38	14,368,674.721	906,573.630	39.536772662°N	107.602716840°W
1,216.00	29.62	32.17	1,160.15	260.42	157.84	14,368,687.831	906,582.086	39.536809303°N	107.602688223°W
1,247.00	30.59	31.30	1,186.97	273.65	166.01	14,368,701.056	906,590.263	39.536846235°N	107.602660606°W
1,279.00	31.73	31.56	1,214.35	287.77	174.65	14,368,715.184	906,598.897	39.536885681°N	107.602631460°W
1,310.00	32.70	32.09	1,240.58	301.82	183.36	14,368,729.225	906,607.612	39.536924895°N	107.602602019°W
1,342.00	34.01	32.00	1,267.30	316.73	192.70	14,368,744.138	906,616.947	39.536966552°N	107.602570472°W
1,373.00	35.07	31.47	1,292.84	331.68	201.94	14,368,759.087	906,626.191	39.537008299°N	107.602539251°W
1,405.00	36.12	30.24	1,318.86	347.67	211.49	14,368,775.077	906,635.741	39.537052926°N	107.602507053°W
1,436.00	36.91	29.54	1,343.77	363.66	220.68	14,368,791.069	906,644.932	39.537097533°N	107.602476125°W
1,468.00	37.53	28.48	1,369.26	380.59	230.07	14,368,807.997	906,654.318	39.537144720°N	107.602444606°W
1,499.00	37.53	28.22	1,393.84	397.21	239.04	14,368,824.616	906,663.285	39.537191028°N	107.602414535°W
1,594.00	38.23	28.48	1,468.82	448.54	266.73	14,368,875.950	906,690.984	39.537334065°N	107.602321651°W
1,688.00	37.79	29.36	1,542.89	499.21	294.72	14,368,926.616	906,718.974	39.537475294°N	107.602227669°W
1,783.00	38.41	30.24	1,617.65	550.07	323.86	14,368,977.480	906,748.108	39.537617156°N	107.602129654°W
1,877.00	38.32	29.80	1,691.35	600.59	353.05	14,369,027.996	906,777.297	39.537758066°N	107.602031406°W
1,972.00	38.58	32.53	1,765.75	651.12	383.62	14,369,078.532	906,807.865	39.537899140°N	107.601928274°W
2,067.00	38.41	32.09	1,840.11	701.10	415.22	14,369,128.508	906,839.471	39.538038762°N	107.601821406°W
2,161.00	38.41	31.12	1,913.76	750.84	445.83	14,369,178.245	906,870.076	39.538177650°N	107.601718061°W
2,256.00	37.27	32.53	1,988.79	800.36	476.55	14,369,227.764	906,900.798	39.538315945°N	107.601614279°W
2,350.00	37.27	31.65	2,063.59	848.58	506.79	14,369,275.990	906,931.038	39.538450655°N	107.601512071°W
2,444.00	37.62	30.86	2,138.22	897.44	536.44	14,369,324.847	906,960.689	39.538587051°N	107.601412014°W
2,539.00	37.44	33.84	2,213.57	946.32	567.40	14,369,373.726	906,991.645	39.538723610°N	107.601307334°W
2,633.00	37.18	31.65	2,288.34	994.23	598.21	14,369,421.639	907,022.462	39.538857509°N	107.601203050°W
2,728.00	36.91	31.30	2,364.16	1,043.04	628.10	14,369,470.450	907,052.344	39.538993796°N	107.601102166°W
2,822.00	37.27	31.56	2,439.14	1,091.41	657.66	14,369,518.820	907,081.905	39.539128850°N	107.601002378°W
2,917.00	37.53	32.53	2,514.61	1,140.32	688.27	14,369,567.727	907,112.521	39.539265458°N	107.600898907°W
3,012.00	38.58	31.56	2,589.42	1,189.96	719.34	14,369,617.365	907,143.585	39.539404108°N	107.600793919°W
3,106.00	38.50	31.65	2,662.94	1,239.84	750.03	14,369,667.246	907,174.278	39.539543395°N	107.600690272°W
3,200.00	36.83	31.56	2,737.35	1,288.75	780.13	14,369,716.163	907,204.379	39.539679990°N	107.600588625°W
3,295.00	34.63	31.56	2,814.47	1,336.02	809.16	14,369,763.431	907,233.413	39.539811978°N	107.600490588°W
3,389.00	31.64	29.89	2,893.17	1,380.17	835.44	14,369,807.576	907,259.685	39.539935177°N	107.600402017°W
3,483.00	28.21	29.98	2,974.63	1,420.80	858.83	14,369,848.208	907,283.081	39.540048510°N	107.600323280°W
3,578.00	26.63	27.78	3,058.95	1,459.09	879.98	14,369,886.498	907,304.226	39.540155238°N	107.600252277°W
3,673.00	23.29	28.57	3,145.07	1,494.43	898.89	14,369,921.839	907,323.136	39.540253698°N	107.600188890°W



# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<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 A11 (111167)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A11	<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
3,767.00	19.78	27.87	3,232.49	1,524.82	915.22	14,369,952.229	907,339.463	39.540338371°N	107.600134148°W
3,862.00	16.52	26.37	3,322.76	1,551.14	928.73	14,369,978.547	907,352.980	39.540411650°N	107.600088947°W
3,956.00	13.80	25.58	3,413.48	1,573.23	939.51	14,370,000.637	907,363.759	39.540473111°N	107.600053016°W
4,050.00	10.90	25.06	3,505.29	1,591.40	948.12	14,370,018.804	907,372.366	39.540523636°N	107.600024379°W
4,144.00	7.82	23.56	3,598.03	1,605.31	954.44	14,370,032.720	907,378.688	39.540562317°N	107.600003403°W
4,239.00	4.92	23.47	3,692.43	1,614.98	958.65	14,370,042.383	907,382.895	39.540589162°N	107.599989487°W
4,333.00	1.67	33.49	3,786.26	1,619.82	961.01	14,370,047.224	907,385.256	39.540602631°N	107.599981613°W
4,428.00	0.26	328.54	3,881.25	1,621.16	961.66	14,370,048.563	907,385.908	39.540606355°N	107.599979442°W
4,522.00	0.62	32.97	3,975.25	1,621.76	961.83	14,370,049.171	907,386.073	39.540608037°N	107.599978918°W
4,617.00	0.18	359.74	4,070.25	1,622.34	962.10	14,370,049.752	907,386.352	39.540609652°N	107.599977989°W
4,711.00	0.18	53.09	4,164.24	1,622.58	962.22	14,370,049.988	907,386.470	39.540610310°N	107.599977597°W
4,805.00	0.44	20.92	4,258.24	1,623.01	962.47	14,370,050.414	907,386.717	39.540611498°N	107.599976766°W
4,896.87	0.95	24.30	4,350.11	1,624.03	962.91	14,370,051.439	907,387.157	39.540614346°N	107.599975311°W
TOP GAS A11									
4,900.00	0.97	24.35	4,353.24	1,624.08	962.93	14,370,051.487	907,387.178	39.540614479°N	107.599975240°W
4,994.00	0.44	5.37	4,447.23	1,625.16	963.29	14,370,052.571	907,387.540	39.540617482°N	107.599974068°W
5,089.00	0.62	164.19	4,542.23	1,625.03	963.47	14,370,052.440	907,387.714	39.540617136°N	107.599973438°W
5,183.00	0.44	224.39	4,636.22	1,624.29	963.35	14,370,051.693	907,387.600	39.540615076°N	107.599973765°W
5,278.00	0.18	336.36	4,731.22	1,624.16	963.04	14,370,051.569	907,387.285	39.540614711°N	107.599974868°W
5,372.00	0.44	215.60	4,825.22	1,624.00	962.77	14,370,051.411	907,387.016	39.540614256°N	107.599975807°W
5,467.00	0.53	231.69	4,920.22	1,623.43	962.21	14,370,050.842	907,386.459	39.540612651°N	107.599977722°W
5,562.00	0.26	2.73	5,015.22	1,623.38	961.88	14,370,050.785	907,386.124	39.540612468°N	107.599978902°W
5,656.00	0.62	38.85	5,109.21	1,623.99	962.21	14,370,051.394	907,386.454	39.540614165°N	107.599977798°W
5,751.00	0.00	117.96	5,204.21	1,624.39	962.53	14,370,051.794	907,386.776	39.540615289°N	107.599976696°W
5,845.00	0.44	84.29	5,298.21	1,624.42	962.89	14,370,051.830	907,387.135	39.540615416°N	107.599975427°W
5,939.00	0.18	38.94	5,392.21	1,624.57	963.34	14,370,051.981	907,387.587	39.540615865°N	107.599973841°W
6,034.00	0.18	2.56	5,487.21	1,624.84	963.44	14,370,052.246	907,387.688	39.540616601°N	107.599973513°W
6,129.00	0.26	65.22	5,582.21	1,625.08	963.64	14,370,052.485	907,387.890	39.540617273°N	107.599972820°W
6,223.00	0.53	79.72	5,676.21	1,625.24	964.26	14,370,052.652	907,388.511	39.540617781°N	107.599970635°W
6,317.00	0.62	68.56	5,770.20	1,625.51	965.16	14,370,052.916	907,389.413	39.540618575°N	107.599967469°W
6,412.00	0.88	43.78	5,865.19	1,626.22	966.15	14,370,053.630	907,390.396	39.540620614°N	107.599964058°W
6,506.00	1.14	34.46	5,959.18	1,627.52	967.18	14,370,054.922	907,391.424	39.540624240°N	107.599960546°W
6,601.00	1.32	55.20	6,054.16	1,628.92	968.61	14,370,056.326	907,392.858	39.540628205°N	107.599955611°W
6,695.00	1.14	156.98	6,148.14	1,628.68	969.86	14,370,056.083	907,394.112	39.540627639°N	107.599951140°W
6,790.00	0.88	5.98	6,243.14	1,628.53	970.31	14,370,055.939	907,394.558	39.540627278°N	107.599949546°W
6,884.00	0.79	32.97	6,337.13	1,629.79	970.74	14,370,057.201	907,394.986	39.540630774°N	107.599948159°W
6,916.00	0.97	31.38	6,369.13	1,630.21	971.00	14,370,057.617	907,395.247	39.540631937°N	107.599947277°W
6,978.00	0.97	31.38	6,431.12	1,631.11	971.55	14,370,058.513	907,395.793	39.540634438°N	107.599945432°W
Proj to TD at 6978 MD/6431 TVD - TD A11									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
TOP GAS A11	0.00	360.00	4,350.00	1,634.10	961.13	14,370,061.50	907,385.378	39.540641823°N	107.599982645°W
- hit/miss target						6			
- Shape									
- survey misses target center by 10.22ft at 4896.91ft MD (4350.14 TVD, 1624.03 N, 962.91 E)									
- Circle (radius 25.00)									
TD A11	0.00	360.00	6,500.00	1,634.10	961.13	14,370,061.50	907,385.378	39.540641823°N	107.599982645°W
- hit/miss target						6			
- Shape									
- survey misses target center by 69.73ft at 6978.00ft MD (6431.12 TVD, 1631.11 N, 971.55 E)									
- Circle (radius 25.00)									

# ARK Directional Services

## Survey Report - Geographic

<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well FREI A11 (111167) - Slot A11
<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 A11 (111167)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	ANTERO FREI A11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	ANTERO FREI A11	<b>Database:</b>	EDM SERVER DB

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,978.00	6,431.12	1,631.11	971.55	Proj to TD at 6978 MD/6431 TVD

Checked By: _____	Approved By: _____	Date: _____
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