



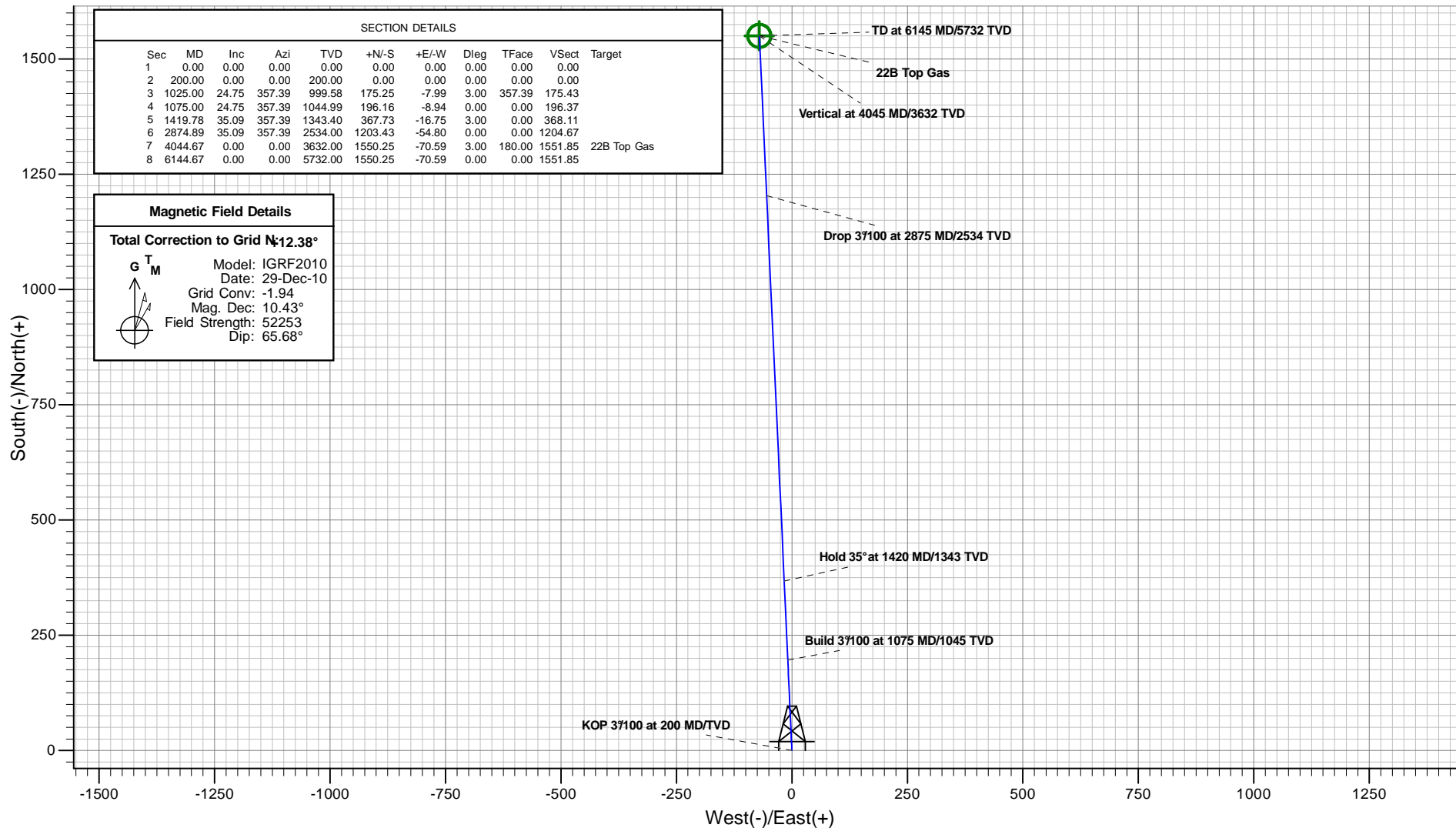
# Antero Resources

## BAT 22B-24-07-96 (111263)



### PLAN VIEW

Project: Speakman  
Site: Speakman A Pad  
Well: BAT 22B-24-07-96 (111263)  
Wellbore: BAT 22B  
Design: BAT 22B\_P01



Plan: BAT 22B\_P01  
Created By: ARK Directional Services  
Date: 15:21, October 18 2010

PROJECT DETAILS: Speakman

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 BAT 22B-24-07-96 (111263) - Slot BAT 22B, Grid North  
Vertical (TVD) Reference: KB @ 5202.00ft (Original Well Elev)  
Section (VS) Reference: Slot - BAT 22B(0.00N, 0.00E)  
Measured Depth Reference: KB @ 5202.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

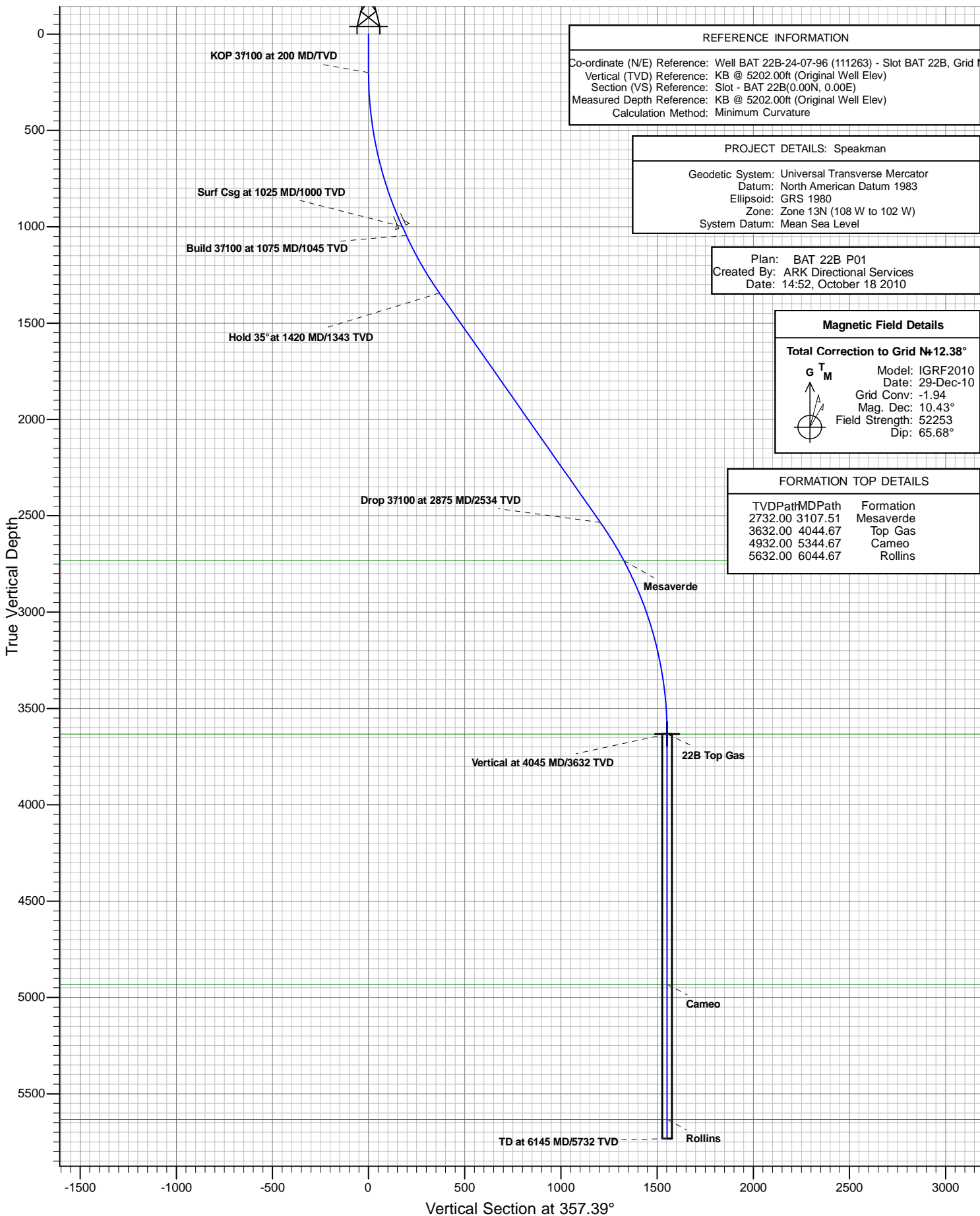


# Antero Resources

BAT 22B-24-07-96 (111263)



## VERTICAL SECTION VIEW



### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well BAT 22B-24-07-96 (111263) - Slot BAT 22B, Grid North  
Vertical (TVD) Reference: KB @ 5202.00ft (Original Well Elev)  
Section (VS) Reference: Slot - BAT 22B(0.00N, 0.00E)  
Measured Depth Reference: KB @ 5202.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

### PROJECT DETAILS: Speakman

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

Plan: BAT 22B P01  
Created By: ARK Directional Services  
Date: 14:52, October 18 2010

### Magnetic Field Details

Total Correction to Grid N=12.38°



Model: IGRF2010  
Date: 29-Dec-10  
Grid Conv: -1.94  
Mag. Dec: 10.43°  
Field Strength: 52253  
Dip: 65.68°

### FORMATION TOP DETAILS

TVDPatMDPath	Formation
2732.00 3107.51	Mesaverde
3632.00 4044.67	Top Gas
4932.00 5344.67	Cameo
5632.00 6044.67	Rollins

# **Antero Resources**

**Speakman**

**Speakman A Pad**

**BAT 22B-24-07-96 (111263) - Slot BAT 22B**

**BAT 22B**

**Plan: BAT 22B P01**

## **Standard Planning Report - Geographic**

**18 October, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well BAT 22B-24-07-96 (111263) - Slot BAT 22B
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Project:</b>	Speakman	<b>MD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Site:</b>	Speakman A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	BAT 22B-24-07-96 (111263)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	BAT 22B		
<b>Design:</b>	BAT 22B P01		

<b>Project</b>	Speakman		
<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>	Speakman A Pad		
<b>Site Position:</b>		<b>Northing:</b>	14,330,542.672 usft
<b>From:</b>	Map	<b>Easting:</b>	776,091.308 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39.420918160°N
		<b>Longitude:</b>	108.060333667°W
		<b>Grid Convergence:</b>	-1.94 °

<b>Well</b>	BAT 22B-24-07-96 (111263) - Slot BAT 22B		
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 ft		<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<b>Wellbore</b>	BAT 22B				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/12/29	10.43	65.68	52,253

<b>Design</b>	BAT 22B P01			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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)	(°)
	3,632.00	0.00	0.00	357.39

<b>Plan Sections</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>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
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	
1,025.00	24.75	357.39	999.58	175.25	-7.99	3.00	3.00	0.00	357.39	
1,075.00	24.75	357.39	1,044.99	196.16	-8.94	0.00	0.00	0.00	0.00	
1,419.78	35.09	357.39	1,343.40	367.73	-16.75	3.00	3.00	0.00	0.00	
2,874.89	35.09	357.39	2,534.00	1,203.43	-54.80	0.00	0.00	0.00	0.00	
4,044.67	0.00	0.00	3,632.00	1,550.25	-70.59	3.00	-3.00	0.00	180.00	22B Top Gas
6,144.67	0.00	0.00	5,732.00	1,550.25	-70.59	0.00	0.00	0.00	0.00	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well BAT 22B-24-07-96 (111263) - Slot BAT 22B
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Project:</b>	Speakman	<b>MD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Site:</b>	Speakman A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	BAT 22B-24-07-96 (111263)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	BAT 22B		
<b>Design:</b>	BAT 22B 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	14,330,485.837	776,140.245	39.420766844°N	108.060153804°W	
100.00	0.00	0.00	100.00	0.00	0.00	14,330,485.837	776,140.245	39.420766844°N	108.060153804°W	
200.00	0.00	0.00	200.00	0.00	0.00	14,330,485.837	776,140.245	39.420766844°N	108.060153804°W	
KOP 3°/100 at 200 MD/TVD										
300.00	3.00	357.39	299.95	2.61	-0.12	14,330,488.452	776,140.126	39.420774004°N	108.060154539°W	
400.00	6.00	357.39	399.63	10.45	-0.48	14,330,496.289	776,139.769	39.420795464°N	108.060156743°W	
500.00	9.00	357.39	498.77	23.49	-1.07	14,330,509.326	776,139.174	39.420831165°N	108.060160410°W	
600.00	12.00	357.39	597.08	41.69	-1.90	14,330,527.529	776,138.345	39.420881009°N	108.060165529°W	
700.00	15.00	357.39	694.31	65.01	-2.96	14,330,550.847	776,137.282	39.420944859°N	108.060172087°W	
800.00	18.00	357.39	790.18	93.38	-4.26	14,330,579.215	776,135.989	39.421022541°N	108.060180065°W	
900.00	21.00	357.39	884.43	126.72	-5.78	14,330,612.558	776,134.469	39.421113842°N	108.060189442°W	
1,000.00	24.00	357.39	976.81	164.94	-7.52	14,330,650.782	776,132.726	39.421218511°N	108.060200191°W	
1,025.00	24.75	357.39	999.58	175.25	-7.99	14,330,661.089	776,132.256	39.421246735°N	108.060203090°W	
Surf Csg at 1025 MD/1000 TVD										
1,075.00	24.75	357.39	1,044.99	196.16	-8.94	14,330,682.000	776,131.304	39.421303996°N	108.060208967°W	
Build 3°/100 at 1075 MD/1045 TVD										
1,100.00	25.50	357.39	1,067.62	206.77	-9.42	14,330,692.604	776,130.822	39.421333032°N	108.060211947°W	
1,200.00	28.50	357.39	1,156.71	252.11	-11.49	14,330,737.950	776,128.757	39.421457206°N	108.060224691°W	
1,300.00	31.50	357.39	1,243.31	302.06	-13.76	14,330,787.893	776,126.483	39.421593963°N	108.060238727°W	
1,400.00	34.50	357.39	1,327.16	356.46	-16.24	14,330,842.294	776,124.006	39.421742930°N	108.060254016°W	
1,419.78	35.09	357.39	1,343.41	367.73	-16.75	14,330,853.570	776,123.493	39.421773807°N	108.060257185°W	
Hold 35° at 1420 MD/1343 TVD										
1,500.00	35.09	357.39	1,409.04	413.81	-18.85	14,330,899.642	776,121.395	39.421899965°N	108.060270133°W	
1,600.00	35.09	357.39	1,490.87	471.24	-21.46	14,330,957.073	776,118.780	39.422057229°N	108.060286274°W	
1,700.00	35.09	357.39	1,572.69	528.67	-24.08	14,331,014.504	776,116.166	39.422214493°N	108.060302414°W	
1,800.00	35.09	357.39	1,654.51	586.10	-26.69	14,331,071.935	776,113.551	39.422371758°N	108.060318555°W	
1,900.00	35.09	357.39	1,736.33	643.53	-29.31	14,331,129.367	776,110.936	39.422529022°N	108.060334696°W	
2,000.00	35.09	357.39	1,818.15	700.96	-31.92	14,331,186.798	776,108.321	39.422686286°N	108.060350838°W	
2,100.00	35.09	357.39	1,899.97	758.39	-34.54	14,331,244.229	776,105.706	39.422843551°N	108.060366979°W	
2,200.00	35.09	357.39	1,981.80	815.83	-37.15	14,331,301.661	776,103.092	39.423000815°N	108.060383120°W	
2,300.00	35.09	357.39	2,063.62	873.26	-39.77	14,331,359.092	776,100.477	39.423158079°N	108.060399262°W	
2,400.00	35.09	357.39	2,145.44	930.69	-42.38	14,331,416.523	776,097.862	39.423315343°N	108.060415403°W	
2,500.00	35.09	357.39	2,227.26	988.12	-45.00	14,331,473.955	776,095.247	39.423472607°N	108.060431545°W	
2,600.00	35.09	357.39	2,309.08	1,045.55	-47.61	14,331,531.386	776,092.632	39.423629872°N	108.060447686°W	
2,700.00	35.09	357.39	2,390.90	1,102.98	-50.23	14,331,588.817	776,090.017	39.423787136°N	108.060463828°W	
2,800.00	35.09	357.39	2,472.73	1,160.41	-52.84	14,331,646.249	776,087.403	39.423944400°N	108.060479970°W	
2,874.89	35.09	357.39	2,534.00	1,203.42	-54.80	14,331,689.259	776,085.444	39.424062175°N	108.060492059°W	
Drop 3°/100 at 2875 MD/2534 TVD										
2,900.00	34.34	357.39	2,554.64	1,217.71	-55.45	14,331,703.545	776,084.794	39.424101294°N	108.060496074°W	
3,000.00	31.34	357.39	2,638.65	1,271.88	-57.92	14,331,757.712	776,082.328	39.424249620°N	108.060511299°W	
3,100.00	28.34	357.39	2,725.38	1,321.58	-60.18	14,331,807.412	776,080.065	39.424385715°N	108.060525268°W	
3,107.51	28.11	357.39	2,732.00	1,325.13	-60.34	14,331,810.961	776,079.903	39.424395432°N	108.060526265°W	
Mesaverde										
3,200.00	25.34	357.39	2,814.60	1,366.68	-62.23	14,331,852.511	776,078.012	39.424509208°N	108.060537944°W	
3,300.00	22.34	357.39	2,906.06	1,407.05	-64.07	14,331,892.883	776,076.174	39.424619758°N	108.060549291°W	
3,400.00	19.34	357.39	2,999.50	1,442.58	-65.69	14,331,928.418	776,074.556	39.424717064°N	108.060559279°W	
3,500.00	16.34	357.39	3,094.69	1,473.18	-67.08	14,331,959.018	776,073.162	39.424800858°N	108.060567880°W	
3,600.00	13.34	357.39	3,191.34	1,498.77	-68.25	14,331,984.601	776,071.998	39.424870911°N	108.060575071°W	
3,700.00	10.34	357.39	3,289.20	1,519.26	-69.18	14,332,005.096	776,071.065	39.424927031°N	108.060580831°W	
3,800.00	7.34	357.39	3,388.00	1,534.61	-69.88	14,332,020.445	776,070.366	39.424969064°N	108.060585146°W	
3,900.00	4.34	357.39	3,487.47	1,544.77	-70.34	14,332,030.609	776,069.903	39.424996894°N	108.060588002°W	
4,000.00	1.34	357.39	3,587.34	1,549.72	-70.57	14,332,035.558	776,069.678	39.425010446°N	108.060589394°W	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well BAT 22B-24-07-96 (111263) - Slot BAT 22B
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Project:</b>	Speakman	<b>MD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Site:</b>	Speakman A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	BAT 22B-24-07-96 (111263)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	BAT 22B		
<b>Design:</b>	BAT 22B 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
4,044.67	0.00	0.00	3,632.00	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
Vertical at 4045 MD/3632 TVD - Top Gas									
4,100.00	0.00	0.00	3,687.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,200.00	0.00	0.00	3,787.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,300.00	0.00	0.00	3,887.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,400.00	0.00	0.00	3,987.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,500.00	0.00	0.00	4,087.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,600.00	0.00	0.00	4,187.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,700.00	0.00	0.00	4,287.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,800.00	0.00	0.00	4,387.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
4,900.00	0.00	0.00	4,487.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,000.00	0.00	0.00	4,587.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,100.00	0.00	0.00	4,687.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,200.00	0.00	0.00	4,787.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,300.00	0.00	0.00	4,887.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,344.67	0.00	0.00	4,932.00	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
Cameo									
5,400.00	0.00	0.00	4,987.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,500.00	0.00	0.00	5,087.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,600.00	0.00	0.00	5,187.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,700.00	0.00	0.00	5,287.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,800.00	0.00	0.00	5,387.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
5,900.00	0.00	0.00	5,487.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
6,000.00	0.00	0.00	5,587.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
6,044.67	0.00	0.00	5,632.00	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
Rollins									
6,100.00	0.00	0.00	5,687.33	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
6,144.67	0.00	0.00	5,732.00	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
22B Top Gas	0.00	0.00	3,632.00	1,550.25	-70.59	14,332,036.080	776,069.654	39.425011875°N	108.060589540°W
- hit/miss target									
- Shape									
- plan hits target center									
- Circle (radius 25.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,025.00	999.58	Surf Csg at 1025 MD/1000 TVD	5.50	6.00	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well BAT 22B-24-07-96 (111263) - Slot BAT 22B
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Project:</b>	Speakman	<b>MD Reference:</b>	KB @ 5202.00ft (Original Well Elev)
<b>Site:</b>	Speakman A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	BAT 22B-24-07-96 (111263)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	BAT 22B		
<b>Design:</b>	BAT 22B P01		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,107.51	2,732.00	Mesaverde			
4,044.67	3,632.00	Top Gas			
5,344.67	4,932.00	Cameo			
6,044.67	5,632.00	Rollins			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.00	200.00	0.00	0.00	KOP 3°/100 at 200 MD/TVD	
1,075.00	1,044.99	175.25	-7.99	Build 3°/100 at 1075 MD/1045 TVD	
1,419.78	1,343.40	196.16	-8.94	Hold 35° at 1420 MD/1343 TVD	
2,874.89	2,534.00	367.73	-16.75	Drop 3°/100 at 2875 MD/2534 TVD	
4,044.67	3,632.00	1,203.43	-54.80	Vertical at 4045 MD/3632 TVD	
6,144.67	5,732.00	1,550.25	-70.59	TD at 6145 MD/5732 TVD	