

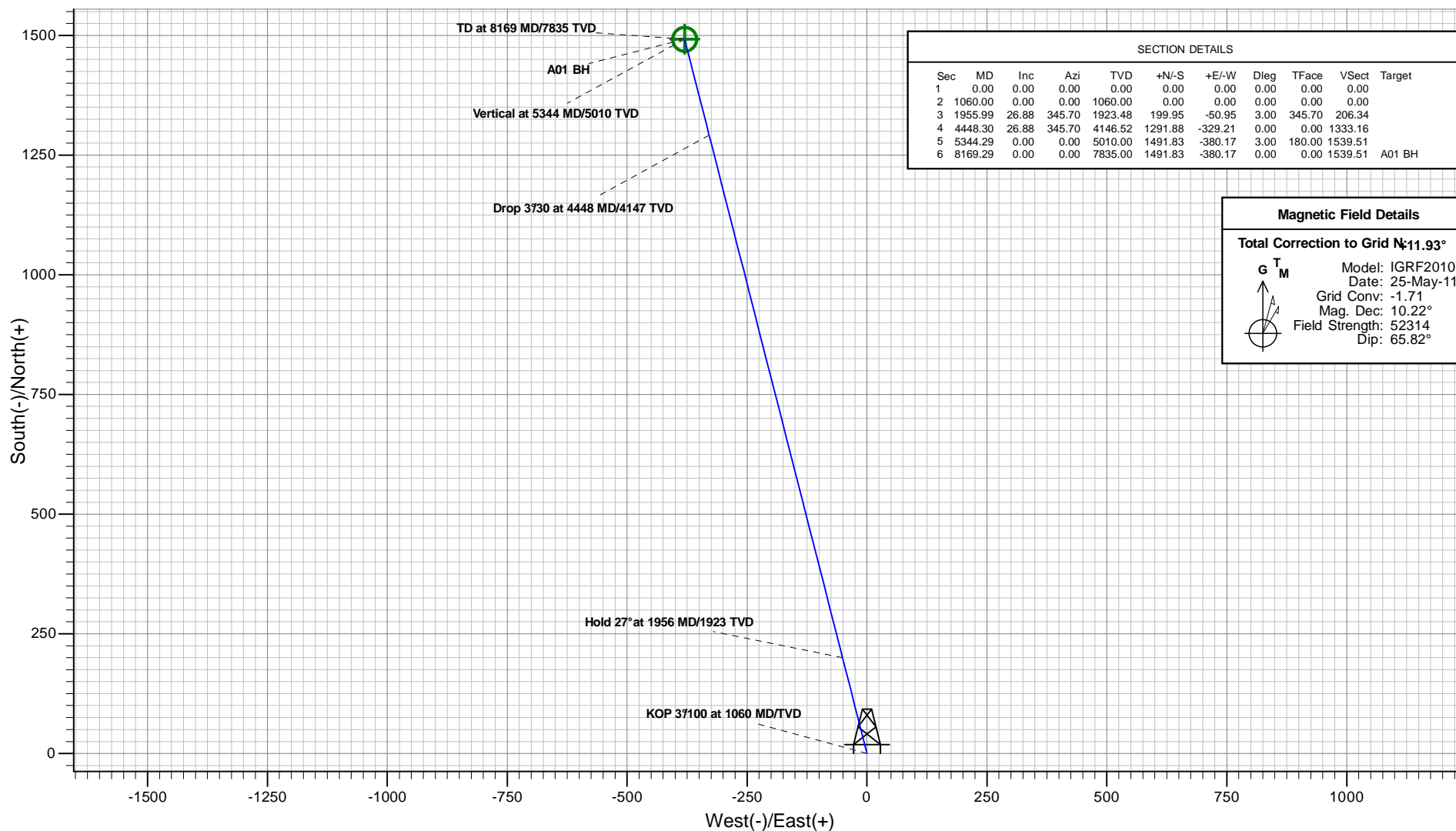


## PLAN VIEW

### Antero Resources

Left Hand Federal A01 (111338)

Project: Left Hand  
Site: Left Hand Federal A  
Well: Left Hand Federal A01 (111338)  
Wellbore: Left Hand Federal A01  
Design: Left Hand Federal A01 P01



Plan: Left Hand Federal A01 P01  
Created By: ARK Directional Services  
Date: 13:44, February 28 2011

PROJECT DETAILS: Left Hand  
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: NAD83 Colorado - HARN  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)  
System Datum: Mean Sea Level

REFERENCE INFORMATION  
Co-ordinate (N/E) Reference: Well Left Hand Federal A01 (111338), Grid North  
Vertical (TVD) Reference: KB @ 5708.00ft (Original Well Elev)  
Section (VS) Reference: Slot - (0.00N, 0.00E)  
Measured Depth Reference: KB @ 5708.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

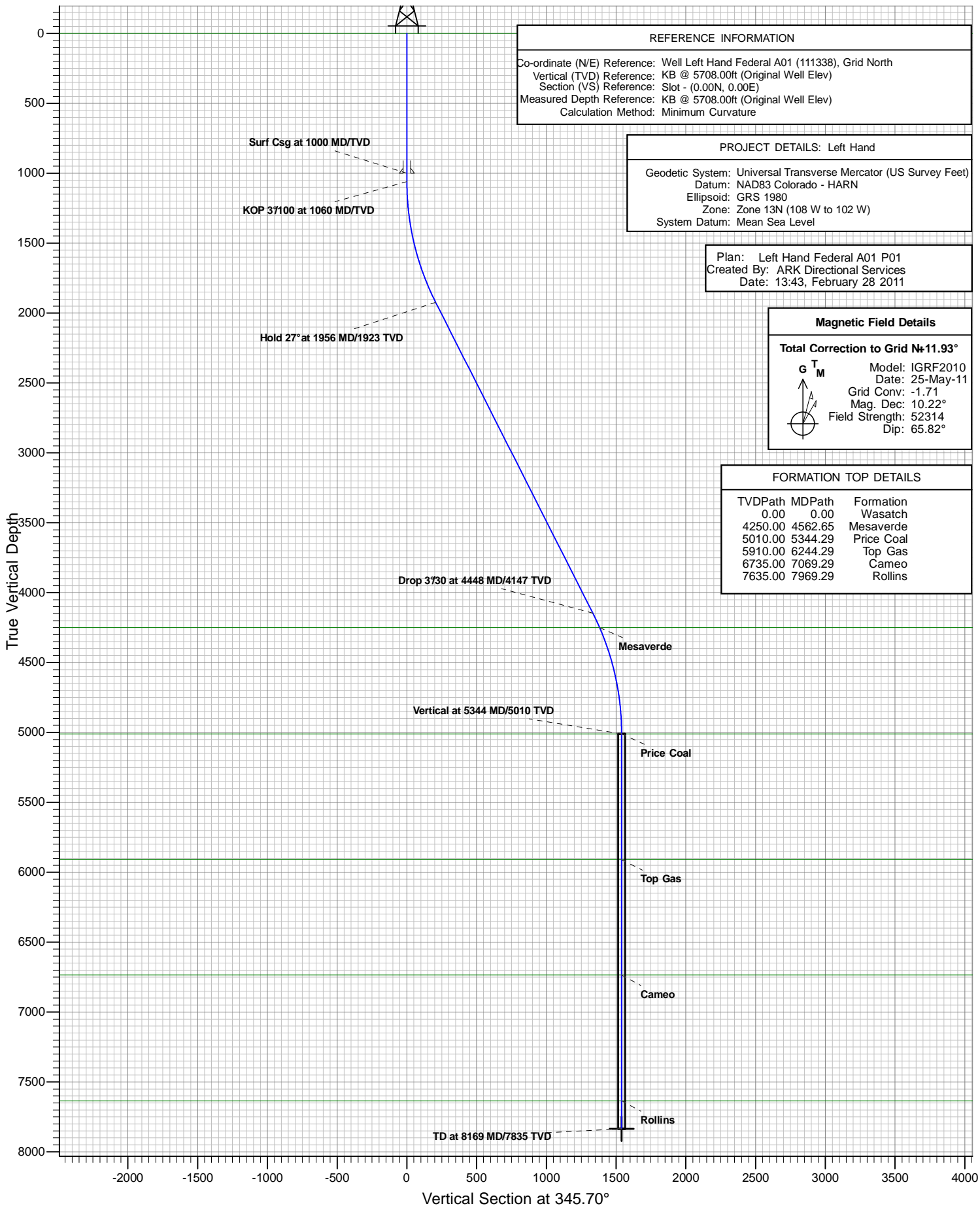


# Antero Resources



## VERTICAL SECTION VIEW

Left Hand Federal A01 (111338)



# **Antero Resources**

**Left Hand**

**Left Hand Federal A**

**Left Hand Federal A01 (111338)**

**Left Hand Federal A01**

**Plan: Left Hand Federal A01 P01**

## **Standard Planning Report - Geographic**

**28 February, 2011**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Left Hand Federal A01 (111338)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Project:</b>	Left Hand	<b>MD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Site:</b>	Left Hand Federal A	<b>North Reference:</b>	Grid
<b>Well:</b>	Left Hand Federal A01 (111338)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Left Hand Federal A01		
<b>Design:</b>	Left Hand Federal A01 P01		

<b>Project</b>	Left Hand		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 Colorado - HARN		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		Left Hand Federal A			
Site Position:		Northing:	14,363,958.160 usft	Latitude:	39.522111194°N
From:	Map	Easting:	885,193.914 usft	Longitude:	107.677970034°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.71 °

Well	Left Hand Federal A01 (111338)					
Well Position	+N/-S	0.00 ft	Northing:	14,363,958.160 usft	Latitude:	39.522111194°N
	+E/-W	0.00 ft	Easting:	885,193.914 usft	Longitude:	107.677970034°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,684.00 ft

<b>Wellbore</b>	Left Hand Federal A01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2011/05/25	10.22	65.82	52,314

<b>Design</b>	Left Hand Federal A01 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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	345.70

<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	
1,060.00	0.00	0.00	1,060.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,955.99	26.88	345.70	1,923.48	199.95	-50.95	3.00	3.00	0.00	345.70	
4,448.30	26.88	345.70	4,146.52	1,291.88	-329.21	0.00	0.00	0.00	0.00	
5,344.29	0.00	0.00	5,010.00	1,491.83	-380.17	3.00	-3.00	0.00	180.00	
8,169.29	0.00	0.00	7,835.00	1,491.83	-380.17	0.00	0.00	0.00	0.00	A01 BH

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Left Hand Federal A01 (111338)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Project:</b>	Left Hand	<b>MD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Site:</b>	Left Hand Federal A	<b>North Reference:</b>	Grid
<b>Well:</b>	Left Hand Federal A01 (111338)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Left Hand Federal A01		
<b>Design:</b>	Left Hand Federal A01 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	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
Wasatch										
100.00	0.00	0.00	100.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
200.00	0.00	0.00	200.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
300.00	0.00	0.00	300.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
400.00	0.00	0.00	400.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
500.00	0.00	0.00	500.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
600.00	0.00	0.00	600.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
700.00	0.00	0.00	700.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
800.00	0.00	0.00	800.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
900.00	0.00	0.00	900.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
Surf Csg at 1000 MD/TVD										
1,060.00	0.00	0.00	1,060.00	0.00	0.00	14,363,958.160	885,193.914	39.522111194°N	107.677970034°W	
KOP 3°/100 at 1060 MD/TVD										
1,100.00	1.20	345.70	1,100.00	0.41	-0.10	14,363,958.566	885,193.811	39.522112299°N	107.677970443°W	
1,200.00	4.20	345.70	1,199.87	4.97	-1.27	14,363,963.130	885,192.647	39.522124726°N	107.677975045°W	
1,300.00	7.20	345.70	1,299.37	14.59	-3.72	14,363,972.753	885,190.195	39.522150926°N	107.677984746°W	
1,400.00	10.20	345.70	1,398.21	29.25	-7.45	14,363,987.409	885,186.460	39.522190829°N	107.677999521°W	
1,500.00	13.20	345.70	1,496.12	48.90	-12.46	14,364,007.057	885,181.453	39.522244323°N	107.678019329°W	
1,600.00	16.20	345.70	1,592.83	73.48	-18.73	14,364,031.645	885,175.188	39.522311264°N	107.678044117°W	
1,700.00	19.20	345.70	1,688.09	102.94	-26.23	14,364,061.103	885,167.681	39.522391468°N	107.678073815°W	
1,800.00	22.20	345.70	1,781.62	137.19	-34.96	14,364,095.352	885,158.953	39.522484713°N	107.678108342°W	
1,900.00	25.20	345.70	1,873.18	176.14	-44.89	14,364,134.297	885,149.028	39.522590746°N	107.678147605°W	
1,955.99	26.88	345.70	1,923.48	199.95	-50.95	14,364,158.114	885,142.959	39.522655590°N	107.678171616°W	
Hold 27° at 1956 MD/1923 TVD										
2,000.00	26.88	345.70	1,962.74	219.24	-55.87	14,364,177.396	885,138.046	39.522708087°N	107.678191055°W	
2,100.00	26.88	345.70	2,051.93	263.05	-67.03	14,364,221.207	885,126.881	39.522827368°N	107.678235223°W	
2,200.00	26.88	345.70	2,141.13	306.86	-78.20	14,364,265.019	885,115.716	39.522946650°N	107.678279392°W	
2,300.00	26.88	345.70	2,230.33	350.67	-89.36	14,364,308.830	885,104.552	39.523065931°N	107.678323561°W	
2,400.00	26.88	345.70	2,319.52	394.48	-100.53	14,364,352.642	885,093.387	39.523185212°N	107.678367730°W	
2,500.00	26.88	345.70	2,408.72	438.29	-111.69	14,364,396.454	885,082.223	39.523304494°N	107.678411900°W	
2,600.00	26.88	345.70	2,497.91	482.11	-122.86	14,364,440.265	885,071.058	39.523423775°N	107.678456069°W	
2,700.00	26.88	345.70	2,587.11	525.92	-134.02	14,364,484.077	885,059.893	39.523543056°N	107.678500239°W	
2,800.00	26.88	345.70	2,676.30	569.73	-145.19	14,364,527.888	885,048.729	39.523662337°N	107.678544409°W	
2,900.00	26.88	345.70	2,765.50	613.54	-156.35	14,364,571.700	885,037.564	39.523781618°N	107.678588579°W	
3,000.00	26.88	345.70	2,854.70	657.35	-167.51	14,364,615.511	885,026.400	39.523900899°N	107.678632749°W	
3,100.00	26.88	345.70	2,943.89	701.16	-178.68	14,364,659.323	885,015.235	39.524020181°N	107.678676919°W	
3,200.00	26.88	345.70	3,033.09	744.98	-189.84	14,364,703.134	885,004.070	39.524139462°N	107.678721089°W	
3,300.00	26.88	345.70	3,122.28	788.79	-201.01	14,364,746.946	884,992.906	39.524258743°N	107.678765260°W	
3,400.00	26.88	345.70	3,211.48	832.60	-212.17	14,364,790.757	884,981.741	39.524378024°N	107.678809431°W	
3,500.00	26.88	345.70	3,300.68	876.41	-223.34	14,364,834.569	884,970.577	39.524497305°N	107.678853602°W	
3,600.00	26.88	345.70	3,389.87	920.22	-234.50	14,364,878.380	884,959.412	39.524616586°N	107.678897773°W	
3,700.00	26.88	345.70	3,479.07	964.03	-245.67	14,364,922.192	884,948.248	39.524735867°N	107.678941944°W	
3,800.00	26.88	345.70	3,568.26	1,007.85	-256.83	14,364,966.003	884,937.083	39.524855148°N	107.678986115°W	
3,900.00	26.88	345.70	3,657.46	1,051.66	-268.00	14,365,009.815	884,925.918	39.524974428°N	107.679030287°W	
4,000.00	26.88	345.70	3,746.65	1,095.47	-279.16	14,365,053.627	884,914.754	39.525093709°N	107.679074459°W	
4,100.00	26.88	345.70	3,835.85	1,139.28	-290.33	14,365,097.438	884,903.589	39.525212990°N	107.679118631°W	
4,200.00	26.88	345.70	3,925.05	1,183.09	-301.49	14,365,141.250	884,892.425	39.525332271°N	107.679162803°W	
4,300.00	26.88	345.70	4,014.24	1,226.90	-312.65	14,365,185.061	884,881.260	39.525451552°N	107.679206975°W	
4,400.00	26.88	345.70	4,103.44	1,270.72	-323.82	14,365,228.873	884,870.095	39.525570833°N	107.679251147°W	
4,448.30	26.88	345.70	4,146.52	1,291.88	-329.21	14,365,250.033	884,864.703	39.525628444°N	107.679272482°W	
Drop 3°/30 at 4448 MD/4147 TVD										
4,500.00	25.33	345.70	4,192.94	1,313.92	-334.83	14,365,272.077	884,859.086	39.525688459°N	107.679294707°W	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Left Hand Federal A01 (111338)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Project:</b>	Left Hand	<b>MD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Site:</b>	Left Hand Federal A	<b>North Reference:</b>	Grid
<b>Well:</b>	Left Hand Federal A01 (111338)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Left Hand Federal A01		
<b>Design:</b>	Left Hand Federal A01 P01		

Planned Survey										
Measured			Vertical			Map	Map			
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)			
4,562.65	23.45	345.70	4,250.00	1,338.99	-341.22	14,365,297.144	884,852.698	39.525756706°N	107.679319981°W	
Mesaverde										
4,600.00	22.33	345.70	4,284.41	1,353.06	-344.80	14,365,311.221	884,849.110	39.525795034°N	107.679334174°W	
4,700.00	19.33	345.70	4,377.86	1,387.52	-353.58	14,365,345.673	884,840.331	39.525888833°N	107.679368911°W	
4,800.00	16.33	345.70	4,473.05	1,417.18	-361.14	14,365,375.339	884,832.771	39.525969599°N	107.679398821°W	
4,900.00	13.33	345.70	4,569.71	1,441.98	-367.46	14,365,400.136	884,826.452	39.526037112°N	107.679423823°W	
5,000.00	10.33	345.70	4,667.57	1,461.84	-372.52	14,365,419.997	884,821.391	39.526091187°N	107.679443848°W	
5,100.00	7.33	345.70	4,766.38	1,476.71	-376.31	14,365,434.868	884,817.601	39.526131674°N	107.679458842°W	
5,200.00	4.33	345.70	4,865.85	1,486.55	-378.82	14,365,444.708	884,815.094	39.526158463°N	107.679468763°W	
5,300.00	1.33	345.70	4,965.72	1,491.33	-380.04	14,365,449.489	884,813.875	39.526171481°N	107.679473584°W	
5,344.29	0.00	0.00	5,010.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
Vertical at 5344 MD/5010 TVD - Price Coal										
5,400.00	0.00	0.00	5,065.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
5,500.00	0.00	0.00	5,165.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
5,600.00	0.00	0.00	5,265.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
5,700.00	0.00	0.00	5,365.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
5,800.00	0.00	0.00	5,465.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
5,900.00	0.00	0.00	5,565.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,000.00	0.00	0.00	5,665.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,100.00	0.00	0.00	5,765.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,200.00	0.00	0.00	5,865.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,244.29	0.00	0.00	5,910.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
Top Gas										
6,300.00	0.00	0.00	5,965.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,400.00	0.00	0.00	6,065.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,500.00	0.00	0.00	6,165.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,600.00	0.00	0.00	6,265.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,700.00	0.00	0.00	6,365.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,800.00	0.00	0.00	6,465.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
6,900.00	0.00	0.00	6,565.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,000.00	0.00	0.00	6,665.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,069.29	0.00	0.00	6,735.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
Cameo										
7,100.00	0.00	0.00	6,765.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,200.00	0.00	0.00	6,865.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,300.00	0.00	0.00	6,965.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,400.00	0.00	0.00	7,065.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,500.00	0.00	0.00	7,165.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,600.00	0.00	0.00	7,265.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,700.00	0.00	0.00	7,365.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,800.00	0.00	0.00	7,465.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,900.00	0.00	0.00	7,565.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
7,969.29	0.00	0.00	7,635.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
Rollins										
8,000.00	0.00	0.00	7,665.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
8,100.00	0.00	0.00	7,765.71	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
8,169.29	0.00	0.00	7,835.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W	
TD at 8169 MD/7835 TVD - A01 BH										

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Left Hand Federal A01 (111338)
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Project:</b>	Left Hand	<b>MD Reference:</b>	KB @ 5708.00ft (Original Well Elev)
<b>Site:</b>	Left Hand Federal A	<b>North Reference:</b>	Grid
<b>Well:</b>	Left Hand Federal A01 (111338)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Left Hand Federal A01		
<b>Design:</b>	Left Hand Federal A01 P01		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
A01 BH	0.00	0.00	7,835.00	1,491.83	-380.17	14,365,449.987	884,813.748	39.526172836°N	107.679474085°W
- plan hits target center									
- Circle (radius 25.00)									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
1,000.00	1,000.00	Surf Csg at 1000 MD/TVD		5.50	6.00

Formations						
Measured Depth	Vertical Depth	Name		Lithology	Dip	Dip Direction
(ft)	(ft)				(°)	(°)
0.00	0.00	Wasatch				
4,562.65	4,250.00	Mesaverde				
5,344.29	5,010.00	Price Coal				
6,244.29	5,910.00	Top Gas				
7,069.29	6,735.00	Cameo				
7,969.29	7,635.00	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
1,060.00	1,060.00	0.00	0.00	KOP 3°/100 at 1060 MD/TVD	
1,955.99	1,923.48	199.95	-50.95	Hold 27° at 1956 MD/1923 TVD	
4,448.30	4,146.52	1,291.88	-329.21	Drop 3°/30 at 4448 MD/4147 TVD	
5,344.29	5,010.00	1,491.83	-380.17	Vertical at 5344 MD/5010 TVD	
8,169.29	7,835.00	1,491.83	-380.17	TD at 8169 MD/7835 TVD	