

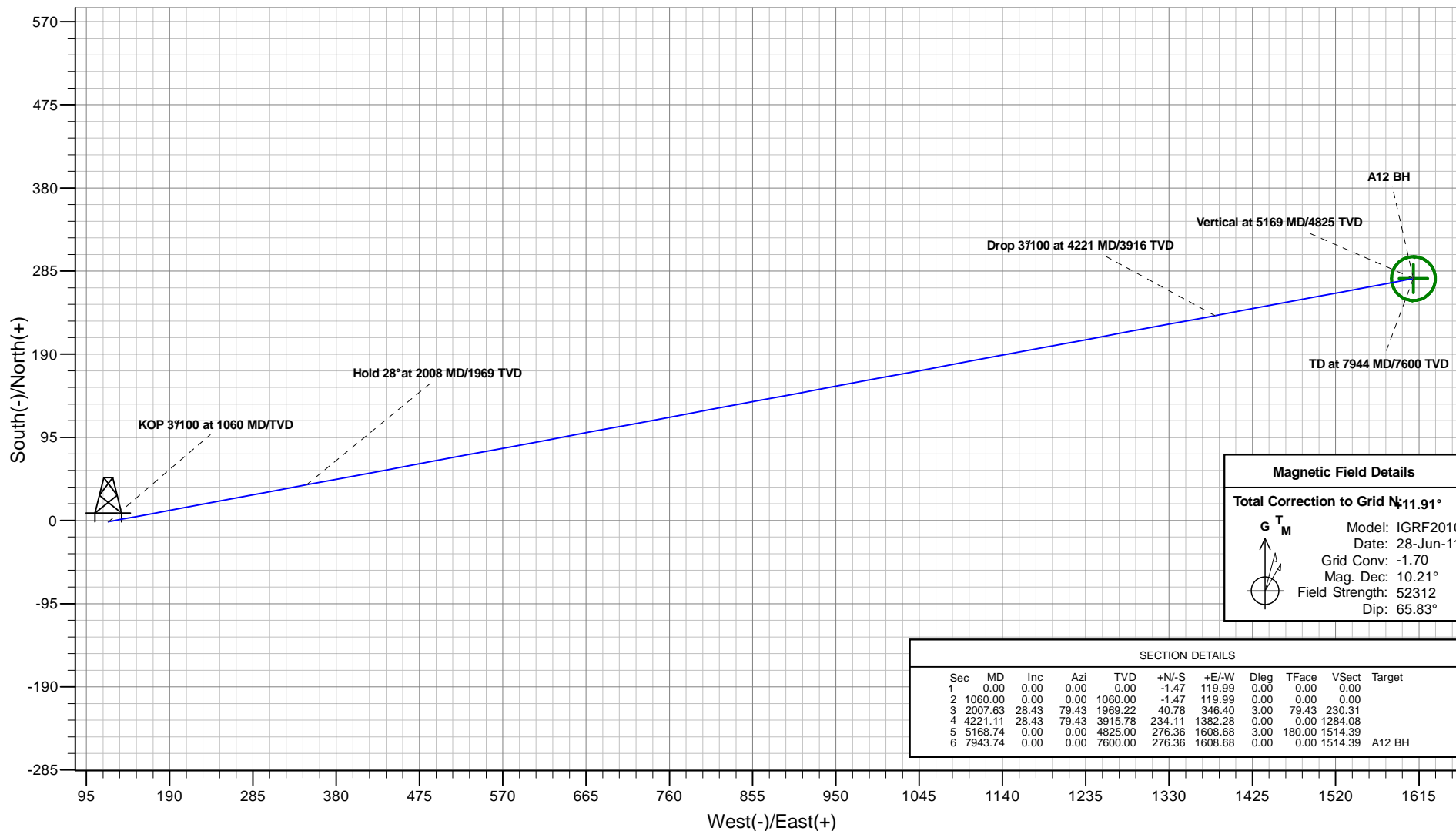


## PLAN VIEW

### Antero Resources

McPherson A12 (111364)

Project: McPherson  
Site: McPherson A Pad  
Well: McPherson A12 (111364)  
Wellbore: A12  
Design: A12 P01



Plan: A12 P01  
Created By: ARK Directional Services  
Date: 9:56, March 30 2011

PROJECT DETAILS: McPherson

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

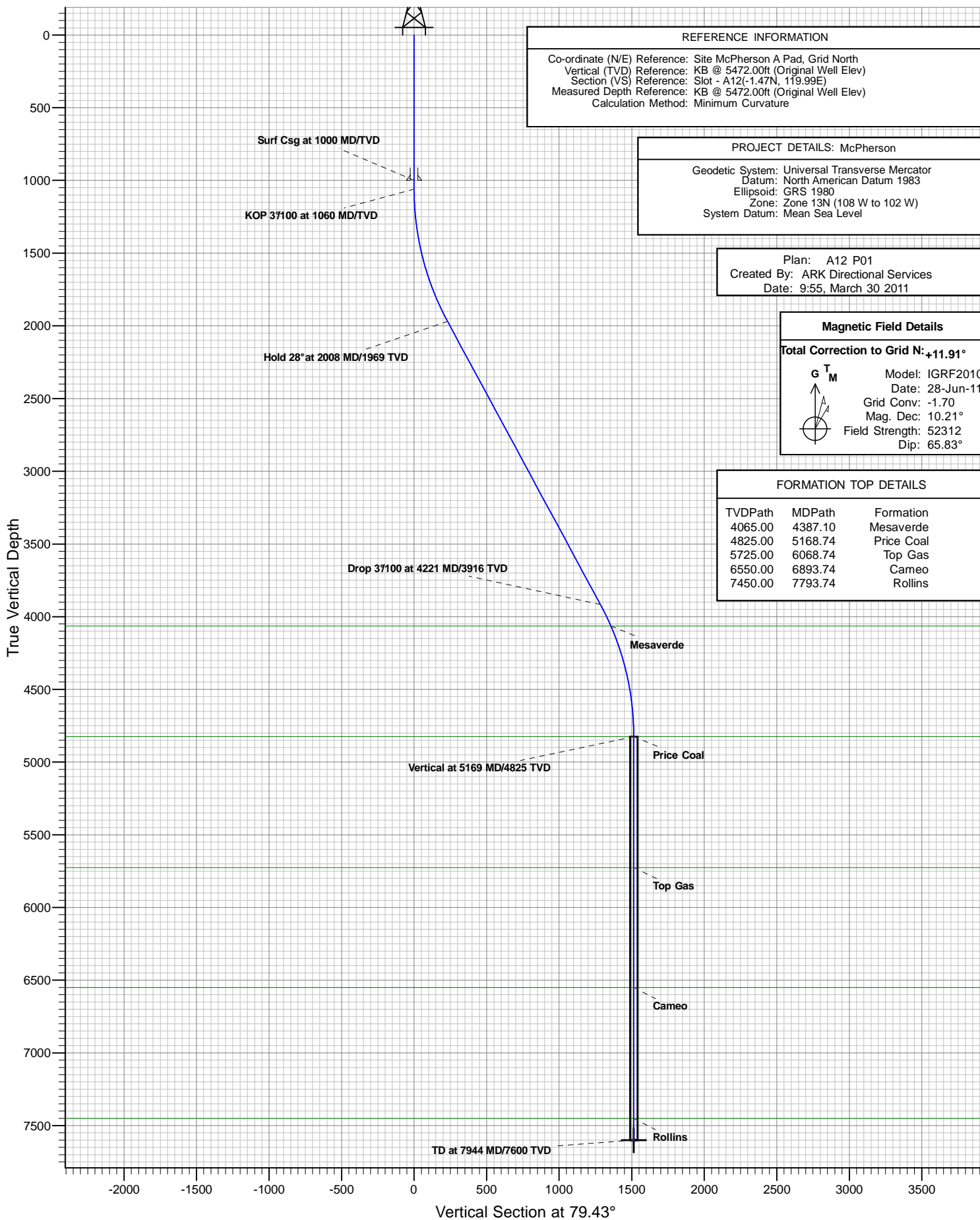
Co-ordinate (N/E) Reference: Site McPherson A Pad, Grid North  
Vertical (TVD) Reference: KB @ 5472.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A12(-1.47N, 119.99E)  
Measured Depth Reference: KB @ 5472.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature



## VERTICAL SECTION VIEW

## Antero Resources

McPherson A12 (111364)



### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site McPherson A Pad, Grid North  
Vertical (TVD) Reference: KB @ 5472.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A12(-1.47N, 119.99E)  
Measured Depth Reference: KB @ 5472.00ft (Original Well Elev)  
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### PROJECT DETAILS: McPherson

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: A12 P01  
Created By: ARK Directional Services  
Date: 9:55, March 30 2011

### Magnetic Field Details

Total Correction to Grid N: +11.91°



Model: IGRF2010  
Date: 28-Jun-11  
Grid Conv: -1.70  
Mag. Dec: 10.21°  
Field Strength: 52312  
Dip: 65.83°

### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4065.00	4387.10	Mesaverde
4825.00	5168.74	Price Coal
5725.00	6068.74	Top Gas
6550.00	6893.74	Cameo
7450.00	7793.74	Rollins

# **Antero Resources**

**McPherson**

**McPherson A Pad**

**McPherson A12 (111364) - Slot A12**

**A12**

**Plan: A12 P01**

## **Standard Planning Report - Geographic**

**30 March, 2011**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Site McPherson A Pad
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Project:</b>	McPherson	<b>MD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Site:</b>	McPherson A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	McPherson A12 (111364)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	A12		
<b>Design:</b>	A12 P01		

<b>Project</b>	McPherson		
<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		McPherson A Pad			
Site Position:		Northing:	14,367,218.623 usft	Latitude:	39.531108419°N
From:	Map	Easting:	885,836.083 usft	Longitude:	107.676038841°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.70 °

Well	McPherson A12 (111364) - Slot A12					
Well Position	+N/-S	-1.47 ft	Northing:	14,367,217.155 usft	Latitude:	39.531114184°N
	+E/-W	119.99 ft	Easting:	885,956.075 usft	Longitude:	107.675613583°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,448.00 ft

<b>Wellbore</b>	A12				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2011/06/28	10.21	65.83	52,312

<b>Design</b>	A12 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	-1.47	119.99	79.43	

<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	-1.47	119.99	0.00	0.00	0.00	0.00	
1,060.00	0.00	0.00	1,060.00	-1.47	119.99	0.00	0.00	0.00	0.00	
2,007.63	28.43	79.43	1,969.22	40.78	346.40	3.00	3.00	0.00	79.43	
4,221.11	28.43	79.43	3,915.78	234.11	1,382.28	0.00	0.00	0.00	0.00	
5,168.74	0.00	0.00	4,825.00	276.36	1,608.68	3.00	-3.00	0.00	180.00	
7,943.74	0.00	0.00	7,600.00	276.36	1,608.68	0.00	0.00	0.00	0.00	A12 BH

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Site McPherson A Pad
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Project:</b>	McPherson	<b>MD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Site:</b>	McPherson A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	McPherson A12 (111364)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	A12		
<b>Design:</b>	A12 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	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
100.00	0.00	0.00	100.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
200.00	0.00	0.00	200.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
300.00	0.00	0.00	300.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
400.00	0.00	0.00	400.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
500.00	0.00	0.00	500.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
600.00	0.00	0.00	600.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
700.00	0.00	0.00	700.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
800.00	0.00	0.00	800.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
900.00	0.00	0.00	900.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
1,000.00	0.00	0.00	1,000.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
Surf Csg at 1000 MD/TVD										
1,060.00	0.00	0.00	1,060.00	-1.47	119.99	14,367,217.155	885,956.075	39.531114184°N	107.675613583°W	
KOP 3°/100 at 1060 MD/TVD										
1,100.00	1.20	79.43	1,100.00	-1.39	120.40	14,367,217.231	885,956.487	39.531114428°N	107.675612132°W	
1,200.00	4.20	79.43	1,199.87	-0.53	125.03	14,367,218.096	885,961.117	39.531117177°N	107.675595820°W	
1,300.00	7.20	79.43	1,299.37	1.29	134.80	14,367,219.917	885,970.879	39.531122972°N	107.675561426°W	
1,400.00	10.20	79.43	1,398.21	4.07	149.66	14,367,222.692	885,985.747	39.531131797°N	107.675509046°W	
1,500.00	13.20	79.43	1,496.12	7.79	169.60	14,367,226.412	886,005.629	39.531143629°N	107.675438823°W	
1,600.00	16.20	79.43	1,592.83	12.44	194.54	14,367,231.067	886,030.671	39.531158434°N	107.675350949°W	
1,700.00	19.20	79.43	1,688.09	18.02	224.42	14,367,236.644	886,060.505	39.531176173°N	107.675245665°W	
1,800.00	22.20	79.43	1,781.62	24.51	259.17	14,367,243.128	886,095.248	39.531196796°N	107.675123260°W	
1,900.00	25.20	79.43	1,873.18	31.88	298.67	14,367,250.501	886,134.756	39.531220247°N	107.674984069°W	
2,000.00	28.20	79.43	1,962.51	40.12	342.84	14,367,258.743	886,178.921	39.531246461°N	107.674828474°W	
2,007.63	28.43	79.43	1,969.22	40.78	346.40	14,367,259.407	886,182.477	39.531248573°N	107.674815943°W	
Hold 28° at 2008 MD/1969 TVD										
2,100.00	28.43	79.43	2,050.45	48.85	389.62	14,367,267.475	886,225.706	39.531274232°N	107.674663644°W	
2,200.00	28.43	79.43	2,138.39	57.59	436.42	14,367,276.208	886,272.505	39.531302010°N	107.674498767°W	
2,300.00	28.43	79.43	2,226.34	66.32	483.22	14,367,284.942	886,319.303	39.531329788°N	107.674333890°W	
2,400.00	28.43	79.43	2,314.28	75.05	530.02	14,367,293.676	886,366.102	39.531357565°N	107.674169012°W	
2,500.00	28.43	79.43	2,402.22	83.79	576.82	14,367,302.410	886,412.900	39.531385342°N	107.674004135°W	
2,600.00	28.43	79.43	2,490.16	92.52	623.62	14,367,311.144	886,459.699	39.531413119°N	107.673839257°W	
2,700.00	28.43	79.43	2,578.10	101.26	670.42	14,367,319.878	886,506.498	39.531440896°N	107.673674380°W	
2,800.00	28.43	79.43	2,666.04	109.99	717.21	14,367,328.611	886,553.296	39.531468673°N	107.673509502°W	
2,900.00	28.43	79.43	2,753.98	118.72	764.01	14,367,337.345	886,600.095	39.531496449°N	107.673344624°W	
3,000.00	28.43	79.43	2,841.92	127.46	810.81	14,367,346.079	886,646.893	39.531524225°N	107.673179746°W	
3,100.00	28.43	79.43	2,929.86	136.19	857.61	14,367,354.813	886,693.692	39.531552001°N	107.673014867°W	
3,200.00	28.43	79.43	3,017.80	144.92	904.41	14,367,363.547	886,740.491	39.531579777°N	107.672849989°W	
3,300.00	28.43	79.43	3,105.74	153.66	951.21	14,367,372.281	886,787.289	39.531607552°N	107.672685110°W	
3,400.00	28.43	79.43	3,193.69	162.39	998.01	14,367,381.014	886,834.088	39.531635327°N	107.672520232°W	
3,500.00	28.43	79.43	3,281.63	171.13	1,044.81	14,367,389.748	886,880.887	39.531663102°N	107.672355353°W	
3,600.00	28.43	79.43	3,369.57	179.86	1,091.60	14,367,398.482	886,927.685	39.531690877°N	107.672190474°W	
3,700.00	28.43	79.43	3,457.51	188.59	1,138.40	14,367,407.216	886,974.484	39.531718652°N	107.672025595°W	
3,800.00	28.43	79.43	3,545.45	197.33	1,185.20	14,367,415.950	887,021.282	39.531746426°N	107.671860715°W	
3,900.00	28.43	79.43	3,633.39	206.06	1,232.00	14,367,424.683	887,068.081	39.531774200°N	107.671695836°W	
4,000.00	28.43	79.43	3,721.33	214.80	1,278.80	14,367,433.417	887,114.880	39.531801974°N	107.671530956°W	
4,100.00	28.43	79.43	3,809.27	223.53	1,325.60	14,367,442.151	887,161.678	39.531829747°N	107.671366077°W	
4,200.00	28.43	79.43	3,897.21	232.26	1,372.40	14,367,450.885	887,208.477	39.531857521°N	107.671201197°W	
4,221.11	28.43	79.43	3,915.78	234.11	1,382.28	14,367,452.729	887,218.357	39.531863384°N	107.671166387°W	
Drop 3°/100 at 4221 MD/3916 TVD										
4,300.00	26.06	79.43	3,985.91	240.73	1,417.78	14,367,459.354	887,253.857	39.531884452°N	107.671041315°W	
4,387.10	23.45	79.43	4,065.00	247.42	1,453.63	14,367,466.045	887,289.708	39.531905728°N	107.670915003°W	
Mesaverde										
4,400.00	23.06	79.43	4,076.85	248.36	1,458.63	14,367,466.979	887,294.714	39.531908699°N	107.670897365°W	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Site McPherson A Pad
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Project:</b>	McPherson	<b>MD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Site:</b>	McPherson A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	McPherson A12 (111364)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	A12		
<b>Design:</b>	A12 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	
4,500.00	20.06	79.43	4,169.84	255.10	1,494.76	14,367,473.721	887,330.838	39.531930137°N	107.670770097°W	
4,600.00	17.06	79.43	4,264.63	260.94	1,526.05	14,367,479.560	887,362.127	39.531948705°N	107.670659858°W	
4,700.00	14.06	79.43	4,360.95	265.86	1,552.42	14,367,484.481	887,388.497	39.531964355°N	107.670566951°W	
4,800.00	11.06	79.43	4,458.55	269.85	1,573.80	14,367,488.471	887,409.876	39.531977041°N	107.670491631°W	
4,900.00	8.06	79.43	4,557.15	272.90	1,590.12	14,367,491.518	887,426.204	39.531986731°N	107.670434104°W	
5,000.00	5.06	79.43	4,656.48	274.99	1,601.36	14,367,493.615	887,437.436	39.531993397°N	107.670394529°W	
5,100.00	2.06	79.43	4,756.27	276.13	1,607.46	14,367,494.754	887,443.544	39.531997021°N	107.670373012°W	
5,168.74	0.00	0.00	4,825.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
Vertical at 5169 MD/4825 TVD - Price Coal										
5,200.00	0.00	0.00	4,856.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,300.00	0.00	0.00	4,956.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,400.00	0.00	0.00	5,056.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,500.00	0.00	0.00	5,156.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,600.00	0.00	0.00	5,256.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,700.00	0.00	0.00	5,356.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,800.00	0.00	0.00	5,456.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
5,900.00	0.00	0.00	5,556.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,000.00	0.00	0.00	5,656.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,068.74	0.00	0.00	5,725.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
Top Gas										
6,100.00	0.00	0.00	5,756.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,200.00	0.00	0.00	5,856.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,300.00	0.00	0.00	5,956.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,400.00	0.00	0.00	6,056.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,500.00	0.00	0.00	6,156.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,600.00	0.00	0.00	6,256.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,700.00	0.00	0.00	6,356.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,800.00	0.00	0.00	6,456.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
6,893.74	0.00	0.00	6,550.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
Cameo										
6,900.00	0.00	0.00	6,556.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,000.00	0.00	0.00	6,656.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,100.00	0.00	0.00	6,756.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,200.00	0.00	0.00	6,856.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,300.00	0.00	0.00	6,956.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,400.00	0.00	0.00	7,056.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,500.00	0.00	0.00	7,156.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,600.00	0.00	0.00	7,256.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,700.00	0.00	0.00	7,356.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,793.74	0.00	0.00	7,450.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
Rollins										
7,800.00	0.00	0.00	7,456.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,900.00	0.00	0.00	7,556.26	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
7,943.74	0.00	0.00	7,600.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°W	
TD at 7944 MD/7600 TVD										

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Site McPherson A Pad
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Project:</b>	McPherson	<b>MD Reference:</b>	KB @ 5472.00ft (Original Well Elev)
<b>Site:</b>	McPherson A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	McPherson A12 (111364)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	A12		
<b>Design:</b>	A12 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									
A12 BH	0.00	0.00	7,600.00	276.36	1,608.68	14,367,494.981	887,444.760	39.531997743°N	107.670368728°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)				(°)	(°)
4,387.10	4,065.00	Mesaverde				
5,168.74	4,825.00	Price Coal				
6,068.74	5,725.00	Top Gas				
6,893.74	6,550.00	Cameo				
7,793.74	7,450.00	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)		
1,060.00	1,060.00	-1.47	119.99	KOP 3°/100 at 1060 MD/TVD	
2,007.63	1,969.22	40.78	346.40	Hold 28° at 2008 MD/1969 TVD	
4,221.11	3,915.78	234.11	1,382.28	Drop 3°/100 at 4221 MD/3916 TVD	
5,168.74	4,825.00	276.36	1,608.68	Vertical at 5169 MD/4825 TVD	
7,943.74	7,600.00	276.36	1,608.68	TD at 7944 MD/7600 TVD	