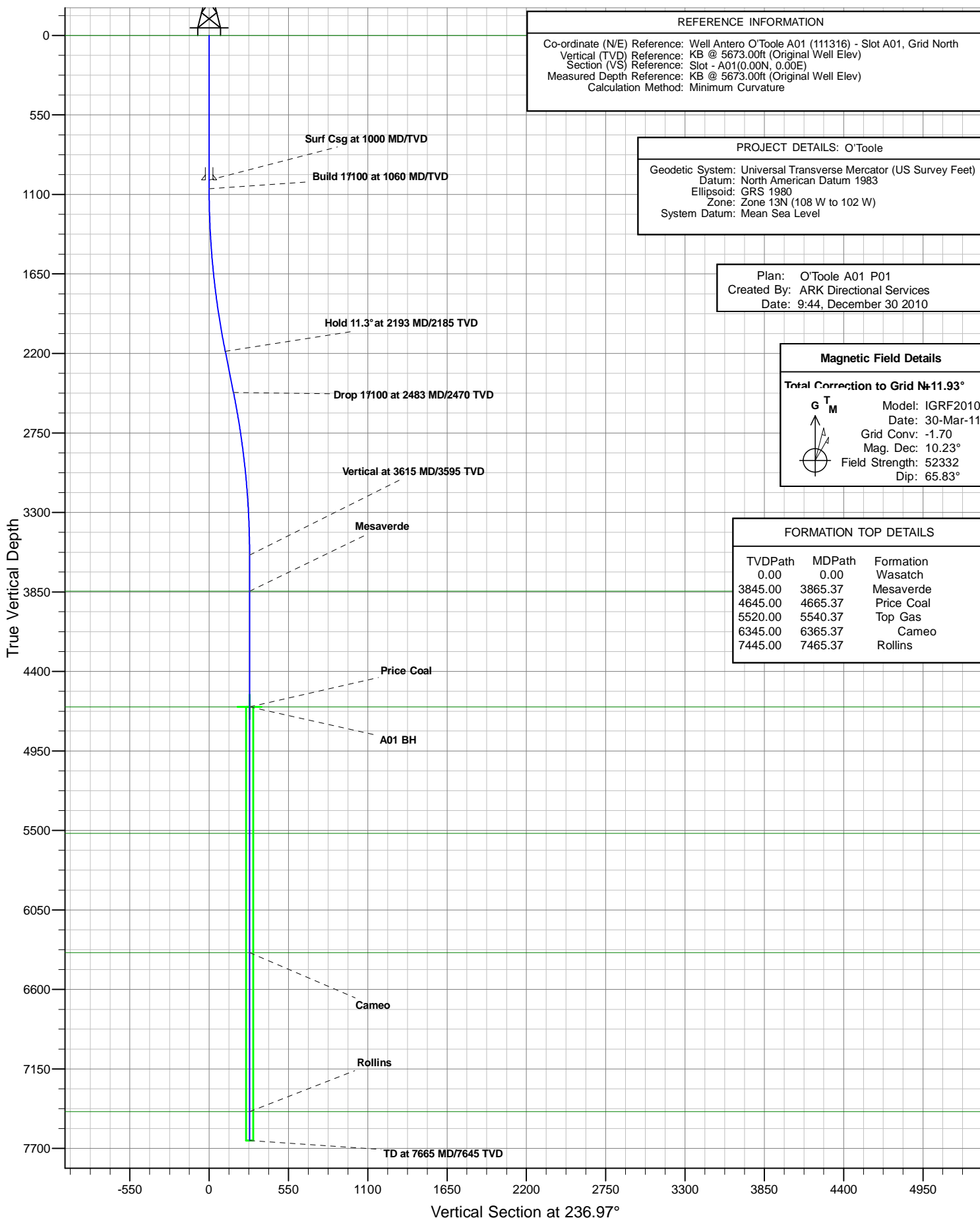


### VERTICAL SECTION VIEW





# **Antero Resources**

**O'Toole**

**O'Toole A Pad**

**Antero O'Toole A01 (111316) - Slot A01**

**O'Toole A01**

**Plan: O'Toole A01 P01**

## **Standard Planning Report - Geographic**

**30 December, 2010**

## Planning Report - Geographic

<b>Database:</b>	EDM 5000 SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Antero O'Toole A01 (111316) - Slot A01
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Project:</b>	O'Toole	<b>MD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Site:</b>	O'Toole A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Antero O'Toole A01 (111316)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	O'Toole A01		
<b>Design:</b>	O'Toole A01 P01		

<b>Project</b>	O'Toole		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<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		O'Toole A Pad			
Site Position:		Northing:	14,364,078.526 usft	Latitude:	39.522763688°N
From:	Map	Easting:	889,150.833 usft	Longitude:	107.663965951°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.70 °

Well	Antero O'Toole A01 (111316) - Slot A01					
Well Position	+N/-S	0.00 ft	Northing:	14,364,078.526 usft	Latitude:	39.522763688°N
	+E/-W	0.00 ft	Easting:	889,150.833 usft	Longitude:	107.663965951°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,649.00 ft

<b>Wellbore</b>	O'Toole 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	3/30/2011	10.23	65.83	52,332

<b>Design</b>	O'Toole 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	236.97	

<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	
2,192.53	11.33	236.97	2,185.17	-60.82	-93.53	1.00	1.00	0.00	236.97	
2,482.85	11.33	236.97	2,469.83	-91.89	-141.33	0.00	0.00	0.00	0.00	
3,615.37	0.00	0.00	3,595.00	-152.71	-234.86	1.00	-1.00	0.00	180.00	
4,665.37	0.00	0.00	4,645.00	-152.71	-234.86	0.00	0.00	0.00	0.00	A01 BH
7,665.37	0.00	0.00	7,645.00	-152.71	-234.86	0.00	0.00	0.00	0.00	

# Planning Report - Geographic

<b>Database:</b>	EDM 5000 SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Antero O'Toole A01 (111316) - Slot A01
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Project:</b>	O'Toole	<b>MD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Site:</b>	O'Toole A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Antero O'Toole A01 (111316)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	O'Toole A01		
<b>Design:</b>	O'Toole 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	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
<b>Wasatch</b>									
100.00	0.00	0.00	100.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
200.00	0.00	0.00	200.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
300.00	0.00	0.00	300.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
400.00	0.00	0.00	400.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
500.00	0.00	0.00	500.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
600.00	0.00	0.00	600.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
700.00	0.00	0.00	700.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
800.00	0.00	0.00	800.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
900.00	0.00	0.00	900.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
<b>Surf Csg at 1000 MD/TVD</b>									
1,060.00	0.00	0.00	1,060.00	0.00	0.00	14,364,078.526	889,150.833	39.522763688°N	107.663965951°W
<b>Build 1°/100 at 1060 MD/TVD</b>									
1,100.00	0.40	236.97	1,100.00	-0.08	-0.12	14,364,078.450	889,150.716	39.522763470°N	107.663966358°W
1,200.00	1.40	236.97	1,199.99	-0.93	-1.43	14,364,077.593	889,149.399	39.522761014°N	107.663970933°W
1,300.00	2.40	236.97	1,299.93	-2.74	-4.21	14,364,075.786	889,146.619	39.522755830°N	107.663980590°W
1,400.00	3.40	236.97	1,399.80	-5.50	-8.45	14,364,073.028	889,142.378	39.522747919°N	107.663995325°W
1,500.00	4.40	236.97	1,499.57	-9.21	-14.16	14,364,069.321	889,136.676	39.522737284°N	107.664015135°W
1,600.00	5.40	236.97	1,599.20	-13.86	-21.32	14,364,064.664	889,129.515	39.522723929°N	107.664040013°W
1,700.00	6.40	236.97	1,698.67	-19.46	-29.94	14,364,059.061	889,120.897	39.522707856°N	107.664069952°W
1,800.00	7.40	236.97	1,797.94	-26.01	-40.01	14,364,052.512	889,110.826	39.522689072°N	107.664104943°W
1,900.00	8.40	236.97	1,896.99	-33.51	-51.53	14,364,045.020	889,099.303	39.522667581°N	107.664144974°W
2,000.00	9.40	236.97	1,995.79	-41.94	-64.50	14,364,036.587	889,086.333	39.522643391°N	107.664190034°W
2,100.00	10.40	236.97	2,094.30	-51.31	-78.91	14,364,027.215	889,071.919	39.522616508°N	107.664240110°W
2,192.53	11.33	236.97	2,185.17	-60.82	-93.53	14,364,017.710	889,057.301	39.522589243°N	107.664290897°W
<b>Hold 11.3° at 2193 MD/2185 TVD</b>									
2,200.00	11.33	236.97	2,192.49	-61.62	-94.76	14,364,016.910	889,056.071	39.522586949°N	107.664295171°W
2,300.00	11.33	236.97	2,290.55	-72.32	-111.23	14,364,006.205	889,039.607	39.522556243°N	107.664352368°W
2,400.00	11.33	236.97	2,388.60	-83.03	-127.69	14,363,995.500	889,023.143	39.522525537°N	107.664409565°W
2,482.85	11.33	236.97	2,469.83	-91.89	-141.33	14,363,986.631	889,009.504	39.522500098°N	107.664456950°W
<b>Drop 1°/100 at 2483 MD/2470 TVD</b>									
2,500.00	11.15	236.97	2,486.66	-93.72	-144.13	14,363,984.809	889,006.701	39.522494871°N	107.664466688°W
2,600.00	10.15	236.97	2,584.93	-103.79	-159.63	14,363,974.731	888,991.202	39.522465964°N	107.664520533°W
2,700.00	9.15	236.97	2,683.52	-112.94	-173.69	14,363,965.590	888,977.144	39.522439744°N	107.664569375°W
2,800.00	8.15	236.97	2,782.38	-121.14	-186.30	14,363,957.388	888,964.530	39.522416217°N	107.664613197°W
2,900.00	7.15	236.97	2,881.48	-128.40	-197.47	14,363,950.128	888,953.364	39.522395392°N	107.664651988°W
3,000.00	6.15	236.97	2,980.81	-134.71	-207.18	14,363,943.812	888,943.650	39.522377275°N	107.664685735°W
3,100.00	5.15	236.97	3,080.32	-140.08	-215.44	14,363,938.442	888,935.391	39.522361871°N	107.664714429°W
3,200.00	4.15	236.97	3,179.99	-144.51	-222.24	14,363,934.019	888,928.589	39.522349185°N	107.664738059°W
3,300.00	3.15	236.97	3,279.79	-147.98	-227.59	14,363,930.545	888,923.247	39.522339221°N	107.664756620°W
3,400.00	2.15	236.97	3,379.68	-150.50	-231.47	14,363,928.021	888,919.365	39.522331981°N	107.664770104°W
3,500.00	1.15	236.97	3,479.63	-152.08	-233.89	14,363,926.448	888,916.946	39.522327469°N	107.664778510°W
3,600.00	0.15	236.97	3,579.63	-152.70	-234.84	14,363,925.826	888,915.989	39.522325685°N	107.664781833°W
3,615.37	0.00	0.00	3,595.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
<b>Vertical at 3615 MD/3595 TVD</b>									
3,700.00	0.00	0.00	3,679.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
3,800.00	0.00	0.00	3,779.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
3,865.37	0.00	0.00	3,845.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
<b>Mesaverde</b>									
3,900.00	0.00	0.00	3,879.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,000.00	0.00	0.00	3,979.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,100.00	0.00	0.00	4,079.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W

# Planning Report - Geographic

<b>Database:</b>	EDM 5000 SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Antero O'Toole A01 (111316) - Slot A01
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Project:</b>	O'Toole	<b>MD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Site:</b>	O'Toole A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Antero O'Toole A01 (111316)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	O'Toole A01		
<b>Design:</b>	O'Toole 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
4,200.00	0.00	0.00	4,179.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,300.00	0.00	0.00	4,279.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,400.00	0.00	0.00	4,379.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,500.00	0.00	0.00	4,479.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,600.00	0.00	0.00	4,579.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,665.37	0.00	0.00	4,645.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
Price Coal									
4,700.00	0.00	0.00	4,679.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,800.00	0.00	0.00	4,779.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
4,900.00	0.00	0.00	4,879.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,000.00	0.00	0.00	4,979.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,100.00	0.00	0.00	5,079.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,200.00	0.00	0.00	5,179.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,300.00	0.00	0.00	5,279.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,400.00	0.00	0.00	5,379.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,500.00	0.00	0.00	5,479.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,540.37	0.00	0.00	5,520.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
Top Gas									
5,600.00	0.00	0.00	5,579.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,700.00	0.00	0.00	5,679.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,800.00	0.00	0.00	5,779.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
5,900.00	0.00	0.00	5,879.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,000.00	0.00	0.00	5,979.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,100.00	0.00	0.00	6,079.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,200.00	0.00	0.00	6,179.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,300.00	0.00	0.00	6,279.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,365.37	0.00	0.00	6,345.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
Cameo									
6,400.00	0.00	0.00	6,379.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,500.00	0.00	0.00	6,479.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,600.00	0.00	0.00	6,579.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,700.00	0.00	0.00	6,679.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,800.00	0.00	0.00	6,779.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
6,900.00	0.00	0.00	6,879.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,000.00	0.00	0.00	6,979.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,100.00	0.00	0.00	7,079.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,200.00	0.00	0.00	7,179.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,300.00	0.00	0.00	7,279.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,400.00	0.00	0.00	7,379.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,465.37	0.00	0.00	7,445.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
Rollins									
7,500.00	0.00	0.00	7,479.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,600.00	0.00	0.00	7,579.63	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
7,665.37	0.00	0.00	7,645.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°W
TD at 7665 MD/7645 TVD									

## Planning Report - Geographic

<b>Database:</b>	EDM 5000 SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Antero O'Toole A01 (111316) - Slot A01
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Project:</b>	O'Toole	<b>MD Reference:</b>	KB @ 5673.00ft (Original Well Elev)
<b>Site:</b>	O'Toole A Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Antero O'Toole A01 (111316)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	O'Toole A01		
<b>Design:</b>	O'Toole 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	360.00	4,645.00	-152.71	-234.86	14,363,925.815	888,915.972	39.522325653°N	107.664781893°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	-129.00	Wasatch				
3,865.37	3,716.00	Mesaverde				
4,665.37	4,516.00	Price Coal				
5,540.37	5,391.00	Top Gas				
6,365.37	6,216.00	Cameo				
7,465.37	7,316.00	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)		
1,060.00	1,060.00	0.00	0.00	Build 1°/100 at 1060 MD/TVD	
2,192.53	2,185.17	-60.82	-93.53	Hold 11.3° at 2193 MD/2185 TVD	
2,482.85	2,469.83	-91.89	-141.33	Drop 1°/100 at 2483 MD/2470 TVD	
3,615.37	3,595.00	-152.71	-234.86	Vertical at 3615 MD/3595 TVD	
7,665.37	7,645.00	-152.71	-234.86	TD at 7665 MD/7645 TVD	