



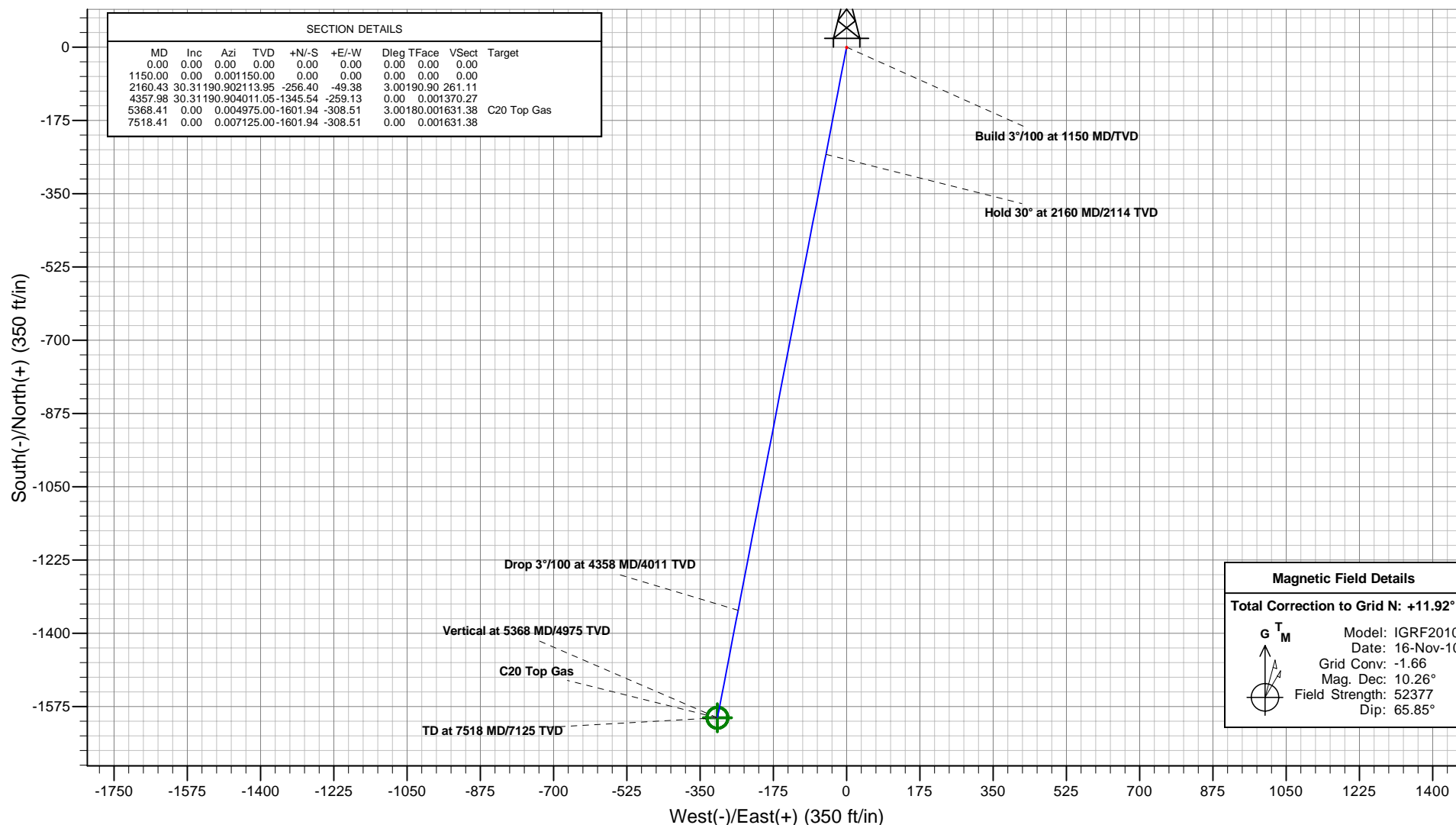
# Antero Resources

## McLin C20 (111238)



### PLAN VIEW

Project: McLin  
Site: McLin C  
Well: McLin C20 (111238)  
Wellbore: McLin C20  
Design: McLin C20 P01



Plan: McLin C20 P01  
Created By: ARK Directional Services  
Date: 16:31, August 17 2010

PROJECT DETAILS: McLin

Geodetic System: Universal Transverse Mercator  
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 McLin C20 (111238) - Slot C20, Grid North  
Vertical (TVD) Reference: KB @ 5750.00ft (Original Well Elev)  
Section (VS) Reference: Slot - C20(0.00N, 0.00E)  
Measured Depth Reference: KB @ 5750.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

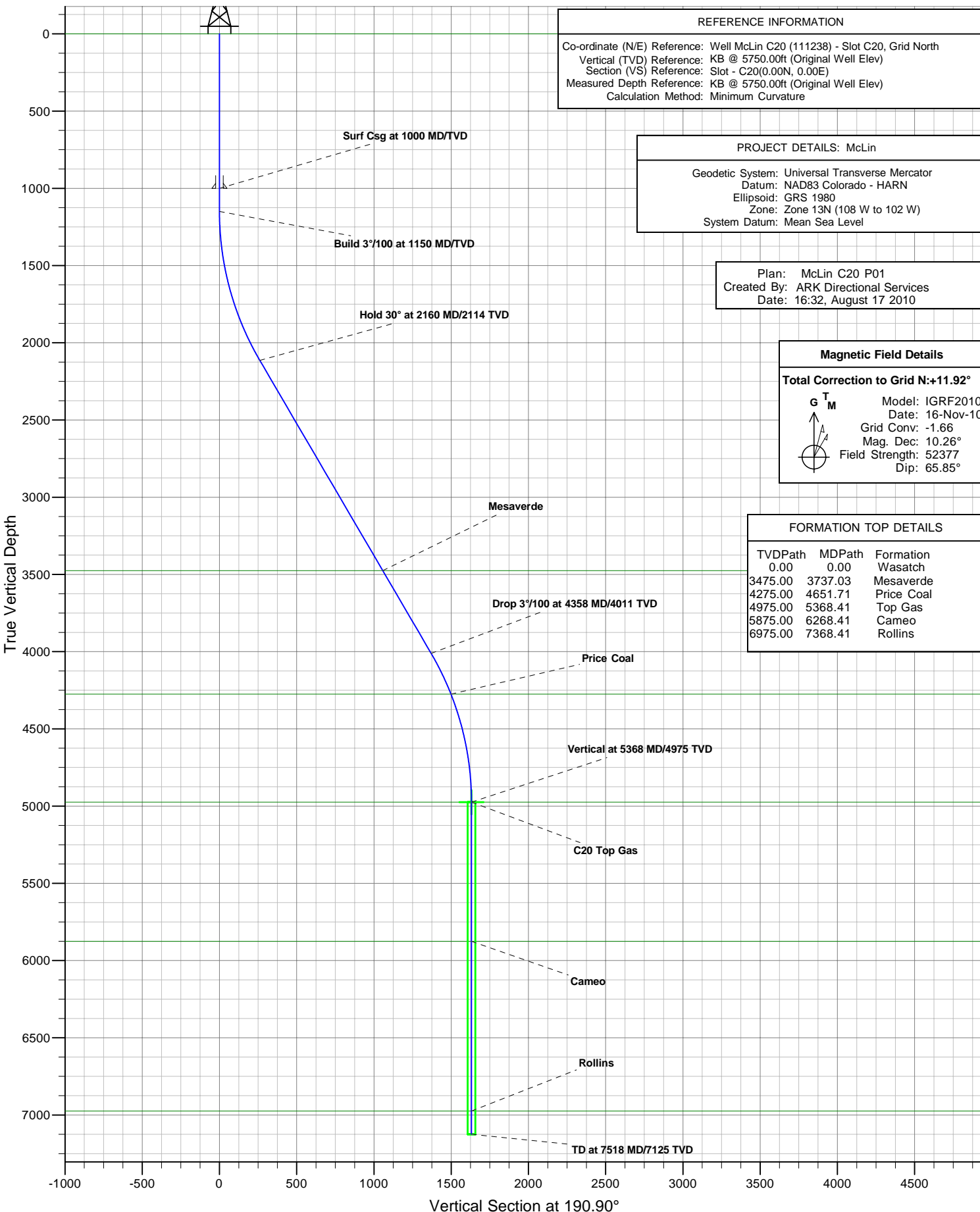


# Antero Resources

McLin C20 (111238)



## VERTICAL SECTION VIEW



# **Antero Resources**

**McLin**

**McLin C**

**McLin C20 (111238) - Slot C20**

**McLin C20**

**Plan: McLin C20 P01**

## **Standard Planning Report - Geographic**

**17 August, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well McLin C20 (111238) - Slot C20
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Project:</b>	McLin	<b>MD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Site:</b>	McLin C	<b>North Reference:</b>	Grid
<b>Well:</b>	McLin C20 (111238)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	McLin C20		
<b>Design:</b>	McLin C20 P01		

<b>Project</b>	McLin		
<b>Map System:</b>	Universal Transverse Mercator	<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)		

<b>Site</b>	McLin C		
<b>Site Position:</b>		<b>Northing:</b>	14,364,522.752 usft
<b>From:</b>	Map	<b>Easting:</b>	905,235.880 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39.525275157°N
		<b>Longitude:</b>	107.607030464°W
		<b>Grid Convergence:</b>	-1.66 °

<b>Well</b>	McLin C20 (111238) - Slot C20		
<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>	39.525150173°N
		<b>Longitude:</b>	107.607103653°W
		<b>Ground Level:</b>	5,726.00 ft

<b>Wellbore</b>	McLin C20				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF2010	2010/11/16	10.26	65.85	52,377

<b>Design</b>	McLin C20 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)	(°)
	0.00	0.00	0.00	190.90

<b>Plan Sections</b>										
<b>Measured</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg</b>	<b>Build</b>	<b>Turn</b>	<b>TFO</b>	<b>Target</b>
<b>Depth</b>	(°)	(°)	<b>Depth</b>	(ft)	(ft)	<b>Rate</b>	<b>Rate</b>	<b>Rate</b>	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,150.00	0.00	0.00	1,150.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,160.43	30.31	190.90	2,113.95	-256.40	-49.38	3.00	3.00	0.00	190.90	
4,357.98	30.31	190.90	4,011.05	-1,345.54	-259.13	0.00	0.00	0.00	0.00	
5,368.41	0.00	0.00	4,975.00	-1,601.94	-308.51	3.00	-3.00	0.00	180.00	C20 Top Gas
7,518.41	0.00	0.00	7,125.00	-1,601.94	-308.51	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 McLin C20 (111238) - Slot C20
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Project:</b>	McLin	<b>MD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Site:</b>	McLin C	<b>North Reference:</b>	Grid
<b>Well:</b>	McLin C20 (111238)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	McLin C20		
<b>Design:</b>	McLin C20 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	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
<b>Wasatch</b>									
100.00	0.00	0.00	100.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
200.00	0.00	0.00	200.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
300.00	0.00	0.00	300.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
400.00	0.00	0.00	400.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
500.00	0.00	0.00	500.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
600.00	0.00	0.00	600.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
700.00	0.00	0.00	700.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
800.00	0.00	0.00	800.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
900.00	0.00	0.00	900.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
<b>Surf Csg at 1000 MD/TVD</b>									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
1,150.00	0.00	0.00	1,150.00	0.00	0.00	14,364,477.833	905,213.919	39.525150173°N	107.607103653°W
<b>Build 3°/100 at 1150 MD/TVD</b>									
1,200.00	1.50	190.90	1,199.99	-0.64	-0.12	14,364,477.190	905,213.795	39.525148400°N	107.607104025°W
1,300.00	4.50	190.90	1,299.85	-5.78	-1.11	14,364,472.052	905,212.806	39.525134223°N	107.607107004°W
1,400.00	7.50	190.90	1,399.29	-16.04	-3.09	14,364,461.788	905,210.829	39.525105909°N	107.607112952°W
1,500.00	10.50	190.90	1,498.04	-31.40	-6.05	14,364,446.429	905,207.871	39.525063534°N	107.607121855°W
1,600.00	13.50	190.90	1,595.85	-51.82	-9.98	14,364,426.015	905,203.940	39.525007215°N	107.607133686°W
1,700.00	16.50	190.90	1,692.43	-77.23	-14.87	14,364,400.604	905,199.046	39.524937107°N	107.607148415°W
1,800.00	19.50	190.90	1,787.52	-107.57	-20.72	14,364,370.263	905,193.203	39.524853401°N	107.607166000°W
1,900.00	22.50	190.90	1,880.87	-142.76	-27.49	14,364,335.077	905,186.426	39.524756327°N	107.607186394°W
2,000.00	25.50	190.90	1,972.22	-182.69	-35.18	14,364,295.142	905,178.735	39.524646150°N	107.607209540°W
2,100.00	28.50	190.90	2,061.31	-227.27	-43.77	14,364,250.567	905,170.151	39.524523174°N	107.607235375°W
2,160.43	30.31	190.90	2,113.95	-256.40	-49.38	14,364,221.431	905,164.540	39.524442790°N	107.607252262°W
<b>Hold 30° at 2160 MD/2114 TVD</b>									
2,200.00	30.31	190.90	2,148.11	-276.01	-53.16	14,364,201.821	905,160.763	39.524388689°N	107.607263628°W
2,300.00	30.31	190.90	2,234.44	-325.57	-62.70	14,364,152.259	905,151.219	39.524251955°N	107.607292353°W
2,400.00	30.31	190.90	2,320.76	-375.14	-72.25	14,364,102.698	905,141.674	39.524115221°N	107.607321079°W
2,500.00	30.31	190.90	2,407.09	-424.70	-81.79	14,364,053.136	905,132.129	39.523978486°N	107.607349804°W
2,600.00	30.31	190.90	2,493.42	-474.26	-91.34	14,364,003.575	905,122.584	39.523841752°N	107.607378529°W
2,700.00	30.31	190.90	2,579.75	-523.82	-100.88	14,363,954.013	905,113.039	39.523705017°N	107.607407254°W
2,800.00	30.31	190.90	2,666.08	-573.38	-110.42	14,363,904.452	905,103.494	39.523568283°N	107.607435978°W
2,900.00	30.31	190.90	2,752.40	-622.94	-119.97	14,363,854.890	905,093.950	39.523431548°N	107.607464703°W
3,000.00	30.31	190.90	2,838.73	-672.51	-129.51	14,363,805.329	905,084.405	39.523294814°N	107.607493428°W
3,100.00	30.31	190.90	2,925.06	-722.07	-139.06	14,363,755.767	905,074.860	39.523158079°N	107.607522152°W
3,200.00	30.31	190.90	3,011.39	-771.63	-148.60	14,363,706.206	905,065.315	39.523021345°N	107.607550877°W
3,300.00	30.31	190.90	3,097.72	-821.19	-158.15	14,363,656.644	905,055.770	39.522884611°N	107.607579601°W
3,400.00	30.31	190.90	3,184.05	-870.75	-167.69	14,363,607.083	905,046.226	39.522747876°N	107.607608325°W
3,500.00	30.31	190.90	3,270.37	-920.31	-177.24	14,363,557.521	905,036.681	39.522611142°N	107.607637049°W
3,600.00	30.31	190.90	3,356.70	-969.88	-186.78	14,363,507.960	905,027.136	39.522474407°N	107.607665773°W
3,700.00	30.31	190.90	3,443.03	-1,019.44	-196.33	14,363,458.398	905,017.591	39.522337673°N	107.607694497°W
3,737.03	30.31	190.90	3,475.00	-1,037.79	-199.86	14,363,440.044	905,014.056	39.522287035°N	107.607705135°W
<b>Mesaverde</b>									
3,800.00	30.31	190.90	3,529.36	-1,069.00	-205.87	14,363,408.836	905,008.046	39.522200938°N	107.607723221°W
3,900.00	30.31	190.90	3,615.69	-1,118.56	-215.42	14,363,359.275	904,998.502	39.522064204°N	107.607751945°W
4,000.00	30.31	190.90	3,702.01	-1,168.12	-224.96	14,363,309.713	904,988.957	39.521927469°N	107.607780668°W
4,100.00	30.31	190.90	3,788.34	-1,217.68	-234.51	14,363,260.152	904,979.412	39.521790734°N	107.607809392°W
4,200.00	30.31	190.90	3,874.67	-1,267.25	-244.05	14,363,210.590	904,969.867	39.521654000°N	107.607838115°W
4,300.00	30.31	190.90	3,961.00	-1,316.81	-253.60	14,363,161.029	904,960.322	39.521517265°N	107.607866839°W
4,357.98	30.31	190.90	4,011.05	-1,345.54	-259.13	14,363,132.294	904,954.789	39.521437990°N	107.607883492°W
<b>Drop 3°/100 at 4358 MD/4011 TVD</b>									

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well McLin C20 (111238) - Slot C20
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Project:</b>	McLin	<b>MD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Site:</b>	McLin C	<b>North Reference:</b>	Grid
<b>Well:</b>	McLin C20 (111238)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	McLin C20		
<b>Design:</b>	McLin C20 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	
4,400.00	29.05	190.90	4,047.56	-1,365.97	-263.07	14,363,111.861	904,950.853	39.521381617°N	107.607895334°W	
4,500.00	26.05	190.90	4,136.21	-1,411.39	-271.81	14,363,066.445	904,942.107	39.521256319°N	107.607921654°W	
4,600.00	23.05	190.90	4,227.15	-1,452.19	-279.67	14,363,025.647	904,934.250	39.521143763°N	107.607945299°W	
4,651.71	21.50	190.90	4,275.00	-1,471.44	-283.38	14,363,006.400	904,930.543	39.521090662°N	107.607956453°W	
Price Coal										
4,700.00	20.05	190.90	4,320.15	-1,488.26	-286.62	14,362,989.579	904,927.304	39.521044255°N	107.607966202°W	
4,800.00	17.05	190.90	4,414.94	-1,519.50	-292.63	14,362,958.340	904,921.288	39.520958069°N	107.607984306°W	
4,900.00	14.05	190.90	4,511.27	-1,545.82	-297.70	14,362,932.015	904,916.218	39.520885442°N	107.607999562°W	
5,000.00	11.05	190.90	4,608.87	-1,567.16	-301.81	14,362,910.676	904,912.108	39.520826571°N	107.608011929°W	
5,100.00	8.05	190.90	4,707.47	-1,583.45	-304.95	14,362,894.383	904,908.970	39.520781619°N	107.608021372°W	
5,200.00	5.05	190.90	4,806.81	-1,594.66	-307.11	14,362,883.179	904,906.813	39.520750709°N	107.608027865°W	
5,300.00	2.05	190.90	4,906.60	-1,600.74	-308.28	14,362,877.095	904,905.641	39.520733926°N	107.608031390°W	
5,368.41	0.00	0.00	4,975.00	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
Vertical at 5368 MD/4975 TVD - Top Gas										
5,400.00	0.00	0.00	5,006.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
5,500.00	0.00	0.00	5,106.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
5,600.00	0.00	0.00	5,206.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
5,700.00	0.00	0.00	5,306.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
5,800.00	0.00	0.00	5,406.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
5,900.00	0.00	0.00	5,506.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,000.00	0.00	0.00	5,606.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,100.00	0.00	0.00	5,706.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,200.00	0.00	0.00	5,806.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,268.41	0.00	0.00	5,875.00	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
Cameo										
6,300.00	0.00	0.00	5,906.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,400.00	0.00	0.00	6,006.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,500.00	0.00	0.00	6,106.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,600.00	0.00	0.00	6,206.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,700.00	0.00	0.00	6,306.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,800.00	0.00	0.00	6,406.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
6,900.00	0.00	0.00	6,506.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,000.00	0.00	0.00	6,606.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,100.00	0.00	0.00	6,706.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,200.00	0.00	0.00	6,806.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,300.00	0.00	0.00	6,906.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,368.41	0.00	0.00	6,975.00	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
Rollins										
7,400.00	0.00	0.00	7,006.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,500.00	0.00	0.00	7,106.59	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
7,518.41	0.00	0.00	7,125.00	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
TD at 7518 MD/7125 TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
C20 Top Gas	0.00	360.00	4,975.00	-1,601.94	-308.51	14,362,875.892	904,905.409	39.520730607°N	107.608032087°W	
- plan hits target center										
- Circle (radius 25.00)										

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well McLin C20 (111238) - Slot C20
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Project:</b>	McLin	<b>MD Reference:</b>	KB @ 5750.00ft (Original Well Elev)
<b>Site:</b>	McLin C	<b>North Reference:</b>	Grid
<b>Well:</b>	McLin C20 (111238)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	McLin C20		
<b>Design:</b>	McLin C20 P01		

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

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.00	0.00	Wasatch			
3,737.03	3,475.00	Mesaverde			
4,651.71	4,275.00	Price Coal			
5,368.41	4,975.00	Top Gas			
6,268.41	5,875.00	Cameo			
7,368.41	6,975.00	Rollins			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,150.00	1,150.00	0.00	0.00	Build 3°/100 at 1150 MD/TVD	
2,160.43	2,113.95	-256.40	-49.38	Hold 30° at 2160 MD/2114 TVD	
4,357.98	4,011.05	-1,345.54	-259.13	Drop 3°/100 at 4358 MD/4011 TVD	
5,368.41	4,975.00	-1,601.94	-308.51	Vertical at 5368 MD/4975 TVD	
7,518.41	7,125.00	-1,601.94	-308.51	TD at 7518 MD/7125 TVD	