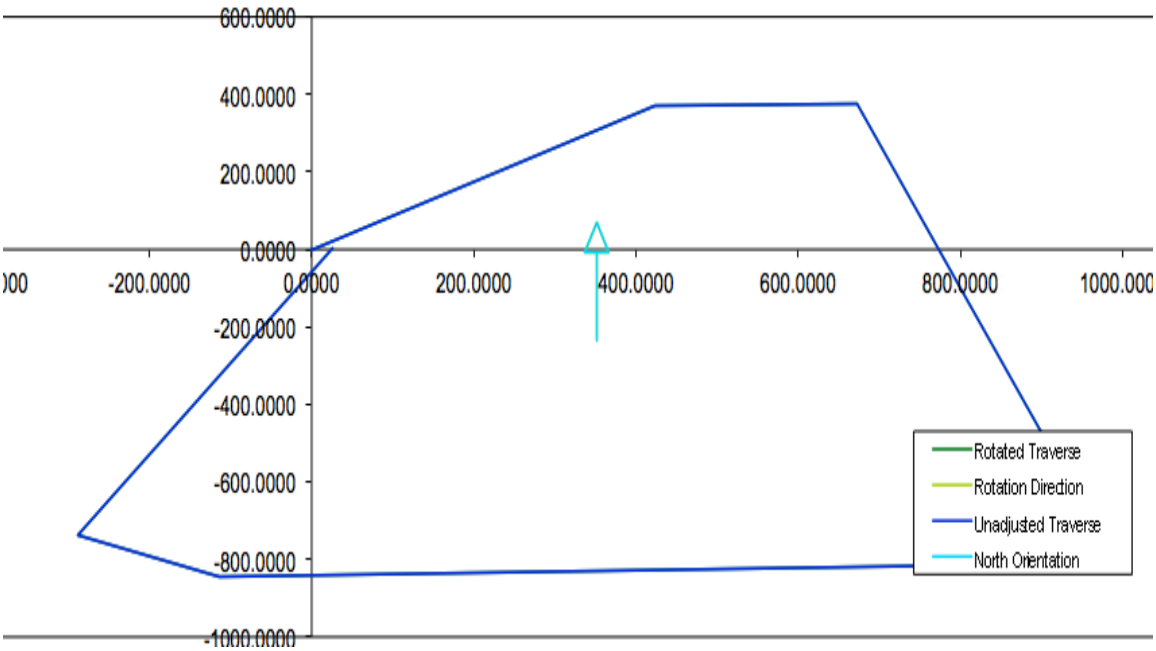

Plane Survey Measurements

Station	X (or E)	Y (or N)	Azimuth(deg)	Slope Dist	VertAngle(deg)	HorizDist	delX	delY
1	0	0	49	594	19			
2			88	255	-12			
3			165	1239	8			
4			268	1105	1			
5			302	206	0			
6			23	806	6			
7								

1st, calculate, calculate horizontal distance, HD = SlopeDist * cos(radians(VertAngle))
Note the radians function applied to VertAngle before the cosine function is applied

Station	X (or E)	Y (or N)	Azimuth(deg)	Slope Dist	VertAngle(deg)	HorizDist	delX	delY
1	0	0	49	594	19	561.6		
2			88	255	-12	249.4		
3			165	1239	8	1226.9		
4			268	1105	1	1104.8		
5			302	206	0	206.0		
6			23	806	6	801.6		
7								

2nd, calculate delX = HD*sin(radians(Azimuth)), dely = HD*cos(radians(Azimuth))

Station	X (or E)	Y (or N)	Azimuth(deg)	Slope Dist	VertAngle(deg)	HorizDist	delX	delY
1	0	0	49	594	19	561.6	423.9	368.5
2			88	255	-12	249.4	249.3	8.7
3			165	1239	8	1226.9	317.6	-1185.1
4			268	1105	1	1104.8	-1104.2	-38.6
5			302	206	0	206.0	-174.7	109.2
6			23	806	6	801.6	313.2	737.9
7								

3rd, add delX, delY to the respective starting points, to get next station location
e.g. add the delX calculated for the leg from station 1 to the starting X for station 1
to get the X for station 2. Corresponding Y's for station 2. Do for each subsequent station

Station	X (or E)	Y (or N)	Azimuth(deg)	Slope Dist	VertAngle(deg)	HorizDist	delX	delY
1	0	0	49	594	19	561.6	423.9	368.5
2	423.87	368.47	88	255	-12	249.4	249.3	8.7
3	673.15	377.17	165	1239	8	1226.9	317.6	-1185.1
4	990.71	-807.96	268	1105	1	1104.8	-1104.2	-38.6
5	-113.5	-846.52	302	206	0	206.0	-174.7	109.2
6	-288.2	-737.36	23	806	6	801.6	313.2	737.9
7	25.053	0.5054						