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Carlson Survnet with ALTA reporting using a Closed Loop traverse

This is in regards to using Survnet Network Least Squares to generate an ALTA report using a closed loop total station traverse raw file.

This document refers to the file "TS_Alta_Sample.zip" with the referenced sample files

This raw file contains a closed loop traverse and then a Survnet project was created to generate an ALTA report to hold a tolerance of 0.07 and 50ppm.

The loop closure was 1 in 28,000 but the Actual to Allowable in the ALTA report of Survnet was close to 2.5 instead of less then 1.0 which would have passed the required specifications.

If you have a traverse such as this example without much redundancy then it will fail the ALTA standards and the ALTA report displays all of the connections as failing.

It is very hard to pass the ALTA Positional Tolerance certification on a large survey with just a simple loop traverse (3 degrees of freedom). The further you get away from the starting point the less you know about your position statistically.

3 Degrees of freedom is a reference to how much redundancy is in your network of measure data and it simply means the Network Least Squares has enough redundant measure data to calculate more then one coordinate solution for each point in the network

The ALTA report in SurvNET shows the positional tolerances required for the ALTA certification. ALTA used to allow other certifications such as 1 in 10,000 style closure but to our knowledge this is no longer allowed.

To get better statistics you need more redundancy or more control points. It is much easier and faster to use GPS to get additional control on your project than it is to run spur traverses with total station equipment.

In summary - the ALTA report calculates the relative error ellipses of the desired connections with a 95% confidence and allows for 0.07' and 50ppm. This is what the ALTA certification of Positional Tolerances requires.