HR-342 Use of GPS for Photogrammetry

Key Words: GPS, Photogrammetry

ABSTRACT

Five test flights were conducted to study the use of GPS in Photogrammetry, three in Iowa, one each in California and Texas. These tests show that GPS can be used to establish ground control by the static method and to determine camera location by the kinematic method.

In block triangulation, six GPS controls are required and additional elevation control along the centerline is also required in strip triangulation.

The camera location determined by aerial triangulation depends on the scale of the photography. The 1:3,000 scale photography showed that the absolute accuracy of the camera location by GPS is better than five centimeters. The 1:40,000 scale photography showed that the relative accuracy of the camera location by GPS is about one millimeter.

In a strip triangulation elevation control is required in addition to the camera location by GPS. However, for block triangulation camera location by GPS is sufficient. Pre targeting of pass and tie points gives the best results in both block and strip triangulation.

In normal mapping for earth work computations the use of 1:6,000 scale photography with GPS control instead of 1:3,000 scale is recommended.

It is recommended that research be done in the use of GPS for navigation in aerial photographic missions. It is highly recommended that research be done in the use of GPS to determine tip and tilt of the aerial camera, that is required in stereoplotting.