Geography 407. Remote Sensing.
Spring 2006
Photogrammetry. Exercise 2: radial/relief displacement

Photo: Honolulu Harbor, photo 4381-7

1. The top of the Empire State building appears 2.46 inches from the nadir of a photograph taken 6150 feet above central Manhattan. If the top is displaced half an inch from the bottom, how tall is the building?

2. On a 1:7920 scale photograph that includes the Eiffel Tower, the distance from the nadir to the top of the tower is 2.18 inches and the length of the displacement is 0.542 inches. If a camera with a 6 inch focal length was used, compute the height of the tower.

3. Locate the principal point of the Harbor photograph. Assuming an altitude of 1420 feet find the height of:

      (a) the big white tank at the top of the photo

      (b) the mid-sized tank located right next to (just to the right and below) the tank in (a)

4. Measure the shadow length of this same mid-sized tank (in 3b). Using the height from 3(b) above, compute the tangent of the sun angle.

5. Determine the heights of the following from their shadow lengths. (Since the sun angle is the same everywhere in the photo you can use the value of its tangent computed in question 4 above.):

  (a) the big white tank in 3(a)

  (b) the four tanks located together near the center of the photo

  (c) the tree located near the bottom left corner of the white rectangular building lying equidistant from the set of four tanks and the two tanks from question 3.

6. Compute the volume in gallons of the large tank in 3(a). (1 cu. ft. = 7.5 gals.)

7. Compute the volume in gallons of each of the four tanks located together near the center of the photo.