AERIAL PHOTO

Introduction

- Each and every thing on the earth is a geography, weather it is tangible or non tangible
- Map is the symbol of geography like the national flag of a country
- If we incorporate each and every thing on the earth then it will be a perfect map but it is not possible and no such map is available
- maps are highly selective and we ignore certain features
- in maps all features are in reduced form

HISTORY

- camera invented in 1840-France
- air craft –Amercia-1903 by right brothers
- air photos were taken with the help of birds, kites, balloons and mountains
- 1860 Boston city of America was photographed
- 1909 Italy city was photographed from air-craft

Essentials for the study of air photo

- instruments(stereoscope)
- scale of air photo
- drawing of maps from photo
- after 1930 in sub continent maps were corrected from air photos

TYPES OF PHOTOGRAPHS

1. terrestrial photographs (camera is horizontal/parallel to earth)
2. aerial photographs (taken vertically from air and the angle is 90 degree, up to 3 degree tilt is allowed)
3. oblique photograph (between terrestrial and vertical)

SCALING

- **POINT SCALE**
- **AVERAGE SCALE**
  - Distance is the basic parameter for the aerial photograph. It depend upon the height of camera/ vertical distance from the earth
  - The distance between lens and photograph is called Focal length
  - Point scale = focal length / Altitude of the platform
- Example: Plane flying at a height of = 5680 feet ASL
- Ground height = 1200 feet ASL
  - (5680-1200=4480feet is the altitude of plane)
- Focal length of camera = 6 inches
- Point scale = focal length of camera/altitude of plane
- = 6 / 4480 X 12 =8960
- R.F. 1:8960
- Scale on the photo is average not point

For average scale there are two methods

- Identify two points on the photo and measure the distance and then take a photograph and go to field and measure the distance on the ground.
- Identify two points on the photo and measure the length and measure the distance on the map

AIRPHOTO SCALES IN PAKISTAN

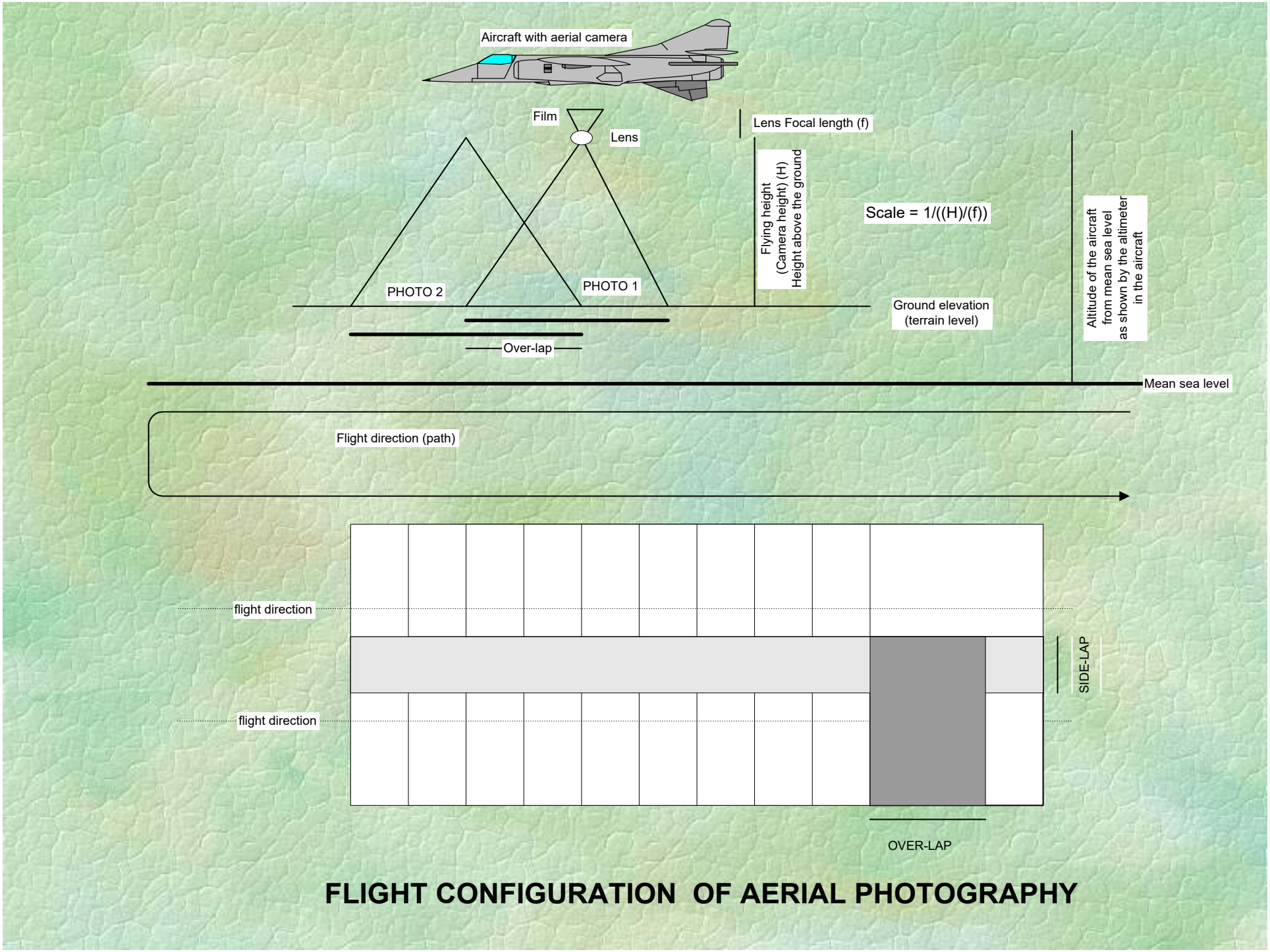
- RF.1:5,000
- RF.1:30,000
- RF.1:50,000

PURPOSE OF AIR PHOTO

–Identify features on the earth surface, while on maps features are put

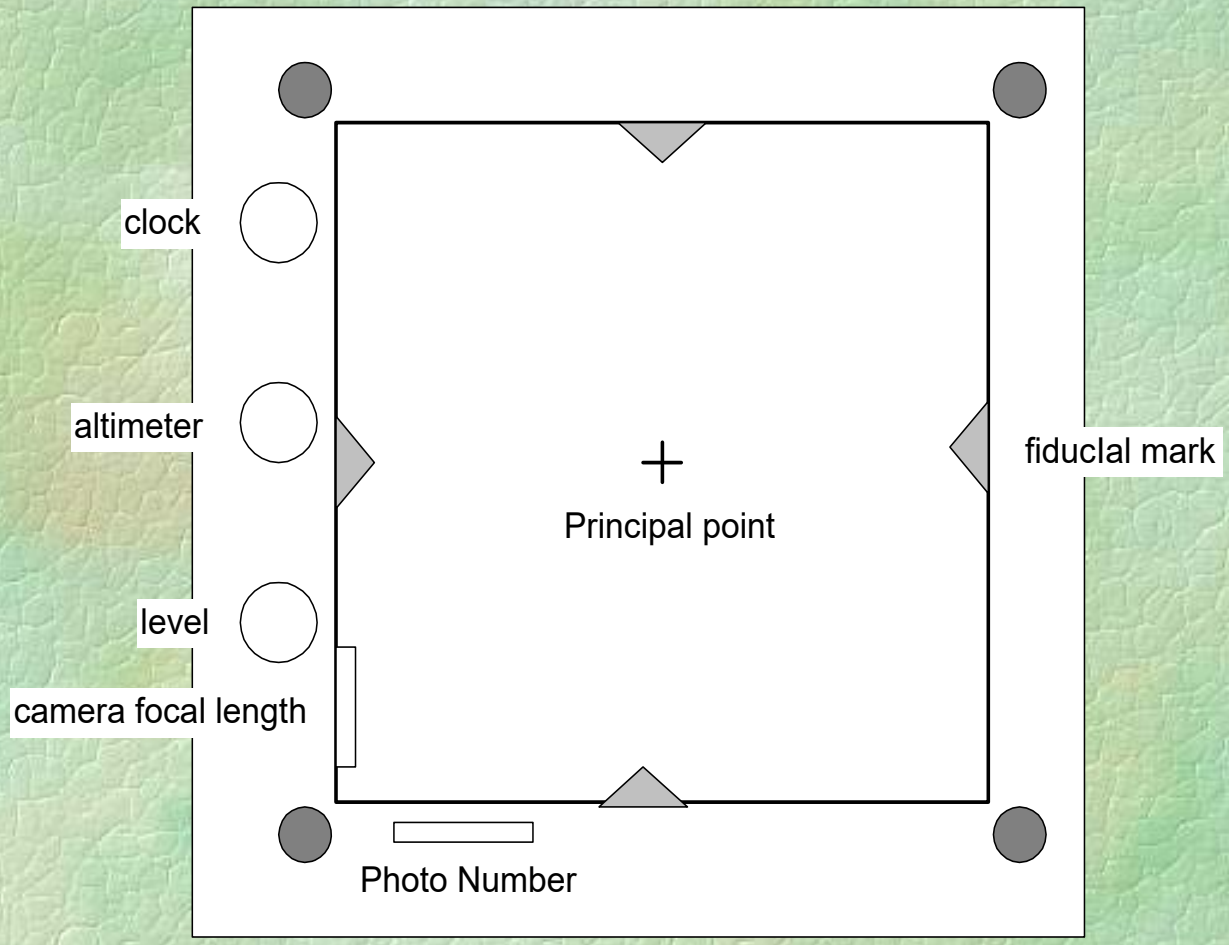
–To measure features horizontally and vertically

–To make maps from the aerial photograph



FLIGHT CONFIGURATION OF AERIAL PHOTOGRAPHY

Aerial Photograph

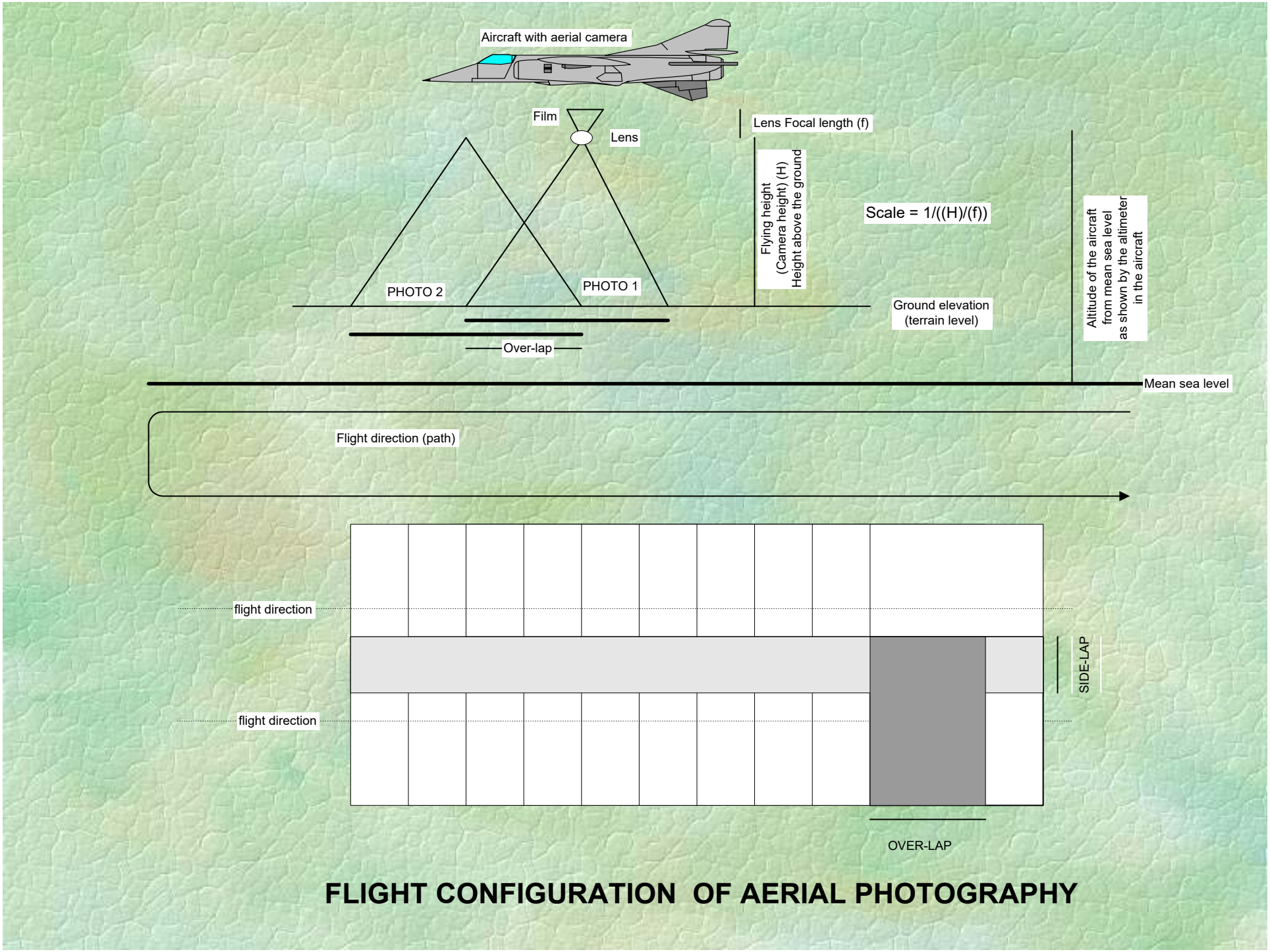


The flying for aerial photographs of the terrain has been designed to meet the conditions with sixty to eighty percent forward overlap between successive frames of photographs along a straight flight strip (flight line)
and
twenty percent lateral (side) lap between adjacent flight strips.

The flight configuration of aerial photographs is decided so that aerial photographs are to be viewed stereoscopically to give the three dimensional images.

Overlapping pair of aerial photographs creates the apparent image displacement for the same object along the flight course because the projected images on the pair of aerial photographs are taken from two slightly different locations.

Relief displacement increases radically from the centre of the aerial photographs because of the central perspective projection.



FLIGHT CONFIGURATION OF AERIAL PHOTOGRAPHY

Guides to Interpretation of Aerial Photographs

The vertical photograph is the most versatile of the aerial photographs. Unfortunately, the relation of the camera to the ground gives an unfamiliar aspect of familiar objects, often in much reduced size. Too, there is an abundance of detail because of the non-selective nature of the camera lens. Important items may be subordinated.

Some of the photo image characteristics for the terrain features interpretation are as follows:

Shape

Size

Shadow

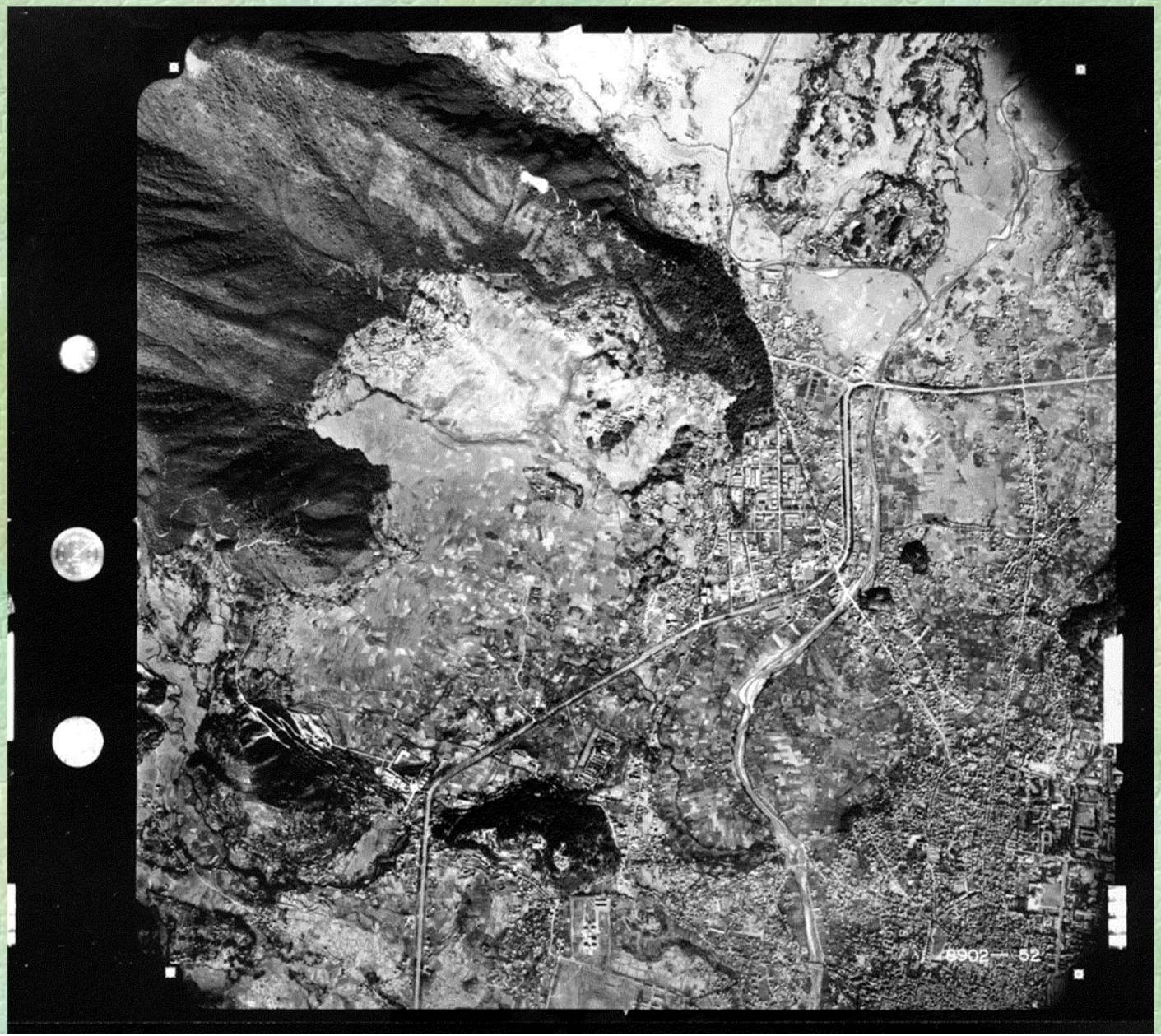
Tone/Color

Texture

Patter

Relation to surrounding objects (Association)

Aerial Photograph



Guides to Interpretation of Aerial Photographs

Shape:

Shape may identify. The specific shape of an object, as it is viewed from above, will be imaged on a vertical photograph. Therefore, the shape from a vertical viewpoint should be known. For example, the crown of a conifer tree looks like a circle, while that of a deciduous tree has an irregular shape. Airports, factories, and so on can be identified by their shapes.

Guides to Interpretation of Aerial Photographs

Size:

Comparative sizes may identify. A proper photo-scale (image resolution) should be selected depending on the purpose of the interpretation. The approximate size of an object can be measured by multiplying the length of the image by the inverse of the photo-scale.

Guides to Interpretation of Aerial Photographs

Shadow:

Shadow is often a clue by characteristic shape. Shadow is usually a visual obstacle for photo/ image interpretation. However, shadow can also give height information about a tower, tall building, mountain ranges, and others, as well as shape information from the non-vertical perspective - such as the shape of a bridge.

Guides to Interpretation of Aerial Photographs

Tone/Color:

Photographic tone or color is the characteristic colors and/or gray shades of scenes and objects. The continuous gray scale varying from white to black is called tone. In panchromatic photographs, any object will reflect its unique tone according to the reflectance. For example, dry sand reflects white, while wet sand reflects black. In black and white near infrared photographs, water is black and healthy vegetation white to light gray. Tone denotes the spectral reflectance of the features.

Guides to Interpretation of Aerial Photographs

Texture:

Texture in aerial photographs is created by the frequency of tonal or color changes. Texture is a group of repeated small patterns. For example, homogeneous grassland exhibits a smooth texture, coniferous forest usually show a coarse texture. However, this will depend upon the scale of the photograph or image.

Guides to Interpretation of Aerial Photographs

Pattern:

Pattern is a more or less orderly arrangement of manmade objects or natural elements. Pattern is a regular, usually repeated, shape in respect to an object. For example, rows of houses or apartments, regularly-spaced rice fields, interchanges of highways, and so on, can provide information from their unique patterns.

Electro-magnetic remote sensing of the earth's resources