CE-103

Surveying

Lecture-10

Photogrammetry

An Area is 20 miles long in the north-south direction and 16 miles wide in the east-west direction is to be photographed with a lens having 12 inch focal length for the purpose of compiling a topographic map. The photo graph size is 9 by 9 in, the average scale is to be 1:10000 effective at an average elevation of 800 ft above sea level. Overlap is to be at least 60% and sidelap 25%. The ground speed of the autograph will be maintained at 200 mph. The flight lines are to be laid out in a north-south direction on an existing map having a scale of 1:50000. The two other flight lines are to coincide with the east and west boundaries of the area, determine the data for the flight plan.

a) $\frac{1\text{ ft}}{\text{H ft}} = \frac{1}{10000} \Rightarrow \text{H} = 10000\text{ ft} \quad \therefore \text{Flying Height} = 10000 + 800 = 10800\text{ ft}$

b) Ground distance between flight lines (east-west): $\frac{9 \times 0.75}{12} \times 10000 = 5625\text{ ft}$

c) Ground distance between exposures (north-south): $\frac{9 \times 0.4}{12} \times 10000 = 3000\text{ ft}$

d) Number of flight lines: $\frac{16 \times 5280}{5625} + 1 = 16.02 \approx 17$

e) Adjusted Ground Distance between flight lines: $\frac{16 \times 5280}{16} = 5280\text{ ft}$

So, Side lap will be greater than 25%

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f) Spacing of flight lines on flight map: $\frac{5280}{5000} \times 12 = 1.27 \text{ in}$

g) Exposure interval: $\frac{3000}{200 \times \frac{22}{15}} = 10.2 \text{ sec} \approx 10 \text{ sec}$

h) Adjusted Ground Distance between exposure: $200 \times \frac{22}{15} \times 10 = 2934 \text{ ft}$

i) Number of Photograph per flight line: $\frac{20 \times 5280}{2934} + 4(\text{ two extra strip }) = 40$

j) Total Number of Photograph : $40 \times 17 = 680$

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Flying Height	10800 ft
Number of Flight line	17
Spacing of flight lines on flight map	1.27 inch
Exposure Interval	10 sec
Number of Photograph Per Flight	40 Nos
Total Photograph	680 Nos

Thank You

Stay Safe
Stay Aware