



Original : ENGLISH

- ranges of co-ordinate carriages displacement X + 50 mm - 120 mm
Y ± 120 mm
Z 127 - 190 mm
- size of the obtained photo 18 x 24 cm
- rate of carriage moving referred to the air photo in differential photorectification . 1,5 - 6,0 mm/sec
- length of slit diaphragm 1,0; 1,5; 2,0; 4,0 mm
- dimensions of instrument width 1350 mm
depth 1050 mm
height 1250 mm
- weight ≈ 450 kg
- resolution of the photoprojecting device 40 lines per mm

The plotter permits to obtain air photos on the film as on the glass plates. The glass plates are preferable because they do not change while chemical and photo processing; this is much important in photoplan making with large factor of the air photos enlargement.

As a rule the air photos are produced as the rectified negatives at arbitrary scale and further they are transformed projectively to the photo-mosaic scale by means of magnifier. Such a method permits to take into account more completely photomaterial deformation and to abandon provisional smoothing of the rectified photos optical densities. Moreover possibility to carry out orthophotorectification without absolute orientation of the model is appeared in the most part of cases. Studies have been made in the USSR demonstrated: when absolute tilt angles of the photos were less 45' geodetic orientation and scaling before profiling was not compulsory and orthophotonegative errors being appeared due to above simplification would be put out while projective printing of the orthophotos. Since in the USSR in the majority of the cases air survey is carried out with the help of gyrostabilizing devices above mentioned requirement is fulfilled as a rule.

Due to application in the OFPD concept of the photo plotting with affine transformation the process of relative and absolute orientation is simplified significantly and it is possible to handle the photos obtained by the air photo cameras with any focal length. OFPD photomagazin is mounted on the holder tied directly with X - carriage, and "dead motion" errors peculiar to the instruments with additional transmission units between co-ordinate carriages and magazine (celsyn, mechanic and so on) are eliminated.

Efficiency of operation of OFPD is shown by the following time consumptions: relative orientation - 10^m, absolute orientation - 20^m, profiling 15^m to 60^m (versus to relief difficulty). Test found instrumental error of the OFPD is $m_x = m_y = 0,01$ mm.

To estimate real photos orthophotorectification accuracy by means of orthoprojector five orthophotos on the scale of 1:25,000, air survey at 1:48,000 scale, and focal length of the air camera $f_k = 100$ mm were produced,

three orthophotos in scale 1:10,000 and air survey on the scale of 1:17,000 were also made up. Elevations within stereo pair amounted to 800 m. Orthophotorectifying was performed without absolute orientation. Accuracy estimation has been produced over redundant points and cuts between neighbour photos. The results are:

- standard error $m_x = m_y = \pm 0,15$ mm; maximum deviations do not exceed 0,4 mm;
- contours' shifts at the joints of the adjacent orthophotos (along cuts) are:
0,2 mm - 50 %, 0,3 - 0,5 mm - 45 %
0,6 - 0,7 mm - 4 %, more 0,7 mm - 1 %.

These results show OFPD orthoprojector assures photomosaic producing for mountain terrain with required accuracy.

Along with the construction of orthophotoprojector investigations were performed to high up differential rectifying productivity. The result was automated orthophotorectifier DFT. Its own distinctive feature is use of digital information for automatic profiling, this information being obtained along with relief drawing on the universal stereophotogrammetric plotter. Automatic plotter operating with information being obtained before is known - orthoprojector GZ-1 (West Germany), but to get this data special measurements of stereo model are necessary, that is special time consuming is required. With DFT information is obtained at the same time as sketching is carried out for the map (photomap) compiling.

The second feature of this plotter is the device to do away with the errors at the orthophoto bands edges. Thanks to it the length of the slot may be enlarged as three times. Therefore profiling productivity will be enlarged correspondingly. The plotter DFT enables to increase efficiency of labour when orthophotorectifying due to automation of profiling and due to enlarged slot length. Plotter's provision investigations have demonstrated good results.