



THE ROLE OF AERIAL PHOTOGRAPHY IN THE CREATION OF TOPOGRAPHIC MAPS

¹Tukhtamishev Shukhrat Shermanovich, ²Khudaykulov Shoxruz Shukhrat o'g'li, ³Omonov Ismail Kholboevich

Senior teacher, Samarkand State Architectural and Civil Engineering Institute "Department of Geodesy and Cartography"¹, Teacher, Samarkand State Architectural and Civil Engineering Institute "Department of Geodesy and Cartography"², Senior teacher, Samarkand State Architectural and Civil Engineering Institute "Department of Geodesy and Cartography"³

ANNOTATION

The purpose of this article is to help organizations that produce the essence and features of the PHOTOMOD program to create an aerospace industry that will make it easier, more efficient, and more efficient.

Key words: *plan, map, drone, shooting, deformation, route, transformation.*

With the development of modern technologies in all areas of the world, the rapid development of computer technology in our country, the growth of production, the possibility of creating new programs, the efficiency of work is increasing. The development of all modern advanced technologies in the field leads to the attainment of the pinnacle of science. In addition, in the field of geodesy, cartography and cadastre, the use of electronic programs in the implementation of topographic and cartographic work, changes in all cities of the country, the need to update the maps of territories in agriculture, industry and other areas. Aerial photographs are created using aircraft, spacecraft and drones. We need to prepare aerial photographs across the region. In this case, it is convenient for us to prepare aerial photographs using the program "RNOTOMOD".

Aerospoty is divided into three types depending on the method of development of aerial photographs and the type of product to be produced.

1. Contour aerial photography. In this case, mutually parallel routes are selected across the area to be photographed. This survey takes into account the fact that the aerial photographs overlap for a certain period of time, not exceeding the specified coverage percentage. The resulting aerial photograph is not considered a photographic plan. This is due to image deformation, sloping flight and terrain relief and other factors. To create a photoplan, the aerial photographs are scaled to the same scale.

2. Combined aerial photography. In this case, the contour shot and the menu shot are carried out together.

3. Stereotopographic survey. In this survey, the camera development of overlapping aerial photographs is carried out in a universal or differential manner.

In the preparation of aerospace, aircraft are selected depending on the task assigned. Aircraft must also comply with the following requirements.

- Location and location of the aerial camera.

- Flight time and flight altitude.

- The speed of the aircraft should be between 180 - 450 km / h

The aerial photography flies in multiple routes, routes and single routes.

When photographing, the longitudinal coverage is usually 60% to 80%, the minimum value of the longitudinal coverage should be 56%, and the maximum value 85%. The obtained aerial photographs were processed using a stereocompressor. It took a long time. Currently, this work is being carried out effectively in the program "RNOTOMOD". The main goal of development using electronic software is to create systems that can fully meet modern requirements.

Digital photogrammetry in the program "RNOTOMOD" includes a complete set of tasks, from the use of satellite imagery and aerial photography to the creation of a relief model, the creation of a digital topographic map.

The RNOTOMOD system includes aerial photography and scanning image processing tools using various sensors such as IKONOS, QuickBird, SPOT, ASTER, or IRS. The RNOTOMOD IT module includes the processing of initial data, input of images, internal orientation, input of coordinates and measurement of base points, input of connection points in the region of transverse and longitudinal coverage.



a)

б)

1-picture

Once all the necessary data have been collected, the phototriangulation block in the RNOTOMOD Solver module is corrected. The RNOTOMOD IT program includes the following processing steps.

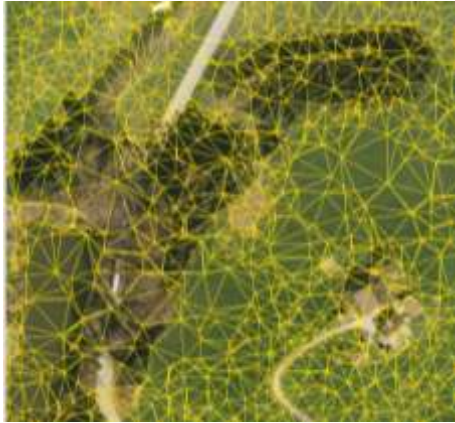
1. Project information Displays the current status of the project. This is done by typing the name and type of the project. For example, information is provided about which folder, in which file, and by what name it is stored.

2. Forming a block (collection), selecting the route of aerial photographs, a list of routes

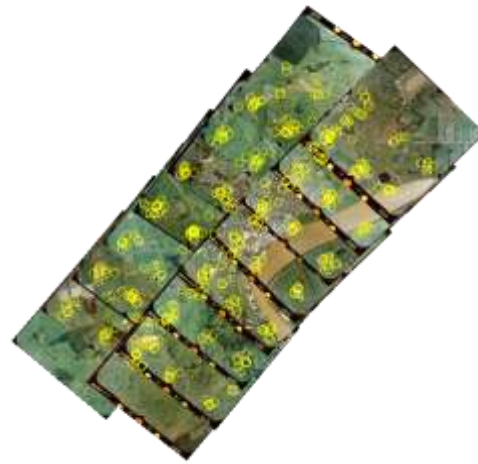
2203-2109

2231-2227

In this case, a network of phototriangulation is carried out through aerial photographs (Fig. 2) and each photo is tied on top of each other and marked. (Figure 3)



2-picture



3-picture

The aerial photographs are scanned and electronically scanned. The resulting object will be projected. The project is linked by routes. 6-8 opoznak bases 6-7 in height and 6-8 in width will be taken, then aerial photographs will be taken on opoznak. The suspended project will be processed in four stages.

The first stage, internal orientation, will have 8 orientation marks on each aerial photo. Its error should not exceed 0.020.

The second step is to measure the base points. At this stage, the x , o coordinates and height h of all the opoznaks in the project are found, then they are determined by how many opoznaks fell on which aerial photographs and they are placed in such a way that all opoznaks are determined on the aerial photographs should not exceed 0.020 altitudes. Errors should not exceed 0.200 on a 1: 2000 scale and 1.00 on a 1: 10000 scale.

The above process then proceeds to the DTM block, where each aerial image is scaled to the same scale (transformation), plus the x , u coordinates are determined for each aerial image, and the average area of the aerial image is found. Once the middle area is found, the frame where the orthophoto is created is drawn. In this way, all aerial photographs are divided into frames and a network of aerial photographs is drawn.

This mesh is made using special stereo glasses. At the end of this stage we will move to the "Masaik" block. Each orthophotoplan is taken separately, then a folder is created on each of the orthophotoplan sheets and exported separately and placed in this folder.

In order to orient the orthophotoplans, a "mar" folder is created in advance, and the orthophotoplans are printed and put into operation. Once the orthophotoplan sheets are identified, they are processed in the Stereo Dravv panel of the RNOTOMOD program. In Stereo Dravv, settlements, horizontals, canals, roads and elevation points are identified and drawn using RNOTOMOD glasses.

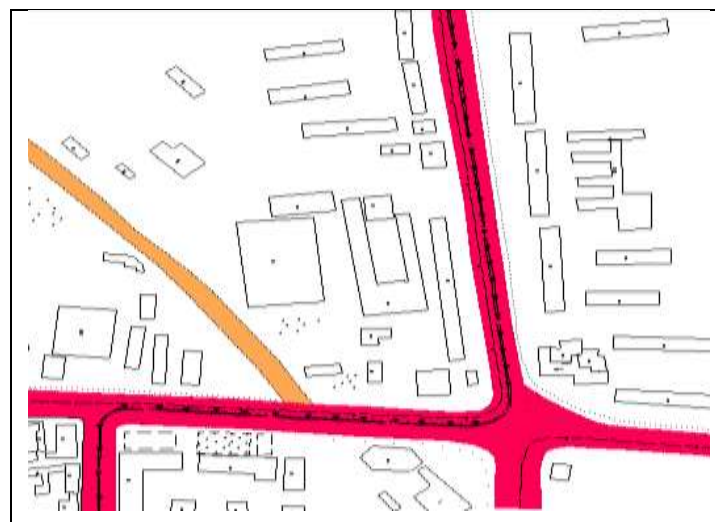
If we look at the example of the Great Silk Road in Samarkand, the aerial photograph is made into a photoplan and illustrated with the help of software.



4-picture, Great silk road

5-picture, Great Silk Road

Spatial image of the streetraster view



6-picture A vector view of the Great Silk Road

We can see the map of the work done in Figure 6. If there are changes, they can be changed at any time.

When the drawing is finished, it is exported to the "Vector" program.

CONCLUSION

In the "Vector" program, the swatches of the cards are made, drawn neatly and clearly, and made ready. It is then sealed and handed over to a special section. RNOTOMOD 6.3 is the latest new version, which automatically performs the above steps. As a result of the development of new technologies and innovations in the field of digital photogrammetry, a number of stages of the program "RNOTOMOD" have emerged, as a result of which the development of quality and ease of use of these technologies facilitates the work of organizations and enterprises.

REFERENCE

1. Company RNOTOMOD 6.1. 2014
2. №3 (1), Geoinformkadastr, T.2002
3. Ҷ.Ю. Safarov, X.A. Abdurahimov, RK Oimatov. Geoinformation cartography. T, 2012
4. DatafromtheInternet.

