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Creating topographical plans to use drones

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ABSTRACT: This work provides the creation of topographic plans using drones. Learn about the possibilities and benefits of making topographic plans using drones and learned from the Phantom 4 RTK drones.

KEYWORDS: drones, card, phantom, aerofotoplane, GPS, GLONASS, cartography, decoding.

I. INTRODUCTION

Drones are your closest supporter. In the age of technology and technology, innovations and changes continue to amaze us. Drones are one of the most widely used devices in the world today. Drones are unmanned aerial vehicles and are currently in demand in various areas. Drones are now widely used in the military, film, mail, agriculture, construction, geodesy and cartography industries. Today we are talking about the benefits of using drones in geodesy, cartography and cadastre, and how to create topographic maps and plans using them.

The advantages of drones in geodesy and cartography.

Using drones to create topographic maps and plans can significantly increase the amount of work to be done and reduce the time and cost involved.

The type of drones helicopters and aircraft are currently being used to create topographic maps and plans. The type of drones helicopters can range from 20 to 50 square feet in one flight, and the type of aircraft - up to 2,000. Typically, it takes about 10 to 15 minutes to prepare the drones for the job, and the range of the drones is determined by a special device connected to the drone wirelessly, and the droning scheme and balloon options are selected. Flight planning is mainly done at the offsite, taking into account the wind speed and weather conditions. It should be noted that the technology has not yet taken up the full geodesic position. Drones are expertly supervised from top to bottom in the process of creating topographic plans using drones

II. MAIN PART

The order of use of drones in geodesy is as follows:

1. Permit to Flight Safety Inspection;
2. Preparation of drones for flight;
3. Drag the drone over the object and select the required balloon;
4. Obtaining aerofotoplane of the area using a drone;
5. GPS connection and determination of central coordinate;
6. Photogrammetric processing data - obtaining orthophotoplane of field, obtaining spherical model of field, obtaining spherical model of relief;
7. Upload the data to AutoCAD;
8. Dehydration of orthophotoplanes;
9. Linking the received data;
10. Make a topographic map of the requested area.

Currently, drones are ahead of modern electronic tachometers in terms of performance. The electronic tachometer is an average of 3 points per minute, and the dirons are definitely superior to this process, reaching hundreds of points and photographed with orthophotoplane, aerophotoplane, spherical model coordinates and spatial data due to their high quality camera. . With this device, which is based on high accuracy and speed, we can quickly and accurately create any scale topographical maps and plans, such as morning urine at the hands of the client. This is a much-needed technology for today's ever-expanding and innovative.

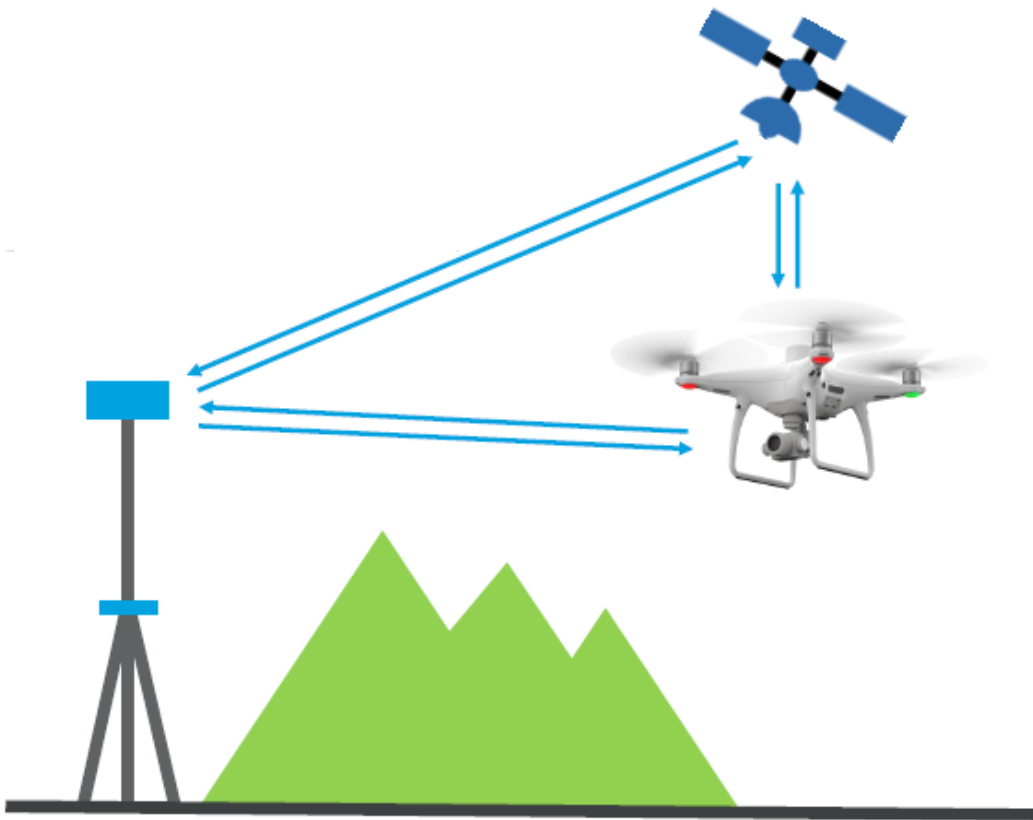


Figure 1. How to connect drones to GPS base station.

Prior to launching drones, the operation was mainly connected to geodetic networks and special features (opoznak) were built in the area, which now does not require the linking of modern, self-propelled structures to these networks. relieves stress. This is an example of DJI's Phantom 4 RTK drone for 2018.

Phantom 4 RTK - This modern self-propelled GPS receiver has a built-in GPS that transmits data to a GPS base station with high accuracy data (Figure 1). The RTK's 20-mp camera may not be the focus of average users, but is a major tool for geodesy. The Phantom 4 RTK is designed for high quality and precision work that is designed to meet the specific needs of users and ensure fast and accurate performance. This RTK model works on GPS, GLONASS and Galileo systems and transmits data in cm. The Phantom 4RTK stores all the data it receives on the microSD card and opens a separate folder for each flight. The Phantom 4 RTK is a high-precision invention technology that is several times more efficient than other drones and saves up to 50% of user time. A distinctive feature of the RCC is that a 30-minute flight replacement for a large area will automatically replace the jacket at the point of departure, and will continue to link the ceiling after the amplifier has been replaced (Figure 2).

Phantom 4 RTK is a special module designed for geodesy and cartography. Card creation with RTK is easy, easy and efficient.

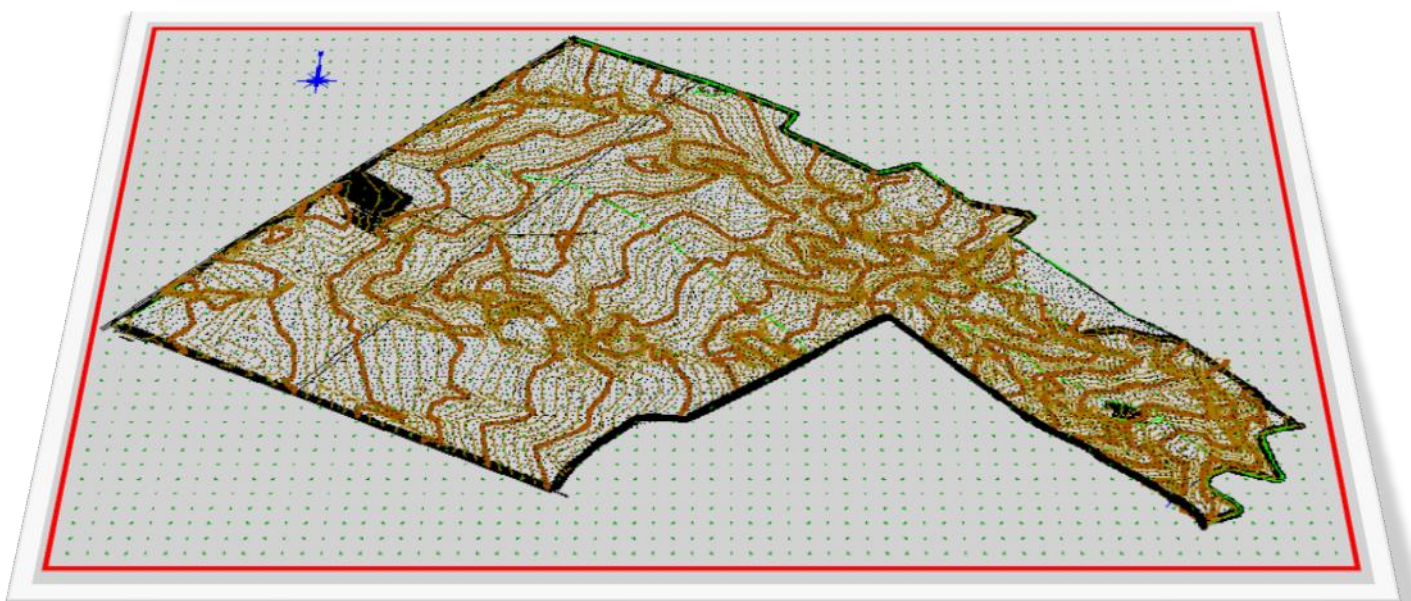


Figure 2. Opportunities to use drones in our country

According to the decision of the Cabinet of Ministers of the Republic of Uzbekistan № 332 dated November 26, 2014, the use of unmanned aircraft is permitted only on the basis of a separate decision of the Cabinet of Ministers and their entry into the territory of the Republic of Uzbekistan.

According to the Regulations of the Cabinet of Ministers of the Republic of Uzbekistan dated August 31, 2016 № 287 "On the use of unmanned aircrafts in civil and state aviation of the Republic of Uzbekistan" the rules of operation and registration of this unit are provided. Specifically its authorized body is the Republic of Uzbekistan "Flight Safety Inspection". In addition, the Geoinnavigaion Center, which is part of the Part 1 of the Cabinet of Ministers Resolution 332, may be used. The center is authorized to sell and lease UAVs.

Topographic Card Planning is the primary and integral part of all planning projects, so any part of the project, big or small, will start with topographic planning. We consider the performance of elixron tachimometers and drones in the development of topographic maps and plans of the area as an example of the process of creating a topographic plan for new plantations on an area of 1,140 hectares in the district of Kashkadarya.



III. CARRYING OUT GEODETIC SURVEYS

Before each topographic survey, geodetic surveys will be collected, which will provide full information about the area under construction, which will serve as a basis for the proper organization of topographic work.

As a result of the observations, we made a net 300x300 cm, taking into account the curve of the relief. This means that the measurements are crossed every 30 meters. It collects 13342 dot coordinates on a total of 1,140 hectares. If an area is obtained by using a drone-free elixron tachometer, 1 point per minute in the open space is obtained at 60 dots per



hour. If geodesists work 8 hours a day $8 * 60 = 480$, it will take $13342/480 = 28$ days to complete the field, which means that one month will only be spent on field work. After hard and hard work you will also need to do cameral work, which in itself is a huge expense and time consuming. With Dirons, all operations will be completed within two days, including location survey, pre-testing, commissioning and mapping, and within three days the topographic plan will be in the hands of the customer.

IV. CONCLUSION

We will save a month and a lot of money in comparison to the traditional method. Nowadays the card is important in terms of speed, quality, and priority in making plans. This can be done indirectly with drones and is much more efficient

To sum up, just because any modern technology does not mean that it has replaced geodesy, that there is always a need for a well-rounded, well-trained and quality professional honored.

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