RESEARCH ARTICLE

Application of Remote Sensing Aerial Survey Technology in Map Surveying and Mapping

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Abstract: This research discusses the application value of remote sensing aerial survey technology in map surveying and mapping, analyzes the commonly used remote sensing aerial survey technology, and finally analyzes the application strategy of remote sensing aerial survey technology in map surveying and mapping, aiming to use remote sensing aerial survey rationally in map surveying and mapping work. Technology, to give full play to the maximum effect of this technology, to ensure the overall efficiency of map surveying and mapping work.

Keywords: Remote sensing aerial survey technology; Map; Surveying and mapping; Application

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1. Introduction

In recent years, the continuous development of modern technology has effectively promoted the rapid development of different industries. The use of advanced technology in map surveying and mapping is conducive to ensuring the quality of the map, the accuracy of the surveying and mapping, and preventing errors caused by related factors [1]. Therefore, it is recommended to use remote sensing aerial surveying technology in map surveying to avoid being affected by weather factors and to obtain the most ideal map surveying operation effect.

2. Discussion on the Application Value of Remote Sensing Aerial Survey Technology in Map Surveying and Mapping

Remote sensing aerial survey technology is one of the forms of long-distance detection technology. It uses sensors to radiate the surface of an object, detect the shape of the object, and then reflect the shape of the object to the remote sensor. In the application process of remote sensing technology, many types of technology will be used to perform technical functions. The surveying and mapping area detection photos are taken in the form of aerial photography. After the photos are formed, the acquired images can be stored in the server, and the aerial survey graphics can be obtained after subsequent calculations. Relevant data can be classified into the remote sensing data collected during the analysis of the same period, which is conducive to obtaining information in time and comparing the corresponding map areas [2]. At this time, visual information will be gradually formed, data models will be built for key areas, and related graphics of detection data will be observed. This technology can be applied to map surveying to facilitate the extraction of relevant data and information at the first time, reducing errors caused by weather factors, and avoiding errors at the same time. The misreporting of map information is of great value when used in map surveying and mapping.

3. Commonly Used Remote Sensing Aerial Survey Technology Analysis

3.1 Application of Aerial Survey Remote Sensing Technology

This technology is a relatively commonly used technology. Its application in map surveying and mapping can ensure the accuracy of the map. It combines two technologies: aerial surveying and remote sensing. The use of remote sensing technology can improve map quality,

remote data analysis and processing capabilities, and ensure map production efficiency and The advantage of map output rate is outstanding. In recent years, with the sound development of remote sensing technology, the use of this technology in geomorphological detection can measure data related to bad environment and topography, and can effectively guarantee the safety of surveying personnel.

3.2 Application of Aerial Photography Mapping Technology

Technical support for map surveying and mapping can improve the accuracy of surveying and mapping. The use of aerial photography technology in the implementation of map surveying and mapping can not only improve the overall level of surveying and mapping, but also help ensure the accuracy of subsequent data analysis results. With the continuous optimization of photography technology, aerial photography technology has developed rapidly, and the application effect of different types of equipment and instruments is better. In the map surveying and mapping work, the professional level of surveying personnel is relatively high, and they need to use relevant professional surveying technology rationally. , Data processing of later information in a timely manner. The application of aerial photography technology in map surveying can reduce the difficulty of manual operation. Even if the operation is in a bad environment, it will not be affected by weather factors and cause shutdown problems, and can reduce related interference and ensure the accuracy of measurement results [3]. The combined application of aerial photogrammetry technology and laser scanner technology will gradually form the best results of information processing with three-dimensional data, and provide technical support for land planning, coordinate calculation, mapping and other aspects

3.3 Application of Intelligent Integration Technology

Intelligent integration technology is a perfect technology based on remote sensing aerial survey technology. The combination of the two can improve the performance of remote sensing aerial survey technology and standardize the application process of remote sensing aerial survey technology. At the same time, the use of an intelligent integrated system will obtain the effect of remote sensing aerial survey technology to extract surveying and mapping information and surveying and mapping data, which is convenient to lay a solid foundation for timely storage, sorting, processing, and analysis, especially for areas with complex geographic environments. The effect of using this technology is ideal. There is a lot of information in map surveying and mapping. Remote sensing aerial surveying technology can collect relevant information and data, and then sort, analyze and process. With the help of intelligent technology, a large amount of information and data can be analyzed, thereby promoting the good development of remote sensing aerial surveying technology. In terms of improving the function of this technology, reducing the burden on staff, and ensuring the accuracy of surveying and mapping data.

4. The Application Strategy of Remote Sensing Aerial Survey Technology in Map Surveying and Mapping

4.1 Application Countermeasures in Preliminary Preparations

In order to improve the overall quality of the map surveying and mapping work, in addition to improving the process, the stability of the surveying and mapping data should be ensured. The reasonable use of remote sensing aerial surveying technology will provide support for the smooth progress of the map surveying and mapping work. The personnel carefully do the preliminary preparation work, determine the surveying and mapping target, the surveying and mapping area, and analyze the situation of the surveying and mapping area and whether the geographical location is accurate, so as to give full play to the application of the technology [4]. At the same time, it is necessary to understand the environment in the region, especially the topography, geology, and hydrological conditions, climatic conditions, etc., in order to provide data support for surveying and mapping work. In addition, relevant tools and equipment should be scientifically applied, and the specific conditions and tool performance of the surveying and mapping area should be accurately grasped, and surveying cars, GPS instruments and total stations should be used in the map surveying and mapping to assist in the work.

4.2 Application Countermeasures in Laying Control Points

Controlling the scope of surveying and mapping is conducive to the use of remote sensing aerial surveying technology, which requires scientific design of points, and then integrates the status of the points for integrated processing. The implementation of preliminary preparations can lay a good foundation for later work. At the same time, it is also very necessary to do a good job in the control point deployment to ensure the authenticity and accuracy of the data. When implementing the deployment and control work, design the points reasonably, and de-

termine the scope of the surveying and mapping area in accordance with the relevant conditions mastered in the previous stage. The number of control points is required to meet the surveying and mapping requirements. The actual requirements are to prevent the occurrence of excessive waste of design points, increased cost investment, or too few design points to meet actual needs [5]. It is required to clarify the key points of the setting, arrange and control the elevation control points and plane control points in actual surveying and mapping, determine the important points and set them with the help of the network RTK, and use the GPS dynamic system to confirm the different points during map surveying and mapping. Improve the accuracy of control point mapping. In addition, the verification work is carried out conscientiously. Because the map surveying and mapping work is highly rigorous, the relevant data information generated in this work is repeatedly checked, thereby improving the efficiency of the map surveying and mapping work and the accuracy of the measurement data.

4.3 Application Countermeasures in Detection Data Analysis

The map surveying and mapping work has high requirements for related data, so after repeated analysis of different data, the map drawing work can be carried out, and the accuracy of the data is required to be verified in order to obtain the true data information, in order to improve the overall quality of the map. Lay a good foundation. By contacting various surveying and mapping results, screening and analyzing all data information, if it is found that the data does not meet the requirements or is misplaced, it should be deleted as soon as possible to prevent adverse effects on the application of data in subsequent work and waste of resources. At the same time, the acquired data format is incorrect and needs to be adjusted immediately to ensure the overall effect of data processing. Three-dimensional maps are the main content of the production. Therefore, it is necessary to strengthen management and control and use computers reasonably, and manual repair and confirmation can be adopted. Formal processing. In addition, it is recommended to link manual sketches and computer drawing maps, and analyze and process all data information according to the specific conditions. The scale is related to the quality of the drawing. Therefore, the function of the map needs to be determined. The map drawing work is more complicated and relevant. The accumulation of data and information can gradually form a high-quality map. If it is an object that cannot be displayed on the map, it needs to be displayed in conjunction with the scale of circulation, and the corresponding marking work should be done to ensure the quality of the overall drawing.

5. Conclusions

With the continuous development of remote sensing aerial survey technology, the use of remote sensing aerial survey technology in map surveying and mapping work can improve the authenticity and accuracy of map data information, provide good support for smooth map surveying and mapping work, and give play to the application value of this technology.

References

[1] Lin Ying. Research on the Application of Remote Sensing Aerial Survey Technology in Map Surveying and Mapping[J]. Geology and Mineral Surveying and Mapping, 2021, 4(4): 73-74.

[2] Lu Jianxue. Application of remote sensing aerial survey technology in map surveying and mapping [J]. Science and Technology Innovation and Application, 2020, 000(007): 175-176.

[3] Zhan Hong. Research on the Application of Remote Sensing Aerial Surveying Technology in Map Surveying and Mapping[J]. Commodity and Quality, 2019, 000(021): 98.

[4] Liu Yujuan. On the application of remote sensing aerial survey technology in map surveying and mapping[J]. Commodity and Quality, 2019, 000(014): 193.

[5] Shao Xuegang. Discussion on the application of remote sensing aerial surveying technology in map surveying and mapping[J]. Development Orientation of Building Materials, 2019,017(011):218.