

Safety management of catenary professional organization in Guiyang Guangzhou high speed railway construction

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Abstract: in December, 2014, Guizhou Guangzhou high speed railway, the first high-speed railway in Guizhou, was opened for operation, with a design speed of 250 km / h. With the development of China's economy, people's living standards have been significantly improved. As the main mode of transportation in China, the railway also has higher requirements for its running speed. Nowadays, the operating mileage of high-speed railway in Guizhou has exceeded 1500 kilometers, and the operation and management level of high-speed railway has been significantly improved. The technical level of railway construction and management and operation is also constantly developing and improving, and the reconstruction of Guiyang Guangzhou high-speed railway has also been put on the agenda. In such a large-scale and large-scale construction process, how to ensure the construction progress, ensure the construction quality, and grasp the safety management in the construction process is particularly important. In view of this, this paper briefly analyzes the safety management of catenary professional construction organization in the construction of Guiyang Guangzhou high-speed railway, hoping to provide some reference and help for the majority of friends.

Key words: Guiyang Guangzhou high speed railway quality and speed improvement reconstruction construction; Catenary; security management

Introduction

In order to further shorten the distance between Chengdu Chongqing Guizhou and Guangdong Hong Kong Macao Greater Bay area, improve the structure of the railway network in the west, promote the implementation of the western development strategy, and promote the economic development of Guizhou Province and the urbanization construction along the line. According to the decision and deployment of the Party group of the State Railway Group, the Party committee of the State Railway Group and the Chengdu Bureau Group, and the Chengdu Bureau Group, the Guiyang Guangzhou railway quality and speed improvement project was officially launched on July 12. After the completion of the reconstruction project, the speed of Guiyang Guangzhou high-speed railway will be increased from the maximum operating speed of 250 km / h to 300 km / h, and the distance between Guiyang and Guangzhou will be reduced from the current 4 hours and 10 minutes to 3 hours and 30 minutes. The improvement of the operating speed also has higher requirements on the quality of catenary equipment. The bridge tunnel ratio of Guiyang Guangzhou high-speed railway is more than 85%. In the process of catenary equipment transformation, it is not only necessary to ensure the safety of operators and prevent accidents, but also to ensure that the construction quality meets the required standards under long-term and high-intensity operation. It is the key to pay attention to the safety management in the construction process.

1 Main categories and causes of accidents

The speed-up and quality improvement reconstruction of Guiyang Guangzhou high-speed railway involves a total of 579.601 kilometers from Longli north to Congjiang, involving 507 OCS equipment in anchor sections. The skylight will be arranged for 9 hours every day for construction, mainly to replace the suspender of the whole line, replace the existing compensation device, add the required counterweight weight and anchor compensation device and relevant positioners, elastic slings, etc., make corresponding adjustments, transform 57 groups of 18 # turnouts, and replace the contact wires of 11 arc burning anchor sections.

1. Labor safety

Long time and high-intensity construction has a severe test on personal safety and equipment safety. The construction of quality improvement and reconstruction has a wide range of operations. The construction personnel include railway power supply supervisors and construction personnel from the Electrification Bureau. The level and ability of the operators are uneven. Although most of the operators have been engaged in the catenary profession for a long time, they have not strictly complied with the safety regulations and established a strong sense of safety management. During the operation of some precision instruments, Relevant staff may also be unskilled in business and unfamiliar with equipment. At the ideological level, the causes of the accident include: the working attitude of the operators themselves, and the weak sense of responsibility. Therefore, personal safety is a major cause of accidents.

2. Equipment safety

With the rapid development of electrified railway, the circuit problem is also one of the common problems in the system. The most frequent problem is the electrical circuit fault. Under normal circumstances, the current of the contact line and the current passing through the contact network are interconnected. However, due to the mistakes of the staff during operation or some problems of the equipment, the current circuit fault often occurs. The main reasons for this fault are: first, it may be the problem between the current wiring. When the connected lines are too complex, It will cause the lines to cross each other, resulting in leakage and electrical circuit failure. 2□ The contact problem of the circuit is still caused by the connection of the line, resulting in poor contact, which leads to the phenomenon of electrical

circuit.

3. Driving safety

At present, there are a lot of railway safety risks, and the safety situation is still grim. In addition to personal safety and equipment safety, the inventory of materials and tools after on-site construction is not in place, which causes the train to collide with foreign objects in the line due to the left materials. The consequences and nature are very serious, which has a great impact on the safety of trains and passengers. In recent years, a relatively complete inventory system has been formed for the material management of high-speed rail, such as the inventory system of materials and tools in and out of the network, which counts the number of materials and tools before and after entering the network one by one and records video, which has played a good effect in preventing materials and tools left in the line. However, there is no corresponding prevention mechanism for the cancellation of materials and tools when the field operation is wide and the flow of operators is large. If the missing materials and tools are not found until the end of the skylight and the personnel get off the network, the skylight must be extended to organize personnel to search, which will inevitably affect the subsequent accurate train operation. At the same time, careless inventory of materials and tools out of the network will also cause the risk of materials missing in the network.

2 Safety management of catenary construction organization in the construction of Guiyang Guangzhou high speed railway

1. Strengthen safety management awareness, establish and improve safety management system

First of all, strengthen safety education for railway construction personnel to make them aware that once a safety accident occurs, they will face serious consequences. Only by ringing the alarm bell at all times and enhancing safety awareness can we better ensure the normal operation of quality improvement and reconstruction.

Secondly, establish and improve the safety management system. Take the relevant safety regulations of the group company as the executive standard, and combine with the actual operation of Guiyang Guangzhou high speed railway, formulate effective safety management regulations, so as to provide guarantee for the quality improvement and reconstruction construction. In the construction of this quality improvement and reconstruction, for the 9-hour long skylight, Guiyang power supply section requires that the scope of each construction operation shall not exceed 15 kilometers, that is, no more than 10 anchor sections are involved in each operation. There must be one section leader and three section cadres on duty to monitor and control the operation progress at any time. After the operation, a certain power supply quality inspector shall be appointed for each operation group to carry out on-site acceptance of the operation quality, so as to ensure the safety and control of the whole operation surface. At the same time, the system will be implemented in the specific work, and the rules will be refined by levels and stages. In addition, urge the construction unit to build a safety responsibility system with clear responsibilities, and comprehensively link performance with safety management, so as to ensure the smooth progress of safety management.

2. Strengthen risk management awareness and build risk management system

In the reconstruction construction of Guiyang Guangzhou high speed railway, the safety management of power supply system is the top priority, and it is also an important foundation for the long-term stable operation of Guiyang Guangzhou high speed railway. Therefore, it is necessary for the equipment management unit and the construction unit to formulate preventive measures from the perspective of development according to their own actual situation, identify, analyze and study risk prevention and control measures actively, find out the risk factors in daily work, repair them in advance, and issue corresponding risk emergency plans according to the risk situation, so as to improve the risk containment rate. In addition, in daily work, it is necessary for relevant staff to regularly carry out risk screening on key construction points, regularly organize and hold risk screening meetings, and organize professional technicians to conduct risk research and judgment on key recent operations, in this way to try to find key risk points, and control the law of risk occurrence, so as to provide reference for later risk screening work.

3. Improve risk early warning management and safely handle power supply failure

We should establish and improve the risk early warning system, truly reflect the problems of quality improvement and reconstruction construction, and comprehensively follow the scientific principles to improve the relevant risk early warning. At the same time, it is also necessary to comprehensively consider various factors, establish and improve risk early warning measures according to the collected information, and summarize all possible risk factors in catenary construction into the risk early warning system, so as to reflect the practicality and operability of the system. During the construction process, it is required to hang a ground wire in the neutral area or install an equipotential line at the operation fracture to prevent inductive electric injury. In addition, if the railway power supply system is out of sync with the risk early warning mechanism, it is necessary to actively improve and supplement the risk early warning measures, so as to improve the effective control of staff in the daily safety management process and ensure the normal and stable operation of the railway system.

4. Strengthen intelligent management means and improve safety management ability

Nowadays, with the rapid development of intelligent technology, it is widely used in many fields of society and plays an important role. On the one hand, it can be integrated with the railway power supply system to improve the effectiveness of the management mode. On the basis of the original equipment, improve the application frequency of intelligent equipment, and reduce the safety management problems caused by power supply system failure by implementing intelligent detection, intelligent monitoring and other methods. On the other hand, the traditional management mode can be optimized to improve the safety management ability. As for the problem of leftover materials mentioned above, the "five people in a row sweeping method" can be adopted, that is, five people in a group, respectively in the center of the

up and down lines, outside the up and down lines and between the two lines, the whole working face and the walking path shall be checked by pulling a net to ensure that there are no omissions of materials and tools, so as to provide a more effective guarantee for the operation of electrified railway.

3 Thoughts on innovating the operation safety management of overhead contact system in electrified railway

With the continuous development of the railway system, the speed of the train continues to increase, which has higher requirements for the reconstruction construction of Guiyang Guangzhou high-speed railway, and also poses challenges to the safety management system. Therefore, in the new era, it is necessary to innovate the original safety management system of electrified railway work, which can be started from the following aspects:

1. Ideological innovation

In the electrified railway, the catenary is the core equipment, which undertakes important power transmission tasks. The actual working environment of the catenary is very bad, and its role can be replaced by other equipment. Therefore, once the catenary fails, it will bring great losses. With the continuous improvement of the train speed, the requirements for the catenary are also increasing. Therefore, it requires the majority of scientific researchers to increase investment in the process of its design, processing and implementation, and to improve the safety awareness, fundamentally solve the key link of the catenary, and avoid various accounts.

2. Optimize maintenance system

The traditional maintenance system for the electrified catenary is generally the periodic maintenance system. This traditional maintenance system has some defects. For example, some electrified trunk lines that are not busy can be maintained in strict accordance with this maintenance system. However, in practice, busy electrified trunk lines, especially electrified railway trunk lines in hub areas, Regular maintenance is far from meeting the actual needs, which may leave huge hidden dangers for the safe operation of catenary equipment. Therefore, in the specific operation process, according to different trunk lines, optimization and reform should be carried out on the basis of regular maintenance system. By optimizing the maintenance system, the normal operation of the transportation industry can be better guaranteed.

4 Conclusion

In short, in the new era, in order to better ensure the normal operation of the catenary, provide stable electric energy for electric locomotives and prevent safety failures, it is necessary to take reliable safety measures, select lightning protection facilities with excellent performance, and optimize the maintenance system on the basis of regular maintenance and according to actual needs, Prevent catenary failure and ensure normal operation of railway transportation.

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