

Application of Automatic Transfer System of Civil Aviation Wireline Communication Technology

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ABSTRACT. *This paper first expounds the development status of automatic transfer system in civil aviation communication technology, analyzes the automatic transfer system interconnection scheme, and discusses the rationality of automatic transfer system in combination with the actual work of civil aviation communication, and provides reference for related research fields.*

KEYWORDS: *Civil aviation, Wired communication, Automatic transfer, Network interface*

1. Introduction

The rapid development of information technology has promoted the advancement of civil aviation communication technology, especially wired communication and wireless communication, which have been widely used in the field of computer information technology. The automatic transfer technology plays a pivotal role in China's civil aviation system and plays a very important role. It will play a greater role in the future civil aviation communication system. Based on this, this paper focuses on the application of automatic transfer system in civil aviation communication technology.

2. Development Status of Automatic Transfer System in Civil Aviation Communication Technology

The main data of the civil aviation automatic transfer report network is obtained from the regional air traffic control bureau data network and the civil aviation data information communication network, and the civil aviation satellite network is used as the transmission medium to form an automatic data transfer system. At present, the automatic transfer system of Lhasa Gongga Airport is responsible for the forwarding of telegrams between airports in the region and with domestic and international civil aviation airports, such as control, weather, navigation information, passenger and cargo transportation, etc. The newspapers, the airports in the lower joint zone, and the business terminals of all departments in the field, have extensive

business coverage and high communication reliability requirements. The existing automatic transfer system of Lhasa Airport adopts the DMHS-M medium-sized automatic transfer system developed by Beijing Air Traffic Technology Co., Ltd., which is equipped with 64-channel transfer interface, and uses 4 intelligent asynchronous units. Its remote service terminals include Chengdu ATM, Chengdu Satellite, Chengdu Dial, Linzhi ATM, Linzhi Dial, Ali ATM, Ali Dial, Bangda ATM, Bangda Satellite, Bangda Dial, Shigatse ATM, Shigatse Dial, etc. The business terminals include ATC, AIMS, and Broadcasting, zone adjustment, flight service, observation, forecasting, freight, baggage, stowage, etc.

3. Automatic Transfer System Interconnection Scheme

3.1 Asynchronous Interconnection Reporting System

In the civil aviation transfer system, the direct connection method is the most used. This method needs to occupy several physical ports, and the communication speed and transmission reliability level are not high. In addition, it is necessary to maintain and lease multiple communication lines at the same time. The cost is higher and the economy is poor. Since the development of civil aviation, the relatively mature information transmission mode is asynchronous interconnection. Because of its strong compatibility, asynchronous interconnection can be selected as a reliable alternative.

3.2 X. 25 Transmission Method

X. 25 transmission is the main transmission method in the civil aviation reporting system, but the throughput is not high, which can basically meet the character communication traffic requirements in the civil aviation telegraph. At this stage, the transmission scheme applied in the trunk transmission system is the SVC technology. In the process of implementing the information interconnection, the temporary connection or the use of the frequent connection is established. Any one port in the system can realize 128 SVCs, which is easy to meet multiple system interconnections. Combined with the development of the civil aviation transfer system, X. 25 The development of the protocol is earlier. On the basis of the existing network transmission structure, the network renewal status is extended. This method is costly and the communication speed is not satisfactory. The highest standard before the 21st century is only 64K. In the automatic transfer system of civil aviation communication technology in China, the main interfaces of trunk line interconnection are: ACARS telegraph exchange, AFTN international interface, THALES, SITA international interface, Y_CABLE, China Airlines letter and telegraph interface, and Air China Eastern Airlines transfer system and air traffic control system. Join. These interfaces must use X when transmitting data information. 25, but X. 25 is not a mainstream transmission technology. After expanding the data network, the civil aviation department no longer passes X. 25 provides dedicated direct access equipment.

3.3 Ip Mode Interconnection

In the civil aviation data network, the IP scheme can realize the data transmission of the transfer system well whether it is in technical implementation or operation management. First of all, the use of IP technology programming to achieve the transfer information scheme has the advantages of simplicity and feasibility. In the data transmission, TCP and UDP can be used, while the civil aviation intelligent synchronization control system is a router provided by aviation management technology, followed by outsourcing. The equipment is easily used to realize the ATM network and KU satellite network interconnection transmission, and is transmitted in the automatic transfer system under the OSPF protocol. For the OSPF protocol, the civil aviation transfer network IP can be regarded as the initial segmentation when planning the network. When the ATM network and the KU satellite network are interconnected, each network segment is occupied by a transfer system. Although the IP mode interconnection has obvious advantages, it still has drawbacks, such as physical circuit redundancy and network security. In order to achieve IP interconnection in the shortest time and improve network security, you can also add a system environment. Through the improvement and improvement of technology, the data transmission in the automatic transfer system can be better realized, the work efficiency is improved, and the reliability of data transmission is ensured.

3Using FR communication to achieve

The DMHS system method In the civil aviation data network, the DMHS system method implemented by means of FR transmission communication has an interface reserved in advance, and after the retransmission system is updated, the FR communication interface will be added, and a new configuration is also added in the database. In terms of parameters, only the establishment of an independent FR process can process the communication data and report and manage the working status. The transfer system can realize two intelligent synchronization units at the same time, and the main working mode of the FR transmission communication is Active/Active, and each intelligent unit can be respectively connected with the ATM network and the KU satellite network, and X. The mode of communication transmission is the mode of primary/standby. The system has eight PVCs connected to the KU satellite network and the ATM network. As long as one of the PVCs can operate normally, the data transmission work is smoothly carried out. Each telegram needs a PVC for data transmission, and the security of the data information is guaranteed. At the layer re-certification, the transport layer packet loss and retransmission mechanism is obvious. Together with the civil aviation data encryption technology, the security level of the telegraph information is greatly improved. The PVC connection has its own heartbeat packet, which provides security and confidentiality level. Effective cost savings.

4. Based on Fr Program Analysis

Through the transformation of the automatic transfer system in civil aviation wired communication technology, the intelligent level of the transfer system is continuously improved, and each intelligent synchronization unit interface is increased to four, which are respectively connected to four network systems: in order to realize X. 25 transmission, one is connected with the existing FRS800 network of civil aviation; two are connected with ATM network system and KU satellite network respectively; the last one is used as backup. The improved automatic transfer system not only realizes simultaneous connection with four FR interfaces, but also ensures that the information throughput of each interface is 2-8M. In addition, there are many advantages through the FR connection method, which has changed the civil aviation automatic transfer system management system and improved the degree of automation; the provincial bureau can easily realize the transfer of information interconnection by means of the second transfer of the authority, and enhance the interconnection of different transfer systems, and several trunk lines. It can form a mesh interconnection, and the provincial bureau and the air traffic control station can form a tree-like interconnection structure, which promotes the transfer of data between civil aviation data networks.

5. Conclusion

In the civil aviation system, the automatic transfer system plays an important role in automatically reporting whether the communication can operate normally and directly affects the flight status of civil aviation, which should be highly valued by the civil aviation communications department. At the same time, it is necessary to strengthen research on the automatic transfer system, optimize the automatic transfer system, improve the civil aviation communication function, enhance the information transmission efficiency and safety level, and better play the role of the automatic transfer system.

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