

Risks and Effective Prevention of Aviation Safety Management in the New Situation

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Abstract: Under the new situation, profound changes have occurred in the field of aviation safety, and the risks of safety management have become increasingly prominent, which has affected the healthy development of the aviation industry. This article focuses on aviation safety management issues, and analyzes in depth the risks of terrorism in the aviation field under increasing circumstances, the emergence of high-tech risks, and the increasing risks of dispatch management. These issues include strengthening security work, strengthening new technology research and development. In order to improve the level of dispatch management, countermeasures to prevent aviation the risks of safety management in the new situation are proposed.

1. Introduction

With the rapid development of the civil aviation industry, the proportion of aviation travel in various modes of transportation is getting higher and higher, and it has become an indispensable and important part of the transportation system. According to statistics, in 2015 alone, China has added 32 new routes, 432 domestic routes, and 135 international routes. In 2015, the number of national aviation trips exceeded 200 million. However, transportation in the aviation field is different from other transportation methods. Although it can bring huge time convenience to people, there are risks in other industries. With the global political turmoil and the continuous development of aviation technology, aviation safety issues are affected. It is also becoming more prominent. In addition to the subjective factors of the aircraft itself, there are also a variety of objective factors. Therefore, facing the safety management of the aviation field requires our serious response and resolution.

2. Aviation the risks of safety management in the new situation

From the vigorous development of the aviation industry in China in recent years, we can see that, like in the early years, the hidden problems of safety caused by poor conditions have rarely been seen. In the new situation, the risks in the aviation sector in China are mainly related to safety management. Coming from terrorism, high technology, and dispatch management.

2.1 Terrorism risks are more prominent

The high-speed, high-freedom transportation characteristics of the aviation industry make it well-suited as a target for terrorism and an important tool for suicide attacks and cross-border crimes. According to the data given by international airlines in the past two years, we can see that there are as many as 325 plane crashes or aviation accidents worldwide due to various factors, of which 78 are due to terrorist factors. Every terrorist act against aviation will cause huge loss of life and property. For example, the terrorist attacks of 9.11 in the United States in 2001 caused nearly 10,000 casualties, and the economic losses amounted to tens of billions of dollars. In the July 17 crash of Malaysia airlines in 2014, none of the 298 passengers on board was spared, demonstrating the great threat of terrorism to aviation security (Hou Xitong, 2016).

2.2 High-tech risks gradually appear

Aviation risk under high-tech has become a hot topic that people have been studying. And aviation technology is different from other transportation industry, because of the limitation of transportation conditions, it often needs to have higher requirements in casting technology. Also its accident rate is high risk. Once an accident occurs, the survival of passengers is relatively low. Therefore, all countries have been paying high attention to aircraft casting technology. High-tech risks are mainly reflected in two aspects, what are, one is the risk caused by the technical failure of the aircraft itself, and the other one is the risk caused by the signal interference of various high-tech products. As far as technical failure is concerned, the passenger plane itself is a large and sophisticated equipment. A Boeing 747 series aircraft contains more than 6 million parts. If any one of the parts is defective, it can cause devastating aviation safety influences. At the same time, with the rapid development of aeronautical information technology, most modern passengers aircrafts have adopted automatic and intelligent control modes, which reduces the requirements for pilot operation technology on the one hand, and also adds many additional risks. For example, the cause of the Malaysia Airlines MH370 accident has not been determined so far in 2014, but according to aviation experts' speculation, it is very likely that the aircraft's automatic cruise system malfunctioned, causing the aircraft to deviate from the route and eventually run out of fuel and crashed. As far as communication interference is concerned, the main threats come from various equipment of intelligent communication carried by passengers. If passengers do not turn off their mobile phones as required, it may cause interference to aircraft ground communications or instrument operation (Zhai Hong, 2014).

2.3 Risks of dispatching management increased

Scheduling management risks include the ground dispatch and the flight dispatch. Whether a complete aviation system has an aircraft transportation system, it also needs the dispatch of a ground control system. The security area of the ground control system includes security checks for passengers, management of facilities and equipment, and so on. Among them, the security problem is the most prominent. For example, in April 2016, an 11-year-old girl in Moscow, Russia, got on the plane without buying a ticket, and successfully reached the destination. The incident also reflected side effects. the various dangers that hidden caused by the leakage will increase the safety risks of the entire aircraft. And there is another meaning in the risk management of the aviation field. As the application in the aviation field becomes more frequent, route development becomes more and more intensive, and this puts great pressure on the aviation ground control system. Such high-density, high-frequency flights are extremely easy to produce various scheduling errors what have caused aviation safety accidents. In 2015, it was Malaysia International Airport. Due to aircraft scheduling problems, almost three aircraft collided. With the development of high and new technology, this kind of accident is becoming more and more intelligent. It is not very common, but the risks in this area still exist.

3. Effective prevention and control of aviation safety management risk strategy in the new situation

3.1 Improving the safety management system in the aviation field

Compared with conventional transportation, the scope of safety management of civil aviation passenger planes is much larger. Therefore, aviation safety management should start from multiple perspectives, covering all aspects of airports, passenger planes, and personnel. On one hand, it is the management of aviation personnel information to ensure that the connection of information work between various departments within the aviation enterprise is more compact and efficient. For example, in the ticket purchase process, comprehensive screening of passenger information is required, and various departments need to cooperate with the department of security inspection to ensure that there are no terrorists and other personnel who may affect aircraft security. On the other

hand, in terms of ground control in the aviation field, it is necessary to complete airport security screening in a timely manner, and develop a security system that is stricter than before to reduce loopholes in the security system and ensure safe boarding of passengers.

3.2 Strengthening high-tech R & D in aviation

From the perspective of aviation accidents in various countries, the vast majority of aircraft accidents are related to the aircraft's own technology. Therefore, solving the research and development of high-tech in the aviation field has become an important link to reduce aviation management risks. So relevant departments must aim at various safety risks in the aviation field and improve the aviation safety management technology in a targeted manner. As we know that, 75% of all types of aircraft accidents in China are caused by engine technology. Therefore, we should focus on public relations for the technological backwardness of engine control systems and navigation systems in China's aviation technology. At the same time, the aircraft signal system is also an important aspect that affects China's aviation safety, and various types of contradictions between flight attendants and passengers caused by mobile phone shutdown regulations often occur. It is necessary to strengthen the construction of the aircraft's own signal transmission and the reception system to improve the flight safety of the aircraft while not affecting the passenger's flight experience.

3.3 Improving the aviation dispatch management system

Scientific aviation dispatching management is the key to ensure the safety and orderly flight of passenger aircraft, especially under the current high-density, high-frequency flight environment, the pressure of air traffic dispatch is increasing, and the risks are increasing. In this regard, the management system of information transmission, the accident report, flight trajectory monitoring, emergency handling and other aspects should be comprehensively refined and improved, so as to shorten the response time of aviation dispatching and achieve the purpose of refined and real-time management. What's more, the person in charge should also use more advanced and stable management system of information scheduling and dispatching complement to maintain the good order of air traffic.

3.4 Strengthening aviation risk identification and assessment

The key to strengthening aviation risk identification is to grasp the source of safety information. Therefore, we must strengthen the construction of the aviation information security system, establish a safety information management organization centered on the safety supervision department, and receive and archive relevant information. In addition, aviation risk identification methods also include unsafe incident statistics, operational data analysis, and daily inspections of security. These are an important basis for subsequent risk assessment and risk management. And it is also necessary to effectively evaluate the risks to determine whether the risks are within acceptable limits, and to formulate corresponding disposal countermeasures based on the degree of risk.

3.5 Establishing an emergency management mechanism for aviation risks

Aviation risks are sudden and accidental. Therefore, there are always some events that are difficult to predict in advance. This requires aviation companies to make emergency plans in advance so that they can be disposed of and resolved in time when a crisis occurs. At the same time, it is necessary to consider the possible risk factors in advance. Then they would better prepare a risk emergency plan, also assign emergency responsibilities, as well as determine the emergency disposal processes what make specific arrangements from various aspects. In addition, in order to improve the effectiveness of emergency plans, they need to organize relevant personnel to conduct emergency drills regularly or irregularly to simulate risk scenarios, and enhance emergency response capabilities in risk environments, then accumulate emergency disposal experience to ensure that when risks occur. Then they can arrange emergency rescue work in an orderly manner according to the plan.

3.6 Further strengthening the awareness of security service

According to the survey statistics, most personnel only pay attention to equipment failure and uncertainty in equipment operation, and fail to pay attention to the relationship between risks and targets in a timely manner, resulting in incomplete identification of risks and hidden dangers, which may affect the quality of equipment guarantee services, and also indirectly increase the risk of the safety of control operation. At the same time, the awareness of risks and hidden dangers of individual personnel in civil aviation companies needs to be strengthened, because employees have little knowledge of other equipment except the equipment in their own departments, and the operation cognition lacks the understanding of the relevance and integrity of equipment. In this regard, aviation companies should increase the training on strengthening the awareness of safety and security service. At the same time, when conducting relevant training, they should focus on strengthening the systematic operation of equipment rather than distinguishing the equipment boundaries of each department.

4. Conclusion

At present, based on the safety management, aviation enterprises in various countries have established their own safety management system platform, and provided corresponding risk management modules for the high-tech, scheduling risks and terrorism risks in the aviation field, so as to effectively reduce aviation risks. And countries will also be committed to developing new aviation technology together with improving aviation transport security.

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