

Optimization of Maintenance in Civil Aviation Aircraft Equipments

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Abstract: As the economic level rising, the function and stability of civil aircraft have been greatly improved. However, with the development of science and technology in modern civil aviation transportation, the frequent occurrence of flight accidents has threatened people's safety. The main reason is the internal failure of the engine body or the daily maintenance management is incomplete. Therefore, the relevant maintenance management departments should attach great importance to the first core research and management of civil aircraft stability and safety. In view of various equipment problems existing in the operation of civil aircraft, the practical application of data collection mode and maintenance information disclosure mode of modern aircraft maintenance equipment is analyzed. This paper describes some characteristics of aircraft maintenance work, and combined with the main factors affecting the risk of civil aircraft maintenance, giving countermeasures and suggestions to effectively improve the level of civil aircraft maintenance risk management.

Keywords: Civil aircraft; Equipment; Maintenance; Optimization

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1 Introduction

With the development of society and the progress of science and technology, people have developed from ground transportation to air transportation. The appearance of aircraft has become one of the

symbolic characteristics of civilization progress. Nowadays, aircraft has become an indispensable means of transportation in people's daily life. From a professional point of view, the structure and technology of aircraft are very sophisticated, and the equipment and instruments sizes are also very large. If equipment failure occurs, it will seriously affect the flight and operation of civil aviation aircraft, seriously threaten the safety of nation's life, and it is not conducive to the development of aviation industry. From the perspective of civil aviation transportation, safety has always been the core issue and also the basic requirement for land, sea, air transportation industry. Among them, civil aviation equipment, as an important equipment of air transportation, must strictly abide by national standards and requirements, do a good job in the maintenance of civil aviation equipment, ensure the reasonable implementation of various safety regulations and maintenance procedures, ensure the sustainable development of China's aviation industry. At the same time, reducing the aircraft failure rate is also an important work which beneficial to nation. Relevant aircraft maintenance risk management departments should also carry out scientific management, attach importance to aircraft maintenance management, and ensure the safety of aircraft operation. In recent years, the incidence of aircraft accidents is rising. Due to various reasons, aircraft maintenance risk management also needs careful inspection, scientific maintenance, reasonable improvement and appropriate management. In modern aircraft maintenance, through continuous experience summary and equipment update, civil aircraft on-board maintenance system gradually forming a system^[1].

2 Risk characteristics of civil aviation aircraft maintenance

2.1 Necessity and complementarity

Currently, the maintenance management of civil aircraft has not been fully automated and intelligent, and it is still depending on manual maintenance. In the process of maintenance, due to the human's subjective judgment, some maintenance errors might inevitably occur. In addition, the accuracy of aircraft determines the complexity of the system, so it becomes an inevitable feature of civil aircraft maintenance management. However, from the accuracy of maintenance, these errors can be solved. After maintenance, through equipment inspection, troubleshooting and obstacle avoidance can be succeeded^[2].

2.2 Randomness and concealment

The structure and accuracy of the aircraft are very high. In order to maintain the efficiency and quality of aircraft maintenance, we must be much careful. In the whole process of aircraft maintenance, due to the complexity, there will be inevitably some small factors and also randomness which causing aircraft failure. Many obstacles cannot be simply detected. The hidden feature of aircraft maintenance is that only when all aircraft working normally, the maintenance task can then only be said completed^[3].

2.3 Cumulative

Due to the hidden danger of civil aircraft maintenance, many aircraft cannot find and judge the existence and faulty part in time. Therefore, it is necessary to make a suspicious judgment according to the actual and careful inspection, remove the specific faulty parts and complete the aircraft maintenance work. It is often affected by some factors in the whole process. In addition, other parts of the aircraft and subsequent maintenance work will also affect the operation, which shows the characteristics of continuous accumulation to a certain extent^[4].

2.4 Hysteresis

Currently, the maintenance technology of civil aircraft cannot catch up with the advanced level of aircraft equipment. Due to the high complexity of aircraft maintenance, aircraft maintenance workers need to have a high degree of professional skills and professionalism. Currently, the aircraft operation

system is updated very quickly, and the whole system is very related. If some of them are exposed to the risk of failure, they may directly spread to the whole system operation. The technical level of machinists is an important dependence to solve the problem of aircraft. Therefore, the technical level of civil aviation machinists is very important. If the technical level cannot keep up with the progress of aircraft system, the maintenance quality of civil aviation aircraft will be seriously affected^[5].

3 Problems in maintenance of civil aviation aircraft

3.1 Business process delay

Currently, most of the civil aviation maintenance tools management system is in the post-processing or manual processing stage. For example, carry out rectification according to the temporary requirements of the purchasing department, or only repair and recycle the civil aircraft when obvious fault problems occurred. It can be said that the pre control work has not been effectively implemented, which cannot fundamentally avoid the danger of civil aircraft equipment. For business processes, maintenance technician need to go through multiple business processes to formally perform maintenance tasks. As a result, once the aircraft has serious problems, it is difficult to repair them in time, and the hidden danger problems becoming more serious. In view of this, the business process of civil aircraft equipment maintenance should be reasonably improved and optimized according to the actual situation.

3.2 The quality of maintenance technician needs to be improved

To a certain extent, civil aircraft equipment maintenance technician are selected from different levels before taking up their posts, most of the theoretical knowledge is strong, but actually relatively weak. The most important thing is that most of the maintenance technician in the long-term work process of the existence of fluke gradually increased, some hidden problems were not dealt in time. Due to this part of hidden problems that cannot be repaired in time, makes the normal operation of civil aircraft difficult to be effectively guaranteed. Therefore, it can be said that currently, the quality of maintenance technician needs to be improved, which must be strengthened in

time to ensure the safety of aircraft equipment.

3.3 Maintenance means lack of rationality

The maintenance management of civil aircraft equipment is mainly administrative management means. However, administrative means often include complex and changeable working procedures. In addition, there are also blind spots in equipment maintenance means and related management. For example, the lack of reasonable storage methods will affect the inspection efficiency of subsequent tools and equipment, and seriously limited the maintenance efficiency.

4 Suggestions for civil aviation aircraft maintenance management

4.1 Improve the problems solving ability

The maintenance process of civil aircraft is also the process of problems solving. In addition to quickly solve problems, it is also necessary to prevent failures. Therefore, in order to improve the effect of civil aircraft maintenance risk management, one of the effective methods is to record the civil aircraft failure and processing in detail, establish a perfect database, and improve the risk of subsequent failure maintenance in the management work. When similar fault occurs, the fault can be handled quickly and the effect of aircraft maintenance risk management can be improved.

4.2 Improve maintenance management standard requirements

Reasonable maintenance management standard is a necessary condition to ensure the safe operation of civil aircraft. In the past, civil aviation managers paid more attention to the maintenance management of aircraft faulty problems but ignored the maintenance management of aircraft maintenance equipment. Often lack of strength in the performance of maintenance management responsibility, or some content is difficult to effectively perform. In order to further improve the safety and rationality of civil aircraft maintenance, maintenance managers should further refine the management content and technical content in combination with the relevant content of equipment management, in order to fundamentally guarantee the scientific rationality of civil aircraft maintenance equipment. Therefore,

maintenance managers must be clear about the importance of equipment maintenance management and the important content of maintenance technology to ensure the maintenance effect of equipment. Therefore, managers should strengthen equipment maintenance standards, pay attention to equipment technical data and technical standards, and strive to optimize the maintenance process. In the specific implementation, the administrator can start according to the order of equipment maintenance. The management can communicate with the factory deeply, and the manufacturer must provide feasible maintenance management manual and relevant parts standards. In this process, managers should do a good job in data collection of maintenance equipment. According to the actual situation, it is better to set up a reference room, which is in the charge of experts and uniformly deployed and managed. Combining computer technology with information technology, establish the maintenance management database of maintenance equipment. The information content of the database can include the technical parameters, number and price of the equipment, reasonably record the state of the equipment after scrapping, and provide scientific guidance for the follow-up maintenance and management. It is worth noting that the management should optimize the maintenance management process and effectively deal with the safety risk of civil aircraft in combination with the actual situation^[6].

4.3 Strengthen management work

Currently, civil aviation maintenance technician do not pay enough attention to maintenance rules and regulations, and airlines must fundamentally solve this problem. The aircraft equipment repair department of airlines can effectively strengthen the daily management of equipment, including focusing on the problems or failures in the daily maintenance management, and effectively recording various problems on the aircraft, in order to provide reference and maintenance in case of the second failure of the aircraft. In this process, maintenance technician should strengthen the integration of various technical resources, and effectively optimize the technical equipment and technical means which suitable for the maintenance equipment. It must be rectified in accordance with the current national standards and requirements. If necessary, an inter departmental

professional team can be established to solve the problem of equipment operation failure and ensure the maintenance effect of civil aircraft. Among them, the equipment management team established between departments can incorporate equipment maintenance into the internal management system of the organization, and assign professional and technical technician to solve common failures or other difficult problems of civil aircraft equipment. Do a good job in daily supervision and management to ensure the safety of civil aircraft operation to the maximum extent.

4.4 Improve the professionalism of maintenance technician

The professional level and responsibility awareness of civil aircraft maintenance technician are related to the efficiency and quality of maintenance risk management of the whole civil aircraft. It is also an important means of aircraft maintenance risk management. Its ability and quality are important factors to determine the effect of aircraft maintenance. Therefore, civil aviation enterprises should actively strengthen the training, improvement of professional knowledge and technical ability of aircraft maintenance technician to ensure the effective development of aircraft maintenance management and improve the effectiveness. In order to further ensure the safety operation of civil aviation aircraft, leaders of civil aviation enterprises should carry out regular training for aircraft equipment maintenance technician and strengthen the professional quality of maintenance technician. In the specific strengthening process, we can start from the aspects of working ability, employment qualification and operation ability to comprehensively improve the professionalism of maintenance technician, avoiding the situation of previous low-quality technician. In addition, civil aviation enterprises can make up for

the deficiencies existing in China's maintenance and repair management, comprehensively improve the maintenance level of civil aviation aircraft equipment according to the appropriate overseas advanced repair and maintenance experience for maintenance and repair technician. It is believed that through the unremitting efforts of all technician, the maintenance level of civil aircraft equipment will be further improved.

5 Conclusion

The good operation of civil aviation aircraft is related to the safety of the people. At the same time, it is necessary to ensure the effective implementation of various safety regulations and maintenance contents, to fundamentally improve the operational safety of civil aviation aircraft.

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