

Exploring the Information Management of Aviation Equipment Maintenance Engineering

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Abstract: With the improvement of China's aviation equipment manufacturing technology and the continuous upgrading of production technology, the level of aviation equipment maintenance engineering and information integration has been greatly improved, and information management has become a key factor to improve aviation safety and stability. The paper takes the development status of domestic aviation equipment as the starting point, and explores the remote management function of aviation management along the development trend of intelligentization and precision. As a maintenance project to ensure stable aviation operation, it should also focus on the current situation and build the conformity system and platform of the goal of modern refined management, with the informationization, digitization and visualization of aviation equipment maintenance engineering management as the standard, to promote the rapid development of aviation equipment maintenance in China.

1. Introduction

Under the new wave of technological change, the informationization of aviation equipment maintenance management has become the trend of the times, and the continuous integration of the management system has virtually increased the complexity of equipment in the actual maintenance management process. At the same time, a large number of new types of equipment have emerged in the aviation field, which has improved aviation equipment in terms of modernization level and automation level. Under this background, traditional aviation equipment has also been active in maintenance mode, means and methods. The transformation, innovative integration of information management tools into the aviation equipment maintenance link, to some extent promoted the overall improvement of aviation equipment maintenance capabilities, a clearer and more comprehensive grasp of the current status of China's aviation field equipment maintenance engineering information management. And try to achieve the unified construction of scientific management objectives, deepen the information level of aviation equipment maintenance, and promote the overall optimization and improvement of equipment support capabilities.

2. The goal of the construction of aviation equipment maintenance engineering information management platform

The application of information management tools in aviation equipment maintenance

engineering is a systematic and strong project, which can improve the overall operational efficiency and maintenance level of aviation machinery. For the aviation maintenance system, the comprehensive realization of equipment maintenance engineering informationization must establish an overall concept in advance, promote the integration of maintenance and management, and promote the continuous development of maintenance management in the direction of real-time and intelligent. Through the use of the computer technology platform to effectively connect with the communication network, the principle of optimization is always adhered to, and the physical and electronic interfaces are systematically established, and the data format is effectively processed according to the unified standard, thereby achieving seamless connection in different directions, thereby More effective command, control, and coordination of maintenance equipment.

Optimize the automation level of aviation operation command, and carry out the system construction of the equipment command network with the preconditions of relevant standards and regulations, and timely feedback the aviation equipment, key equipment and personnel information to the headquarters to make the work of the aviation equipment systems at the headquarters. The operation status is full control, auxiliary equipment repair and safety protection, fully utilize the convenience of modern network technology to protect the equipment maintenance project, fundamentally realize the interactivity of internal communication and interaction, realize aviation equipment in command and effective exchange of maintenance information and data to accelerate the rapid establishment of the system command network.

Equipment maintenance management visualization. Equipment warehouse, equipment release, repair institutions and technical personnel, etc., as the basic components of aviation equipment maintenance engineering, the construction of information technology can effectively realize the visualization of each link.

Equipment repair remote. For the actual situation of the aviation equipment maintenance site, relevant maintenance experts can carry out remote technical guidance and provide information and information services to conduct conference analysis anytime and anywhere. Based on the components and specific models of the equipment, a fault-inference module based on experts is established to comprehensively evaluate the causes and types of equipment failures in a human-machine dialogue mode.

Intelligent information management. The system can collect and collect the basic information and materials of the equipment technicians, display the equipment maintenance history and status online, and calculate the basic parameters of the design in detail, such as the integrity rate, the uselessness and the fault-free time, etc., in a scientific and rational way. Analyze and evaluate the type of equipment failure, and systematically summarize the fault changes and occurrence rules to provide protection equipment failure and maintenance reminders.

Equipment support is accurate. The equipment maintenance information is timely mastered, fully reflecting the visualization and transparency of resources and information, and all the tasks and receiving tasks can be completed online. Through the good use of radio frequency identification technology or bar code, the equipment is automatically automated in the process of querying, locating and identifying the actual turnover, and the best maintenance benefit is obtained through effective use of resources.

3. Construction principles and contents of aviation equipment maintenance engineering information management system

3.1. Construction principles for the information management of aviation equipment maintenance projects

Strengthen the leading role of senior management and build a scientific theoretical foundation. In

the aviation equipment maintenance project, the development and construction of information management has extremely significant systemicity and complexity. Its construction level is closely related to the modernization of equipment maintenance development, and it is closely related to the innovation and reform of equipment maintenance system and management mode. Therefore, before the construction of the information management platform, it should be recognized and supported by relevant senior leaders, and actively guide the relevant leaders to effectively ensure the smooth development of information management. In addition, accelerate the realization of the system construction of the information management theory system of equipment maintenance engineering, conform to the development requirements and trends of modern information technology and equipment technology, and accumulate a large number of information development experience and laws to better achieve the guidance of practice.

Increase the level of resource sharing. In the aviation equipment maintenance project, the traditional management system has non-scientific and non-rational characteristics, and a lot of problems and contradictions arise in the actual management process. Therefore, in the process of building an information management platform, we should ensure the high sharing of all kinds of information resources, and take standardization construction as the primary task of management, and build a unique equipment maintenance management platform to promote the aviation equipment maintenance engineering information management platform. The actual operation needs to realize the interconnection with the database and improve the sharing level of information in the equipment maintenance process.

Pay attention to the security of information. In the process of actually collecting information, the most important thing is to maintain the security and effectiveness of the information. Therefore, during the development of information management of aviation equipment maintenance projects, the primary task is to do a good job of information confidentiality. Through effective combination with information management practices, a number of feasible measures are formulated to fundamentally improve the stability and reliability of overall information system of equipment maintenance engineering.

3.2. Construction content of information management of aviation equipment maintenance engineering

First of all, hardware system construction. In the entire network management system, information management has always been at a relatively core position, playing a good command and guidance role in the development of equipment maintenance work. At the same time, it is also the equipment maintenance command. The important places for system maintenance and equipment maintenance monitoring are the basic conditions for the construction of infrastructure facilities such as servers and terminal equipment. The equipment command subnet is a place for real-time maintenance engineering and daily office work of various equipments, which can deepen the sharing depth between resources. The information registration query is applied to the information, and the device performs online instruction on related information, and effectively guides the actual operation of the field through remote video and the like. The maintenance point is at the very end of the aviation maintenance engineering information management, which is equipped with equipment maintenance activity monitoring and equipment data collection equipment.

Second, the software system construction. Fully apply the information network to the aviation maintenance support command automation subsystem, continuously improve the equipment maintenance mode and means at the current stage, implement monitoring, command and coordination of specific equipment, personnel and materials, and formulate corresponding equipment repair plans and The program will effectively improve the level and quality of equipment

maintenance management. The equipment support training and assessment subsystem makes full use of the network platform to provide an online practice model core online assessment function to solve aviation maintenance support. The aviation equipment maintenance management subsystem should comprehensively understand and master the specific equipment model, storage quantity and turnover situation, give full play to the functions of online inquiry, transmission and reception, and transfer of information, and conduct scientific research on the use and daily consumption of different types of equipment by each unit. The analysis provides a large number of reference for the ordering of the late equipment and the financing of its consumables.

4. Application of information management system in aviation equipment maintenance engineering

4.1. Guarantee aviation equipment maintenance support information perception

Under the background of modern informationization, the aviation equipment maintenance project is actually the analysis of the maintenance information acquisition and the effective deployment of maintenance resources. These contents make the equipment maintenance engineering have higher and higher requirements for the real-time and comprehensive information. The comprehensive application of information management technology in aviation equipment maintenance activities, based on powerful data analysis and data processing, quickly and accurately collect and store improved work data and task information generated during various maintenance operations, forming a comprehensive and multi-functional The level of aviation equipment maintenance support information source, to achieve the real-time perception of aviation equipment maintenance support information between the aviation equipment maintenance support unit.

4.2. Guarantee the precise control of aviation equipment maintenance support

The guarantee task goes straight to the front line. Through the information management platform, unified planning and processing of various types of codes and format standards in data information, speed up the establishment of a formatted information database, and the aviation commanders involved in maintenance operations can use the cloud computing network well. The control information is directly communicated to the frontline maintenance personnel, and the seamless management and control of the data is fundamentally realized based on the format.

More accurate maintenance. Through the effective application of information management technology, effective connection and communication between different systems has been formed, including fault information analysis and processing system, maintenance personnel capability information system, remote remote expert diagnosis system, maintenance support resource library, etc. Providing various dynamic, accurate and real-time equipment failure data for maintenance engineering operations, so that the time spent on aviation equipment maintenance information in the actual circulation process is greatly shortened, and while the accuracy of the data is improved, To a certain extent, it provides systematic support for the repair of aviation equipment.

4.3. Guarantee aviation equipment maintenance decision

The decision information capacity is huge. With its powerful network storage capability, information technology ensures the effective storage of information resources in an all-round way, especially some equipment maintenance data information, and provides corresponding information processing services.

Decision information is rapidly integrated. The informatization operation contains multiple

services, which can decompose various complexity tasks into multiple subtasks, and can ensure that each server maintains the same progress and level during task execution, and can quickly aggregate and integrate equipment maintenance information, anytime, anywhere. It provides various decision-making information and decision-making models to command organizations or commanders, and can update relevant information in a timely manner to ensure the “freshness” of information decision-making.

Easy to use decision information. Through the effective use of information management technology, the latest aviation equipment maintenance information can be sorted in an integrated form, and real-time situation maps can be generated according to the information feedback content, and directly pushed to the aviation equipment maintenance organizations at all levels to help maintenance personnel pass visualize the situation map to complete the development and implementation of maintenance decisions.

5. Key ways to improve the efficiency of information management in aviation equipment maintenance engineering

5.1. Development of aviation equipment support and database system

In order to realize the comprehensive improvement of information management efficiency, aviation units should accelerate the effective establishment of equipment quality inspection system, and build relevant maintenance efficiency simulation evaluation and equipment task assistant decision-making system on this basis; establish a professional maintenance sub-database to achieve For all models, such as machine, special, military, electric, and other models, for the different geographical environment, climate environment and application database of mission objects, simulation and performance based on aviation equipment maintenance evaluation database should be established. Through in-depth excavation and analysis of a large amount of data and information in the maintenance process of aviation equipment, the comprehensive processing of information such as recurring, multiple, dangerous and complex is taken as the focus of maintenance, and the corresponding decision support for aviation equipment maintenance organizations at all levels is supported.

5.2. Building a high-speed bandwidth information transmission network

The existing information platform and information network were completely upgraded and upgraded, which promoted the effective integration of infield SRU maintenance information and external field LRU maintenance information. The use of systematic and standardized segments to achieve effective integration of various sensor information, to give maintenance information in the transmission, storage and display of the level of automation, Fundamentally realize the effective solution to the problems of inadequate maintenance of the comprehensive class and the inconsistency of the situation display;

Further increase the research and development of the new aviation equipment maintenance information transmission network, in line with the various requirements of reliability, security and confidentiality in the modern information transmission process, solve the field training, major tasks, confrontation exercises, free air combat Short-term, high-demand task maintenance is difficult.

Based on the maintenance of various information resources of aviation equipment, the establishment of relevant database systems, timely update of the data involved, not only can fully improve the maintenance quality and maintenance efficiency of the aviation equipment award. Not only can the aviation equipment award maintenance quality and maintenance efficiency be fully improved, but also the level of intelligence in the process of maintenance quality appraisal and

assisted decision-making implementation can be achieved to some extent.

5.3. Establishing an interactive and interactive information processing system

With the continuous optimization and adjustment of the overall storage and management structure in the aviation equipment maintenance information processing system, the equipment maintenance organization gradually forms an integrated aviation equipment task processing system under the database technology. The entire information processing process is based on a series of equipment maintenance data and information provided under standardized processes and tools, and comprehensively process a pre-defined and high-quality analysis result to provide support for effective implementation of off-site distribution, simultaneous decision-making, and parallel interaction.

5.4. Strengthening the quality management of aviation maintenance under the conditions of information transformation

In the context of modern informatization, China's aviation equipment field has been comprehensively improved in terms of maintainability and reliability. At present, the corresponding aviation equipment maintenance quality management system should be established and improved, and the mechanization and informationization of aviation equipment maintenance should be fundamentally realized a positive shift between the two. The air quality maintenance management work is continuously strengthened. However, due to the large number of new technologies and new materials used in China's aircraft, the complexity and diversification of aviation maintenance operations are invisibly increased, the requirements for the quality of aviation maintenance are more stringent in terms of control and management.

6. Conclusion

In summary, since the reform and opening up, the national economic level has increased rapidly. China's aviation industry has shown rapid growth. The aviation maintenance work has undergone tremendous changes in terms of task volume and technical quality. The quality of maintenance is closely related to the safety of people's lives and property. It is necessary to further enhance the emphasis on management, and actively introduce modern management methods, correct the management responsibilities and attitudes of various departments, and make the aviation equipment maintenance management work fine, practical, and well done.

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