Research on the Integration of Civil Aviation Meteorological Services to Promote High Quality Development

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Abstract: The impact of current weather reasons on aviation safety efficiency and high operation requirements is becoming more and more significant. The role of meteorology in flight operation is becoming more and more prominent, and the needs of aviation meteorological users have undergone deeper changes. This paper starts with the urgency of the development of the integration of civil aviation meteorological services, and tries to improve the system for the integrated development of business services to help the operation of integrated services. It establishes a hierarchical training system to give full play to the advantages of human resources, and three connotations of adhering to guiding services to improve quality and efficiency, so as to further give full play to the role of aviation meteorology in promoting the safety, normal and efficient operation of civil aviation. We will promote the integration of meteorological services and work together to open up a new situation of high-quality development with safety and intimate service.

Keywords: Services; Diversity; Integration

1. Introduction

With the increasing impact of weather conditions on aviation safety and high operational requirements, the role of meteorology in flight operations is becoming more prominent. In addition, the frequent occurrence of extreme dangerous weather has led to an increasing demand for meteorological services from users, and the demands of aviation meteorological users have undergone deeper changes. This article analyzes how meteorological services can adapt to new needs, closely focusing on enhancing "safe operation" and "service improvement" to improve quality and efficiency, and solves how to improve aviation meteorological services to meet development needs and comprehensively ensure the construction of aviation operations.

The contradiction between the diversity of meteorological user needs and the imbalance and inadequacy of meteorological support capabilities will still be the main contradiction in the development of the civil aviation meteorological industry, both currently and in the foreseeable future. The observation seat and forecast seat of the airport meteorological station are still independent of each other in terms of work responsibilities, and personnel skills cannot meet the comprehensive ability reflection. The different institutional responsibilities have led to a lack of consensus on service concepts, and the two seats have not achieved collaborative management, resulting in the current seat setting not fully realizing the efficiency and value of human resources. So how to promote the integration of meteorological seats is also to promote the internal integration of observation and forecasting, the external integration of meteorology and users, promote a virtuous cycle of internal and external integration, continuously improve meteorological service capabilities, fully meet the needs of meteorological users, and build a new development pattern of meteorological dual integration driven by user needs.

2 Cause Analysis

2.1 Nertial Thinking about Operating Post

Meteorologists, guided by the actual results of their work as forecasters and observers, tend to think according to their own inherent thinking. Long established professional habits define the birdcage effect, which means that when they see a birdcage, they must have raised birds. Therefore, psychological construction means that being an observer cannot be a forecaster, let alone how to avoid the risks caused by different orientations of inertia thinking, regulations, and safety management requirements through seat coordination.

It is difficult to balance the selection of systems

and services in business operations. Especially for observation seats, the main focus of the system is still on data collection, recording, reporting, and notification within the central area of the field. The safety requirements, operating environment, and service requirements of users have undergone significant changes today, leading to meteorological personnel reporting compliance with system requirements and reporting compliance with service requirements, which can also lead to inconsistent conclusions among users. In the increasingly developing aviation industry, meteorological requirements are becoming increasingly diversified, which requires the meteorological industry to break away from its inherent thinking mode. Under the effective implementation of regulations and rules, it is necessary to closely focus on the contradiction between the growing diversity of user needs and the imbalance and insufficiency of support capabilities, seek common ground while reserving differences, and promote the construction of meteorological integration.

2.2 Requirements for Aviation Meteorological Service Characteristics

2.2.1 Diversified Demand

Nowadays, aviation meteorology plays an increasingly important role in ensuring safe operation efficiency, leading to an increasing demand from users for aviation meteorology. There is a need for low altitude services in general aviation services, refined segmentation and segmentation of regulated users, energy conservation and emission reduction to improve operational efficiency in airlines, and specialized information. Ultimately, the development of meteorology revolves around diverse needs, in order to enhance the driving force for addressing the imbalance and inadequacy between development needs and service guarantees, and to respond to the new opportunities, challenges, tasks, and requirements that demand brings to services.

2.2.2 Refinement of Service Requirements

With the increasing demand for efficiency from users, the demand for services is also becoming more refined. The true reflection is reflected in the placement of meteorological services in time and space, which also puts forward higher requirements for product diversity, targeting, and initiative. This is also the industry's development direction for avoiding service requirements.

2.3 Differentiation in the Development of Imbalanced Systems and Actual Operational Practices

2.3.1 Differentiation of Scoring Effectiveness and User Experience, Operational Impact

Forecasts are all probabilistic, and the accuracy of the world's top numerical forecasts and other forecasting methods is limited. Users may trust forecasts because they have been accurate several times in a row, or they may not trust forecasters because they have been unreliable. Is the forecast a chicken rib that is tasteless to eat and regretful to discard. So the rating effect cannot truly reflect the user's true feelings about the service experience.

2.3.2 Imbalanced Development of Systems and Diverse Products

Due to the consideration of user needs, the diversity of customized products is becoming increasingly diverse, resulting in an increasing variety of forecast products. Although there are too many meteorological products, it is also more likely to lead to excessive user information and inconsistent conclusions, especially in extreme weather conditions involving edge conditions, which can easily cause users to have nowhere to go.

3 Implementation Strategy for Integrated Operation of Aviation Meteorological Services.

3.1 Improve the System for Integrated Development of Business Services

Due to inertia thinking, aviation meteorological observation, forecasting, and services are often in an independent and separated state, and the systematic and coordinated nature of institutional norms is also relatively poor, which is not conducive to communication and collaboration. Therefore, closely linking the central goals of "safe operation" and "service improvement", traditional seats are rearranged. The integrated management of observation, forecasting, and services can effectively provide service efficiency and avoid the inefficient and high repetition rate of traditional work operation modes, forming a comprehensive development form of aviation meteorology with integrated business functions, clear seat responsibilities, and intensive management modes. The specific measures are as follows: firstly, to rationalize the combination of actual work, closely integrate existing functional responsibilities with actual

work, fully analyze and develop feasible and highly operational operating mechanisms that are in line with the actual operating mode. Among them, there are training systems, job operation manuals, safety control modes, and emergency response modes, with similarities and differences, starting from the work priorities and service points of each position as much as possible, truly achieving the goal of "close to operation, close to needs, and standardized and orderly". The second is dynamic revision. There may be different differences in the practice of the three seats, and they should be unified and coordinated, constantly adjusting in sync with the overall goal of integrated development of meteorological business. Gradually improving the system in dynamic development, so that it can truly fit the development of integrated business services and serve. The purpose of providing services for meteorological observation positions, forecast positions, and service positions should be consistent, that is, the observation position should be precisely monitored according to the operational service requirements in use, the forecast position should be accurately released according to operational requirements, and the service position should be finely serviced according to tactical needs, promoting the high-quality development of meteorological services through "three refinements". Based on institutional requirements, continuously strengthen service collaboration from the perspective of users, utilize existing detection methods, assist and analyze to achieve better service collaboration mechanisms.

3.2 Establishing the Cultivation of Professional Skills for Integrated Meteorological Talents

According to license requirements and traditional seat setting requirements, meteorological personnel have single professional skills, each holding corresponding licenses and independent duty seats, resulting in a significant gap between personnel skills and actual user needs. Repeated and mechanized observation seats also easily make meteorological personnel lose their initiative. In the context of integrated development of meteorological services based on user needs, higher requirements are placed on the comprehensive abilities of personnel. Composite meteorological talents not only provide meteorological personnel with more qualification platforms, but also better adapt to current development needs. The hierarchical classification of seats is not only the classification of training systems, but also the classification of qualifications and abilities. Only by continuously optimizing and improving the training system of meteorological personnel can the comprehensive skills of meteorological personnel be enhanced. By segmenting the training of business skill levels, promoting the integration of internal seats and external traffic control, in line with the construction of integrated meteorological services, we can fully leverage the advantages of human resources and improve the efficiency of integrated meteorological services.

3.3 Three Adherence Directions Help Improve Service Quality and Efficiency.

3.3.1 Adhere to Demand Orientation and Optimize Service Supply

How to better integrate service orientation and user needs, take demand as the starting point, adhere to both seeking benefits and avoiding harm, comprehensively expand the field of grassroots meteorological services, and strengthen the effective supply of meteorological services. For users, due to insufficient meteorological knowledge, there is a significant cognitive gap in identifying and using the provided plaintext messages, code messages, graphic information, etc. Although too many meteorological products are rich, they are more likely to lead to excessive user information and inconsistent conclusions. Users prefer to obtain the most direct conclusions. Graphical and visual direct weather information is conducive to improving the maximum efficiency of users, allowing weather information to play a more accurate and timely role. The more service products there are, the more responsibilities and tasks there are for each seat, so repetitive work can easily lead to increasing work pressure for each seat. Therefore, the integration of business services and the consistency of conclusion summary should be consistent, whether it is the release of live products, various forecast products, or service products. The conclusion should be consistent, effectively integrating user demand task lists, combining existing rules and regulations, adhering to proactive and genuine service demand orientation, optimizing the standardization and applicability of product

releases, and more accurately improving service efficiency. For example, the current trend forecast code message provides a brief explanation of the situation for the next 2 hours, and the airport alarm text is accompanied by a public online graphic service, which is conducive to solving the differences in user understanding of service conclusions.

3.3.2 Adhere to Problem Orientation and Improve the Quality of Development

In recent years, the standardization of civil aviation meteorological work has made significant progress, and trend forecasting assessments, MDRS probability forecasting competitions, and airport alarm quantification evaluation competitions have emerged one after another. However, due to the incomplete compatibility of supporting evaluation rules, localized climate characteristics in various regions, and defects in scoring methods, frontline personnel may overlook the significance of product services for operation and only consider high scoring strategies in one direction, Due to the uneven development between the system and actual operational practice, high scoring effects are not equivalent to service effects, nor are they completely equivalent to the true reflection of operational impact. In actual operation, it is recommended to continuously improve the reasonable corresponding values between operational services and rating effects in the later stage, in order to better fit the original mission of civil aviation meteorological services in civil aviation operations.

3.3.3 Adhere to Goal Orientation and Optimize Development Layout

Adhere to the goal of prioritizing service, innovate measures around actual needs, and establish refined and efficient business processes. The goal of the service is to facilitate the scientific prevention and control of operational risks for aviation users, and to minimize and avoid catastrophic losses to the greatest extent possible. At present, in combination with service orientation and user needs, precise observation, accurate forecasting, and precise service requirements are benchmarking. The precision of service lies in the alignment between conclusions and needs. Therefore, strengthening the mastery of meteorological personnel's knowledge of control and flow management, understanding the thoughts of users, and aligning with their thoughts, can actively integrate aviation meteorology and aviation operations in depth, continuously reflecting the new meteorological pattern of "sincere service, safety accompaniment", It is a new situation where both internal and external circulation work together to promote high-quality development.

4. Conclusion

The current civil aviation meteorology has shortcomings such as incomplete personnel team construction, incomplete detection equipment matching, and insufficient professional identity. The inertia thinking of making it difficult to forecast 100% of the actual situation also hinders the implementation of work to a certain extent. Effective measures should be considered from the following aspects: firstly, continuously integrate and optimize the system of meteorological services in accordance with user needs and regulations; Secondly, with the combination of seat integration and control, traffic flow, and existing technological means, the conclusion is more in line with the integration of meteorology and operation; Thirdly, accelerate the cultivation of composite meteorological talents, optimize the allocation of meteorological talent resources, and leverage the overall function of meteorological service teams. Actively implementing the strategic concept of building a strong civil aviation country, fully leveraging the promoting role of aviation meteorology in the safe, normal, and efficient operation of civil aviation, promoting the integration of meteorological services, and focusing on reform and innovation, sorting out new thinking, working together to open up a new situation of high-quality development where safety is at the heart and services are considerate.

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