

INTEGRATION OF THE FLIGHT SAFETY MANAGEMENT SYSTEM (SMS) AND QUALITY MANAGEMENT SYSTEM (QMS) INTO A UNIFIED SINGLE MECHANISM OF AVIATION SAFETY MANAGEMENT

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The article considers the role of integration processes of the quality management system in the field of civil aviation. The process of effective implementation of IMS in the corporate environment is taken into consideration and substantiated. The analysis of ICAO-9859 Document is carried out and the need for the implementation of an integrated corporate management system in organizations operating in civil aviation is substantiated. The advantages of using integrated systems are substantiated. General and specific principles of the Safety Management System (SMS) and Quality Management System (QMS) are highlighted. The created system for the effective implementation of the IMS is considered using a specific example of applying the requirements of the "Safety Management Manual".

Keywords: Civil Aviation, Recommended Practice, Integrated Management System (IMS), Safety Management System (SMS), Quality Management System (QMS), ICAO, IATA, Council, Compliance Management, Quality, Safety, System.

The theme of the development trend of international aviation has always been highly relevant and large-scale. Taking into account the national interests of the ICAO Member States, the Chicago Convention provided paragraphs requiring the adoption of SARPs (Civil Aviation Recommended Practices), as well as the introduction of relevant amendments and additions to them by the ICAO Permanent Executive Body - Council [[https:// www. icao. int/about-icao/Council/Pages/Council.aspx](https://www.icao.int/about-icao/Council/Pages/Council.aspx)].

The state ought to enforce the legal framework for aviation activities in order to ensure the availability of the national regulatory conditions for fulfilling common duties and obligations under the Chicago Convention. According to the provisions of SARPs, such a legislative framework is adopted at the highest legislative level. The legislative framework is usually referred to as the main aviation legislation ("Basic Aviation Law", "Aviation Rules" or "Basic Regulation"), which can be supplemented by Decrees of the Presidents of the ICAO Heads of Member Countries, Ordinances of the country's legislative body, Commands by the State Civil Aviation Administrations (SCAA), etc.

The ICAO Council, recognizing the need to determine the relationship between the critical elements of the state flight safety control system,

introduces some updates and additions to the SARPs for the Safety Management System (SMS), clearly defining additional explanatory notes aimed at ensuring the implementation of these requirements. It should be noted that both the provisions of the Chicago Convention and SARPs establish common duties and obligations for all ICAO member states, which determine the state's responsibility in civil aviation. These conditions are: an acceptable level of uniformity of practice and procedures of the Civil Aviation Authority (Civil Aviation Authorities - CAA) in regulating the activities of civil aviation, which will be sufficient for effective interaction of states at the international level. The implementation of SARPs is aimed at achieving a rational level of unification and effective harmonization of applicable standards in order to ensure the necessary and acceptable level of uniformity of state regulation procedures and practices for civil aviation signatories to the Chicago Convention [Art. 38 Convention on International Civil Aviation].

The rapid development of the concept of "Flight Safety Systems" has been rapidly changing in recent years. Since 2000, ICAO has actively started to apply and develop a management mechanism in this direction. The basic concepts and criteria of the system were defi-

ned in the first edition of the “Safety Management Manual”, published in 2006 [ICAO-9859 No. AN/460]. Taking into account the wide range of risks of aviation activities directly related to the operation of aircraft and processes (ensuring their operation), ICAO sets a strategic goal - to identify effective methods to reduce risks and provide mechanisms for their control and coordination.

In order to improve the mechanism and system of uniformity of practice procedures in February 2013, the ICAO Council unanimously adopted the “International Standards” and the “Recommended Practice” reflected in the first edition of ICAO Appendix 19, defined in the main document on “Flight Safety Management”. However, taking into account the specific features of this mechanism and the forthcoming scope of work that needs to be determined for its practical application and taking appropriate measures to improve it in accordance with the established standards and requirements, the ICAO Council determined the date of application in practical activities from November 14, 2013 (after 9 months).

In the process of full studies and detailed analysis of the amendment, it can be concluded that the main objective of this amendment is to clearly define the criteria for the application of the Safety Management System (SMS) in organizations responsible for the design of the type and manufacture of engines and propellers. This is facilitated by the mention of these organizations in Appendix 8, “Airworthiness of Aircrafts”. The author also formulated the conclusion that the corresponding amendment provided an increase in the level of protection measures for received data and information about the flight safety status, as well as their sources. He also focuses on the fact that one of the key elements of the amendment are to increase the status of the SMS management mechanism at an objective level. The indicated content was displayed in the previous supplement to Appendix 19 to the status of SARPs that were included in the new appendix.

A detailed analysis of the development trend made it possible to draw the attention of

the author of the article that, as a result of the adoption of the amendment by the ICAO Council in March 2016, the second edition of Appendix 19 was published. This Appendix fully reflected the material nature of the amendment and thereby completed the second stage of development of this Appendix.

The author of the article points out that, despite the fact that the second edition of ICAO. Appendix 19 Flight Safety Management came into force on July 11, 2016, the application of this document was determined for the period from the beginning of November 2019. A little later, gradually realizing its strategic goals and planned measures to improve the safety system of all aviation activities in general and based on the updated requirements of the second edition of Appendix 19, in November 2018 the 4th edition of the “Safety Management Manual” is published.

From the point of view of the author of the article, this document has fundamentally changed the concept of a safety system, the areas of its distribution and application in civil aviation. He argues that while previous Safety Guidelines defined clear criteria for safety management processes, the latest edition of the Safety Guidelines defines corporate a set of ideas and standards for integrated safety management systems for all levels, areas and spheres of aviation activity. The state’s safety management responsibilities are outlined in Chapter 3 of Appendix 19, and include the requirement for service providers specified in SARPs to implement SMS (Safety Management Systems). Regarding the implementation of SMS by service providers, a detailed description is given in Chapter 4 of Appendix 19.

After analyzing the fourth edition of the Safety Management Manual, it was concluded that this document defines the basics of using effective integrated management system, as well as the safety management mechanism at the corporate level. The author cites the excerpt from clause 9.7.5.2 as an example. Document ICAO-9859, which describes a list of systems that may be part of a single integrated management system. These stand out:

1. Quality Management System(QMS);
2. Safety Management System (SMS);
3. Aviation Security Management System (SeMS);
4. Environmental Management System (EMS);
5. Occupational Health and Safety Management System (OHSMS);
6. The System of Financial Management (FMS) ...[Chapter 9.7.5.2. ICAO-9859 "Safety System Manual"]

Through the introduction and development of the integration of various management systems for organizations, it is possible to create effective and efficient management at a high quality level, demonstrating a single strategic focus and purpose of these systems. The author proposes a more detailed analysis of the components of each of these systems, highlighting the basic requirements and regulations, the basis of which are determined in International Standards. So, for example, in the part of the Quality Management System, a single standard ISO-9001 is defined (version from 2015). This standard is the fundamental basis for most standards defined by systemic requirements. The main criteria for companies has implemented a management system in accordance with the requirements of the specified standard include:

- **Definition of the environment of the company** (at the same time, this requirement covers the understanding of the organization, the definition of requirements and expectations of stakeholders, the definition of the scope of the QMS, as well as a description of the QMS and its functioning processes).

- **Demonstration of leadership of senior management** and its commitment to maintaining and developing the QMS (which covers: general leadership requirements; whereby this commitment should be ensured; the principle of customer orientation; the requirements of the Quality Policy; as well as the criteria for determining functions, responsibilities and authorities).

- **Planning** (in relation to risks and opportunities, goals and measures for their achievement in the field of development of a workflow management system, as well as in the field of

processes associated with changes ("Change-Management").

- **Resources and means of support** (it is a complex that includes human resources, infrastructure, environment for the functioning of processes, resources for monitoring and organizational knowledge, as well as requirements for competence, awareness and internal corporate information exchange).

- **Ensuring and monitoring the activities of companies** at the stages of the life cycle of products and services (covers the criteria for: planning and managing company activities; customer relations; determining requirements for products and services; designing and developing products or services; suppliers and outsource process management; as well as the general process of production, output of a product / service and the management of inappropriate results of work processes).

- **Evaluation of the performance** of the whole organization (which covers the requirements for monitoring, measuring, analyzing and evaluating processes in the field of: customer satisfaction; conformity of products or services; QMS effectiveness; planning success; actions taken to address risks and opportunities; suppliers' performance results and needs to improve the whole control systems). A special part is allocated for the analysis of the entire management system by senior management.

- **Improvement** (the concept of which includes the whole range of activities are related to correction, corrective actions and the mechanism for managing inconsistencies, continuous improvement of the system, innovations and reorganization processes) [International Standard ISO-9001: 2015].

The author focuses on the requirements of the paragraph 9.7.6. Document ICAO-9859, which clearly defines the need for integration of SMS (Safety Management System) and QMS (Quality Management System). Both systems complement each other: while SMS focuses on managing safety risks and safety indicators of all airline operations, QMS focuses on complying with regulations and requirements in order to meet customer expectations and contractual

obligations [Chapter 9.7.6. ICAO-9859 Safety System Manual].

At the same time, the objectives of the SMS are defined in hazard identification, assessing safety risks and implementing effective risk control in the safety sector. In contrast, the QMS focuses on the consistent delivery of products and services that meet the relevant specifications and processes for managing and coordinating production risks.

As a result of the processes of research and analysis of systems of both SMS and QMS, the author draws attention to the fact that both systems should:

- be planned and managed;
- strive for continuous improvement;
- use all the organizational functions of business processes;
- identify ineffective processes and procedures;
- have the same goal - to provide consumers / customers with safe and reliable products and services.

In recent years, applying the international practice of leading companies based on the latest ICAO requirements, some providers and operators have implemented an integrated ma-

agement system in practice, combining the requirements of a quality management system and a safety management system (combining them into a single corporate management system). As a rule, this system is defined as the organizational structure and associated resources, procedures and business processes (necessary to create and continuously improve the system and improve the quality level) when providing a product or service by means of complying with safety standards and requirements. In other words, the development trend of the latest ICAO documents in the field of management systems is determined by the fact that monitoring compliance with Compliance Management is becoming an integral part of ensuring more effective control of safety risks [International Standards and Recommended Practice, https://studme.org/308206/tehnika/mezhdunarodnye_standarty_rekomenduemaya_praktika#618].

The author of the article, determining the strategic orientation towards the integration of the main systems of functioning of organizations in the field of civil aviation, highlighted the general and specific necessary principles of both systems - QMS and SMS:



To sum up his article, the author concludes that the quality and safety management processes will be effective and efficient in an integrated management system with common goals and decision-making, given the wider impact on all types of activities of the organization. At the same time, complementing each other within the framework of a single centralized corporate governance system, they will contribute to the achievement of common goals - improving the quality level (of the services provided or the provision of the product) through compliance with safety requirements.

REFERENCES

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UÇUŞ TƏHLÜKƏSİZLİYİ (SMS) VƏ KEYFİYYƏTİN İDARƏETMƏ (QMS) SİSTEMLƏRİNİN ÜMUMİ AVİASİYASININ TƏHLÜKƏSİZLİYİNƏ NƏZARƏT MEXANİZMİNƏ İNTEGRASIYASI

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Məqalədə Mülki Aviasiya sahəsində Keyfiyyət İdarəetmə Sisteminin integrasiya proseslərinin rolu məsələsindən bəhs olunur. Korporativ mühitdə İnteqrə olunmuş Menecment Sisteminin effektiv tətbiqi konsepsiyası nəzərdən keçirilir və təhlil olunur. İKAO-9859 Sənədinin təhlili aparılmış və mülki aviasiya ilə işləyən təşkilatlara vahid korporativ idarəetmə sisteminin tətbiq olunmasının zəruriliyi əsaslandırılmışdır. İnteqrasiya olunmuş sistemlərin tətbiqinin üstünlükləri əsaslandırılmışdır. Uçuşların Təhlükəsizliyi İdarəetmə (SMS) və Keyfiyyət İdarəetmə (QMS) sistemlərinin ümumi və spesifik prinsipləri vurğulanır. "Təhlükəsizliyin İdarə olunması sahəsində Təlimat"ın tələblərinin konkret nümunələri əsasında İnteqrə olunmuş İdarəetmə Sisteminin effektiv tətbiqi araşdırılmışdır.

Açar sözlər: Mülki Aviasiya, Təvsiyə olunan təcrübə, İnteqrasiya olunmuş İdarəetmə Sistemi (İMS), Uçuşların Təhlükəsizliyi İdarəetmə Sistemi (SMS), Keyfiyyət İdarəetmə Sistemi (QMS), İKAO, LATA Uyğunsuzluqların İdarə edilməsi, Keyfiyyət, Təhlükəsizlik, Sistem

ИНТЕГРАЦИЯ СИСТЕМЫ УПРАВЛЕНИЯ БЕЗОПАСНОСТЬЮ ПОЛЁТОВ И СИСТЕМЫ МЕНЕДЖМЕНТА КАЧЕСТВА В ЕДИНЫЙ МЕХАНИЗМ УПРАВЛЕНИЯ БЕЗОПАСНОСТЬЮ АВИАЦИИ

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В статье рассмотрен вопрос, касающийся роли процессов интеграции Системы Менеджмента Качества в сфере гражданской авиации. Рассмотрено и проанализировано понятие эффективного внедрения ИСМ в корпоративной среде. Проведён анализ Документа ИКАО-9859 и обоснована необходимость внедрения интегрированной системы корпоративного менеджмента в организациях, в сфере гражданской авиации. Обоснованы достоинства и преимущества внедрения интегрированных систем. Выделены общие и специфичные принципы Системы Управления Безопасностью (SMS) и Системы менеджмента Качества (QMS). На конкретном примере требований «Руководства Управления Безопасностью» рассмотрена система эффективного внедрения ИСМ.

Ключевые слова: гражданская авиация, рекомендуемая практика, Интегрированная Система Управления (ИСМ), Система Управления безопасностью полётов (SMS), Система Менеджмента Качества (QMS), ИКАО, ИАТА, Управление соответствием, качество, безопасность, система