

A Review of Transportation Aviation Operational Safety Research in China and the United States

Dan Li ^{1, a, *}, Lin Wei ^{1, b}

¹ School of Flight Technology, Civil Aviation Flight University of China, China

^{a, *} 15283827597@163.com, ^b weilin@cafuc.edu.cn

Abstract. According to relevant data from ICAO and China's civil aviation, the global aviation industry is in a gradual recovery phase. As the world's first and second largest aviation markets, China and the U.S. have extensive cooperation in a number of fields such as aircraft and airborne equipment manufacturing, pilot training, air traffic management, energy conservation and emission reduction. Working together to address challenges and accelerate economic recovery is the main theme of the world today, and is a common priority for the global civil aviation industry. China and the United States have the responsibility to cooperate in all aspects under the framework of ICAO's Global Development Initiative and play a greater role in the recovery and development of global civil aviation.

Keywords: ICAO; gradual recovery phase; pilot training; address challenges; ICAO's Global Development Initiative.

1. Introduction

In the area of flight standards, there is a broad consensus on the operating regulations between the United States and China. This is not only due to the fact that China and the U.S. have similar operational volumes and characteristics, but also based on a common understanding of airline management [1]. For many years, China and the U.S. have been exchanging and discussing the management methods of training, fatigue, airworthiness, safety, etc. Both sides have the opportunity to focus on the core of airline operation, differentiate the operation control methods of airlines from a system engineering perspective, find the commonalities, and then carry out differentiated supervision; share the practical experience of operation risk control in the context of digitalization. We will discuss how to strengthen the link between operation control and flight by improving the quality of flight dispatchers, and how new technologies can empower safety [2]. I believe that these studies are of great importance to the development of civil aviation in China and the United States.

2. Study on the current situation of global civil aviation industry and the development path of China's civil aviation

As the only fast global transportation network, the development of civil aviation industry has never been single and independent from other industries [3]. From influencing the world through its own creativity to reacting to the continuous changes in external environment, civil aviation industry is both a driving force and a barometer of economic development. With global economic stagnation under the impact of the epidemic, market turmoil, industry chain disruptions and restructuring, the potential for new economic stimulus policies, trade protection and the trend toward counter-globalization, we are facing increasingly complex challenges, both from nature and from ourselves [4]. The latest analysis of the economic impact of the new crown (COVID-19) on civil aviation published by ICAO in 2022 shows that global passenger traffic in 2021 is down by 2.3 billion passengers, or 49%, compared to 2019 before the epidemic, which is of course far better than the 60% drop in 2020, with a projected decline of between 26% and 31% this year compared to 2019. Statistics show that China's civil aviation has maintained its growth trend last year in terms of passenger turnover, cargo and mail turnover, transport flight hours and landings and takeoffs by 3.5%, 15.8%, 6.4% and 6.5% respectively compared to 2020, but still a big gap compared to 2019 before the epidemic. The accumulating epidemic-derived safety risks and the continuously

increasing production and operation pressure have brought great challenges to the safe operation and regulation of civil aviation worldwide [5].

After years of learning, exploring and developing, China's civil aviation has gradually found a development path that meets its own characteristics in terms of safety operation and supervision, and we are forming a complete safety operation and supervision system from the national safety program down to the safety management system [6]. This complete system has to undergo multiple verifications and tests in the process of formation, and the epidemic is one of them. Integrating development and safety in high-quality development is a major principle and requirement for achieving Chinese-style modernization, and it is the primary task for civil aviation to achieve high-quality development.

3. Study on the cooperation mechanism of Sino-US transport aviation operation safety

Achieving the expected safety and efficiency is the goal of airline operation and the yardstick to measure government regulation and service. Operation control, as the core of airlines to achieve safe and efficient operation, is the brain and decision center of airline operation, which has extensive integration capability and rapid response capability [7]. This is a difficult problem for both the company and the bureau to make quantitative and qualitative decisions.

Since the formal establishment of the China-U.S. Aviation Cooperation Program (ACP) mechanism in 2004, China and the U.S. have carried out a lot of cooperation under the framework of the ACP platform and achieved great gains, and the ACP has become an important channel for coordination and communication between the Chinese civil aviation and the U.S. civil aviation community. The fruitful results of the ACP cooperation mechanism are a model of cooperation between China and the U.S. in civil aviation, as they have brought together good expectations for the future and the willingness to cooperate and develop each other [8]. China greatly recognizes the important role played by ACP in enhancing mutual communication and understanding between technical departments of both sides and promoting healthy interaction. We appreciate the positive contributions made by ACP and Chinese and American experts and scholars in promoting the safe operation and smooth development of civil aviation in both China and the United States!

China and the U.S. are both world powers, and the relationship between China and the U.S. has been called "the important bilateral relationship of the 21st century. U.S.-China civil aviation cooperation is an important part of the U.S.-China relationship. In terms of future development, many organizations predict that China's civil aviation will become the world's largest aviation market [9]. The potential for U.S.-China cooperation is huge and the prospect is very broad. The in-depth cooperation between China and the U.S. civil aviation will promote the development of economic trade between the two countries and help further bring the two peoples closer together.

The world is undergoing profound changes today, and a new round of technological revolution and industrial change is roaring ahead. China and the U.S. civil aviation should take a development perspective to insight the industry trends, consolidate the consensus, promote in-depth cooperation, and jointly promote the high-quality development of civil aviation in both countries [10]. To sum up, the following three suggestions are made for the Sino-US transport aviation operation safety cooperation mechanism:

3.1 Expand consensus and collaborate on equal footing

China and the U.S. civil aviation should strengthen exchanges and cooperation on the basis of equality and respect, actively promote exchanges among civil aviation authorities, transport airlines, scientific research institutions and other aspects, and expand the consensus between the two sides in all aspects and at all levels. In the face of the repeated impacts of the epidemic, enhanced cooperation between the two sides is the only solution. "A gentleman is harmonious but different", and both sides should collaborate on an equal footing. The process of constantly identifying

problems and working together to solve them will allow everyone to abandon preconceptions and prejudices. Both China and the United States should focus on solving practical difficulties, adhere to scientific management, and promote the steady development of the aviation industry in both countries [11].

3.2 Grasp the opportunity and move forward with courage

At the recently concluded 20th National Congress of the Communist Party of China (CPC), General Secretary Xi Jinping proposed to build a Chinese modernization, and made a macroscopic outlook on the two-step strategic arrangement for the comprehensive construction of a strong socialist modernization state, focusing on the deployment of strategic tasks and major initiatives for the next five years. The first and foremost task. The report especially puts forward the goal of accelerating the construction of a strong transportation country, and promoting high-quality development of civil aviation is an indispensable part of a strong transportation country. With the arrival of the 14th Five-Year Plan and the effective control of the epidemic, China's civil aviation will definitely usher in a new stage of development. The market potential of China's civil aviation is deep and promising. Both Chinese and American civil aviation should seize this development opportunity, firmly believe, overcome difficulties, and conduct more in-depth friendly exchanges and cooperation in a broader field.

3.3 Mutual benefit and win-win situation, and make progress together

It is China's basic national policy to insist on opening up to the outside world, and China firmly pursues an open strategy of mutual benefit and win-win situation. China's civil aviation continues to provide new opportunities for the world with the new development of China's civil aviation, which has strongly promoted the development of the world economy and better benefited people from all countries [12]. Aviation plays a very important role in the process of globalization, and understanding and supporting globalization could not be easier for our civil aviation industry. We should promote cooperation together, we should oppose protectionism and technical barriers, create a favorable development environment together, further strengthen the exchange of aviation products and cooperation between the aviation industries of both countries, and effectively bring more benefits to the aviation enterprises and people of both countries.

4. Summary

The establishment of the ACP has enabled the two countries to communicate and cooperate more closely and efficiently, and the scope of cooperation has been extended to all aviation technology companies and transportation companies in the United States. In the past 18 years, with the support of all parties, the ACP has held 7 Sino-US Civil Aviation Symposiums and carried out nearly 40 cooperation projects, and the results achieved are obvious to all. "As long as the two countries work together, they can continue to overcome all kinds of difficulties and obstacles, push the cooperation between the two countries to a new peak, stand at the forefront of the times, and make new contributions to the prosperity of the aviation industry of both countries!"

Acknowledgment

Thanks to the opportunity provided by the Flight Standards Division of the Civil Aviation Administration of China (CAAC) and the Civil Aviation Flight University of China (CAFUC), I have the honor to work in the Flight Standards Division on secondment for one year and have a certain understanding of the safety operation and administrative supervision of the Bureau. At the same time, with the ACP platform built by China and the US, I have had in-depth communication with some US aviation technology companies and transportation companies in transportation

aviation operation safety, which has laid a very good theoretical foundation for research and analysis of transportation aviation operation safety.

References

- [1] Dong Nianqing. A study of air transportation agreements between the United States and China [J]. Journal of Civil Aviation University of China, 2008, 26(4):8.
- [2] Liu Hongshi. Study on the strategy of sustainable development of air transportation in China [D]. Wuhan University of Technology.
- [3] Wu Cong. Study on the development of civil aviation safety and its laws in China and the United States [D]. Civil Aviation University of China.
- [4] Xiao Yuyao, Qu Kai, Yao Danping, et al. A comparative study of civil aviation safety management organization system in China and the United States[J]. Jiangsu Aviation, 2016(1):2.
- [5] Zhao Fenglu. Analysis of safety trends in China's civil aviation and comparative study at home and abroad [D]. Civil Aviation University of China.
- [6] Juno. Research on the current situation and future development strategies of China's international air transport market[J]. Civil Aviation of China, 2019(6):4.
- [7] Zhou Su-Ping, Chen Ru-Wei. Study on the liberalization process of the aviation market in China and the United States and its impact on the market[J]. Civil Aircraft Design and Research, 2018(3):8.
- [8] Zheng Xingwu, Zhang Lingxiang, Lu Wei. On the impact of liberalization of bilateral air transport agreements between the United States and China[J]. Journal of Civil Aviation University of China, 2007, 25(4):5.
- [9] Wen, Kai. The future pattern of shared travel business from the history of air transportation industry in China and the United States[J]. Tsinghua Financial Review, 2018(10):2.
- [10] Hu Xiaoyu. Research on the international competitiveness of China's civil aviation transportation industry [D]. Beijing University of Technology and Business, 2009.
- [11] You Huai Mo. Global commercial air transport market review and outlook[J]. International Aviation, 2022(2):5.
- [12] Li Jiexiang. Analysis and suggestions of China-US airline operations[J]. Civil Aviation Management, 2004, 000(005):19-20.