

Action Support of Unmanned Combat Forces in the Security of Hangzhou Asian Games and Its Enlightenment

Zhongjia Li¹, Wei Chen², Guobao Du³

¹ Chinese People's Armed Police Force Zhejiang Corps, China

² Army Academy of Artillery and Air Defense, Hefei, Anhui, China

³ Chinese People's Armed Police Force Beijing Corps, China

Abstract: This paper discusses the application of unmanned combat forces in the security work of Hangzhou Asian Games, the action guarantee measures and its experience and enlightenment. As an international sports event, Hangzhou Asian Games put forward extremely high requirements for security work. Unmanned combat forces, including UAV, unmanned ground vehicles and unmanned security inspection system, have significantly improved the efficiency and accuracy of security work by virtue of their high efficiency, flexibility and accuracy. These technologies enhance safety prevention through real-time monitoring and efficient patrol. This study summarizes the application experience of unmanned combat forces in the security field, and emphasizes the importance of technological innovation and application, as well as the necessity of coordinated operations and the improvement and compliance of laws and regulations. The successful application of unmanned combat forces not only provided a solid security guarantee for the Hangzhou Asian Games, but also provided useful reference and enlightenment for the security work of similar large-scale international events in the future.

Keywords: Action Support; Unmanned Combat Forces; Asian Games; Security.

1. Introduction

As an international sports event, the Hangzhou Asian Games not only showed the competitive style of athletes from various countries, but also put forward extremely high requirements for security work. In such a large-scale activity, it is very important to ensure the safety of participants and spectators. Therefore, the rigor and efficiency of security work have become an important challenge that organizers must face. In recent years, with the rapid development of science and technology, unmanned combat forces have gradually emerged in the field of security. With its high efficiency, flexibility and accuracy, it has brought new possibilities for modern security work.

Unmanned combat forces, including UAVs and unmanned ground vehicles, have the advantages of long working hours, quick response and high mobility, and can play an important role in the complex and changeable security environment [1-2]. In the Hangzhou Asian Games, the introduction of unmanned combat forces not only improved the efficiency and accuracy of security work, but also reshaped our cognition and expectation of security work for large-scale events to some extent.

This paper discusses the specific application of unmanned combat forces in the security work of Hangzhou Asian Games, analyzes how it can provide a strong guarantee for the smooth progress of the activities, and draws lessons from it, with a view to providing useful reference and enlightenment for the security work of similar large-scale international events in the future.

2. Application of Unmanned Combat Forces in the Security of Hangzhou Asian Games

During the Asian Games in Hangzhou, unmanned combat forces, as a new force in security work, played a decisive role. The introduction of these high-tech equipment not only enhances the rigor of security, but also greatly improves the efficiency of dealing with emergencies.

UAV reconnaissance and surveillance played the role of air marshal in the security of the Asian Games. The UAV equipped with high-definition camera conducts uninterrupted flight reconnaissance around the venue, and transmits pictures to the command center in real time, so that the security team can quickly grasp the security situation around the venue [3]. The high mobility and flexibility of UAV enable them to reach the designated place quickly, and monitor suspicious targets for a long time with high precision, thus effectively preventing potential security threats.

Unmanned ground vehicles took on the heavy responsibility of ground patrol during the Asian Games. These vehicles are equipped with advanced sensors and cameras, which can carry out autonomous navigation and patrol in complex venue environment. They can not only find abnormal situations in time, but also respond quickly in emergencies, providing strong support for security personnel [4]. The use of unmanned ground vehicles has greatly reduced the patrol burden of security personnel and improved the overall safety monitoring ability.

Unmanned security inspection system also played an important role in the security of Hangzhou Asian Games. These systems use advanced image recognition and detection technology to quickly and accurately check the people and articles entering the venues. The introduction of unmanned security inspection system not only improves the security

inspection efficiency, but also reduces the risk of missed inspection, which provides a solid security guarantee for the smooth progress of the Asian Games [5]. The application of unmanned combat forces in the security of Hangzhou Asian Games is multifaceted, and they have played an irreplaceable role in the air, ground and security inspection. With the addition of these high-tech equipment, the security of the Asian Games will be more rigorous and efficient, and a safe and comfortable competition environment will be created for athletes and spectators.

3. Action Support Measures for Unmanned Combat Forces

3.1. Technical Support

Technical support is the key link to ensure the effective operation of unmanned combat forces in the security of Hangzhou Asian Games. It is essential to ensure the stability and reliability of unmanned combat equipment [6]. Before the Asian Games, relevant technicians conducted a comprehensive inspection and test of all unmanned combat equipment, including flight stability, navigation system accuracy, sensor sensitivity and so on. These tests are carried out not only in the laboratory environment, but also in the actual security scene to ensure that the equipment can work normally in various complex environments.

In order to ensure efficient communication between unmanned combat equipment and the command center, the technical team established a stable and high-speed data transmission system. This system adopts the latest communication technologies, such as 5G network and satellite communication, to ensure that real-time pictures and data can be transmitted to the command center quickly and accurately, and provide timely information support for security decision-making. Technical support also includes the continuous maintenance and upgrading of unmanned combat equipment. During the Asian Games, the technical team set up a special maintenance site, equipped with professional maintenance tools and spare parts to ensure that once the equipment fails, it can be repaired and replaced quickly. At the same time, according to the actual needs of security work, the technical team also upgraded the software and optimized the functions of unmanned combat equipment in time to improve its adaptability and operational effectiveness. Technical support is also reflected in the professional training of operators of unmanned combat equipment. In order to ensure that the operators can master the operation skills and emergency treatment methods of the equipment skillfully, the technical team organized a series of training courses and simulation drills. These trainings not only improve the skill level of operators, but also enhance their ability to deal with emergencies.

Technical support is an indispensable part of unmanned combat forces in the security of Hangzhou Asian Games. Through comprehensive equipment testing, efficient data transmission, continuous maintenance and upgrading and professional operation training, technical support measures ensure that unmanned combat forces can play the greatest role in security work.

3.2. Manpower Security

In addition to the established measures, the Hangzhou Asian Games further augmented the action support for unmanned combat forces by focusing on the integration of

technology and human expertise [7]. The introduction of advanced simulation training programs was implemented to enhance the decision-making capabilities of the control teams under various simulated combat scenarios. These programs provided a virtual environment where operators could practice and refine their skills without risking actual equipment or compromising security. Moreover, the Games organizers emphasized the importance of psychological resilience among the control team members. To this end, they incorporated stress management and mental fortitude training into the preparation regimen. This approach aimed to prepare operators for the high-pressure situations that might arise during the Games, ensuring that they could maintain focus and perform effectively under stress. In terms of technological support, the integration of artificial intelligence (AI) played a crucial role in enhancing the unmanned combat forces' capabilities. AI algorithms were employed to analyze vast amounts of data collected from various sensors and surveillance systems, allowing for more accurate predictions of potential security threats. This data-driven approach significantly improved the preemptive measures that could be taken to counter any emerging risks.

Furthermore, the Hangzhou Asian Games recognized the value of continuous learning and adaptation. As such, a feedback mechanism was established to gather insights from each operation involving the unmanned combat forces. These insights were then used to refine operational protocols, improve equipment functionality, and update training modules. This iterative process ensured that the unmanned combat forces remained at the cutting edge of technological advancements and operational strategies. Lastly, the Games emphasized the importance of inter-agency cooperation. Collaborative efforts were made to ensure seamless communication and coordination between the unmanned combat forces and other security agencies involved in the Games' security. This multi-agency approach not only bolstered the overall security posture but also fostered a unified response to any potential threats, thereby enhancing the effectiveness of the unmanned combat forces' action support measures.

By implementing these comprehensive action support measures, the Hangzhou Asian Games fortified the role of unmanned combat forces in ensuring a secure and successful event, while also setting a precedent for future large-scale sporting events in terms of advanced security solutions.

3.3. Protection by Laws and Regulations

In large-scale international events such as the Asian Games, security work is a crucial link. With the development of science and technology, unmanned combat forces such as UAV, unmanned ground platform and unmanned offshore system have been widely used in the security field. However, the use of these high-tech equipment has also brought some legal and regulatory problems.

According to the provisions of international humanitarian law, the use of any weapon must abide by the principle of distinction and must not cause unnecessary harm to civilians and civilian facilities. When using unmanned combat forces, we must ensure that they meet the requirements of international humanitarian law and avoid causing harm to innocent people. All countries have corresponding laws and regulations on the use of unmanned combat forces. In China, the use of unmanned combat forces must follow the National Security Law of People's Republic of China, the Anti-

Terrorism Law of People's Republic of China and other relevant laws and regulations to ensure the legality of the action. On special occasions such as the Asian Games, it may be necessary to use unmanned combat forces with specific legal authorization. For example, it may be necessary to obtain permission from relevant departments, or to act according to the established emergency plan in an emergency.

Before using unmanned combat force, the specific scope and conditions of its use should be made clear, for example, it should only be used in a specific security area and limited to tracking and monitoring suspicious targets. Ensure that the operators of unmanned combat forces operate within the scope permitted by law, and all actions are under the direct or indirect control of human beings, so as to avoid improper use of autonomous weapons. When using unmanned combat forces, we should maintain the transparency of operation and take responsibility for any possible accidental injury or damage, so as to safeguard public trust and international image. Conduct professional training for personnel operating unmanned combat forces to ensure that they understand relevant laws and regulations and can abide by these regulations in actual operation. Make a detailed emergency plan, evaluate the possible risks caused by the use of unmanned combat forces, and take measures to reduce these risks.

4. Experience Enlightenment

4.1. Importance of Technological Innovation and Application

The application of unmanned combat forces in the security field is not only the product of scientific and technological progress, but also the concrete embodiment of technological innovation. In the security work of Hangzhou Asian Games, the introduction of unmanned combat forces has significantly improved the efficiency and quality of security, which is the powerful driving force behind technological innovation.

Technological innovation plays a vital role in security work. The traditional security mode relies on a lot of manpower to patrol and monitor, which is not only inefficient, but also prone to omissions. The introduction of unmanned combat forces has achieved comprehensive and real-time monitoring of security areas through high-tech means, greatly improving the rigor and accuracy of security. Unmanned combat equipment, such as UAV and unmanned ground vehicles, can quickly reach the designated place for high-precision reconnaissance and monitoring. These devices are equipped with advanced sensors and cameras, which can capture abnormal situations that are difficult to find by traditional means and provide timely and accurate information support for security personnel. This not only improves the response speed of security, but also enables security personnel to respond to various emergencies more accurately. Technological innovation has also promoted the intelligent development of security work. Through big data analysis and artificial intelligence and other technical means, the security system can realize automatic identification and early warning of various security risks, further improving the efficiency and quality of security.

Technological innovation and application are of irreplaceable importance in the field of security. As a representative of technological innovation, the successful application of unmanned combat forces in the security of Hangzhou Asian Games fully proves the key role of

technological innovation in improving security efficiency and quality.

4.2. The Necessity of Coordinated Operations

In the security work of Hangzhou Asian Games, the cooperative combat mode between unmanned combat forces and human security personnel has shown remarkable results. This kind of cooperative operation not only improves the overall efficiency of security work, but also has an effect on the complex and changeable security environment. Under the cooperative combat mode, unmanned combat forces and human security personnel have their own advantages and formed a strong complementarity. UAV and unmanned ground vehicles conduct rapid reconnaissance and monitoring in a wide area, and transmit pictures and data to the command center in real time. Human security personnel quickly make judgments and decisions based on this information, and guide unmanned combat forces to carry out precise strikes or implement other necessary security measures.

When dealing with complex security environment, the advantages of coordinated operations are particularly obvious. Unmanned combat forces can quickly reach dangerous or inaccessible areas and provide first-hand on-the-spot information, while human security personnel can make in-depth analysis of this information with their rich experience and professional knowledge and formulate more scientific and reasonable coping strategies. In addition, in an emergency, unmanned combat forces can also provide necessary support for human security personnel, such as air cover, material transportation, etc., thus greatly improving the overall efficiency of security work.

4.3. Perfection and Observance of Laws and Regulations

The use of unmanned combat forces not only improves the security efficiency, but also causes us to think deeply about the improvement and compliance of laws and regulations. The introduction and application of new technologies must be based on strict compliance with relevant laws and regulations, which is not only the premise of ensuring the legal and compliant use of technologies, but also the key to ensuring social order and public safety. With the rapid development of science and technology, especially the wide application of new technologies such as unmanned combat forces in the security field, the existing laws and regulations system may have a certain lag. Therefore, it is necessary to improve the relevant laws and regulations to meet the development and application needs of new technologies. This includes defining the scope of use, operational norms, data protection and accountability of unmanned combat forces. At the same time, strict compliance with laws and regulations is also the fundamental requirement for using unmanned combat forces. In the security work of Hangzhou Asian Games, we should always adhere to the principle of rule of law and ensure that every technology is used within the legal framework. This not only ensures the legal use of technology, but also wins the trust and recognition from all walks of life for us.

The perfection and compliance of laws and regulations is an important guarantee for the application of new technologies in the security field. In the future, we will continue to pay attention to the dynamic development of laws and regulations, actively promote the improvement of relevant laws, and strictly abide by various regulations to ensure that new technologies such as unmanned combat

forces can develop healthily and orderly on the track of the rule of law and contribute to social harmony and stability.

5. Conclusion

Unmanned combat forces have significantly improved the security efficiency and quality of the Hangzhou Asian Games, and achieved comprehensive and real-time monitoring through UAV and unmanned ground vehicles. Technical support is the key to its effective operation, including equipment testing, data transmission, maintenance and upgrading and professional training. Human resources guarantee ensures daily control and emergency response by setting up a professional team. The protection of laws and regulations requires compliance with international humanitarian law and relevant laws and regulations to adapt to the development of new technologies. Technological innovation plays an important role in improving security efficiency. The cooperative combat mode of unmanned combat forces and human security personnel can effectively deal with complex security environment, which provides valuable experience for future large-scale events.

References

- [1] Xie, Q. L., Zeng, X. W., & Huang, W. G. (2007). The Enlightenment of Doha Asian Games to Guangzhou Asian Games. *Journal of Guangzhou Sport University*, 27(3), 3.
- [2] Li, H. Z. (2012). A Perspective on Urban Security Work for Large-scale Sports Events from the Guangzhou Asian Games. *Bulletin of Sports Science and Technology Literature*, 20(1), 3.
- [3] Qiu, Z. X. (2010). On the Construction of Police Intelligence Mechanism for Guangzhou Asian Games Security. *Journal of Political Science and Law*, 27(5), 5.
- [4] Qi, X. (2010). The Enlightenment of Beijing Olympic Security to Guangzhou Asian Games Security Work. *Journal of Political Science and Law*, 27(3), 5.
- [5] Wang, X. M. (2011). Activating Radio Command and Dispatch System to Support Asian Games Radio Security Work. *China Radio*, 000(004), 28-28.
- [6] Chen, Y. W., & Wang, S. H. (2010). Medical Rescue and Health Service Support for NBC Security in the Olympic Games. *Hospital Management Journal of the People's Liberation Army*, 017(001), 80-81.
- [7] Wang, Q. (2019). Analysis and Enlightenment of Important Measures in Preparation and Preparation for the 2020 Tokyo Olympic Games in Japan. *China Sports Science and Technology*, 55(9), 9.