

Analysis on the Construction of UAV Emergency Distribution Force of the CAPF

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Abstract: In order to solve the problem of emergency distribution of the armed police force, the article analyzes the objective background of the use of force and the actual situation of the armed police force, finds out the target orientation of force construction, and clarifies the construction principles and ideas, aiming to provide reference for relevant research and practical work.

Keywords: UAV, Emergency distribution, Force construction.

1. Introduction

Applying UAVs to the emergency support tasks of the CAPF is a realistic need to solve the transportation and delivery support problems under the special task environment, and is an inevitable result of the technological progress of UAVs. In recent years, the logistics support department of the Central Military Commission has carried out the application test and certification of UAV transport platform during the 13th and 14th five year plans, and made plans and arrangements for the exploration and application of UAVs by various services and arms. Accelerating the construction of UAV emergency response force is an important measure to implement the instructions of the Central Military Commission and the CAPF, and also a new growth point to promote the in-depth development of military civilian integration in the field of transportation and delivery of the CAPF. In depth research on the construction of UAV emergency distribution force of the CAPF is of great significance to tap the potential of UAV emergency distribution and promote the development of military civilian integration to a higher level.

2. Objective Background of The CAPF Using UAV Emergency Distribution Force

2.1. Global Environmental Deterioration and Frequent Disasters Make Emergency Distribution Imperative

Despite the rapid development of science and technology in the world today, and the prediction of natural disasters has reached a considerable level, local, regional, even national or global sudden natural disasters and sudden public health events occur from time to time, which cause serious or even devastating blows to mankind and pose a major threat to human survival and social development.

In the past 20 years, the number of disaster statistics has increased dramatically. In the 20 years from 2000 to 2019, there were 7348 major disasters in the world, causing 1.23 million deaths and 4.2 billion people affected (many people were affected by disasters more than once), causing global economic losses of about US \$2.97 trillion. The global average annual death toll from disasters is about 60000. Since

2010, there has been no major disaster (more than 100000 deaths) and no single year has seen more than 35000 deaths.

At the beginning of 2020, novel coronavirus ravaged the world. Over the past three years, direct and indirect economic losses and casualties have been incalculable. The global epidemic prevention and disaster prevention situation is grim. It is imperative to update disaster prevention and relief methods. Intelligence and impersonality have become the inevitable development direction. For the logistics industry, the solution of emergency problems in terminal distribution has become a key link to improve the complete logistics chain.

2.2. The Emergency Logistics System Is Constantly Changing and Improving, And the Emergency Distribution Technology Is Becoming Mature

Emergency logistics has been proposed in recent years to deal with emergencies and the development of modern logistics industry to a certain extent. Since 2003, Chinese scholars have started a systematic study on emergency logistics. In recent years, with the continuous efforts of many scholars and enterprises at home and abroad, the theory and practice of emergency logistics have changed from strategic planning and system construction, organization coordination and dynamic regulation, monitoring and early warning and plan preparation, infrastructure and equipment technology Leapfrog progress has been made in network layout, standard formulation, resource allocation and performance evaluation.

Technically, 5g, big data, cloud computing and other technologies are accelerating their application in the industry, unmanned and intelligent technologies are changing with each passing day, and the path planning and task allocation capacity of unmanned distribution has initially taken shape. From the perspective of distribution promotion and coverage, according to the express development index report of the national post office, in 2020, the city and county levels will be fully covered, and the coverage rate of express outlets in townships and towns across the country will reach 98%, basically realizing "there are outlets in townships", 400000 sets of intelligent express boxes have been distributed in major cities, 114000 end-of-end public service stations have been built nationwide, diversified delivery modes have been increasingly improved, and the infrastructure for emergency distribution has been basically completed. From the perspective of distribution capacity, the number of

professional express parks in China has increased significantly. Beidou warehouse, 5g unmanned warehouse, smart Logistics Industrial Park, cross-border industrial park and other projects have landed one after another. There are more than 370 distribution hubs equipped with full-automatic sorting systems, 122 special cargo aircraft in the whole industry, 30 new international routes for all cargo aircraft, successful trial operation of high-speed rail freight, and further improvement of the heavy cargo UAV model system. Basically meet the joint distribution needs of various modes of transportation under emergency conditions.

2.3. The Continuous Development of UAV Technology Provides A High-Quality Model for Emergency Distribution

(1) The military application of UAV in the world has never stopped, and it has been used for battlefield supply in recent years

At the beginning of the 20th century, unmanned aerial vehicles (UAVs) emerged as target aircraft in the field of military applications. Times have changed and technologies have changed. UAVs have also gradually developed surveillance and reconnaissance, electronic countermeasures and even air strike operations, and their capability boundaries have been constantly widened. However, due to its small load, short range, poor reliability and many other shortcomings, UAVs have been rarely used in the field of military transportation and delivery. With the strong promotion of the state and enterprises, in recent years, intelligent logistics and unmanned logistics technology have developed rapidly, the problem of UAV short boards has been continuously reduced, and great progress has been made in load, flight control and range. It can already undertake some transportation and delivery support tasks, and has shown great development potential. In the Afghan war, the US military used a large number of transportation UAVs for logistics supply, overcoming the mountainous terrain characteristics of the battlefield plateau, Which greatly improves the guarantee efficiency and security.

(2) The development and application of civil UAV in China is rapid and extensive, and has been extended to the field of logistics and distribution

After a century of reform and development, UAVs are more and more widely used in the civil field. At present, the existing UAV models can meet the needs of film and television aerial photography, agricultural plant protection, disaster detection, post disaster rescue and other tasks. In the field of logistics and distribution, with the rapid development of China's e-commerce and logistics industry, transportation UAVs, due to their unique advantages in terminal distribution, jd.com, sf.com and other logistics leading enterprises actively explore new models of UAV logistics and distribution, and have made initial achievements. According to statistics, from 2015 to 2018, the annual compound growth rate of China's civil UAVs reached 77.4%. In 2018, the market size of China's civil UAVs was 13.4 billion yuan, and in 2019, it reached 21 billion yuan, a year-on-year increase of 56.72%. In general, China's civil UAV industry has shown a blowout development trend.

(3) The development of unmanned and intelligent equipment in our army is a general trend, and UAV transportation and delivery have been piloted one after another

President Xi put forward the strategic requirement of

"strengthening the army through science and technology" at the meeting to celebrate the 90th anniversary of the founding of the army, and profoundly pointed out that science and technology are the first engine to promote social progress and a powerful driving force to improve the combat effectiveness of the army. At present, the rapid development of science and technology has caused changes in the form of war and the mode of warfare. In July 2020, when inspecting the Air Force Aviation University, President Xi clearly pointed out that it is necessary to strengthen unmanned combat research, strengthen the professional construction of unmanned aerial vehicles, strengthen practical education and training, and accelerate the training of UAV application and command talents. At the logistics work conference of the Central Military Commission, President Xi put forward the need to speed up the construction of unmanned intelligent equipment support system, promote the fundamental change of logistics support mode, and build a modern logistics compatible with the world's first-class army. As a new high-tech product and new unmanned intelligent equipment, transport UAV is a beneficial supplement to traditional means of transportation and has great potential in the field of military transportation and delivery. In recent years, according to the planning and deployment of the logistics support department of the Central Military Commission, UAV transport and delivery pilots have been carried out in various services and arms and the CAPF, exploring UAV transport and delivery support methods and modes, verifying and improving the functional modules of the UAV transport and delivery enabling system, and promoting the normal application of UAVs in the field of military transport and delivery.

(4) The urgent need of the special mission of the CAPF for UAV delivery capability

On June 21, 2020, the new people's armed police law was promulgated and implemented, which clearly stipulates that the CAPF is responsible for performing duties, dealing with social security emergencies, preventing and dealing with terrorist activities, safeguarding maritime rights and law enforcement, rescue and defense operations, and other tasks entrusted by the central Military Commission. The CAPF is the backbone of disaster relief. It is both the pioneer and the main body. This determines that the logistical support of the CAPF must consider the emergency needs in the event of disasters and emergencies. The concept of modern war is changing with each passing day. How to implement accurate protection in such an environment has become a necessary problem for the CAPF to fulfill its duties.

As the central link of logistics support, transportation and delivery is an important support for the generation of combat effectiveness support. On the whole, the functions and missions of the CAPF continue to expand. The task scope covers the whole territory and extends from land to sea. The task environment of transportation and delivery support is more complex and changeable; From the perspective of actual combat, in recent years, the CAPF has exposed many weaknesses in transportation and delivery support in carrying out its tasks. For example, in the "9.18" anti-terrorism operation in Baicheng, Xinjiang in 2015, traditional highway transportation was greatly restricted due to the complex mountain environment, bad weather and poor road conditions on the plateau. Helicopter transportation also showed a lot of discomfort under mountain conditions. Transportation and supply can only rely on human and animal resources. The problem of "failure to deliver" and "failure to ensure speed"

of equipment and materials was particularly prominent, which seriously restricted the effective development of combat operations. It is based on the realistic background of transportation and delivery support in such operational tasks as anti-terrorism operations and emergency rescue that we feel the urgent need to use UAVs in the emergency distribution field of the CAPF.

In November 2016, at the logistics work conference of the Central Military Commission, President Xi explicitly proposed to accelerate the construction of an intelligent unmanned equipment support system. During the 13th five year plan and the 14th five year plan, the logistics support department of the Central Military Commission conducted experimental verification of the application of UAV transport platforms and made plans and arrangements for the exploration and application of UAV transport by various services and arms. Accelerating the construction of UAV emergency distribution is an important measure to implement the instructions of the Central Military Commission and the CAPF, and also a new growth point to promote the in-depth development of military civilian integration in the field of transportation and delivery of the CAPF. In depth research on the application of UAVs in transportation and delivery of the CAPF is of great significance to tap the potential of UAV transportation and delivery and promote the development of military civilian integration to a higher level.

With the continuous expansion of the functions and tasks of the CAPF under the strategic requirements of "multi-functional integration, stability and rights maintenance", higher requirements are put forward for the emergency material support ability. Rapid emergency, accurate and reliable material support is the proper intention to meet the emergency needs of the CAPF. As the terminal link of emergency logistics, emergency distribution will become an important means to improve the emergency material support capacity of the CAPF after the characteristics of UAV such as fast, accurate and three-dimensional mobility are integrated into the distribution link. At the same time, as a new means of distribution, the mode change and process change triggered by it will help enrich and develop the transportation and delivery theory of the CAPF.

3. Target Orientation of The Construction of Unmanned and Emergency Distribution Force of the CAPF

3.1. We Should Vigorously Support the Goal System of Building A Strong Army

To build the CAPF's UAV emergency distribution force, we first need to find the right positioning and strongly support the goal system of building a strong army. The 19th National Congress of the Communist Party of China set the grand goal of building the people's army into a world-class army in an all-round way by the middle of this century. Building a strong modern CAPF is an essential part of building a world-class army. Building a UAV emergency distribution force of the CAPF, building an integrated UAV distribution command and control management system, comprehensively improving the emergency support capacity of the CAPF, and enabling the CAPF to better perform its tasks in all kinds of emergencies are the proper intentions of building a strong modern CAPF, It is also a historical task entrusted to the CAPF by the times.

3.2. It Should Be Deeply Integrated into The Logistics Support System of The Whole Army

To build the CAPF's UAV emergency distribution force, we should find the right position in the construction of the whole army's rear and front support system. As a new quality transportation and distribution force, the UAV emergency distribution force belongs to the construction of intelligent logistics support system. Its overall goal must match the strategic planning of our army's intelligent logistics construction, be consistent with the logistics informatization construction process of our army, and adapt to the actual emergency support capacity of the CAPF. It can not start a new stove and become a whole. The armed police law endows the CAPF with a new responsibility and mission. Under the new mission and task, the direction and objectives of all construction are redefined. Intellectualization and unmanned are the core guidance of modern warfare. The CAPF must focus on the future and achieve leapfrog development of the modernization of the force with advanced concepts and more investment.

3.3. We Should Effectively Solve the Problem of Emergency Support for the CAPF

To build the CAPF's UAV emergency distribution force, we should find the correct positioning in the core elements. The core element of the UAV distribution system is to complete the accurate and rapid delivery of all kinds of materials under emergency conditions and realize a complete distribution process. In the construction of the command and control system, we should take the quasi big change into consideration, determine the design starting point and general direction, walk out the way of integration of construction and use, take the quasi big pattern, and establish a global three-dimensional strategic vision. In order to highlight the element needs of emergency response and distribution, it is generally necessary to grasp the four key needs of rapid response, reasonable distribution, accurate distribution and economy and efficiency, give full play to the emergency distribution ability of UAVs by relying on a reasonable structure, and play a certain role in regular distribution, so as to solve the prominent problem of emergency support "the last kilometer" of the CAPF in urgent, difficult, dangerous and heavy tasks.

4. Basic Principles for The Construction of UAV Emergency Distribution Force of the CAPF

The construction of the CAPF's UAV emergency distribution force is a long-term systematic project. Based on the missions and tasks of the CAPF, focusing on the characteristics and requirements of modern scientific and Technological Development and future joint operations, according to the situation faced by the construction of the intelligent emergency support force of the force and the requirements of emergency distribution tasks, relying on the current construction conditions, we should clarify the construction ideas and determine scientific and reasonable construction principles.

4.1. Strengthen Demand Demonstration and Grasp Top-level Design

Led by the transportation and delivery Bureau of the

Logistics Department of the CAPF, the transportation and delivery offices of all brigades are organized to deeply study the realistic needs of the CAPF for UAV emergency distribution at all levels, in all directions and in all units of the campaign tactics, accurately measure the possible emergency distribution tasks of UAVs, and study and demonstrate various types of UAV emergency distribution auxiliary equipment, added and modified equipment, including UAV model configuration, demand quantity and performance indicators, Put forward the overall plan and road map for the construction of unmanned and emergency distribution forces of the CAPF.

4.2. Deepen Military Civilian Integration and Promote Equipment Research and Development

In combination with the UAV emergency distribution demand demonstration and force construction planning, relevant scientific research institutions, UAV enterprises and logistics enterprises will be organized to study and demonstrate the development path of the CAPF's UAV equipment, promote the design, development and other links, combine the introduction of mature market equipment with independent research and development, and accelerate the development of the CAPF's UAV emergency distribution equipment.

4.3. Solid and Steady Progress in Stages and Steps

The construction of the UAV emergency distribution force

cannot be accomplished overnight. It is necessary to focus on the duties and missions of the CAPF and analyze the actual task needs of each force. First, rely on local authorities to solve the current problems that need to be solved urgently, purchase local services and mature technical products through military civilian integration, and establish a campaign emergency distribution support force or reserve force; Second, by refitting UAV transport equipment to meet the needs of military transport and distribution, or developing UAV transport equipment with intellectual property rights, and relying on the existing motorized mobile power, air helicopter power, and maritime ship power to form an UAV transport unit; Third, expand the scale and build in an all-round way, grasp the unmanned and intelligent requirements of modern troops to perform tasks, comprehensively and systematically develop UAV emergency distribution equipment that meets the missions and tasks of the CAPF, and constantly improve the emergency support system of the CAPF.

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