

Enlightenment of Russian Military Equipment Maintenance and Support Work to Our Army within the "Russia Ukraine Conflict"

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Keywords: Russia-Ukraine conflict; Analysis of military equipment loss; Equipment maintenance in wartime; Equipment support in wartime; Experience reference; Enlightenment

Abstract: The maintenance support of equipment plays a really necessary role in restoring the combat effectiveness of troops. First of all, this paper combs the equipment loss of either side within the "Russia Ukrayina conflict", and analyzes the reasons for the equipment loss of either side. Secondly, it analyzes the issues existing within the maintenance and support work of Russian military equipment, like the shortage of comprehensive maintenance personnel, the failure of the brigade repair battalion to recover abandoned equipment in time, and also the extension of logistics supply line in time. Finally, based on the above analysis, this paper puts forward the enlightenment to our army in the field of equipment support, like strengthening the actual combat training of equipment support and improving the comprehensive maintenance level of wartime equipment, so as to improve the equipment support system of our army.

1. Introduction

At present, our military is in a critical period reform, building an army that can win the information war is the goal of our reform. With the progress of science and technology, the process of war is constantly accelerated, and the combat time and combat space is constantly compressed. The maintenance of combat effectiveness of troops relies more on the regeneration of weapons and equipment capacity, so the construction of maintenance support capacity is particularly important.

Through combing, it can be found that the existing studies mostly focus on analyzing the characteristics and modes of equipment maintenance support of the Russian military in peacetime. For example, Chongbin W and Peng Q (2021) analyzed the development history and characteristics of Russian military equipment maintenance support and expounds its reference significance for promoting the integrated equipment maintenance support in China. ^[1] Xiang M and Chunliang C (2019) analyzed the establishment structure of the Russian army and made it clear that the equipment maintenance support methods of the Russian army include emergency support, joint logistic support, priority support, fixed and accompanying combined support, etc. ^[2] Ruokun C and Chunrun Z (2018) summarized the characteristics of Russian military equipment support training in real combat, summarized the development trend of Russian military equipment support training in real combat, and provided reference for Chinese military reform. ^[3] However, there are essential differences between peacetime maintenance support and wartime maintenance support. Peacetime maintenance support is characterised by meticulousness, predictability, controllability and non-real-time performance. Wartime maintenance support lays more emphasis on the rapid recovery of equipment combat capability, and equipment should have sustained combat capability. Therefore, under the current military system, how to restore the performance of weapons and equipment through efficient equipment maintenance and support is a crucial analysis topic during this field.

Russia is a military power and has developed an efficient maintenance support system. Therefore, by analyzing the equipment damage situation of Russia and Ukraine, this paper summarizes the problems exposed in the process of Russian arms maintenance and support, and draws lessons from experience, so as to improve the efficiency of our army's wartime equipment maintenance and

support.

2. Analysis of equipment damage in Russia and Ukraine

The war between Russia and Ukraine continues. Reports of Russian and Ukrainian losses in military facilities, equipment, supplies and personnel continue. By analyzing the causes, sorts and amount of equipment damage in Russia and state, the combat state of affairs of the line will be analyzed and also the issues existing within the method of equipment maintenance and support of each side will be summarized. In this conflict, the damage to military equipment during the conflict fell into three categories: destroyed, abandoned and captured.

2.1. Equipment damage in Russia and Ukraine

According to Oryx researchers' statistics, Russia lost 1061 pieces of combat equipment in the first 20 days of the conflict, including tanks, aircraft, armored vehicles, infantry vehicles, etc. Among them, a total of 633 were abandoned and captured, accounting for 59.66% (Figure 1). In addition to massive weapons like armored vehicles and tanks, several tiny weapons have additionally been taken by the Ukrainian military, like AK-74 and AK-47M assault rifles, AK-12 assault rifles and PRG-7 launchers. In addition, Russia also lost 44 pieces of logistics equipment, including 42 engineering vehicles and two logistics trains. Of these, 65.9 percent of the vehicles were abandoned or captured.

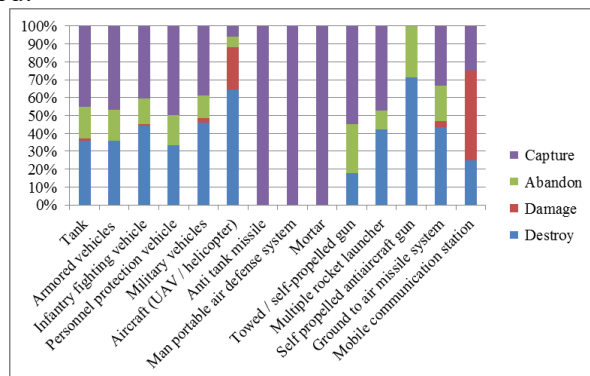


Figure 1 Statistics of equipment losses in Russia

Ukraine lost a total of 329 pieces of combat equipment during this period, including tanks, armored combat vehicles, and military vehicles accounted for a higher proportion, accounting for 14.2%, 12.8%, and 22.8%, respectively. In terms of loss classification, 111 were destroyed, 4 were damaged, 40 were abandoned, and 174 were captured. In addition, only one engineering vehicle was captured and two transport aircraft were destroyed in terms of logistics equipment (Figure 2).

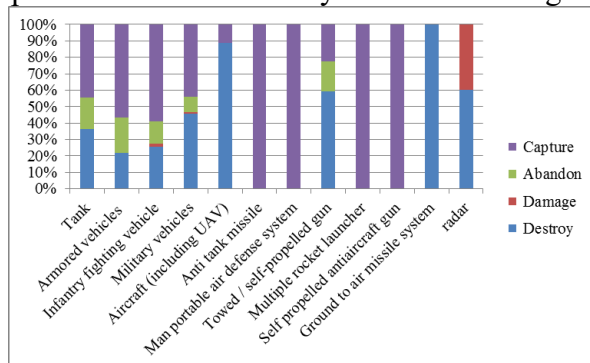


Figure 2 Statistics of equipment losses in Ukraine

2.2. Analyze the causes of equipment damage

By comparison, 60% of Russian equipment was captured or abandoned. This is a problem that should be taken seriously by the Russian military, which is, after all, a major military power in an integrated and well-trained military system. Although 65.05% of Ukraine's combat equipment was

abandoned and seized, the number of them was relatively small, less than 1/4 of that captured. Therefore, Ukraine's fuel and maintenance forces are comparatively decent, and it doesn't have to be compelled to hand over plenty of kit, however Russia's fighting forces are comparatively robust, and may capture Ukrainian instrumentality for his or her own use.

Russia began to have problems with the logistics supply on February 26, giving Ukraine the opportunity to seize a large number of weapons. Photos of the battlefield have been released showing that some Russian vehicles were damaged by TB-2 drone attacks in Ukraine, leaving them unable to be repaired and abandoned, while some logistics vehicles got stuck in mud due to weather or ran out of fuel due to logistical problems.

3. Problems exposed in the maintenance and support process of Russian military equipment during the "Russia-Ukraine conflict"

3.1. Insufficient comprehensive maintenance talents lead to untimely maintenance of equipment failures

All personnel of the Russian army who undertake equipment maintenance and support work must participate in professional level training in accordance with the manual for determining the military professional skill level of the Russian armed forces and the combat training outline for support, maintenance and maintenance units, and obtain the corresponding qualification certificate after passing the training. In addition, the Russian army has also built a number of large "comprehensive training centers" to systematically train professional maintenance personnel and implement continuing military education, forming a level by level training system that matches the promotion of positions. However, since the Russian army shortened the service period of conscripts after the military reform, soldiers could not receive sufficient training, so they lacked the corresponding comprehensive maintenance ability. Therefore, equipment maintenance personnel could only undertake relatively basic work and could not deal with complex equipment failures in wartime. In addition, during the "Russia Ukraine conflict", the Russian army did not use a large number of advanced technical means for fault diagnosis, which also reduced the efficiency of equipment maintenance and support to a certain extent, resulting in a large number of armored vehicles and tanks being abandoned.

3.2. The brigade repair battalion failed to recover the abandoned equipment in time

At present, the Russian army has repair platoons at the battalion level and repair battalions at the brigade level. When the army marches, if it is judged that the damaged vehicle cannot be repaired within 30 minutes, it can be towed to the roadside and wait for the superior repair unit to deal with it. Due to the short specified time, battalion level troops often leave the difficult faults to the superior units in the actual combat state, and only deal with simple faults, such as changing tires. As we all know, tanks, armored vehicles and trucks are heavy equipment, which is very difficult to transport from the rear to the front line. If they cannot be repaired in time, it will inevitably affect the combat effectiveness. The superior repair unit should have recovered the damaged vehicle in time, and even such big actions as replacing the engine should be completed within a few hours. Left behind vehicles should be guarded by personnel and drive back after repair. This time, a large number of vehicles of the Russian army were transported and towed away by the Ukrainian people, which proved that they had not been recycled by the follow-up troops for a long time, that is, the front-line troops were disconnected from the support forces.

3.3. The untimely extension of the logistics supply line leads to insufficient subsequent supply

Before the conflict, the Russian army expected to achieve a quick victory, so it chose to carry a large number of logistics personnel and ammunition, armor and other basic combat materials. In terms of logistics support command, the Russian army's support operations are mainly carried out by the campaign direction command post through the structured logistics command system, in which the logistics of the headquarters is responsible for solving the problems of

coordination between different forces and services, while the logistics of the military theater is mainly responsible for providing support to the frontline combat troops. The army supplies and technical Support Corps trucks are used to deliver supplies. With the continuous progress of the war, The ammunition, ammunition, oil and other equipment and materials carried by the Russian army were gradually exhausted, and Russia had to start to build a more systematic and comprehensive logistics supply mechanism. At this stage, the Russian army sent tens of thousands of troops from the rear to the east, north and south, to transport fuel, food, weapons, ammunition and other materials for the front, especially fuel, but also to speed up the delivery, so as to solve the problem of a large number of tanks, armored vehicles and other equipment due to insufficient fuel supply and have to choose to anchor.

4. Inspiration and experience for reference

By studying the problems existing in the equipment maintenance and support work of the Chinese and Russian troops in the "Russia Ukraine conflict", and drawing lessons, it has an important enlightenment role for our army to do a good job in equipment maintenance and support [4].

4.1. Strengthen the actual combat training of equipment support, and improve the comprehensive maintenance level of wartime equipment

4.1.1. Strengthen the maintenance and support capabilities of individual soldier equipment

The improvement of overall equipment support efficiency depends on individual capability level. Therefore, it is necessary to seek breakthroughs in the improvement of individual soldier equipment repair ability and actively guide officers and men to recognize the importance of wartime equipment maintenance. In the form of regular maintenance skills competition, mass combat training activities are carried out to stimulate the training enthusiasm of maintenance and support personnel [5]. At the same time, strengthen emergency support targeted training. Emergency maintenance and support training shall be incorporated into the overall plan of annual training. In accordance with the emergency support plan, regional joint, joint services, joint military-local joint and other forms will be adopted to actively carry out targeted and adaptive exercises on joint support command and emergency supply, and make preparations for equipment support for emergency operations.

4.1.2. Attach importance to the cultivation of comprehensive equipment maintenance support capabilities

Improve the comprehensive ability of personnel by carrying out comprehensive training of equipment support. Equipment support units and combat units may conduct training together, arrange training subjects and organize personnel in a unified manner, and the training assessment shall be jointly organized by the organs at higher levels. Military training includes equipment training content such as support mission regulation, resource directed distribution, joint support operations, resource allocation and command, independent action coordination, support force organization, support force deployment, dynamic demand control, real-time accompanying support, and mobilization and support coordination. In the end, the comprehensive equipment support capability of situation control, mission control, command and control, and force layout will be improved.

4.2. Adjust the layout of support forces and optimize and integrate theater equipment support resources

4.2.1. Optimize the layout of equipment maintenance support pre-storage points

Limited logistics resources and infinite troop demand have always been the problem of modern military equipment support construction [6]. Setting reserve points in advance solves this problem to some extent. At present, we should make good use of the opportunity of equipment deployment and support force adjustment after the establishment of the theater, integrate the equipment support

force in the direction of the theater, and realize the integration of warehouse data, standards, management, construction and service. In peacetime, we should strengthen the pre-storage of main battle equipment, maintenance equipment and spare parts, and establish forward support bases and supporting points in wartime, so as to achieve the objectives of reasonable distribution of turnover and reserves, appropriate variety, quantity and scale, smooth and efficient emergency replenishment, and meeting the needs of wartime fund-raising ^[7-8].

4.2.2. Strengthen the construction of high-speed direct distribution capacity

First of all, we should establish the idea of joint operations, break through the relatively independent status quo between military arms and professions, integrate existing logistics resources, introduce advanced technology and management concepts, build a military logistics distribution network with reasonable distribution and fast operation, change the decentralized storage and transportation of materials into centralized storage and rapid distribution, enhance transportation means, realize the reasonable allocation of land, water and air support means, and focus on improving long-distance transportation. Rapid transportation and motorized transportation capacity ^[9]. Secondly, promote the military civilian integration development in the logistics field. It is necessary to establish a diversified distribution force system with the current service distribution force as the backbone and the local distribution force as the supplement, and to uniformly dispatch and reasonably organize the organizational support force and the local reserve support force, so as to achieve the integration of military and civilian, integrate the army with the people, and provide strong support for accurate support.

4.3. Attach importance to logistical support and enhance confrontational logistical effectiveness

4.3.1. Targeted formulation of logistical support and combat readiness plans

The biggest problem of the Russian army in the "Russia-Ukraine conflict" was that it did not pay enough attention to logistics support and did not make an overall plan to establish a perfect supply line before the war. Finally, due to the lack of fuel and food, weapons and equipment were abandoned, thus affecting the battle progress. Therefore, our army should take this as a reference and pay more attention to logistics support. To be specific, it is necessary to formulate a complete combat readiness plan for logistics support. According to different operational areas and different mission requirements, it is necessary to make feasibility prediction for logistics equipment support in future operations, and make various support plans for equipment material raising, reserve and operation that meet the needs of future operations. Secondly, targeted rapid response drills should be strengthened in key areas, such as logistics support drills in special environments such as seas, plateaus and mountains, so as to improve the adaptability of troops and meet the special requirements of logistics equipment support for future operations.

4.3.2. Attach importance to the survival and defense capability building of logistic support equipment

During the conflict between Russia and Ukraine, the Russian army mainly delivered fuel, food and other supplies to the frontline troops by truck. However, due to the lack of effective protection awareness, the convoy was destroyed by Ukrainian drones in the process of moving. In future wars, logistics support is bound to adapt to the high-intensity confrontational environment. Therefore, for logistics equipment transport troops in the state of war, the main task is to complete the task under the premise of "preserving themselves". Specifically, the "early warning" ability of vehicle equipment maintenance support system should be improved, and the information transmission mechanism of vehicle equipment maintenance support should be reformed. Attach importance to the construction of protective means of vehicle field maintenance and support equipment to improve its survival and defense capability. In addition, in time of war, it should also be assigned to full-time defense forces and appropriately distributed vehicle field maintenance and support equipment ^[10].

5. Conclusion

With the rapid development of technology and the change of military struggle environment, all countries have started a new round of military revolution, and the development of equipment maintenance support is one of the key links of military revolution. Russia as a military power, combined with their own characteristics widely absorbing European and American countries for many years advanced idea, promote the development of equipment maintenance support transformation, and gradually formed a compatible with their system and mechanism,our the equipment maintenance support management mode has many similarities with the russians, the reform ideas and methods for our army has strong reference significance.

Based on this, this paper combined with the problems exposed by the Russian military equipment maintenance support in the "Russia-Ukraine conflict", such as the lack of comprehensive maintenance personnel, resulting in a large number of equipment can not be maintained and abandoned; Disconnection between front troops and support forces leads to equipment recovery failure; The delayed extension of logistics supply lines leads to the breakdown of tanks and armored vehicles due to insufficient fuel supply. Analyze the internal causes of the problems and draw lessons from the experience. So as to put forward our future should pay attention to comprehensive equipment maintenance support ability, strengthening individual equipment maintenance support capability, strengthening the construction of high-speed direct distribution capabilities, attach importance to the survival of logistics equipment and defense capability construction improve the efficiency of the equipment maintenance support in wartime, the better performance of "repair for war, fight to win" the mission, To help achieve the military development goals in the new era.

References

- [1] Chongbin, W., Peng, Q., Tianya, C. (2021) Research on the Transformation and Development of Russian Military Equipment Maintenance Support Mode. *Aviation Standardization and Quality*, 5, 52-56.
- [2] Xiang, Z., Chunliang, C., Shixin, Z. (2019) The development status and enlightenment of U.S. and Russian Army troops and equipment maintenance support. *Firepower and Command and Control*, 7,172-177.
- [3] Ruokun, C., Chunrun, Z., Wenjun, Z. (2018) The practice and enlightenment of actual combat training of US and Russian military equipment support. *Journal of Military Transportation Institute*, 3, 36-39.
- [4] Jian, F., Zhifei, W., Huang, X. (2016) Enlightenment from the equipment maintenance and support work of the US military and the Russian military to PLA. *Journal of Naval Engineering University (Comprehensive Edition)*, 3 69-71.
- [5] Nuobei, W. (2010) Contemporary foreign military logistics support and its reference value to PLA. Wuhan University.
- [6] Yongyong, M. (2017) Research on the construction of military general equipment regional support center. National University of Defense Technology.
- [7] Yanbo, Z., Huafeng, Z., Haiming, S. (2006) A Preliminary Study on the Maintenance Support of Weapons and Equipment under the Conditions of Information Warfare. *National Defense Science and Technology*, 6, 65-68.
- [8] Xiaojun, F. (2006) Research on equipment support informatization under the conditions of modern warfare. University of National Defense Science and Technology.
- [9] Chaoyang W. (2006) Research on battlefield weapons and equipment support under the condition of informatization. People's Liberation Army Information Engineering University.
- [10] Chunrun, Z., Minghui, Q., Huizhi, C. (2004) Enlightenment of Iraq War on the Construction of Vehicle Equipment Maintenance Support Force. *Journal of Equipment Command Technology College*, 4, 6-8