



UAV Use in the Russian Armed Forces

OE Watch Commentary: The accompanying excerpted article from the 24 April 2018 edition of *Izvestiya* discusses how UAVs are being used in the Russian Armed Forces. Of particular note, the Russian Armed Forces has established 67 UAV companies and likely has over 2000 UAVs of various sizes. These UAVs perform a variety of tasks, including: target acquisition, search and rescue, patrolling, signal retransmission, electronic warfare, and artillery spotting. There are reports that Russia has operationally tested weapon-carrying UAVs in Syria. The accompanying excerpted article from *Zvezda TV* discusses Russia's Orlan-10 UAV, which is classified by the Russians as a 'medium-class' UAV with a 120km operating radius, 14 hour aloft time, and 5000 meter flight ceiling. The Orlan-10s work in teams of 2-3. While one UAV conducts reconnaissance at an altitude of 1000-1,500 meters, the second carries electronic warfare systems and the third functions as a retransmission platform, flying at an altitude of 4,000-5,000 meters, to connect forward flying UAVs to control stations. Russia has demonstrated no known SATCOM capability to control UAVs, so they regularly employ retransmission stations to support beyond line-of-site operations. Russia has produced over 1000 Orlan-10s with 11 different modifications, accounting for approximately half of the Ministry of Defense's UAV fleet. The accompanying excerpted article from the 13 April 2018 edition of *Izvestiya* describes how Russia is developing Simultaneous Localization and Mapping (SLAM) technologies for use in UAVs and other autonomous vehicles in order to alleviate dependencies upon GPS/GLONASS navigation in electromagnetically challenged environments. **End OE Watch Commentary (Bartles)**

Source: Aleksey Ramm and Bogdan Stepovoy. "Безлюдный флот: Россия стала второй по числу военных беспилотников (The Unmanned Navy: Russia Has Become Second Based Upon the Number of Military Unmanned Aerial Vehicles)," *Izvestiya*, 24 April 2018. <https://iz.ru/732935/aleksei-ramm-bogdan-stepovoi/bezliudnyi-flot>

The Ministry of Defense has decided to form new unmanned aerial vehicle regiments in the Navy's composition. Already right now the Russian Armed Forces are in second place in the world based upon the number of drones. Since 2011, the number of unmanned aerial vehicles (UAVs) in the RF Army has increased by more than a factor of 10. These devices are involved with reconnaissance, target designation, adjust artillery and air strikes in the online mode, and help to assess losses, which have been inflicted on the enemy. The UAV fleet has changed the tactics of the use of the Armed Forces on the ground, at sea, and in the air.

A Navy Main Staff spokesman told Izvestiya that the first UAV regiment was created in the Northern Fleet as an experiment. Then a fundamental decision was made on the formation of similar formations in all of the country's fleets. UAV detachments have been created on Kamchatka, at Severomorsk, and in the Crimea. They were transformed into squadrons in 2015. Now they will enlarge these formations and reform them into regiments...

In 2011, there were 180 UAVs in the Russian Army, a portion of which was still Soviet made. There were more than 1,700 new drones in the troops in 2015. Their number reached 1,980 by the end of 2016. There are 67 UAV companies in the Navy, Aerospace Forces, and Ground Troops right now. Based upon expert assessments, the number of UAVs in the Russian Army and Navy significantly surpasses 2,000. Their number will only increase in the future...

Primarily reconnaissance missions were assigned to military unmanned aerial vehicles 10 years ago. Right now they find targets, participate in search and rescue operations, patrolling, maintain communications, and adjust artillery and air strikes in the online mode...

Several types of UAVs are used in the Armed Forces. The most widespread are the Orlan-10...The Orlan UAVs are usually employed in groups of 2-3 aircraft. One of the aircraft conducts reconnaissance at a distance of 1-1.5 kilometers from the ground, the second carries electronic warfare systems, while located at a bit higher altitude, and the third – relays video to base from an altitude of 4.5-5 kilometers...UAV companies of battalion and brigade subordination have been created in the Ground Troops. They are primarily equipped with Orlan-10 UAVs. As a rule, the drones accomplish reconnaissance missions in motorized rifle and tank units...

The Russian unmanned aerial vehicle fleet lags behind the American fleet based upon its strength. However, foreign experts think that domestic UAVs with electronic warfare hardware will surpass the NATO countries' similar aircraft. It is precisely those aircraft, in their opinion, that are the main threat to the Western armies. Russia will have to make one more step forward in the development of military unmanned aerial vehicles – to accept heavy strike drones into the inventory.

Source: Pavel Kutarenko. "Уникальная отечественная разработка: эксклюзивные кадры с испытаний «Орланов» под Петербургом (Unique Russian Development: Exclusive Footage of Orlan Tests Near Saint Petersburg)," *Zvezda TV*, 9 March 2018. <https://tvzvezda.ru/news/opk/content/201803090933-un7x.htm>

The Orlan can not only reconnoiter from the air but also destroy enemy electronic warfare assets, suppress communications or, conversely, provide them via an interception-proof channel" No modern-day army can now manage without UAVs. Drones in the sky can spend hours reconnoitering and guiding fire for artillery and aviation -- the enemy has nowhere to hide from the "all-seeing eye" even at night and in bad weather.

After assembly, each Orlan multirole UAV complex is dispatched to a testing ground near Saint Petersburg. During a three-hour flight the operation of all its systems are checked -- from the infrared camera to the positioning modules...

There is plenty that is secret in how it is produced, because it differs radically from civilian models. The Orlan can not only reconnoiter from the air but also destroy enemy electronic warfare assets, suppress communications or, conversely, provide them via an interception-proof channel. Since starting work the maker has turned out more than 1,000 Orlan-10 UAV complexes. Eleven modifications of this aircraft are now in service with our army but the developers are not leaving it at that. Tests are already under way of an advanced combat quadcopter -- its range is a little less but it is much more mobile. Its main advantage is that it is virtually silent, which is crucial for reconnaissance.

(continued)



Continued: UAV Use in the Russian Armed Forces

Source: Yevgeniy Devyatyarov and Aleksandr Kruglov. “Беспилотники научатся ориентироваться на местности (UAVs Learn to Take Their Own Bearings),” *Izvestiya*, 13 April 2018. <https://iz.ru/727459/evgenii-deviatiarov-aleksandr-kruglov/bespilotniki-nauchatsia-orientirovatsia-na-mestnosti>

Combat robots are to learn to take their own bearings without using satellite navigation, to enable them to operate effectively even if GPS and GLONASS signals are jammed. Russian specialists are developing an autonomous navigation system for airborne, terrestrial, and underwater unmanned vehicles, to order for the Defense Ministry. The plan is that the new technology, which is based on machine vision principles, will be implemented in the course of three years.

The Central Scientific Research and Development Institute for Robotic and Cybernetic Engineering (TsNII RTK) is developing autonomous terrain mapping for airborne, terrestrial, and submarine drones, to order for the Russian Ministry of Defense. The institute's specialists have already begun trialing this kind of technology.

*A machine vision system comparable in its functionality to a human eye will be used for autonomous navigation, *Izvestiya* was told at TsNII RTK. It is also planned to use photographs of locations from popular online services such as Google and Yandex. In addition, unmanned vehicles will themselves photograph terrain...The main goal is to refine the machine vision system and supplement it with elements of artificial intelligence. This will enable an unmanned vehicle to navigate in a locality it has not surveyed, by using the publicly available photography of Google and Yandex.*

As part of the project, an algorithm is being developed to enable drones to operate as a team. In the area of its assigned mission a drone will navigate by existing photographs, make its own photographs of the terrain, and transfer the data onto a map that is accessible to all the drones. With each new flight over an area, its three-dimensional map becomes more detailed...

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Airborne Reconnaissance Units using Orlan-10, ZAPAD 2017.

Source: Mil.ru [CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)], https://commons.wikimedia.org/wiki/File:Zapad-2017_-_Airborne_exercise_11.jpg.