The Automation of Forward Air Control

OE Watch Commentary: Forward Air Controllers (FACs), individuals on the ground that assist pilots in dropping munitions on the enemy, have long been key personnel in the Russian Armed Forces. During the Soviet-Afghan War, FACs were so valued that the Afghans put bounties on them to be killed or captured. FACs have also been an important part of Russia's Syrian campaign. Forward Air Controller, Senior Lieutenant Aleksandr Prokhorenko, died 24 March, 2016 after he became surrounded by ISIS fighters and reportedly called an air strike on his own position to avoid capture. The accompanying excerpted articles from *Armeyskiy Sbornik* and *Izvestiya*, describe the nature of a FAC's duties and how Russia is quite interested in using robotics and artificial intelligence to designate targets and guide munitions, thereby reducing the need for human FACs, such as Senior Lieutenant Prokhorenko, to be placed in danger. **End OE Watch Commentary (Bartles)**


Forward Air Controller, Senior Lieutenant Aleksandr Prokhorenko.

Source: Unknown https://vavpvo.ru/nashi-geroi, via Wikimedia https://en.wikipedia.org/wiki/File:Alexander_Prokhorenko.jpg, Fair Use.

Source: V. Lukyanchik, O. Bunin, and D. Koryakin: "Авианаводчик с искусственным интеллектом (A Forward Air Controller with Artificial Intelligence)," *Armeyskiy Sbornik*, July 2018, pp. 26-33.

From the experience strategic exercises Tsentr-2015, Kavkaz-2016, and Zapad-2017 and combat operations of the Russian Federation Armed Forces Aerospace Forces (VKS) in the Syrian Arab Republic (SAR), it follows that the employment of aviation and UAVs permits general-purpose forces to execute combat missions effectively. The engagement of targets and destruction of objectives and personnel by army and ground attack aviation (henceforth, aviation) with a 85-95% probability, however, is impossible without the accurate availability of target coordinates and corresponding target designation and guidance. At the present time a forward air controller (FAC) -- a specialist who, on the forward edge of combat operations (.5-2 km) and sometimes next to the enemy, provides a target designation to an aerial vehicle -- coordinates the actions of aviation in the area of operations of the Ground Troops (ground forces) and "vectors" aviation (aerial vehicles) to the target. On the one hand this threatens the life of the FAC both from the enemy as well as from possible friendly fire, and on the other hand such factors as stress, fatigue, fear, malaise, and others are inherent to a person. In addition, the FAC is sent into the attack position (combat mission area) in advance to perform his combat mission and is present there regardless of weather conditions and time of day. Using a robot in place of a person helps preclude the aforementioned factors and significantly reduces the factor of risk to a person's life and health…

> *"UAVs and forward air-controller robots are indispensable in the modern Armed Forces."*

Source: Bogdan Stepovoy and Aleksey Ramm, "Робот наведет авиацию с высокой точностью: Офицеров-авианаводчиков хотят заменить искусственным интеллектом (A Robot Will Guide Aircraft with High Precision: Forward Air Controllers are to be Replaced by Artificial Intelligence)," *Izvestiya*, 10 August 2018. https://iz.ru/773334/bogdan-stepovoi-aleksei-ramm/robot-navedet-aviatciiu-s-vysokoi-tochnostiu

The profession of forward air controller will cease to be the most dangerous one in the Armed Forces… The Defense Ministry has informed Izvestiya that the concept of a robotic forward air controller is being developed by the Aerospace Forces (VKS). The controller will have two components -- ground-based and airborne. To operate in the ground troops' first echelon, the robot's special electronic equipment will be mounted on a tracked platform. The complex will also get airborne carriers -- UAVs (BPLA). The Aerospace Forces are currently deciding exactly which of the homeland UAVs is best suited to that role.

During battle, the air controller-robots will operate independently -- more exactly, with minimal intervention by operators. It will be required only when difficult irregular situations arise…Airborne and ground robots will get reconnaissance and guidance equipment. The standard apparatus will be able to detect a target, define its parameters, and relay the coordinates to a command post or to Aerospace Forces airplanes. The equipment will include a laser rangefinder, a high-resolution video camera, a thermal imager, and a navigation system.

The robot will determine what kind of target is in front of it -- a tank, a machinegun weapon position, an artillery system, or a surface-to-air missile complex. The artificial intelligence will select the type of weapon with which it is best to destroy the adversary's equipment and personnel, and will also distinguish our own personnel from theirs. For target destruction, conventional free-falling bombs or ammunition adjusted via satellite or a laser beam can be used, as well as weapons with a TV guidance system.

The automated forward air controller's job will not end there. In those cases where laser-guided missiles and bombs are being used, the robot will "illuminate" the target with the laser. For destroying an adversary's stationary objects with guided aerial bombs or cruise missiles, there will be sufficient coordinates indicated…

But the main thing is that ground subunits' stability in defense and rapid forward movement during a raid or an attack greatly depend on the forward air controllers' work. They are responsible for ensuring that a bomb strike does not hit our own men, Lieutenant General Valeriy Gorbenko, the 4th Air Force and Air Defense Army's former commander, said.

"UAVs and forward air-controller robots are indispensable in the modern Armed Forces," he noted. "It is important that the equipment will make it possible to transmit data about targets not only to a command post, but also directly to an airplane. This will help inflict a strike on the adversary without delay, which greatly increases the effectiveness of airstrikes.