



The Inflatable Sentry

OE Watch Commentary: In 2016, the Russian Ministry of Defense reactivated the “Lighter-Than-Air Systems Department” in the Aerospace Forces and adopted a lighter-than-air systems technology development concept: the “Dirigibles, Aerostats, and Air Balloons until 2025” (дирижаблей, аэростатов и воздушных шаров до 2025 года). The purpose of this was not only to develop a replacement for the 1950s era lighter-than-air systems currently used by the Aerospace Forces for traditional purposes, such as air and missile defense, and scientific research, but also to develop new balloons, dirigibles, and aerostats to support new Aerospace Forces’ missions. The Russians consider lighter-than-air systems as an alternative to unmanned aerial vehicles because their payload capacity is an order of magnitude greater, and their loiter time can be measured in terms of days instead of hours. This loiter capability is so great that they are often referred to as “static reconnaissance systems” (статичными разведчиками).

Most discussions of new Russian lighter-than-air systems involve systems for air and missile defense, but the accompanying excerpted article from *Izvestiya* discusses the AKV-05 aerostat, a system intended to provide persistent surveillance of the ground. The AKV-05 system consists of a ground control post mounted on an all-terrain vehicle, a tethered aerostat, a towed electromechanical winch for the aerostat, and a mobile gas replenishment unit. The AKV-05 aerostat is a 50 cubic-meter helium balloon that maintains an operational altitude of 300 to 1,000 meters with equipment weighing up to 16 kg. The AKV-05 is equipped with an onboard computer that can automatically adjust altitude and remain fixed on position at wind speeds of 15 m/s (with gusts of 25 m/s). In its standard configuration, the AKV-05’s maximum flight time is 75 hours, during which it can provide round-the-clock electro-optical video surveillance, including with a thermal imager. In good weather conditions, the electro-optical system can reportedly read license plates at an altitude of 300 meters and range of two kilometers, and can spot objects within a 10-km radius. If proven successful, the AKV-05 aerostat could enhance Russia’s Reconnaissance-Fire System (разведывательная-огневая система), especially for security purposes such as Russia is now engaging in Syria. Not only is the AKV-05 seen as a targeting asset, but it is also being considered for use as a radar platform, communications (retransmission), signals intercept, electronic warfare, and weather purposes. **End OE Watch Commentary (Bartles)**

Source: Aleksandr Kruglov and Aleksey Ramm, “Надувной часовой: важные военные объекты будут охранять аэростаты (The Inflatable Sentry: Aerostats to Guard Important Military Sites),” *Izvestiya*, 14 December 2018. <https://iz.ru/815399/aleksandr-kruglov-aleksei-ramm/naduvnoi-chasovoi-vazhnye-voennye-obekty-budut-okhraniat-aerostaty>

The armed forces are to receive a new generation of tethered aerostats. The official name of these complexes is AKV-05. They have been tested in Syria, at the Humaymim airbase and during the liberation of Palmyra. The plan is to use the aerostats with video surveillance and thermal imaging devices for guarding important military facilities. The first batch will cost the military 120 million rubles [\$1,739,703]. According to experts, they will be versatile platforms for hi-tech surveillance systems...

AKV-05s are currently being tested in Syria, where they are in active use to guard and monitor the environs of the Humaymim airbase. In 2016 they were in the sky above Palmyra, watching the operation to liberate the city. All data from the aerostats were being transmitted in real time to the National State Defense Management Center...

The plan is to fit other equipment to the aerostats in the future, including radars, communication, signals intercept, and electronic warfare devices, and target acquisition. The aerostat can serve as a weather station, a communications relay, or a radar station capable of detecting a target within a radius of 200 km.

*Aerostats are relatively inexpensive and memories of them were prompted by the emergence of hi-tech miniaturized intelligence-gathering systems, military expert Vadim Kozyulin explained to *Izvestiya*. “An aerostat can lift technologically advanced surveillance gear to high altitudes and make it much more effective,” he said. “These complexes are fitted with a colossal number of detectors and sensors that watch what is happening on the ground. In ‘defense’ mode it has a powerful database with a detailed map of the terrain which is updated in real time. Any kind of change -- for example, a vehicle leaving, people moving around, or any kind of work beginning -- triggers the data processing program.” Artificial intelligence monitors the situation, analyses changes, and flags up any kind of suspicious trend. This enables prompt detection of threats, Kozyulin said.*

The use of aerostats for communications was tried out during the USSR’s war in Afghanistan, and they were found to extend the range of radio traffic to four or five times that of ground-based devices. Modern technologies and materials have made aerostats safer to use. Among their advantages are the ability to remain over a single location for an extended period and the high quality of the signals they transmit. Aerostats enable communications in places where it is impossible to lay cables or rapidly deploy a network of mobile communication hubs -- for example, in mountains or the Arctic tundra. These complexes are much cheaper than ground-based assets, of which a vastly greater number are needed for signals coverage of the same area.

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