



'Penitsillin' Artillery Reconnaissance System Enters Service

OE Watch Commentary: The accompanying excerpted article from *Izvestia* discusses Russia's most recent attempt to diversify artillery reconnaissance capabilities, the 'Penitsillin' automated sonic-thermal system artillery reconnaissance system. The Penitsillin is mounted on a Kamaz-6350 chassis, with a detection radius of up to 25 km. It consists of the 1B75 electro-optical module, which works in the infrared and visible spectrum using imaging cameras placed on a telescopic boom, and several ground-installed 1B76 sound and seismic receivers. The system receives and processes thermal, acoustic and seismic signals from enemy fire, calculating their location and transmitting the data to friendly artillery reportedly in less than five seconds. Russian experts point out that the latest equipment will fundamentally increase the effectiveness of Russian artillery. According to *Izvestia*, training has already begun on the system, as the system will eventually be fielded throughout the Artillery Troops and the Coastal Defense Artillery Troops. **End OE Watch Commentary (Bartles)**

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***-Viktor Murakhovskiy, Editor-in-Chief of “Arsenal of the Fatherland” Magazine
Center for Space Situation Reconnaissance***

Source: Bogdan Stepovoy and Anton Lavrov, “«Пенициллин» идёт в разведку: артиллерию наведут на цель электронные комплексы ('Penitsillin' Is Going on Reconnaissance: Electronic Complexes Guide the Artillery to the Target),” *Izvestia* Online, 6 May 2020. [https://iz.ru/1007743/bogdan-stepovoi-anton-lavrov/penitsillin-idet-v-razvedku-artilleriiu-navedut-na-tcel-elektronnye-kompleksy](https://iz.ru/1007743/bogdan-stepovoi-anton-lavrov/penitsillin-idet-v-razvedku-artilleriiu-navedut-na-tsel-elektronnye-kompleksy)

'Penitsillin' Is Going on Reconnaissance: Electronic Complexes Guide the Artillery to the Target

...Sources in the Military Department told *Izvestiya* that the fundamental decision on the initiation of the deliveries of the AZK 1B76 "Penitsillin" reconnaissance complexes has already been made. They plan that the equipment will initially begin to arrive in the Ground Troops artillery regiments and brigades and later the equipment will augment the arsenal of the Russian Navy's Coastal Missile-Artillery troops...There is only one "Penitsillin" complex in the Armed Forces for the time being. It arrived at the Missile Troops and Artillery Combat Employment Center in Saratov this year. The officers-instructors, who will teach the crews to work with the new equipment beginning next year, have already been trained. After passing the examinations and all of the needed standards, the crews will obtain the new equipment and will be sent to the troops...

A set includes a special optical-electronic module - six each ordinary and thermal-imaging cameras, which operate in the infrared range. They have been installed on a vertical lifting mast and are capable of supporting high-speed data sorting. The video systems can conduct surveillance of an extensive sector and detect the flashes of shots or the explosions of projectiles, which will permit the electronics to determine the munition's flight trajectory and the location of the camouflaged artillery positions. The complex also has several special remote sensors. They permit the calculation of the shooter's coordinates while using the acoustic location principle, Viktor Murakhovskiy pointed out. "The shot from a gun creates a sound wave in the surface layer of the atmosphere, which covers very great distances", he explained. "These sensors and special algorithms, which take into account the current state of the atmosphere (humidity, wind, and other parameters), permit the electronics to calculate the deployment location of the enemy weapon positions with the highest accuracy."

The preparation of the "Penitsillin" for combat takes a matter of minutes - the crew needs to competently deploy and camouflage the equipment. Then its role is reduced to the minimum - the electronics engage. The modules must supplement each other in an engagement. Based upon the characteristics of the sound wave, the flashes, and also based upon the strength and nature of the detonations, the complex determines which artillery, rocket-propelled, or missile systems launched the munitions. The time of receipt of the coordinates of a single target, which is conducting firing, totals no more than five seconds. During this short interval, the target's location is plotted on an electronic