



The Drel Gliding Gravity Bomb with Independently Targetable Submunitions

OE Watch Commentary: The Standardized Gliding Cluster Bomb (PBK) with Self-Aiming Antitank Submunition-Combined (SPBE-K), or Drel PBK-500U, will be Russia's first guided bomb with self-targeting submunitions. The Drel is reportedly 310 cm long, has a 45 cm diameter, weighs 540 kg, and has 15 self-targeting submunitions that are designed to destroy armored vehicles, radar reconnaissance system radars, command-and-control facilities, and particularly SAM systems. The air dropped PBK-500U can glide up to 30 km from its target, well outside the range of many short-range air defense systems. The accompanying excerpted article from *Gazeta.ru* discusses the features of the PBK-500U, and specifically mentions the cost savings of using the PBK-500U versus using an expensive cruise missile.

The accompanying excerpted article from *Svobodnaya Pressa* also mentions the bomb's features and points out that the PBK-500U will by no means replace conventional gravity bombs, as they are far cheaper. Of particular interest in the article is the mention of how Russians describe the tactical, operational, and strategic depths. Based upon this information, and descriptions seen in other sources, the approximate depth values are: tactical depth (0-120 km), operational-tactical depth (120 km-500 km), operational depth (500-1,500 km), operational-strategic depth (1,500-5,500 km), and strategic depth (5,500+ km). The PBK-500U is considered to be an operational-tactical level weapon system, likely used on operational-tactical fighters such as the Su-24M and Su-34. **End OE Watch Commentary (Bartles)**

“Why do we need air-delivered weapons such as the Drel?... it is all a matter of price. A gliding munition with guidance based on data of the global positioning system is tens or even thousands of times less expensive than an air-to-surface guided missile. It ensures high accuracy of engagement (3-5 meters) with a long flight range. But the most important thing is that the price of this air-delivered weapon permits using it en masse.”

Source: Mikhail Khodarenok, “Новое оружие России: «Дрелью» по танкам (New Russian Weapon: Drel Against Tanks),” *Gazeta.ru*, 20 February 2018. <https://www.gazeta.ru/army/2018/02/20/11656981.shtml>

During a scientific-technical conference held at facilities of Basalt Scientific Production Association (NPO), Vladimir Lepin, general director of the Tekhmash Concern, announced that Drel, the newest aerial bomb that became known for the first time during the Army-2016 forum, will enter the inventory in 2018.

“State tests of the new basic model of a 500-kilogram gliding cluster bomb armed with self-aiming submunitions began in 2016. The state tests are being conducted in accordance with the program of the client (Russian Defense Ministry), and after their successful conclusion in 2018 it is planned to make this article operational,” Lepin stated.

It is reported that the standardized gliding cluster bomb, PBK-500U SPBE-K (Drel) has the capability of all-weather, around-the-clock use. It is presumed that the munition will be released without the platform aircraft entering the kill zone of SAM systems and complexes. The PBK-500U SPBE-K gliding cluster bomb is designed to engage the probable enemy's armored vehicles, radar reconnaissance system radars, command-and-control facilities, and SAM complexes and systems.

After separation from the platform aircraft, Drel can fly up to 30 kilometers and deliver up to the 15 self-aiming submunitions to the target area, which will be guided to specific targets using the GLONASS global positioning system.

The newest PBK-500U SPBE-K aerial bomb weighs around 540 kilograms and the munition is three meters long. It is presumed that Drel will be released from high altitudes and from the stratosphere (in particular, the principal altitude for combat employment of the new munition is given as 14 kilometers). It is reported that the cluster bomb itself and the self-aiming submunitions have a small radar cross-section, which will reduce substantially the possibility of Drel being hit by enemy air defense missile-gun complexes and small-caliber air defense artillery.

It is presumed that the Drel aerial bomb will enter the arsenal of all Russian aircraft. It will be possible to accommodate this air-delivered weapon in their internal bomb bays and on their underwing pylons...”The meaning of developing such munitions that glide and are guided based on data of the global positioning system is as follows,” Andrey Frolov, editor-in-chief of the Arms Export journal, explained to Gazeta.Ru. “It would appear that we have air-to-surface guided missiles with a substantially greater flight range and warhead yield.

“Why do we need air-delivered weapons such as the Drel?” According to the expert, it is all a matter of price. A gliding munition with guidance based on data of the global positioning system is tens or even thousands of times less expensive than an air-to-surface guided missile. It ensures high accuracy of engagement (3-5 meters) with a long flight range. But the most important thing is that the price of this air-delivered weapon permits using it en masse. In fact it is rather stupid to try to hit a jeep costing \$15,000 and mounting a heavy-caliber machinegun with a guided missile costing \$500,000. This is absurd. And no economy will withstand the employment of missiles at that price en masse. But Frolov emphasizes that a gliding munition with GPS guidance is the ideal munition for low and even high intensity conflicts.

Therefore the Drel is an extremely promising gliding cluster bomb. And the expert believes its acceptance into the inventory will sharply increase Russian Army combat capabilities.

(continued)



Continued: The Drel Gliding Gravity Bomb with Independently Targetable Submunitions

Source: Sergey Aksenov and Viktor Murakhovskiy, “ВКС России никак не возьмут в руки «Дрель» (There Is No Way The Russian Federation Aerospace Forces Will Get Their Hands on The Drel),” *Svobodnaya Pressa*, 8 January 2018. <https://svpressa.ru/war21/article/190045/>

The Russian military will receive the newest PBK-500U Drel precision aerial bomb in the inventory in 2018. Tekhmash Concern General Director Vladimir Lepin told Interfax about this in an interview...In 2016, RF Deputy Defense Minister Yuriy Borisov promised to equip our operational-tactical aviation aircraft with Drel soon. According to him, the munition is designed to engage enemy armored vehicles, fortifications, field ammunition dumps, industrial facilities, and lines of communication...

In the opinion of Anatoliy Tsyganok, head of the Center for Military Forecasting of the Institute for Political and Military Analysis, state-of-the-art munitions of this nature will become the primary weapon for all the world's high-tech armies in 10-15 years. We are ahead for now, although not everything is going smoothly. “PBK-500U Drel is an antitank system. It is designed to engage particular armored vehicles,” military expert and MilitaryRussia website editor Dmitriy Kornev explained. “This is a rather recent decision for Russia, because up to now we have not had a single series-produced device with self-aiming submunitions in the inventory. There are of course simple cluster munitions on tactical missiles, including Iskander.”

[Svobodnaya Pressa] But in fact there is an international convention prohibiting cluster munitions?

[Kornev] Most likely the new aerial bomb is not among those prohibited by this convention, since the ban extends only to antipersonnel cluster munitions (submunitions weighing up to 20 kilograms -- Auth.). Not only do we have, but the West also has more powerful cluster bombs.

[Svobodnaya Pressa] On what kind of delivery vehicles can the new aerial bombs be mounted?

[Kornev] First of all, there is the Su-24M. Secondly, the Su-34 is an aircraft that will operate in the operational depth of the enemy defense. The Tu-22M also can employ the new bomb theoretically, but it hardly will. This is a little way from their specialization.

[Svobodnaya Pressa] How should we assess the fact that the Drel bomb can glide up to 30 kilometers? Is this a revolution or nothing special? Will the platform aircraft really remain unattainable for enemy air defense?

[Kornev] If we are talking about engaging tank formations, their own air defense has a kill radius of less than 30 kilometers against offensive air weapons. In the Russian troops these are the Osa and Tor complexes. That is, bombing is possible without entering the immediate air defense zone of a tank formation. It is understandable that if we are talking about permanent positions of armored systems prepared in advance and covered from the air, then of course there will be more serious air defense systems there. But in any case, the kill probability against the platform aircraft declines as the munition's range capability increases.

And it simply is great to employ such a munition with respect to an enemy who is on the march, because there is a much lesser radius of action for mobile air defense complexes in troop columns. The only thing is that it will be necessary to ensure the coordination of bombers as part of a reconnaissance-strike complex. This is when reconnaissance reports target coordinates in real time and incoming aviation executes a maneuver and employs munitions against a target for which there has been prestrike reconnaissance. As a matter of fact, the majority of modern operations should be carried out specifically in that way...

In the opinion of Colonel (Reserve) Viktor Murakhovskiy, editor-in-chief of the Journal Arsenal Otechestva [Homeland Arsenal], acceptance of the new aerial bomb into the inventory will not affect the strategic balance of forces in the world in any way.

[Murakhovskiy] You have to understand that in the case of a new aerial bomb we are talking about the operational-tactical and not the strategic level. These are entirely different concepts. It is like comparing apples to oranges. For example, range is the main characteristic of a strategic weapon. The Chief of General Staff recently publicly designated the range of operational-tactical arms as up to 500 kilometers. The next level is up to 1,500 kilometers. But strategic weapons have a reach from 5,500 kilometers and more. And their warhead can be both nuclear and conventional, as for cruise missiles.

[Svobodnaya Pressa] That is, it is a question of a simple improvement of operational-tactical munitions and no more than that?

[Murakhovskiy] Just so. There are two directions here. The first is an improvement in the delivery vehicle. In this case aircraft are equipped with a computer subsystem that supports employment of conventional unguided munitions with an accuracy similar to that of a precision munition. There are such systems on the Su-24M, Tu-22M3, Su-33, Su-35, and so on.

And the second direction is creation of the precision-guided munitions themselves, but you have to understand that this is expensive. A conventional 500-kilogram aerial bomb costs less than 300,000 rubles (≈ \$5211 based upon the March 2018 exchange rate.) but a smart bomb of that caliber with a laser homing head costs around 8,500,000 rubles. (≈ \$147,635 based upon the March 2018 exchange rate.) Therefore you have to have both of them in the arsenal and employ them depending on the specific mission and the enemy force.