



Russian Ground Forces' Air Defense: A Look At Russia's Threat-Based Military

OE Watch Commentary: The 2S6 (2K22) Tunguska (SA-19 Grison) is a tracked, short-range missile-gun, light armored, anti-aircraft system that was designed to protect assets from air attack in the forward edge of the battle area (FEBA), fielded to replace the ZSU-23-4 Shilka in the early 1980s. The Tunguska went through its first major upgrade in the 1990s (2K22M Tunguska-M), and in 2003, Russia began fielding the current (most modernized) version, the 2S6M1 (2K22M1) Tunguska-M1. The Tunguska-M1 has twin 2A38M (30mm) guns with a firing rate of up to 5,000 rounds per minute that are capable of destroying flying targets at distances from 200 to 4,000 meters at an altitude of up to 3,000m. The Tunguska's guns are useful for engaging extremely close targets, where the expenditure of a missile would be uneconomical (such as a small UAV), targets that have EW protection capabilities (that missiles cannot engage), and, when necessary, ground targets. The Tunguska also has eight 9M311-M1 short-range missiles designed to engage low-flying aircraft and cruise missiles at a range of from 200 to 10,000 meters and at altitudes from 15 to 6,000 meters.

Historically, the Russian Ground Forces' decision to transition from the Shilka, to the Tunguska, to the Tunguska-M, to the Tunguska-M1 is directly related to the US's fielding of attack helicopters, namely the Bell AH-1 Cobra and the Boeing AH-64 Apache. In the Vietnam era, the AH-1 Cobra attack helicopter, with long-range antitank guided missiles (ATGMs), first started appearing in the US arsenal. On the receipt of targeting information, the AH-1 Cobra would "jump up" from behind a terrain feature (hill, valley, etc.) fire a rocket, and withdraw into hiding. The firing cycle for such an attack would only be 40-50 seconds, insufficient time for older Soviet Shilkas and Strela-2Ms to respond. After one major exercise, the Commander-in-Chief of the Soviet Ground Forces, and Hero of the Soviet Union, General Ivan Pavlovsky (1909–1999), assessed the level of threat of attack helicopters to armored vehicles on the modern battlefield by saying: "It is better to have ten tanks that are reliably covered from the air than one hundred with no protective cover." His statement proved prophetic during the Arab-Israeli conflicts, as Israeli Cobras were reportedly destroying from six to eight unprotected armored vehicles (tanks, BTRs, BMPs, etc) each sortie. As the US has fielded more modern attack helicopters, the Soviet Union, and later Russia, has fielded more modern Tunguskas to destroy them. Modernizing capabilities in direct response to adversary capabilities can be seen in many other Russian development programs, demonstrating how the Russian military is very much a "threat-based" military, as opposed to Western militaries which are more "capability-based."

The accompanying excerpted article from *Rossiyskaya Gazeta* discusses another modernization of the Tunguska, the addition of passive sensors that can provide targeting data so the Tunguska does not need to emit as much radiation. This capability would increase the Tunguska's survivability on the modern battlefield, and although not mentioned in the article, could be one way of mitigating proposed new US attack helicopter-launched anti-tank guided missiles. **End OE Watch Commentary (Bartles)**



Postwar portrait photo of Soviet Army General Ivan Grigorevich Pavlovsky (1909-1999). 328th Rifle Division (Soviet Union). Commander-in-Chief of the Soviet Ground Forces from 1967-1979.
Source: Wikimedia, https://en.wikipedia.org/wiki/File:Soviet_Army_General_Ivan_Grigorevich_Pavlovsky.jpg, Public Domain

“Thanks to the introduction of television and thermal-imaging channels with the automated target tracker, the “Tunguska-M1” has obtained the capability “to see” at any time of day and to destroy the enemy in stealth mode, without revealing itself.”

Source: Aleksey Brusilov, “Скрытное уничтожение: новый прицел сделал “Тунгуску” еще более грозной (Secret Destruction: The New Sight Has Made the ‘Tunguska’ Even More Formidable),” *Rossiyskaya Gazeta* Online, 4 September 2019. <https://rg.ru/2019/09/04/skrytnoe-unichtozhenie-novyj-pricel-sdelal-tungusku-eshche-bolee-groznoj.html>

Secret Destruction: The New Sight Has Made the ‘Tunguska’ Even More Formidable

The “Tunguska” air defense missile-gun complexes are one of the main weapon systems of the Air Defense Troops of the Russian Ground Forces (PVO). They are considered to be a formidable adversary for hostile combat aircraft, helicopters, and unmanned aerial vehicles.

These vehicles are being constantly being improved. One could have caught sight of the modernized variant of the 2S6M1 with the new sight at the recent Southern Military District opposing-force tactical exercises near Volgograd...

Thanks to the introduction of television and thermal-imaging channels with the automated target tracker, the “Tunguska-M1” has obtained the capability “to see” at any time of day and to destroy the enemy in stealth mode, without revealing itself...