



## The S-500 “Prometheus” Air and Missile Defense System Is Coming!

**OE Watch Commentary:** Discussion of the S-500 “Prometheus” air defense-antimissile (PVO-PRO) system began in 2004, with research and development commencing in 2007. During this time, estimates began appearing when the S-500 would enter service and the timeline for the S-500 has been pushed back several times from 2012 to 2014 to 2017, and then, as former Deputy Defense Minister Yuriy Borisov mentioned, 2020. In May 2018, during a meeting with the President of Finland, Russian President Vladimir Putin spoke about the need to complete development and begin serial production of the S-500 as soon as possible. According to the accompanying excerpted article from *Interfax-AVN*, the S-500 will be fielded in the next 12-18 months.

It is important to note that the S-500 is not a completely “new” system. Major Russian end-items (planes, tanks, ships, etc.) are almost always built using the “evolutionary” approach, by evolving new systems from existing systems. In this case, the S-500 is a further development of the S-400 “Triumf,” which was a further development of the S-300. The S-500 system itself consists of a launch vehicle, command post, acquisition radar, engagement radar, and an antiballistic missile radar, that for the most part, are simply upgraded versions of the S-400 system. The S-500’s capability to engage a range of targets, including cruise missiles, aircraft, MRBMs, and ICBMs, is due to the use of the aforementioned radars (including a new antiballistic missile radar), and its ability to fire ten different missiles. The S-500 uses seven “old” missiles from the S-400 that are designed to intercept “air-breathing” targets. Each missile differs in range, intended interception altitude, speed, dynamic qualities, and homing system in order to best deal with its appropriate class (high-speed, low-flying, maneuvering, etc.) of target. The S-500 will also use three “new” missiles, specifically made for the S-500. The 40N6M has the longest range of the missiles, giving the S-500 an impressive reach of 600 km. The 77N6-N and 77N6-N1 missiles are designed to destroy high-speed ballistic missiles, targets that can travel 7 km/s. The S-500s radars are reported to be significantly upgraded versions of (roughly equivalent) equipment of the S-400 system. The S-500 acquisition radar can reportedly detect targets up to 800 km, and the ballistic missile radar reportedly has a detection range of up to 2,000 km. The accompanying excerpted article from *Svobodnaya Pressa* discusses the S-500s purported capabilities. **End OE Watch Commentary (Bartles)**



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New self-propelled launch vehicle 5P90S on BAZ-6909-022 chassis for S-400 system  
(Demonstration of military vehicles at Bronnitsy test range, 2011).

Source: Vitaly Kuzmin Blog, CC 4.0. (<https://www.vitalykuzmin.net/Copyright-policy>), <https://www.vitalykuzmin.net/Military/Demonstration-in-Bronnitsy/i-D6KNDGb/A>.

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## Continued: The S-500 “Prometheus” Air and Missile Defense System Is Coming!

*“The uniqueness of the Prometheus lies in the fact that it equally effectively intercepts both aerodynamic and ballistic targets. That is, the system is universal, classed as it is as both an anti-aircraft and anti-missile defense asset.”*

**Source:** “Russian military to get S-500 missiles in 12-18 months,” *Interfax-AVN*, 15 October 2018.

*The delivery of the next-generation S-500 Prometheus surface-to-air missile (SAM) system to the Russian Armed Forces will begin in a year or a year and a half, Ret. Lieut. Gen. Aitech Bizhev, a Russian expert on air defense, said.*

*“As far as I know, research and development work on S-500 is underway. The system should start entering service in the very near future, I think in a year or a year and a half,” Bizhev, a former deputy commander of the Russian Air Force, said...*

*The S-500 is a long-range, high-altitude-interception universal SAM system with an increased missile defense potential.*

*The S-500 will become the basis of the national air and missile defense system, Andrei Cheburin, commander of a missile defense unit of the 1st Army of Air and Missile Defense of the Aerospace Forces, said in an interview with the Defense Ministry’s newspaper *Krasnaya Zvezda* in January 2017.*

**Source:** Vladimir Tuchkov, “Русский «Прометей»: перехват в космосе и у земли гарантирован ЗРС С-500 выходит на финишную прямую (The Russian ‘Prometheus’: Interception Guaranteed in Space and on Earth; S-500 Surface-To-Air Missile System Approaches the Finish Line),” *Svobodnaya Pressa*, 30 September 2018. <https://svpressa.ru/war21/article/211816/>

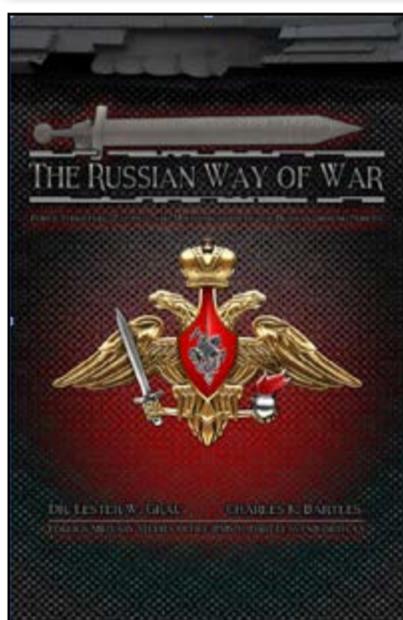
*...The S-500 provides guaranteed protection against air strikes on large areas where military and civilian facilities are located and acts as a protective umbrella for large cities and individual regions. The radius of the Prometheus long-range missiles is 600 kilometers. The maximum altitude at which it can intercept ballistic missiles and satellites in low orbits is more than 200 kilometers. Meanwhile, the upper strike limit is kept secret.*

*The tasks assigned to the Prometheus, which belongs to the new generation of air defense-anti-missile (PVO-PRO) systems can be described very concisely: to shoot down with anti-missiles everything that can fly. Or almost everything. All aerodynamic targets, including advanced targets, are intercepted. That is, to “survive,” an attacking aircraft will not be helped by stealth, or the ability to maneuver with large overloads, or hypersonic speed exceeding Mach 5.*

*There are limitations as regards the destruction of ballistic missiles. Tactical and operational-tactical missiles, as well as medium-range missiles, are intercepted. Intercontinental ballistic missiles can be hit during the final section of the trajectory and, under certain conditions, during the middle section. The S-500 works more easily with satellites and space platforms with strike weapons because their movement in orbit is absolutely predictable and an anti-missile launched toward a reference point is guaranteed to intersect with the space vehicle.*

*The uniqueness of the Prometheus lies in the fact that it equally effectively intercepts both aerodynamic and ballistic targets. That is, the system is universal, classed as it is as both an anti-aircraft and anti-missile defense asset. Before it, there was no such universalism. So, for example, the S-400 surface-air missile system predominantly has an air defense function and it is more difficult for it to deal with ballistic targets. The Prometheus is equipped with 10 different missiles, each of which is designed to intercept a specific type of flying vehicle... Here there is a clear division between the anti-aircraft and anti-missile parts. The S-500-is, in fact, two systems, each of which handles its own tasks. One engages with aerodynamic targets (airplanes, helicopters, cruise missiles, drones), the second with ballistic targets. Accordingly, two groups of equipment and missiles were created...*

*...The Prometheus is able to repel massive air attacks. A single S-500 battalion tracks up to 160 targets and simultaneously fires on 80.*



### THE RUSSIAN WAY OF WAR by LESTER W. GRAU and CHARLES K. BARTLES

At any given time, assessments of the Russian Armed Forces vary between the idea of an incompetent and corrupt conscript army manning decrepit Soviet equipment and relying solely on brute force, to the idea of an elite military filled with Special Operations Forces (SOF) who were the “polite people” or “little green men” seen on the streets in Crimea. This book will attempt to split the difference between these radically different ideas by shedding some light on what the Russian Ground Forces consist of, how they are structured, how they fight, and how they are modernizing.

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