

S-500 missile system

The **S-500 Prometey** (Russian: С-500 Прометей, lit. 'Prometheus'), also known as **55R6M "Triumfator-M"**,^[2] is a Russian surface-to-air missile/anti-ballistic missile system intended to replace the A-135 missile system currently in use, and supplement the S-400. The S-500 is under development by the Almaz-Antey Air Defence Concern, initially planned to be in production in 2014 it is currently targeting 2020 for deployment. With its characteristics it will be very similar to the US Terminal High Altitude Area Defense system.^[3]

Contents

Overview

See also

References

External links

Overview

The S-500 is a new-generation surface-to-air missile system. It is designed for intercepting and destroying intercontinental ballistic missiles, as well as hypersonic cruise missiles and aircraft,^{[4][5]} for air defense against Airborne Early Warning and Control and for jamming aircraft. With a planned range of 600 km (370 mi) for anti-ballistic missile (ABM) and 400 km (250 mi) for the air defence,^[6] the S-500 would be able to detect and simultaneously engage up to 10 ballistic hypersonic targets flying at a speed of 5 kilometres per second (3.1 mi/s; 18,000 km/h; 11,000 mph)^{[7][8]} to a limit of 7 km/s (4.3 mi/s; 25,000 km/h; 16,000 mph).^{[9][10]} It also aims at destroying hypersonic cruise missiles and other aerial targets at speeds of higher than Mach 5, as well as spacecraft.^[5] The altitude of a target engaged can be as high as 180–200 km (110–120 mi).^[4] It is effective against ballistic missiles with a launch range of 3,500 km (2,200 mi), the radar reaches a radius of 3,000 km (1,300 km for the EPR 0,1 square meter).^{[11][12][13]} Other targets it has been announced to defend against include: unmanned aerial vehicles, low-orbit satellites, and space weapons launched from hypersonic aircraft, drones, and hypersonic orbital platforms;^[14]

The system will be highly mobile and will have rapid deployability. Experts believe that the system's capabilities can affect enemy intercontinental ballistic missiles at the middle and end portions of flight,^[6] but reports by Almaz-Antey say that the external target-designation system (RLS Voronezh-DM and missile defense system A-135 radar Don-2N) will be capable of mid-early flight portion interceptions of enemy ballistic missiles, which is one of the final stages of the S-500 project.

In 2009, the system was under development at the design stage at Almaz-Antey and had been planned to be completed in 2012.^[15] In February 2011, it was announced that the first S-500 systems should be in serial production by 2014.^[16] Two plants were developed to produce the S-500 by 2015.^[17] Under the State Armament Programme 2020 (GPV-2020), the plan is to purchase 10 S-500 battalions for the Russian Aerospace Defense (VKO).^[18]

The main components of the S-500 will be^[19]

- launch vehicle **77P6**, based on the BAZ-69096 10x10 truck
- command posts **55K6MA** and **85Zh6-2** on BAZ-69092-12 6x6
- acquisition and battle management radar **91N6A(M)**, a modification of the 91N6 (Big Bird) towed by the BAZ-6403.01 8x8 tractor
- 96L6-TsP** acquisition radar, an upgraded version of the 96L6 (Cheese Board) on BAZ-69096 10x10

| S-500 Prometey | |
|--------------------------|--|
| Type | Mobile surface-to-air missile/anti-ballistic missile system |
| Place of origin | Russian Federation |
| Service history | |
| In service | 2020 (planned) ^[1] |
| Used by | Russia |
| Production history | |
| Designer | Almaz-Antey |
| Specifications | |
| | |
| Operational range | 600 km (370 mi) ^[1] |

- multimode engagement radar **76T6** on BAZ-6909-022 8x8
- ABM engagement radar **77T6** on BAZ-69096 10x10

The system is planned to have a response time of less than 4 seconds (Compared to the S-400's less than 16^[30]).

Although sharing a similar designation, the relationship between this new S-500 and the S-500U project of the 1960s is unclear. The S-500U multichannel anti-aircraft system was a 1968 initiative by the Soviet Air Defence Forces Soviet Navy, Ministry of the Radio Industry (Ministerstvo Radio Promyshlennosti SSSR), and Ministry of the Shipbuilding Industry to create a unified complex for the National Air Defence Troops, navy and ground troops. Missiles of the S-500U complex were supposed to engage enemy aircraft at a range up to 100 km (62 mi). The S-500U SAM complex project was rejected by the Soviet Army, which had a requirement to engage not only enemy aircraft, but also short-range ballistic missiles. Consequently, the S-300 family (SA-10 and SA-12) was developed instead.

Five batteries of S-500 missiles are planned to be in service by 2020. The S-500s will work with S-400s and are planned to together replace S-300 air defence missiles.^[21] The first units are planned to be deployed around Moscow and the country's central area. A naval version is the likely armament for the new Lider-class air-defense destroyers due to enter service in 2023–25.^[22]

See also

- Arrow 3
- A-235 anti-ballistic missile system
- S-300VM
- S-350E Vityaz
- S-400
- Voronezh-DM - early-warning radar for Russian Aerospace Defence Forces
- Ground-Based Midcourse Defense(GMD)
- Medium Extended Air Defense System(MEADS)

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