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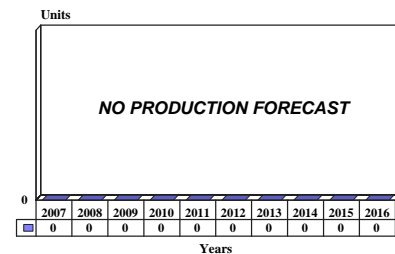
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Sukhoi Su-25 - Archived 3/2008

Outlook

- No further new production is forecast
- Venezuela expressed interest in the Su-25TM/Su-39 variant during early 2006, but no order has followed
- The Su-25 is the focus of several upgrade programs

10 Year Unit Production Forecast
2007 - 2016



Orientation

Description. Single- and twin-seat, twin-turbojet-powered ground attack and weapons training aircraft.

Sponsor. Russian Ministry of Defense.

Status. Su-25 production was halted in 1991, but may have later resumed at Tbilisi Aircraft State Association (currently called Tbilisi Aircraft Manufacturing, or TAM), Tbilisi, Georgia. In addition, a batch of seven Su-25TMs was produced between 1992 and 1998 by Ulan-Ude Aviation Plant Joint Stock Company, Ulan-Ude, Russia.

Further production of the Su-25 is possible.

Total Produced. More than 1,200 Su-25s have been produced.

Application. Primary missions are close air support and ground attack. Secondary missions include weapons systems training and advanced pilot training.

Price Range. Estimated between \$6 million and \$19 million in 2007 U.S. dollars.



Su-25K, UBK

Source: Czech Republic Air Force

Sukhoi Su-25

Contractors

Prime

Sukhoi Co (JSC)	http://www.sukhoi.org , 23B, Polikarpov Str., Moscow, 125284 Russia, Tel: + 7 095 940 2663, Fax: + 7 095 945 6806, Email: info@sukhoi.org , Prime
Tbilisi Aircraft Manufacturing	http://www.tam.ge , 181, Bogdan Khmel'nitski Str., Tbilisi, 0136 Georgia, Tel: + 995 32 708412, Fax: + 995 32 708838, Prime
Ulan-Ude Aviation Plant Joint Stock Co	http://www.uuaz.ru , 1, Khorinskaya St, Ulan-Ude, 670009 Russia, Prime

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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

(Su-25K)

Design Features. Cantilever shoulder-wing monoplane with 20-degree swept-wing leading edges and straight trailing wing edges. Single-seat versions have a two-piece canopy and three-piece windscreen. Two-seat versions have a taller vertical stabilizer. Tricycle-type landing gear with single wheels is used; main units retract into the engine housings on each side of the fuselage.

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length	15.05 m	49.38 ft
Wingspan	14.50 m	47.57 ft
Weight		
Max TOW	19,300 kg	42,549 lb
Performance		
Maximum speed at SL, clean	950 kmph	513 kt
Service ceiling; clean	7,000 m	22,965 ft
Range at height(a)	1,000 km	540 nm

Propulsion

Su-25(b) (2) Tumansky/Soyuz R-195 axial-flow, dry turbojets rated 44.18 kN (9,921 lbst) each.

Armament

Ten wing-mounted pylons, including eight large underwing pylons and two smaller outboard pylons. The two small outboard pylons accommodate air-to-air missiles. The eight larger pylons have a capacity of 4,000 kilograms (8,818 lb), and can carry air-to-surface missiles, gun pods, rocket pods, bombs, and external fuel tanks. Internal gun is twin-barrel 30mm with 250 rounds.

Crew

Su-25/K/BM/T, single pilot. Su-25UB/UTG/UBP and Su-28, two seats in tandem.

(a)Without external stores.

(b)Late production aircraft only.

Variants/Upgrades

Su-25. Single-seat, subsonic, dedicated close air support and ground attack aircraft.

Su-25K. Export version of Su-25.

Su-25BM. Features additional underwing pylons for towed or rocket-propelled targets.

Su-25UB. Twin-seat derivative for operational conversion training that also possesses full attack capability.

Su-25UTG. Two-seat version for shipborne service. Currently operated by the Russian military and the Ukrainian military. Ten have been produced.

Su-25TP. Possible shipborne version for short-range attack missions. It features an in-flight refueling probe, strengthened landing gear, and an arrestor hook. One prototype was built in 1993.

Su-28. Demilitarized two-seat version that was offered to the Russian Air Force as a basic trainer. It was also known as the Su-25UT. The Su-28 program has been discontinued.

Su-25SM. Upgrade to Russian Air Force Su-25s resulting in a modernized cockpit featuring a new heads-up display (HUD) and two large color multi-function displays, a new Irtysh electronic warfare system, and upgraded survivability gear. Structural

changes were made to the airframe to extend service life and to allow provisions for the nose-mounted radar.

Su-25TM/Su-39. Designation of an improved version of the standard close air support aircraft incorporating new avionics and increased fuel capacity. It is equipped with a pod-mounted Phazotron Kopyo-25 multimode radar, a Voskhod nav/attack system, and a Schkval electro-optical system.

Three developmental aircraft (designated Su-25T) were produced; first flight occurred in August 1984. These three were followed by 20 Su-25T pre-series aircraft. The 20 aircraft were produced by Tbilisi Aircraft State Association, Tbilisi, Georgia; all were completed by 1991. Eight were delivered to the Russian Air Force in 1990-91. The other 12 remained at Tbilisi.

The Su-25TM is a version of the Su-25T that includes a number of equipment changes, including provision for the Kopyo-25 radar and a Khod imaging infrared pod. An initial batch of seven Su-25TMs was constructed in the 1992-1998 time period. At least one of these has been delivered to the Russian Air Force. It was delivered in 1998.

The export version of the Su-25TM is called the Su-39, a designation that (confusingly) has also been used for a primary trainer.

Program Review

Background. The Su-25 Frogfoot is a rough mission equivalent of the USAF/Fairchild A-10A. Development began in the late 1960s, first flight of a prototype occurred in February 1975, and production started in 1978. In 1980, the Su-25 was deployed with Soviet forces in Afghanistan, though the aircraft did not become fully operational until 1984.

The Su-25 was designed to be extremely survivable on any battlefield. Its airframe incorporates extensive use of heavy-gauge aluminum, while the cockpit is of welded titanium construction, as is that of the Fairchild A-10. The cockpit can sustain hits from 20mm and 30mm ground fire up to an angle of 30 degrees. Control surfaces are actuated using mechanical push-rod linkages, eliminating all cables and pulleys. Control rods are duplicated and widely separated. Main load-bearing members are damage-resistant. The engines are widely spaced in stainless-steel bays, and the aircraft can be equipped with a total of 256 flares.

Systems. In addition to the normal complement of ordnance, missiles, and gun systems, the Su-25 also features a nose-mounted laser rangefinder and target designator for use with precision-guided weapons. The aircraft is also equipped with a gunsight and a radar warning system.

Naval Use. The Soviet Navy conducted flight tests of the Su-25UTG, a navalized two-seat training variant of the Frogfoot, aboard the carrier *Tbilisi* (later called the *Admiral Kuznetsov*) in 1989. Other aircraft participating in the tests included the Su-27K and the MiG-29K. In 1993, the Russian Navy decided against using the MiG-29K, instead choosing to go with the two Sukhoi aircraft.

By the end of 1990, 10 Su-25UTGs had been produced. No more have been built to date.

Sukhoi Su-25

Significant News

Russia Upgrading Su-25 Fleet – The Kubinka aircraft repair plant located outside Moscow is currently engaged in an upgrade of the Russian Air Force's Su-25 attack fighters. The planes will be upgraded to the Su-25SM standard, according to the state defense order for 2006. More than five Su-25s are to be upgraded per year. Work is also under way on the modernization of the Su-25UB training attack planes to the Su-25UBM configuration. (Agentstvo Voyennykh Novostey, 12/06)

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Funding

Not available.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1968	Start of development
Feb	1975	First flight of initial prototype
	1980	Deployment in Afghanistan
	1984	Fully operational with Soviet Air Force
Aug	1984	First flight of initial Su-25T development aircraft
	1991	Su-25 production halted
	1995	First flight of initial new-production Su-25TM

Worldwide Distribution/Inventories

<u>Operator</u>	<u>Designation</u>	<u>Qty.</u>
Angola Air Force	Su-25	8
Armenia Air Force	Su-25	5
Armenia Air Force	Su-25K	9
Armenia Air Force	Su-25UBK	1
Azerbaijan Air Force & Defense	Su-25	2
Belarus Air Force	Su-25	70
Belarus Air Force	Su-25UB	6
Bulgaria Air Force	Su-25	31
Bulgaria Air Force	Su-25UB	4
Congo, Democratic Republic of Air Force	Su-25	4
Ethiopia Air Force	Su-25	6
Gambia Air Wing	Su-25	1
Georgia Air Force	Su-25	5
Georgia Air Force	Su-25KM	1
Georgia Air Force	Su-25UB	1
Iran Air Force	Su-25	7
Iran Air Force	Su-25UBK	3
Iran Air Force	Su-25UBT	3

Sukhoi Su-25

Operator	Designation	Qty.
Kazakhstan Air Force	Su-25	14
Korea (North) Air Force	Su-25	35
Peru Air Force	Su-25	6
Russian Federation Air Force	Su-25	193
Russian Federation Air Force	Su-25UB	20
Russian Federation Navy	Su-25UB	14
Turkmenistan Air Force	Su-25	43
Turkmenistan Air Force	Su-25KM	2
Ukraine Air Force	Su-25	62
Uzbekistan Air Force	Su-25	20

Forecast Rationale

Production of the Su-25 for the needs of the Russian Air Force ended long ago, but the service continues to upgrade its fleet of Su-25s to the Su-25SM/UBM configurations. The potential also exists for some aircraft to be upgraded to the Su-25TM/Su-39 standard.

A competing Su-25 upgrade, called the Su-25KM Scorpion, has been developed by TAM and the Israeli firm Elbit Systems. The Scorpion upgrade includes two 6-inch x 8-inch multifunction color displays, a head-up display, a pair of radios, the Elbit Weapon Delivery and Navigation System, the Elbit Display and Sight Helmet, and other systems. The Scorpion can also be produced as a new-build aircraft.

First flight of an Su-25KM Scorpion occurred in April 2001. Initial delivery of a Scorpion, to the Turkmenistan Air Force, occurred in October 2005. The aircraft was an existing Su-25 converted to the Scorpion configuration. TAM has a number of completed Su-25s in stock awaiting customers. These aircraft can be delivered in their standard layout, or can be converted into Su-25KM Scorpions. TAM also has additional Su-25 airframes in various stages of assembly.

Iran acquired six Su-25s in 2005-06. There are conflicting reports on the specific variants received by Iran, but our best information indicated that the deliveries included three UBT and three UBK models. It is also not clear whether these were new-build or refurbished airframes.

Far to the west, Venezuela has also emerged as a potential customer for the Su-25. Reports began circulating in April 2005 that the Navy was interested in acquiring Su-25TMs or Su-39s. Reports said they were to be optimized for the maritime attack mission. Serious discussions are reported to be ongoing with the Russians for the purchase of 14 Su-39s in twin-seat configurations, and it is likely that anti-ship missiles will be part of any eventual deal. A buy of Su-25/39s became even more likely after President Hugo Chávez announced in September 2006 that the Su-25TM would be procured in place of the Air Force's canceled Super Tucanos. Local sources indicated there was a good chance such an order would be part of an overall package that also would include the 14 Su-39s desired by the Navy. Whether the deal will occur remains a matter of speculation, however, and we are not currently forecasting an order from Venezuela.

Ten-Year Outlook

No forecast is being issued for further Su-25 production.

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