

SUKHOI SU-7BM

The late 1950s/early 1960s brought about significant changes in all military services at all levels, from strategic down to tactical. This was due to the rapid proliferation of nuclear weapons, which ceased to be purely strategic. The appearance of tactical nuclear charges cause a true revolution on the battlefield, radically changing the rules of combat, organisation and equipment of the troops. Communist authorities at the time made the assumption that in case of an armed conflict Poland would field two armies, an armoured and a general one, to attack in a north-westerly direction with a single large 'nuclear corridor'. This meant that in the early 1960s Poland needed her own 'nuclear fist'. Needless to say, this would not be an independent force. The Polish Armed Forces were seen as merely an addition and support for the Soviet nuclear forces in the area.

During that time it was decided that in addition to R-170 tactical missiles, Poland should also purchase 36 Su-7 aircraft to form one fighter-bomber aviation regiment. The Su-7s went to the 5th Fighter-Attack Aviation Regiment (5. PLMSz) based in Bydgoszcz, which at the time was part of the 16th Fighter-Attack Aviation Division (16. DLMSz).

Pavel Osipovich Sukhoi started work on a new jet-propelled swept-wing aircraft in 1953, when his design office was reorganised. Previously, while working in the design office of Andrei Tupolev as his deputy, he had prepared designs of two

aircraft: S-1 swept-wing front-line fighter and T-3 delta-wing interceptor fighter.

Construction of the first prototype of the S-1 with the AL-7 engine was completed in the summer of 1955. The machine was first flown on 8 September 1955 by A. Ts. Kochetkov. The S-1 was then fitted with the more powerful AL-7F engine giving a thrust of 9,310 daN. In April 1956 V. N. Makhalin flew the S-1 when he established a record for the USSR at 2,170 km/h. Another test pilot, N. I. Korovushkin, used the aircraft to reach an altitude of 19,100 m. The take-off weight of the S-1 was 9,423 kg. Armament consisted of three 30 mm NR-30 cannon. In the autumn of 1957 the aircraft passed state trials, and even before these were completed it was decided to start series production under the military designation Su-7.

The S-1 introduced several innovations to Soviet aircraft. These included the adjustable supersonic air intake and all-moving horizontal tail surfaces. The S-1 was succeeded by the S-2 fighter. Few Su-7s were built as front-line fighters. At the same time Sukhoi was tasked to build a fighter-bomber. It was decided that the new aircraft would be based on the Su-7. The airframe structure was left without significant changes, but new equipment and armament was introduced. The swept wing was retained as the best suited for transition between subsonic and supersonic speeds, without a sharp change of aerodynamic characteristics of the aircraft.





2 Su-7BM c/n 5301 '01', 5th Fighter-Attack Aviation Regiment (5 PLMSz), Bydgoszcz.



[1, 3-5]: Su-7BM c/n 5301 '01', delivered to the 5th Fighter-Attack Aviation Regiment in Bydgoszcz on 26 June 1964. After 26 years of service, having flown over 1, 100 hours, on 29 August 1990 it was transferred to the Aircraft Depot at Mierzęcice. In October 1990 the aircraft was handed over to the Polish Aviation Museum in Cracow.



16 Su-7BM c/n 5303 '03', 5th Fighter-Attack Aviation Regiment (5 PLMSz), Bydgoszcz.



17 Su-7BM c/n 5306 '06', 5th Fighter-Attack Aviation Regiment (5 PLMSz), Bydgoszcz.



18 Su-7BM c/n 5309 '09', 5th Fighter-Attack Aviation Regiment (5 PLMSz), Bydgoszcz.



[57]: A rare photo to bring back the times of communist propaganda. Su-7BKL c/n 7911 '911' delivered to 3 PLMB in Bydgoszcz on 11 April 1972 with Edward Gierek (the head of the communist party in Poland), Henryk Jabłoński (the President of the State Council) and Wojciech Jaruzelski (the Minister of Defence).



The early 1980s brought a number of dangerous accidents, two of which ended tragically. On 24 November 1982 the Su-7BKL code no. '810' was lost and por. Marek Gawłowski was killed. Another Su-7BKL was lost on 18 July 1984, when kpt. Wiktor Korczyński ejected safely from the machine code no. '15'.

On 12 June 1987 the Su-7BKL code no. '515' was lost in unusual circumstances. A Russian pilot who ferried the aircraft to the USSR for an overhaul, but who had not flown the Su-7 for a long time, forgot the type's well known excessive fuel consumption. Having used afterburner several times at low level near Biała Podlaska, he realised he faced a fuel crisis. After unsuccessful attempts to establish communication with the air base at Biała Podlaska he was forced to eject. The unfortunate pilot suffered a serious financial loss, as he had done quite substantial shopping in Poland. The Soviets admitted the fault of

their own pilot and on 15 January 1988 replaced the loss with an aircraft from the 80th production batch, no. 8004. The aircraft had been built in 1972 and used extensively for over fifteen years in the Soviet Air Force. In the Polish Air Force it was given the code no. '804'. The changes and upgrades that this aircraft had undergone in Soviet service led to a joke among the 3 PLMB technical personnel, that the unit operated four versions of the Su-7: the Su-7U, Su-7BM, Su-7BKL and '804'.

Su-7s flew their last flights in the Polish Air Force during the summer of 1990. At that time 27 Su-7s (2 Su-7BMs, 21 Su-7BKLs and 4 Su-7Us) were transferred to the depot at Mierzęcice, where they were scrapped. The remaining machines went, among others, to the Polish Aviation Museum in Cracow, Polish Army Museum in Warsaw (Czerwiński Fort), 'White Eagle' Museum at Skarżysko-Kamienna and a private collection at Hermeskeil (Germany).

[58]: Su-7BKLs on a forward aerodrome during an exercise in 1977. Aircraft '818', '806', '13' and '808' covered by masking nets.



SUKHOI SU-20

In parallel with the start of series production of the Su-7, development of the aircraft continued. Particular stress was placed on developing a variable geometry (swing wing) combat aircraft.

It was decided to use the Su-7 as the basis, and unlike other swing wing aircraft developed at the time (such as the MiG-23), only the outer wing panels were moving in the Sukhoi machine. A broad aerodynamic fence, some 4 m long, was fitted on the outer edge of the fixed wing centre section to strengthen the structure, allowing carriage of armament or fuel tanks there. The fixed wing centre section was thickened. By retaining a large non-moving portion of the wing it was easier to arrange the undercarriage and external armament stores. Shift of the aerodynamic centre while swinging the wing was small and generally balanced by the shift in centre of gravity. Moving wing panels were fitted with leading and trailing edge flaps which, coupled with the wing sweep change, significantly improved take-off and landing characteristics.

The experimental aircraft was designated the Su-7IG (IG for 'izmenayemaya geometriya' or 'variable geometry').

The Su-7IG (known as the 'Fitter-B' to NATO), was an experimental aircraft used for in-depth research of the variable geometry wing. Series production of the aircraft developed from it was soon begun. The aircraft bore the designation Su-17 (S-32). Series production of the aircraft was undertaken from 1970 at Komsomolsk-on-Amur.

In 1972 the Su-17 was replaced by the Su-17M, the latter's export version being known as the Su-20, 'Fitter C' in the NATO code. The main change was the new AL-21F3 engine which produced greater thrust but was lighter. This allowed an increase in payload from 3,000 kg to 4,000 kg. Equipment

included the ASP-PFM-7 gun sight and the PBK-2 bomb sight. The aircraft had two built-in NR-30 cannon in the wing roots. External armament included Kh-23M ('Kerry') guided missiles, unguided missiles, conventional and nuclear bombs. From 1974 the aircraft was also able to carry the Kh-25 ('Karen') and Kh-29 ('Kedge') missiles thanks to using an external target illuminating pod.

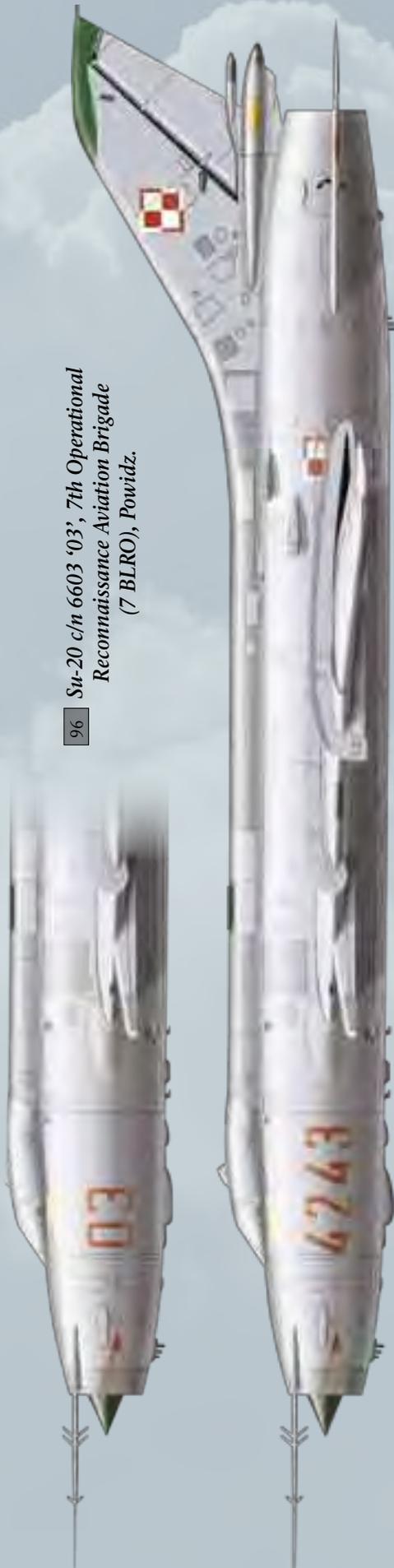
Su-17 (Su-20) DEVELOPMENT VERSIONS

- Su-17 - intermediate production version (1970-1973) that differed from the prototype with a redesigned nose. This was a single-seat attack-bomber. Powered by Saturn/Lulka AL-21F3 engine (6,670/9,420 daN), several initial examples had the AL-7F1 engine. Armament was carried on eight hardpoints under the fuselage and the fixed wing section.
- Su-17M - ultimate version (1973-1975) with the AL-21F3 engine (7,650/10,990 daN). Increased fuel tankage, external tanks 2 x 1,150 l, 2 x 800 l, Kh-23 guided missiles (with Delta-NG) and R-3S/R-13M AAMs. Differed from the Su-17 in having additional fences on top of the wing.
- Su-17R - reconnaissance variant of the Su-17M.
- Su-17M2 and Su-17M2D - modified Su-17M with longer nose inclined downwards for improved forward visibility. This was the first version with Doppler radar and laser range finder in the cone.
- Su-20 - export version of the Su-17M. Used by the Polish Air Force, among others.
- Su-20U - export version of the Su-17UM.
- Su-20R - export version of the Su-17R.

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[76]: Su-20 aircraft at Powidz airfield. Comparison of each of the Su-20 shows that there are differences in camouflage details, but colours and overall patterns are almost the same.

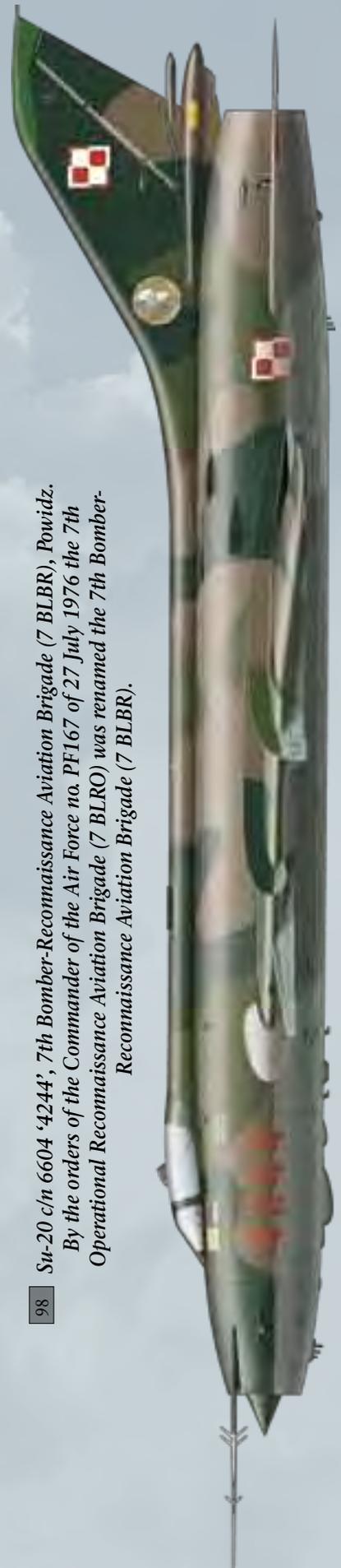




96 Su-20 c/n 6603 '03', 7th Operational
Reconnaissance Aviation Brigade
(7 BLRO), Powidz.



97 Su-20 c/n 6603 '4243', 7th Operational
Reconnaissance Aviation Brigade
(7 BLRO), Powidz.



98 Su-20 c/n 6604 '4244', 7th Bomber-Reconnaissance Aviation Brigade (7 BLBR), Powidz.
By the orders of the Commander of the Air Force no. PF167 of 27 July 1976 the 7th
Operational Reconnaissance Aviation Brigade (7 BLRO) was renamed the 7th Bomber-
Reconnaissance Aviation Brigade (7 BLBR).



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7 PLBR badge as used during 1980s.

[161, 162, 164]: Su-20 c/n 74416 '6256', 7th Bomber-Reconnaissance Aviation Regiment (7 PLBR), Powidz, 1997.



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