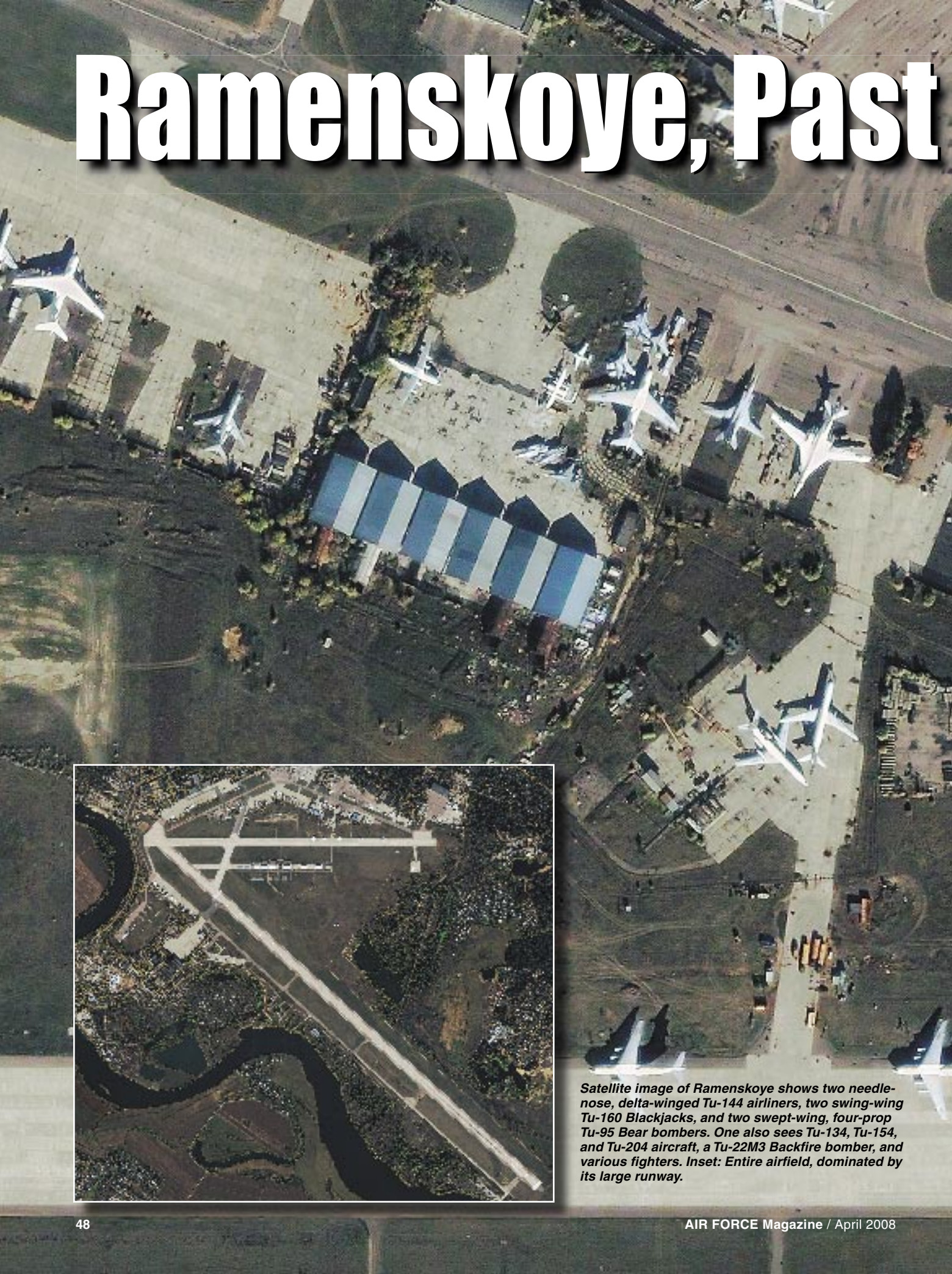


Ramenskoye, Past



Satellite image of Ramenskoye shows two needle-nose, delta-winged Tu-144 airliners, two swing-wing Tu-160 Blackjacks, and two swept-wing, four-prop Tu-95 Bear bombers. One also sees Tu-134, Tu-154, and Tu-204 aircraft, a Tu-22M3 Backfire bomber, and various fighters. Inset: Entire airfield, dominated by its large runway.

and Present

Westerners have finally gotten a look at “Russia’s Edwards Air Force Base.”



Photography by Aleksey Mikheyev and from Gromov LII archives

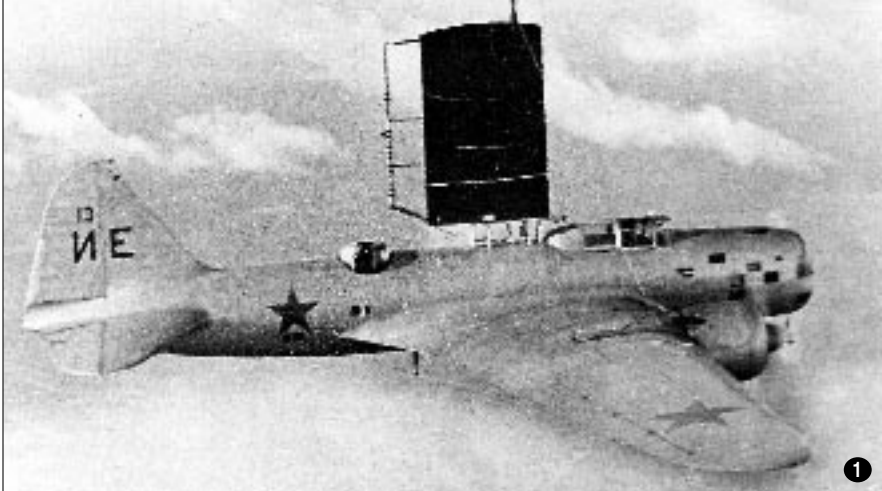
Satellite image by DigitalGlobe

The Ramenskoye Airfield, near Moscow, has been the heart of Soviet and Russian aviation for 60 years. Until recently, it was also highly secretive. The facility is capable of testing every type of aircraft Russia has. It has three runways; one stretches for 3.3 miles, making it the longest in Europe. The Gromov Flight Research Institute (the Russian acronym is LII) was founded there in 1941 and is viewed as the Edwards Air Force Base of Russia—the nation's premier aviation test and engineering site. Virtually all major design bureaus are present. Since 1993, Russia has held a biennial air show there, lifting the curtain somewhat. Still, Ramenskoye remains the tightly secured center of development of Russia's new and highly advanced aircraft.

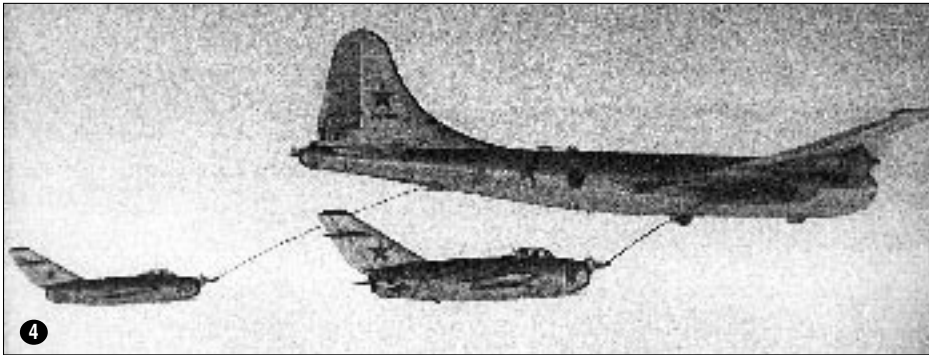
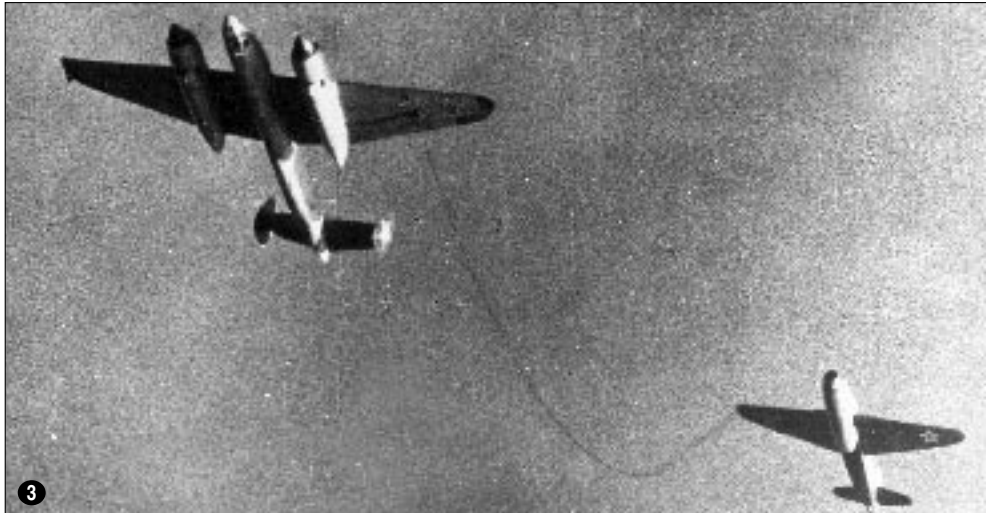


[1] This is the Myasishchev Experimental Design Bureau ramp in the 1950s, with a Tu-4 Bull in foreground. The Tu-4 first flew in 1947. This aircraft was converted in 1952 into a flying laboratory to test a landing gear for the M-4 Bison bomber, seen on the taxiway. **[2]** A Tu-4LL outfitted with an eight-bladed propeller and an NK-12 engine for the Tupolev Tu-95 Bear strategic bomber. The then-new power plant was tested at Ramenskoye in 1952. **[3]** In 1951, this Tu-4KS was used as a test-launch platform for the KS missile, designed by Mikoyan. The missile went operational on Tu-16KS Badgers in 1957. **[4]** Mikoyan's MiG-9 took to the air for the first time on April 24, 1946, about three hours before the Yak-15. **[5]** This prototype Yak-15 was extensively tested in taxi and wind tunnel trials at Ramenskoye. The fighter was designed in the 1940s, and based on the Yak-3. The engines were based on a German engine. Yakovlev pulled the piston engine from its Yak-3 and replaced it with a jet engine.



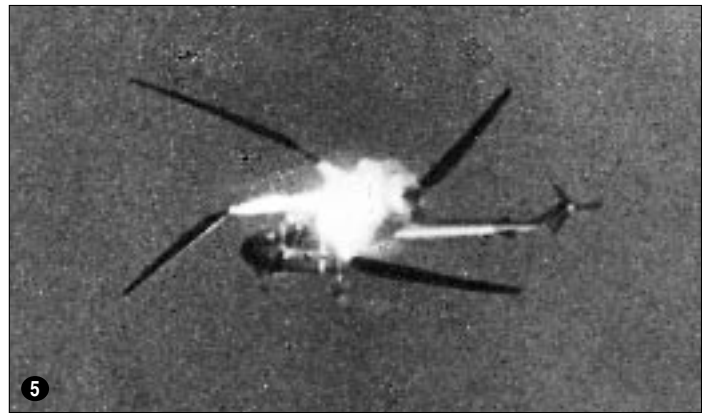
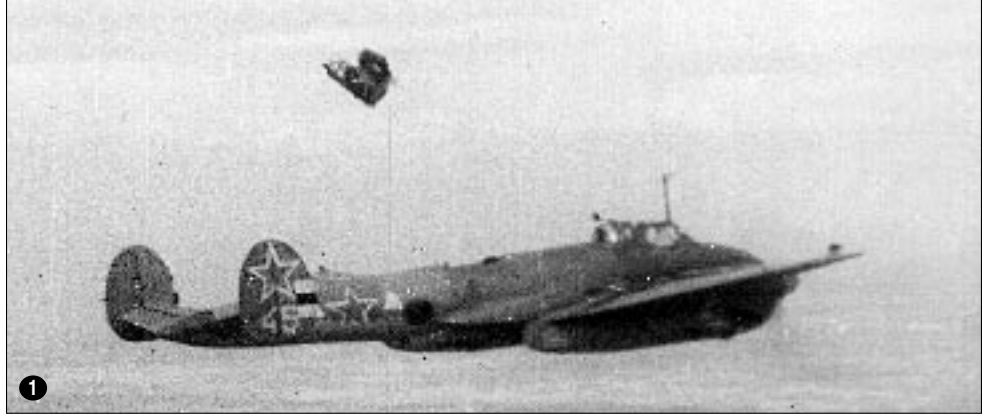


[1] This DB-3 bomber was used in 1941 for laminar-flow tests. It had a test airfoil section installed vertically above the fuselage center section. [2] A forward-swept-wing glider, designated LL-3, was powered by rocket boosters. It was tested in 1947, as was a second such glider designed by Pavel Tsybin. Both gliders were towed to their test altitudes by converted Tu-2 bombers. [3] A Tu-2LL (l) plays the part of a tanker in initial trials of aerial refueling techniques. Here, the tanker and a Yak-15 fighter engage in a highly unusual and quite dangerous wingtip-to-wingtip refueling operation.

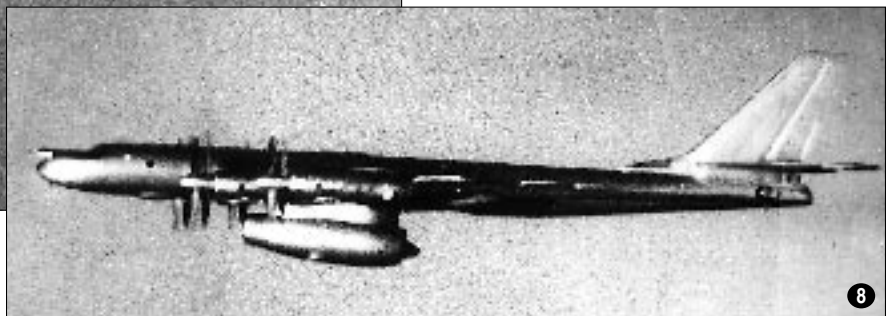


[4] A single Tu-4LL, serving in the role of a tanker, refuels two MiG-15 fighters by means of a relatively new hose and drogue system. [5] This strange air vehicle, called Turbolet, was used in early tests of vertical takeoff and landing (VTOL) designs in the period 1957-59. The craft was powered by an engine from a MiG-19 and was used in research of flight dynamics and maneuverability at near-zero flight speeds. The data was later used in creation of the first Soviet VTOL aircraft—the Yak-36. [6] A modified MiG-19, redesignated SM-30, carries out a so-called “zero-length launch” in the mid-1950s. The aircraft was mounted on top of a trailer at a 15 degree angle. A solid fuel booster under the fuselage provided the thrust. The first manned tests occurred in April 1957.

[1] A modified Pe-2 dive bomber in 1946 carries out the first Soviet tests of ejection seat technologies. **[2]** A MiG-15UTI tests a new ejection system in 1951. **[3]** A trainer aircraft, the MiG-25RU, goes through trials of an ejection seat later considered for the Soviet space shuttle Buran. **[4]** A modified Su-7U fighter tests the K-36 seat in a zero-altitude, zero-speed trial. **[5]** In a test, explosions blow the blades off a remotely controlled Mi-4 helicopter so that technicians could observe the effects.



[6] Mi-8 Hip helicopter, shown here in a parachute "capture," served as one of two specialized flying laboratories during the period 1975-89. **[7]** An An-12 Cub aircraft—the other flying laboratory—was used for ejection seat trials conducted from a special rotary cockpit installed at the extreme tail of the aircraft.

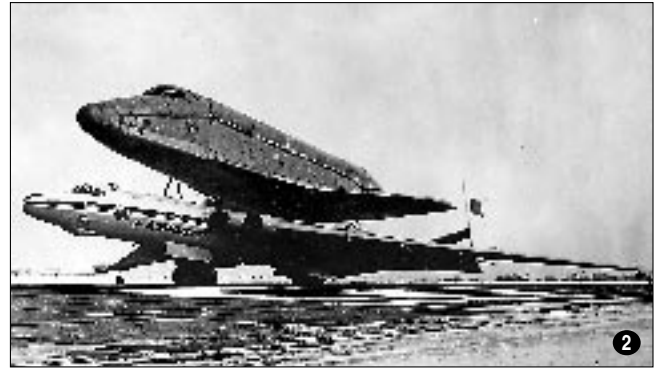
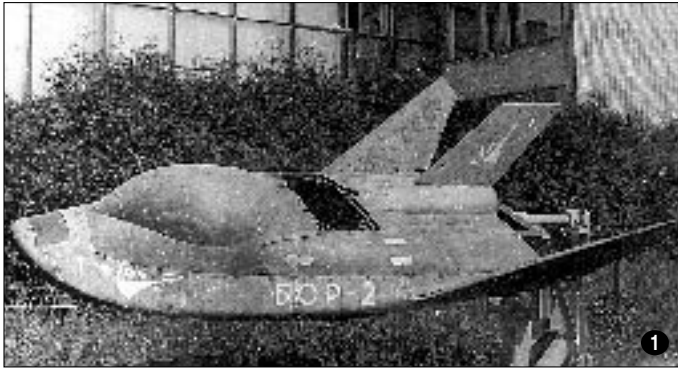


[8] Soviet anti-submarine aircraft, such as this Bear, had cavernous bomb bays and were used as test beds for most new engines. Today, Il-76LLs are mostly used in this role.

[1] Sukhoi's proposed Mach 3 bomber, the T-4, awaits its first flight, made on Aug. 22, 1972. The all-titanium, fly-by-wire aircraft was years ahead of its time but only completed a total of 10 flights, reaching Mach 1.3. [2] In this photo, the T-4's nose section is lowered. Designers built the nose to lower during takeoff and landing, giving the crew a clear forward view. The T-4's futuristic features made it expensive and the Soviet government chose to cancel the program. Tupolev's Tu-22M Backfire was chosen instead, as a more "down-to-earth" design. The sole T-4 prototype was transferred to the Monino museum outside Moscow, where it remains to this day.



[3] This photo, taken on Aug. 11, 1971, at the Myasishchev design bureau's ramp, depicts an M-4 bomber—the 3MD Bison-C. Behind the Bison are a French-built Mirage III (foreground) and an American F-4 Phantom, both of which are covered with fabric. It is not known where they came from or whether they are actual aircraft. Further in the background, to the right of three Il-18 Coot airliners, is a prototype of a Myasishchev M-52 bomber. The M-52 was never given engines and never took to the air. [4] This prototype of the Tupolev Tu-144 supersonic airliner made its first flight from Ramenskoye on Dec. 31, 1968. It was the first airliner to break the sound barrier and to exceed Mach 2. The Tu-144 prototype was put in the air in such a hurry that it had no passenger seats, and its crew had ejection seats.



[1] Bor-2, an experimental hypersonic test vehicle, flew in December 1969 at speeds of up to Mach 13.3. A member of the family, Bor-4, achieved speeds up to Mach 25. [2] A converted Myasishchev Bison bomber carries the Buran shuttle externally, piggyback fashion. There were two such carriers at Ramenskoye. [3] A full-scale Buran replica lands after a test flight. The vehicle made several flights from Ramenskoye under its own power. Here, an Su-17 fighter-bomber (foreground) and a Tu-134 airliner fly chase.



[4] A new forward-swept wing design, created by Sukhoi, is about to be dropped from a helicopter; it is a scaled-down aerodynamic test article. The full-scale aircraft, originally designated S-37 Berkut, made 61 flights in the late 1990s. [5] An Su-47 prototype fighter, shown here in a test, is said to have many advanced features. Sukhoi claims that the fighter is stealthy, having a radar cross section of 3.2 sq. ft. [6] A production Tu-144 airliner in 1995 was modified by NASA, Boeing, and Rockwell as a test bed for NASA's High-Speed Commercial Research program. Note the US and Russian flags on the tail. After 27 test flights, it was returned to storage at Ramenskoye.





[1] This photo captures an unlikely formation of three Ilyushin-designed transports, which are (front to rear) the Il-114, Il-76, and Il-96. [2] An Su-34 ground attack aircraft, now being fielded by Russia's Air Force, on approach to Ramenskoye. [3] A new Russian MiG-29K carrier-borne fighter, its canopy raised, awaits its next flight.



[4] An F-15C from the 48th Fighter Wing, RAF Lakenheath, Britain, blasts off the Ramenskoye runway. The US Air Force aircraft was there in August 2007 to take part in an air show. (USAF first participated in this air show in 2003.) [5] USAF brought to the 2007 show a variety of aircraft, including a KC-135R aerial refueler from the 351st Air Refueling Wing, also based at Lakenheath, and [6] a C-17 Globemaster III airlifter flown in from McChord AFB, Wash. [7] A portion of the static display at a recent air show, as glimpsed from the gondola of a hot-air balloon. ■

