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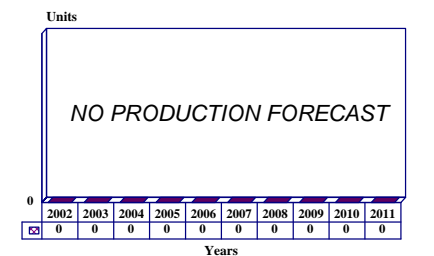
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Mikoyan MiG-25/31 - Archived 3/2003

Outlook

- Production of the MiG-31 has ceased
- A number of Russian Air Force MiG-31s are to be provided with a multirole capability

10 Year Unit Production Forecast
2002 - 2011



Orientation

Description. High-performance, single- and twin-seat, twin-engine fighter/interceptor aircraft.

Sponsor. Russian Ministry of Defense.

Contractors. MAPO-MiG; Moscow, Russia. In late 1999, MAPO-MiG was renamed MiG Russian Aircraft Corp.

Status. Production of the MiG-31 ceased in the 1997-1998 time frame. MiG-25 production was completed in the mid-1980s.

Total Produced. Over 1,500 MiG-25s and over 280 MiG-31s were produced.

Application.

MiG-25: High-altitude interceptor and reconnaissance.

MiG-31: All-weather counter-air, including air defense interception of bombers and cruise missiles.

Price Range. MiG-31 unit flyaway estimated at \$57-\$60 million in 1998 US dollars.

Technical Data

(MiG-31)

Design Features. Cantilever high-wing monoplane based extensively on the MiG-25 Foxbat series of high-altitude, Mach 2-3 interceptors. The airframe is composed mostly of arc-welded nickel steel (49 percent), light alloy, and titanium. There is minimal use of composites. The fuselage is a direct derivative of that of the MiG-25 with greatly enlarged wedge engine inlets on the sides of the fuselage. The wings incorporate a highly swept wingroot. The leading edges are swept approximately 40 degrees. Each wing has a large trailing edge flap and single aileron, and leading

edge slats. There is a slight anhedral of the entire wing structure. The tail unit encompasses twin swept vertical stabilizers with single rudders. Horizontal stabilizers are one-piece all-moving. Two canted ventral fins are used for control stability. Retractable tricycle-type landing gear has twin wheels on each unit. The fire control system includes the Zaslon phased-array radar, a forward infrared tracking system, and a tactical situation display. Ten targets can be tracked simultaneously and four attacked simultaneously.

Dimensions

Wingspan

Metric

13.47 m

US

44.18 ft

	<u>Metric</u>	<u>US</u>
Overall length	22.69 m	74.44 ft
Overall height	6.15 m	20.18 ft

Weight

Maximum take-off		
with full internal fuel	41,000 kg	90,390 lb
with full internal fuel and external fuel tanks	46,200 kg	101,850 lb
Empty	21,820 kg	48,105 lb
Internal fuel	15,500 kg	34,170 lb

Performance

Maximum speed		
at 17,500 m	3,000 km/h	1,620 kt
at SL	1,500 km/h	810 kt
Ferry range	3,000 km	1,620 nm
Maximum endurance with external fuel tanks		
unrefueled	3 hours 36 min	3 hours 36 min
with in-flight refueling	6-7 hours	6-7 hours

Propulsion

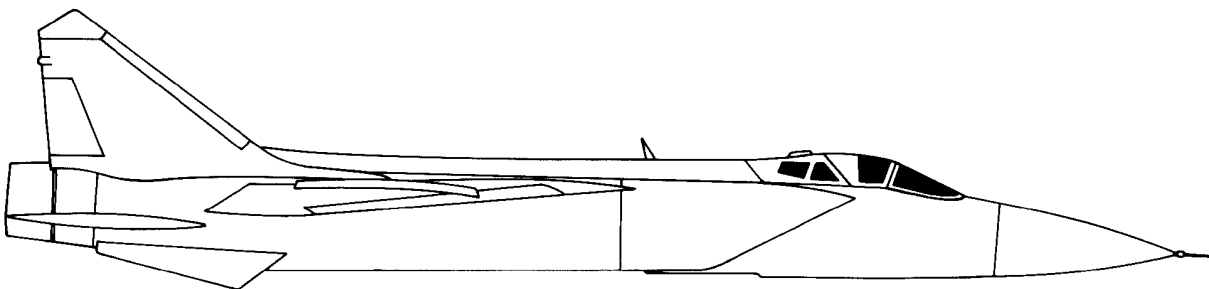
MiG-25	(2)	Tumansky R-15 single-spool augmented turbojets rated approximately 109.8 kN (24,675 lbst) each.
MiG-31	(2)	Aviadvigatel D-30F6 augmented turbofans rated approximately 151.9 kN (34,170 lbst) each with full augmentation.

Armament

Four underfuselage pylons in twin-tandem configuration and dual pylons under each wing. The aircraft can accommodate AA-9 Amos long-range radar-guided air-to-air missiles, AA-8 Aphid short-range infrared-guided missiles, and AA-6 Acrid medium-range infrared-guided missiles. One six-barrel 23 mm gun, with 260 rounds, is located inside the fairing on the starboard side of the lower fuselage.

Crew

Pilot and weapons officer seated in tandem.



MIKOYAN MiG-31

Source: Forecast International

Variants/Upgrades

MiG-25P Foxbat A. First production version based upon the Ye-155P-1 prototype. Single-seat interceptor equipped with four air-to-air missiles and twin R-15 augmented turbojets. Production of this version was completed in the late 1970s.

MiG-25R/RB Foxbat B. Single-seat reconnaissance version with five camera windows, a Doppler navigation system, and twin Tumansky R-15BD-300 turbojets. Production began in 1969. The aircraft originally had no internal or external weapons. Bombing capability was added in 1970 to redesignated MiG-25RB.

MiG-25PU/RU Foxbat C. Twin-seat trainer variants. The MiG-25PU is a trainer version of the MiG-25P, while the MiG-25RU is a trainer version of the MiG-25R. Neither aircraft has nose-mounted radar or combat capability.

MiG-25PD Foxbat E. Improved version of Foxbat A model with a new radar to provide limited look-down, shoot-down capability. Also has an undernose infrared sensor. Powered by updated Tumansky R-15BD-300 engines. Converted MiG-25Ps are designated MiG-25PDS.

MiG-25BM Foxbat F. Most recent MiG-25 version. Intended for the defense suppression mission. Carries AS-11 Kilter anti-radiation missiles.

MiG-31 Foxhound A. Two-seat interceptor. Principal mission is air defense interception of aerial targets, including cruise missiles. Designed to operate singly or in groups of up to four interceptors with automatic datalink and target distribution among the group members.

MiG-31B. Second production version. Includes improved radar. MiG-31B production began in late 1990.

MiG-31BS. Some baseline MiG-31s have been converted to the MiG-31B standard. These are designated MiG-31BS.

MiG-31M. Improved version. Six prototypes have been produced. Features wider dorsal spine, more rounded wingtips, a new radar, and two additional underfuselage pylons. The MiG-31M can carry R-37 and R-77 air-to-air missiles.

Program Review

Background. The last of the MiG-25 family of high-performance interceptors is the MiG-31 Foxhound, a high- and low-altitude supersonic aircraft that entered development sometime in the early 1970s. The aircraft is intended to counter the threat posed by high-speed targets such as bombers and cruise missiles. The prototype of the MiG-31, called the Ye-155MP (originally designated the MiG-25MP), flew for the first time in September 1975. Production began about four years later, with deliveries beginning by 1983. It has replaced Tu-28 Fiddlers and Yak-28 Firebars in Russian service.

The Foxhound made its debut in the West at the 1991 Paris Air Show, where the aircraft was open to public scrutiny. Production of the MiG-31 ended in the 1997-1998 time frame.

Design Differences. Although externally the MiG-31 bears a strong resemblance to the MiG-25, the Foxhound actually differs markedly from its Foxbat predecessors. It is the largest interceptor ever produced, weighing in at more than 90,000 pounds at maximum take-off weight. The MiG-31 airframe is lengthened to accommodate the tandem cockpit installation and longer engines. Engine nacelles and inlets are much larger

than those of the Foxbat. The steel content of the MiG-31 airframe (versus that of the MiG-25) was reduced to 49 percent. The airframe also includes 33 percent aluminum alloy, 16 percent titanium, and some minimal use of composites. The Foxhound features forward extensions of the inner wing leading edges to improve combat handling at high angles of attack.

The MiG-31 is powered by a pair of D-30F6 turbofans, rated at about 151.9 kN (34,170 lbf) each with afterburning. The D-30F6 is a large supersonic engine designed solely with the MiG-31 in mind. The Aviadvigatel design bureau (formerly known as MKB) designed the D-30F6.

The Zaslon phased-array radar, supplemented by an infrared tracking system, is the primary element in the MiG-31's all-weather interception system. The aircraft uses an electronic scanning radar antenna. As an ultra-long-range interceptor, the MiG-31 with electronic scanning can use its total fuselage diameter for its fixed planar array, resulting in a width of 1.1 meters (3.6 ft). Electronic scanning also permits rear sector coverage, apparently without endangering the crew members closely positioned to the radiation.

Funding

Not available.

Recent Contracts

Not available.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
(MiG-31)		
Early	1970s	Mikoyan begins development of MiG-25 derivative
Sep	1975	First flight of Ye-155MP prototype
	1979	Series production begins
Jun	1991	Western debut at Paris Air Show
Aug	1991	MiG-31M prototype lost

Worldwide Distribution

Algeria	26	MiG-25	Russia	50	MiG-25
Belarus	12	MiG-25		220	MiG-31
India	8	MiG-25	Syria	40	MiG-25
Iraq	16	MiG-25	Ukraine	60	MiG-25
Libya	65	MiG-25			

Forecast Rationale

The Russian Defense Ministry approved an upgrade program in 1999 for Russian Air Force MiG-31s to provide the aircraft with a multirole capability. The upgraded MiG-31 is known as the MiG-31BM. Modifications include an upgraded radar, an upgraded navigation suite, a new electronic countermeasures suite, longer range missiles, and Thales MFI-68 multifunction color displays. Sokol in Nizhny Novgorod, Russia, is to perform the modifications.

Sokol has built two MiG-31BM prototypes. The two prototypes are undergoing flight testing.

An export version of the MiG-31BM is also being marketed, called the MiG-31FE. A number of potential customers have shown interest in the MiG-31FE. Although production of new MiG-31s may be unlikely, surplus Russian Air Force MiG-31s could be sold to other operators. These aircraft could then be upgraded to the MiG-31FE configuration.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Aircraft	(Engine)	<u>High Confidence Level</u>				<u>Good Confidence Level</u>				<u>Speculative</u>			Total 02-11
		thru 01	02	03	04	05	06	07	08	09	10	11	
MIKOYAN													
MIG-25 (ALL)(a)	R.15	1592	0	0	0	0	0	0	0	0	0	0	0
MIG-31	D-30F6	285	0	0	0	0	0	0	0	0	0	0	0
Total Production		1877	0	0	0	0	0	0	0	0	0	0	0

(a)Includes two-seat trainers.