

ARCHIVED REPORT

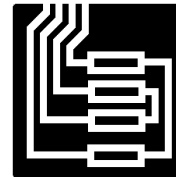
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Dassault Aviation Mirage III/5/50; IAI Kfir - Archived 2/2007

Outlook

- Argentina's planned Dagger avionics upgrade may have been precluded by budget constraints
- No further upgrades expected, as aircraft to be phased out

Note: Icons indicate area(s) of current and potential retrofit/modernization activity



Orientation

Description. The Mirage III was originally a single-seat, single-engine, high-altitude, all-weather interceptor; other versions were later developed. The Mirage 5 is a ground attack aircraft, while the Mirage 50 is a multimission fighter. The Kfir fighter is a derivative of the Mirage 5.

Developer/Primary Manufacturer. Dassault Aviation (formerly Avions Marcel Dassault-Breguet Aviation), Vaucresson, France; Israel Aircraft Industries Ltd, Tel Aviv, Israel (Kfir).

Licensees. Government Aircraft Factories, Melbourne, Australia (Mirage III-D/O).

Swiss Federal Aircraft Factory, Emmen, Switzerland (Mirage III-S).

Licensed Assembly. Societe Anonyme Belge de Constructions Aeronautiques (SABCA), Brussels, Belgium (Mirage 5).

Current Status. All are out of production.

Total Produced. 1,422 Mirage III/5/50; 212 Kfirs.

Application. Mirage 3: fighter/interceptor; Mirage 5: fighter-bomber; Mirage 50: fighter-bomber/interceptor; Kfir: fighter-bomber.

Price Range. Not applicable.

Contractors

Dassault Aviation, <http://www.dassault-aviation.com>, 9, Rond-Point des Champs- Elysées, Marcel Dassault, Paris, 75008 France, Tel: + 33 1 5376 9300, Fax: + 33 1 5376 9320, Email: presse@dassault-aviation.fr, Prime

Technical Data

(Mirage 50)

| | <u>Metric</u> | <u>U.S.</u> |
|--------------------------------|---------------|-------------|
| Dimensions | | |
| Length overall | 15.56 m | 51.04 ft |
| Height overall | 4.5 m | 14.76 ft |
| Wingspan | 8.22 m | 26.96 ft |
| Wing area, gross | 35.0 sq m | 376.7 sq ft |
| Weight | | |
| Empty, equipped | 7,150 kg | 15,763 lb |
| Max TOW | 13,700 kg | 30,203 lb |
| Performance | | |
| Max level speed | Mach 2.2 | |
| Service ceiling (at Mach 2) | 18,000 m | 59,040 ft |
| Combat radius ^(a) | 1,250 km | 675 nm |
| Propulsion | | |
| One Snecma Atar 9K-50 turbojet | | |
| Thrust (with afterburning) | 70.6 kN | 15,872 lbst |

^(a) Hi-lo-hi mission at Mach 0.85/0.9, carrying two 400-kg bombs and maximum external fuel with reserves.

Armament. Seven hardpoints for external loads. Capable of carrying Sidewinder, Matra Magic, or Matra R.530 air-to-air missiles, bombs, combined tank/bomb carriers, or jettisonable fuel tanks. For

ground attack, two 30mm DEFA 552A guns can be carried in the fuselage or an AS.30 air-to-surface missile under the fuselage. For interception, one Matra R.530 is carried under the fuselage, with optional guns.



MIRAGE III

Source: Dassault

Program Review

Background. The decision by Dassault-Breguet (now Dassault Aviation) to develop the Mirage III Mach 2.2 all-weather interceptor was made in 1955, with first flight of the prototype on November 17, 1956. It was followed by the Mirage 5 ground attack variant and the much-improved Mirage 50 multimission fighter. The Mirage III/5/50 remains in service with some 20 air forces. Many of these aircraft should continue flying for several more years, but will need significant improvements in order to retain their effectiveness.

The IAI Kfir is basically a derivative of the Mirage 5. The Kfir program began as a means to circumvent a French embargo on the delivery of Mirage 5s to Israel following the Six-Day War in 1967. The existence of the plane was officially revealed in April 1975.

In July 1986, the South African Air Force unveiled the first Cheetah, a modified Mirage III. The Cheetah

program is a mid-life update designed to increase the operational life of the aircraft. Some 50 percent of the existing airframe was rebuilt and included new intake-mounted canards and a longer, more drooped nose. Nose strakes have been added, as well as dogtooth wing leading edges. The Cheetah is quite similar to the IAI Kfir, although South Africa has implied that it received no outside help in designing the Cheetah modifications. Avionics and armament modifications are also included.

In the mid- to late 1980s, the U.S. Navy leased two squadrons of Kfirs as aggressor trainers. The service redesignated the aircraft the F-21A. These aircraft have since been returned to Israel. Under the lease agreement, IAI provided the aircraft at no cost, while the Navy paid for maintenance, support, and spare parts.

Variants

Mirage III-B. Initial two-seat version; powered by Snecma Atar 9B. Intended primarily as a trainer.

Mirage III-C. Initial single-seat production version.

Mirage III-E. Long-range fighter-bomber/intruder version. Powered by Atar 9C afterburning turbojet.

Mirage III-R. Reconnaissance version of Mirage III-E. Five Omera type 31 cameras are fitted in the nose in place of the radar.

Mirage III-EX. Upgrade featuring longer Mirage F1 nose housing air-air refueling probe, canards and leading-edge wing root extensions, Mirage 5D-style under-fuselage strakes, and a fly-by-wire control system. Also fitted with uprated Atar 9K-50 engine and new avionics.

Mirage 5. Ground attack aircraft. Same airframe and engine as Mirage III-E. Various versions built.

Mirage 50. Multimission fighter (air superiority, air patrol, supersonic interception, ground attack). Powered by Atar 9K-50 turbojet. With afterburning, this engine provides a thrust increase of 17 to 23 percent over the standard Mirage III/5.

Mirage III NG. Incorporates forward canard surfaces and a fully fly-by-wire control system. Intended as a relatively low-cost export fighter in the class of the General Dynamics F-16/79. "NG" stands for Nouvelle Generation (New Generation).

Kfir. Essentially a Mirage 5 airframe mated with a General Electric J79 turbojet engine. Also features a lengthened nose section, shorter tail cone, and reshaped aft dorsal bulge as compared with the Mirage 5, and has a redesigned cockpit layout and greater internal fuel capacity. The most recent configuration (the C7) incorporates detachable canard surfaces for improved maneuverability, range/payload increases over the original Kfir, and a hands-on-throttle-and-stick (HOTAS) system. Other Kfir versions include the C1, C2, and C10, and the two-seat TC2 and TC7.

Cheetah. Developed by Atlas Aviation in South Africa, this is an upgraded Mirage III fitted with a new and extended nose, avionics and canards, and re-engined with the Atar 9K-50 turbojet. The Cheetah entered into SAAF service in 1987.

Airborne Retrofit & Modernization Forecast

Other Variants

| | | |
|-------------------|----------------------|-----------------------------------|
| Mirage III-BE | Mirage 5-BR/BD | Nammer (proposed Kfir derivative) |
| Mirage III-D/D2Z | Mirage 5-COA/COD/COR | |
| Mirage III-EE/DE | Mirage 5-D/DD/DE/DR | |
| Mirage III-O | Mirage M5-F | |
| Mirage III-R2Z/RD | Mirage 5-G | |
| Mirage III-S | Mirage 5-M/DM | |
| | Mirage P/DP | |
| | Mirage 5-PA | |
| | Mirage 5-SDE/SDD | |
| | Mirage 5-V/DV | |

Funding

Not available.

Milestones

| <u>Month</u> | <u>Year</u> | <u>Major Development</u> |
|--------------|-------------|---|
| Nov | 1956 | Initial flight of Mirage III prototype |
| May | 1967 | First flight of Mirage 5 |
| Apr | 1975 | IAI Kfir announced |
| Apr | 1979 | First flight of Mirage 50 prototype |
| Dec | 1982 | First flight of Mirage III NG prototype |
| | 1983 | Initial Kfir C7 deliveries |

Worldwide Distribution

(As of November 15, 2005)

| <u>Region</u> | <u>Country</u> | <u>Total</u> | <u>Variant</u> | <u>Avg. Age (Yrs)</u> |
|----------------------|----------------|------------------------|----------------|-----------------------|
| <u>Africa</u> | Gabon | 9 | Mirage 5 | 21 |
| | South Africa | 42; more in storage | Cheetah | 32 |
| <u>Asia</u> | Pakistan | 92 | Mirage III | 32 |
| | | 89 | Mirage 5 | 25 |
| | Sri Lanka | 11 | Kfir C2 | 27 |
| <u>Middle East</u> | Egypt | 76 | Mirage 5 | 29 |
| <u>South America</u> | Argentina | 17 | Mirage 5 | 27 |
| | | 11 | Nesher/Dagger | 24 |
| | | 11 | Mirage III | 32 |
| | Brazil | 24 | Mirage III | 33 |
| | Chile | 13 | Mirage 50 | 25 |
| | | 24 | Mirage 5 | 30 |
| | Colombia | 11 | Mirage 5 | 30 |
| | | 11 | Kfir | 26 |
| | Ecuador | 14 | Kfir | 25 |
| | Venezuela | 18 | Mirage 50 | 17 |

Opportunities

In 2004, Pakistan purchased Libya's remaining fleet of Mirage 5s, believed to be between 40 and 48 aircraft, and will cannibalize these for spares to support its existing Mirages. In that same year, Chile bought 12 surplus Cheetahs from South Africa, also for spares. No upgrades will be performed on either lot.

Argentina had been planning to upgrade its 10 to 12 Daggers with a new radar and weapons systems in a project originally estimated at \$40 million. No contract announcement has been made.

We are not anticipating any additional upgrades of the Mirage III/5/50/Kfir series beyond the possible Argentinian program.

ELECTRONICS

Argentinian Avionics Upgrade. Argentina's Air Force has been studying options for upgrading its Mirages in order to operate them through the year 2015. Funding constraints and higher priorities have continued to preclude such modernization efforts. The most recent reports indicated that Argentina's Daggers were to undergo a \$40 million upgrade of their weapons systems and would also be fitted with a new radar.

No timetable has been announced for this work, nor has an update of the project's status been issued. We are now carrying this project as a speculative venture.

FI's Opportunity Outlook

| | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Program | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

ELECTRONICS

Argentinian Mirage III/5 Upgrade

Speculative <=====> 10 Dagger (Argentina)

| | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Program | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
