

ENGAGE!



MIRAGE 2000-9

special issue

the result of an outstanding cooperative effort.

For over 30 years, starting with the **MIRAGE V** and subsequently the **MIRAGE 2000**, **DASSAULT AVIATION**, **SNECMA MOTEURS** and **THALES** have been delighted and proud to support the **UAE AIR FORCE & AIR DEFENCE** in establishing the position it now occupies – that of a vital, incontestable guarantor of security in the Gulf.





32 Mirage V aircraft were sold in 1972 – 1973, thus becoming the first supersonic fighter planes to be used in the emerging UAE AF & AD. In 1986, a decision was taken to order 36 Mirage 2000 to consolidate and modernise the UAE AF & AD. The development of their weapons system provided the occasion for training the first Emirian officers at Dassault Aviation's flight test centre in France.

To strengthen relations between the UAE and France, pursue the development of the UAE AF & AD and continue to occupy a leading position in the 21st century, the decision to forge ahead with the Mirage 2000-9 programme was approved in 1997 and announced at the time of President Chirac's visit on 17th December 1997.

Following a series of technical, operational and financial discussions, the contract was signed in 1998.

Concluded at the end of 1998, the sale of Mirage 2000-9 aircraft to the United Arab Emirates has been one of the most consequential agreements ever signed by Dassault Aviation, Snecma Moteurs and Thales.

Of the 62 Mirage 2000-9 planes ordered by the United Arab Emirates in 1998 as part of the Bader 21 purchase agreement, thirty-two are new and thirty are UAE Mirage 2000 aircraft retrofitted to the same standard as the new planes. Following development of the initial standard, the "SAD91", deliveries of the new aircraft began at the end of April and are programmed to continue until early 2004. Retrofitting of existing Mirages is due to continue until 2007. Weapons system development will continue until 2005, for qualification of the "SAD92" standard, which will improve current capabilities.



MIRAGE 2000-9

A very ambitious programme

In some ways, this version resembles those of the last, Rafale type generation. For confirmation of this, we need only look at the list of the capabilities currently being developed or incorporated.

- Nav/attack system: Modular avionics, new RDY-2 multimode radar, digitally terrain following system, new IMEWS countermeasures, Thomrad radio with frequency evasion and enhanced encoding, glass cockpit with new LCD visualisation plus night vision goggles compatibility, data-link, gyro-laser inertial navigation system, navigation Forward Looking Infra-Red system (NAHAR).
- In-flight refuelling and autothrottle (automatic speed control).
- Air-air strike: Mica IR and EM.
- Air-ground strike: Conventional bombs, video and laser-guided bombs, Black Shaheen cruise missile, recce pod and SHEHAB laser designation pod.

In this programme, two specifications are particularly worth mentioning in view of their unusual nature-modular avionics and countermeasures. Apart from the Mirage 2000-9, only the Rafale, F-22 and F-35/JSF are to be equipped with this type of pioneering "core system" IT architecture. When it comes to countermeasures, they break new ground by adopting interferometry technology.

An unprecedented conversion operation

Production and retrofitting in France and the UAE

The upgrading of the UAE AF&AD Mirage 2000 aircraft to Mirage 2000-9 configuration in Al Dhafra has called for an unparalleled industrial action plan. Conversion includes two different operations, a major overhaul and the retrofit itself, which are combined simultaneously. The retrofit of the first two aircraft was carried out in Istres, France, between 2001 and 2003 in order to validate the industrial process in conditions similar to those to be encountered in Al Dhafra. Since April 2002, these teams have left Istres and have been progressively transferred to the UAE to commence the conversion of the remaining 28 aircraft.



Development: a "top-level" co-operation

The Mirage 2000-9 development is:

- spread over 5 years, in 2 Weapon Delivery & Navigation System standards (SAD91 & SAD92),
- jointly performed by both UAE AF&AD staff and French specialists based in Paris, Istres Flight Test Centre and Al Dhafra base,
- A way for UAE AF&AD to set-up their weapon integration in-country capabilities, with software development tools and integration test means.

The challenges of a co-operation

Any fighter program as ambitious as the Mirage 2000-9 one naturally involves a major element of logistical support. Besides Dassault Aviation, Thales and Snecma Moteurs, many companies such as Smiths, Elettronica, MBDa France / UK / US, Sogitec are directly involved in the following services:

- test means and spare parts.
- Mission preparation/restitution systems.
- User's Documentation, in hard copy and in electronic form.
- Practical and theoretical training of pilots and mechanics, in France and Abu Dhabi.
- Training resources - 6 flight simulators and 140 training consoles.

This already impressive list would nonetheless be incomplete if 3rd level maintenance weren't to be included. As part of the agreement, all necessary resources (benches, tooling, spare parts, documentation) have been installed in the buildings of the Emirian company, GAMCO. Since 2000, this firm has taken care of 3rd level maintenance of airframe equipment (hydraulics, flight controls, oxygen, landing gear, etc.).

The company has set up a veritable shuttle programme thanks to the "Door-to-door" service. Logistics also involves secure communications between our various establishments and Al Dhafra.



An exceptional cooperative effort towards the success of a technological challenge.

The Mirage 2000-9 Program is, therefore, distinguished by a multitude of technical, industrial and human superlatives. In particular, it will serve to show our Mirage 2000 clients our expertise in wider-ranging cooperative efforts and modernisation programmes.



Essential, well-orchestrated expatriation

The Bader 21 agreement is set to drastically increase the number of Dassault Aviation, Snecma Moteurs and Thales expatriates. Between the conversion site, technical assistance, Development centre and offices in Abu Dhabi, around 200 staff and their families will be staying in the UAE.



***Mirage 2000-5
Mk2 & 2000-9,
the product
of technological
progress tailored
to the demands of
its customers***

Whilst the Mirage 2000-5 has broken into new markets, users of earlier versions have also been won over by the aircraft's new capabilities.

New Mirage 2000-5 aircraft are joining existing fleets and aircraft in service are being upgraded to the same operational capabilities.

Following close dialogue between end users and industry producers, further improvements have been made to the Mirage 2000-5 range. Recent versions of the aircraft - the Mirage 2000-5 Mk 2 and 2000-9 - incorporate state-of-the-art technologies and functionalities, which, in many instances, result from experience gained during development of the Rafale.

The Mirage 2000-9 ordered by the United Arab Emirates belongs to the new Mirage 2000-5 class.

In common with the majority of military aircraft exported by Dassault Aviation, Snecma Moteurs and Thales, the Mirage 2000-9 incorporates the additional operating capabilities specified by the UAE AF & AD.

Thus equipped, and offering the possibility of future modifications, the Mirage 2000-5 & 2000-9 offer their users a broader scope of operational capabilities, coupled with low operating costs.

There are close to 600 Mirage 2000 aircraft in service the world over. They form part of 8 different air force fleets and have accumulated more than 1,000,000 flying hours. It is important to note that, because of its outstanding flying controls, not one of these planes has been brought down because of loss of control.

Deployed in numerous theatres of operations, the Mirage 2000 serves as an international reference in terms of readiness and aptitude for mobilisation.

Their interoperability with NATO aircraft and their excellent performance have been proven in action.



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