

Sharpening the Teeth



The IAF's (N-) Strike Mirages

Trio of IAF Mirage 2000s in formation take-off.

As reported in *Vayu II/2010*, after protracted discussions and negotiations, upgradation of the Indian Air Forces (IAF) current inventory of fifty-one Mirage 2000H/TH is imminent, the total project cost estimated to be around US \$2.2-billion. The first two IAF Mirages will be upgraded in France, while the balance forty-seven will be equipped with state-of-the-art avionics, radar, mission computers, glass cockpits, Helmet-Mounted Displays (HMD), and Electronic Warfare suites, jam-proof communication with data links. Integration of Weapon delivery and precision-targeting systems and MICA Active-Radar Homing (ARH) and Infra-Red (IR) Beyond Visual Range Air-to-Air Missile (BVRAAM) will then be cleared.

The project cost of US \$2.2-billion has raised many eyebrows yet, in context of sensitive operational roles performed by IAF Mirage 2000H/TH platforms, it is well understandable. From around the mid-1980s India strived hard to configure a selective contingent of nuclear-capable strike aircraft that, being dual capable platforms are deployed without any fanfare and in

exactly the same fashion as all the other conventional strike aircraft in the IAF's inventory. In their nuclear strike role the IAF fighters would be assigned the role of delivering a punishing "second strike" on any potential rogue nuclear aggressor and also be capable of delivering a "pre-emptive strike" on enemy nuclear arsenals or on their Communication, Command & Control (C3) nodes, to disable them from launching a "first strike" on Indian forces or homeland. Moreover as key military and industrial targets and air bases are situated within a radius of 500-km from Indian air bases of Jodhpur, Jamnagar and Bhuj, the operational range and capability of IAF Mirage 2000H/THs and Jaguars permit interdiction of every key Pakistani target. Hypothetically it was anticipated that nuclear strike operations need to be conducted against Pakistan at the later stages of a conventional conflict, in response to a desperate Pakistani nuclear strike just prior to its military and political collapse. It was likely that the Pakistani air defence net would be all but decimated by that point allowing the IAF fighters full operational freedom of action in its nuclear strike operations.

The IAF started practicing nuclear toss-bombing techniques as early as in the late 1980s that reportedly commenced with MiG-23BNs. The IAF at some point of time evaluated the Anglo-French Jaguar as a potential candidate for nuclear strike operations as these rugged twin-engine strike fighters qualify for high-value missions of nuclear delivery. Moreover the Jaguar was designed from the outset for tactical strike missions and its airframe, engines and Flight Control System (FCS) was optimised for high performance at low altitudes and, at one point of time, was meant to defeat the formidable Soviet air defence network. However despite such positive attributes, according to one respectable defence analyst, the Jaguars were found inadequate for the first-generation of Indian nuclear weapons that included 15-Kt nuclear gravity bombs even though the novel undercarriage design "rides" the fighter higher than an average fighter of its size. Unfortunately, the Jaguars were inherently incapable of conducting nap-of-the-earth penetration of enemy airspace in absence of terrain following/obstacle avoidance radar.

Rafael



The IAF Mirage force now have 'long legs' with mid-air refueling.

The IAF, however, soon discovered although initially designed for proficiency in air defence role, Mirage 2000H/TH platforms could make a mark as a true multi-role fighter, and successfully prosecute the surface strike securing all the advantages of delta wing platform including high fuel storage, low drag, increased manoeuvrability, fewer control surfaces and reduced Radar Cross-Section (RCS) while minimising most of the instabilities that arise when the aircraft carries significant external stores during low-altitude missions.

The FBW controls in particular provided the Mirage 2000H/TH fleet remarkable manoeuvrability at low altitudes. The Mirage 2000H/THs are capable of flying fast and low, deliver ordnance on targets with a high degree of accuracy and capable of taking on opposing fighters on the way back.

The Mirage 2000H/TH fuselage centreline and two inboard wing pylons are each capable of carrying 1800-kg loads, capable for carriage of nuclear ordnances. The Mirage 2000N in French *Armee de l'Air* service usually carry the



Mirage 2000TH with fuselage centreline and wing pylons carrying loads.

nuclear-tipped ASMP in the centreline pylon along with two drop-tanks under the inboard wing and Magic-2 close-combat missiles (CCM) under the outer wing pylons. Targeting pods and Electronic Counter Measures/Electronic Support Measures (ECM/ESM) suites are carried in addition for penetration of hostile airspace. The ASMP missile is slated to be replaced by the newer ASMP-A.

It has long been suspected, but never confirmed that the IAF judiciously converted some of its Mirage 2000H/TH platforms for the nuclear strike role thus initiating operational deployment of nuclear deterrence. These fighter types provide the more flexible arm of India's Strategic Forces Command (SFC) created on 6 January 2003. As per policy no particular squadron was earmarked to carry out a possible nuclear retaliatory strike, but dedicated strike platforms were mixed with air defence oriented ones. As the IAF started converting the Mirage 2000, the standard livery generally associated with air defence variants briefly changed to "camouflage" body paint. It was once rumoured (albeit denied by IAF authorities) that Dassault Electronique/Thomson-CSF Antilope 5 terrain-following radar as on French

Mirage 2000N nuclear strike platforms permitting automatic flight down to 61-m and altitude-contrast updating of navigation system had been installed on selective IAF Mirage 2000H/TH along with reinforced radomes and twin Inertial Navigation System (INS).

Admiral Edouard Guillard, France's Chief of Defence Staff has announced the formal introduction into service of the ASMP-A (improved medium-range air-to-surface) nuclear weapon on the Rafale F3. An official ceremony to mark the occasion was held at Base Aérienne (BA 113) St Dizier-Robinson, where the Rafale's nuclear strike role with the missile is allocated to *Escadron de Chasse 1/91 'Gascogne'*. This is the second *Armée de l'Air* unit to be equipped for strategic strike, the first being EC.3/4 'Limousin' at BA125 Istres, which is equipped with the Mirage 2000N.

For self-protection, the comprehensive Remora ESM/ECM suite backs the formidable defensive weaponry of Magic 2 CCMs and Super 530D BVRAAMs. All these multiple attributes enable the IAF Mirage 2000 "strike packages" to

ingress hostile airspace if felt necessary with minimum number of "supporting platforms" for escort and sweep missions.

An important integration has been the Israeli Litening airborne infrared targeting and navigation pod. Designed to improve both day and night attack capabilities, Litening presents pilots with real-time, Forward Looking Infra Red (FLIR) and CCD imagery in combination of laser designator and laser spot designator and is thus effective in both diurnal and nocturnal operations even in adverse weather conditions. With Litening 2 pods entering IAF service in numbers, air enhancement in strike capability is assured.

Thus although unconfirmed reports indicate an upgrade programme similar to the Mirage 2000-9, the exact nature of upgrade remains a closely guarded secret. The operational roles, avionics and armaments of IAF Mirage 2000H/TH platforms remain open to wide range of speculations, all aircrafts being "based" at the centrally located Maharajpur Air Force Station (AFS) at Gwalior. The exact nature of upgraded equipment will only be apparent (if ever) in the time to come.

Sayan Majumdar



Mirage 2000 with drop tank, Super R 530D BVRAAM and Remora ECM pod.

Photo by Vikas Mathur.