India Chooses Rafale

PUNEET BHALLA

On 31 January 2012, the Indian Government finally declared that the French fighter aircraft Rafale, produced by Dassault Aviation, had been selected for its MMRCA programme, based on technical evaluation and financial bids. India's decision to enter into exclusive negotiations means that if the final discussions are successful, 18 Rafale jets will be constructed in Dassault plants in France and 108 in India. The Transfer of Technology (ToT) was an important part of the deal, reflecting India's desire to improve its aeronautics industry as well as equip its air force with modern warplanes.

The requirement of the next generation fighters has been felt for long. The threat has only increased in recent times with Pakistan Air Force (PAF) expected to get at least two more squadrons of newer version F-16s that have greatly improved radars and weaponry. China has also assured to supply it 200 JF17 fighters over the next few years. China meanwhile continues to spend extensively on up gradation of its military. It has made progress strides in development of its indigenous fourth and fifth generation fighters. At the same time it has invested heavily in improving the military infrastructure in TAR. It has extended its runways and modernised the facilities. Regular PLAAF exercises are now being conducted in the region.

The formal exercise to acquire the MMRCA began in 2005, with the Request for Proposal (RFP) being sent out in August 2007. Extensive flight trials were conducted on all the six contenders to test each aircraft on stringent operational and maintenance parameters. Based on these trials, the contenders were narrowed down to two, the Rafale and Typhoon. Subsequently, the financial bids were asked for. For the first time in India, costs were not compared on the ticket price alone, but on how much the fighter would cost to buy, build, upgrade and

operate over a service life of three to four decades.[1] With an eye to upgrade its own capability, the Rafale tender was the first time that an Offset clause had been included in an Indian defence deal.

Rafale is one of the most modern fighter aircraft operational in the world today, having proved its mettle in Afghanistan and Libya. It has been designed as an omni-role fighter that can undertake different roles including anti ship attacks and nuclear strikes. It has a top speed of 1.8 Mach (1.8 times the speed of sound) with a range of 3,700 km. Its operational altitude ceiling is 50,000 feet. Rafale's design features provide it stability at supersonic speeds, while at the same time providing it high manoeuvrability and ability to withstand 9 g or -3.6 g forces. It has low landing speeds, thereby allowing for the aircraft's operation from small runways. This is an important operational advantage as it enables the aircraft to operate from small available portions of otherwise bomb damaged runways. The superior airframe is made up almost 70%of composite materials. This provides it strength, while the reduced airframe weight enables carriage of more armament and other stores. The use of composites along with certain design features, contributes immensely to the stealth capability of the aircraft, thus improving survivability.

An advanced digital "Fly-by-Wire" system, with an in built redundancy improves manoeuvrability as well as survivability. It greatly reduces the cockpit work load of the pilot. It offers auto flight in '*terrain following mode*' in all weather conditions. This allows it to fly low in the enemy airspace thus avoiding detection by most low looking radars. Avionics are of great importance in defining the superiority of a fighter aircraft. The Rafale is presently fitted with the Thales RBE2 passive multi-mode radar. The RBE2 AA (Active Electronically Scanned Array) AESA is planned to replace this. The AESA radar can detect and track multiple targets in all weather and in jammed environment. A secure high-rate data link is provided to enable sharing of data in combined air operations in real time with other aircraft in the formation, airborne and surface command and control centres, tactical air controllers or other friendly assets. This gives it the ability to greatly enhance the situational awareness and to integrate itself seamlessly into the existing battlefield scenario. Dassault claims that the system is open architecture. Also, the deal is to include transfer of software source code. This will allow Indians to re-programme a radar or any sensitive equipment, if needed, for integration into the existing and planned net centric environment; at the same time not compromising on the security of the system.

The Rafale comes equipped with a front-sector electro-optical system which is completely integrated to ensure operations both in the visible and

infrared wavelengths. Operating in the optronic wavelengths, it is immune to radar jamming and provides covert long-range detection and identification, high resolution multi-target angular tracking and laser range finding for air, sea and land targets. It can carry the *Damocles* Laser designation pod with full day and night laser designation capability. The system has an enormous amount of computing power which enables Multi Sensor Data Fusion, i.e. data from all sensors to be displayed on a single display. This translates into accurate and reliable tracks, uncluttered displays, reduced pilot workload, quicker response and increased situational awareness. Survivability of Rafale is ensured by an electronic survival system named "SPECTRA", which protects the aircraft against airborne and ground threats. It provides a multi spectral threat warning capability against hostile radars, missiles and lasers.

The Rafale is fitted with 14 hard points, five of them capable of carrying drop tanks and heavy armament. Rafale can carry out ground strikes as well as air to air attacks and interceptions during the same sortie, a clear demonstration of its true omni role capability and battle zone survivability. The aircraft is to be compatible for air-to-air refuelling from fuel transferring systems used by Indnan Air Force (IAF). It can carry the following weapons:

- MICA air-to-air 'Beyond Visual Range' (BVR) missiles.
- AASM modular, rocket-boosted air-to-ground precision guided weapon series with guidance kit.
- SCALP long-range stand-off missile.
- AM39 EXOCET anti-ship missile.
- Laser-guided bombs.
- Unguided bombs.
- NEXTER 30M791 30 mm cannon that fires 2500 rounds/min.
- Upcoming - METEOR long-range air-to-air missile.

The aircraft is simple to maintain with lesser number of technicians required to work lesser hours. The modular concept allows easier replacement of parts without time consuming activities. System monitoring enables optimum utilisation as well as timely replacement of parts. All this will result in more availability of machines for operations and training.

A defence ministry body called the Contract Negotiating Committee will now engage Dassault in the final negotiations which would include pricing, the ToT by Dassault (and its sub-vendors, like Thales) and Offsets. The Offsets clause demands that Dassault must plough back into Indian industry at least 50

per cent of the estimated $15-17 billion contract value of this deal. Only after these issues are resolved will a contract be actually signed. Senior IAF officers believe this could take till late-2012.[2] Already, it has been reported that the two MoD members on the Contract Negotiations Committee (CNC) have expressed concerns about the lower assessment of the lifecycle cost.[3]

There has been enough discussion on the factors that swung the deal in Rafale's favour. Given the size of the contract, there was a lot of speculation that the deal would be influenced by political, diplomatic and strategic considerations. There was also enough campaigning by the companies as well as the countries involved. However, the officials lead by the Defence minister A K Antony himself have time and again made it clear that "no external factor or geo-political consideration" have played a role in the MMRCA selection process and that it would solely depend on technical and commercial factors.[4] The very fact that aircraft from both US and Russia were eliminated supports this claim.

There are some other varied factors which favour the Rafale.

- Rafale also has a naval variant which could be of future interest to India, given its plans to operate aircraft carriers.
- The recent decision to upgrade India's Mirage 2000H fighters will simplify the air force's logistics chain, as these will share with Rafale many weapons and other equipment.
- The French Mirage 2000s performed commendably during 1999 Kargil campaign against Pakistan. Also, as KP Nair recalls in his article in *The Telegraph*, 'The Indian officials must surely remember how France turned out to be a steadfast military ally. During that campaign, India obtained French clearance – and possibly more - to urgently adapt Israeli and Russian-supplied laser-guided bombs to the Mirages, which were thus able to successfully engage high-altitude targets that Indian MiG-23s and MiG-27s had been unable to reachs'[5].
- Political considerations may have also played against Rafale's final competitor, the Eurofighter Typhoon. As this aircraft is produced by a consortium of four nations, each with different foreign policies and different attitudes and tolerances to arms exports, Indian officials must have been a bit nervous about their ultimate reliability as a single supplier.
- Also, all the weapons and sensors for Rafale are French made. This is not the case with the Eurofighter which even incorporates weapons made by the US.

- There is also the question of Enrichment and Reprocessing (ENR) equipment transfers. Whereas the Nuclear Suppliers Group reneged on its 2008 bargain with India last year by banning the sale of ENR items, France has said it will not be bound by the new restrictions.[6]

Hindustan Aeronautics Limited (HAL) is now getting ready to manufacture Rafale at a new division at Bangalore. The 108 aircraft to be built by them would initially be progressively manufactured from knocked down kits. Gradually, it would start producing fuselage and other parts from raw materials, with the assistance of Dassault engineers.[7] The government has recently cleared Defence PSUs to forge partnerships with private sector companies to speed up technology induction as well as production of strategic systems for the armed forces. Subsequent to this, Dassault Aviation has reportedly selected Reliance Industries Limited (RIL) as its private sector partner to manufacture the Rafale Combat jets in India.[8]

The MMRCA deal has been called the 'mother of all defence deals' because of the costs involved. For the Indian defence, it has been path breaking for many more reasons. By withstanding all pressures and driving a hard bargain, the Indian officials have announced to the world that Indian interests would be supreme.

India thus has gained much more than just a good battle proven futuristic fighter aircraft. Also, Rafale is slated to be the mainstay of the French Air Force and thus it can be safely assumed that the programme will not stagnate and the eventual benefits through up gradations would pass on to the IAF. The upgrade programme of the 50 Mirage 2000s would also benefit from this deal. India thus gains an advantage vis-a-vis its neighbours and fills in the vital gap till the induction of LCA and the development of the 5th generation fighter in collaboration with Russia.

Note: All technical details pertaining to Rafale are attributed to a Dassault Aviation report, 2012, available at http://www.dassault-aviation.com/en/defense/rafale

Puneet Bhalla is a Senior Fellow at CLAWS.

Notes

1. Ajai Shukla, "The Rafale's Long Flight to India," *Business Standard*, February 11, 2012.
2. Ibid.

3. Chandan Nandy and Chethan Kumar, "MoD raises objections over Rafale's lifecycle cost," *Deccan Herald*, March 5, 2012.
4. Rajat Pandit, "French Jet Rafale bags $20bn IAF fighter order", *Times of India*, February 1, 2012.
5. K.P. Nayar, "Why India chose Rafale," *The Telegraph*, February 6, 2012.
6. "Beyond the Rafale Deal," *The Hindu*, 02 Feb 2012.
7. "HAL getting ready to manufacture Rafale," *India Strategic*, February 16 – Mar ch15, 2012.
8. "Rafale partners with Reliance," *India Strategic*, February 16 – Mar ch15, 2012.