

Lost Opportunity

5th generation fighters to enter operational service in the next few years



ILLUSIONARY DEVELOPMENT Indian hopes of participating in the co-development and co-production in the Fifth Generation Fighter Aircraft (FGFA) have not fructified

ATUL CHANDRA | BENGALURU

IN THE NEXT TWO YEARS, TWO 5TH generation combat aircraft types in the Lockheed Martin F-35 Joint Strike Fighter (JSF) and Sukhoi T-50 would have entered service. The entrance of the JSF into operational service will mark a paradigm shift in modern air combat. The JSF is the true successor to the F-16, however, the two could not have been more different.

The F-16 was originally conceived as a less complex but capable fighter aircraft that could be procured in more numbers than the F-15. The JSF, on the other hand, will be the most sophisticated fighter aircraft to enter service with NATO and US allied forces, since F-22 production was closed without the air dominance fighter being made available for export. The Russian PAK FA or Sukhoi T-50 is also expected to enter service in the next couple of years.

Other 5th generation combat aircraft types under development will likely enter service only towards the end of the next decade.

Indian hopes of participating in the co-development and co-production of what is termed here as the Fifth Generation Fighter Aircraft (FGFA) have not fructified and must be seen as a massive lost opportunity. It is more than likely though that the technology that is to be made available to India as part of monies it has paid, could be put to good use in the development of the Advanced Medium Combat Aircraft (AMCA), which is being handled by the Defence Research and Development Organisation (DRDO). Rather than trying to reinvent the wheel with the AMCA, it could be made as a copy of the Sukhoi T-50 with a number of India specific changes, especially related to improving inter-operability with western combat types such as the Rafale and the

Mirage 2000 and the ability to also carry the same weapons.

New generation weapon systems from the West may be expensive, but are combat proven and would confer substantially increased capability on the FGFA and AMCA. An example being integration of missiles such as the Meteor or long range precision strike weapons like Storm Shadow. The cost of development of a 5th generation fighter could prove a heavy burden for India as there seems to be little understanding of the magnitude of costs and the scale of work that needs to be done to deliver a mature 5th generation combat platform to the armed forces.

One only needs to look at programmes like the F-22, JSF and T-50 and the fact that the countries developing them have unmatched expertise in fighter aircraft development and the industrial wherewithal to manufacture them. This is a stark contrast to the rather isola-

tionist approach that India takes with the development of its combat platforms and the fact that there will be no exports to amortise the enormous development costs.

It is instructive to study the progress of the F-35 programme over the years, even though there has been a large amount of criticism for the programme, there is no doubt that over the next few years, the majority of any unresolved issues would be fixed. The Lockheed Martin F-35 Lightning II is now approaching a major milestone that will see it achieve Initial Operational Clearance (IOC) with the US Marine Corps (USMC) before the end of the year. This will be followed by the IOC for the US Air Force (USAF) in 2016.

"We are on the baseline we set in 2010 for the programme," said a confident Lorraine Martin, executive vice president and general manager, F-35 Lightning II, at a briefing held on the first day of the Paris Air Show. At the end of October, Lockheed Martin announced that Jeff Babione would take over as executive vice president and general manager F-35 Lightning II, effective 1 January 2016. Martin has been appointed to the newly created position of deputy executive vice president, Mission Systems and Training (MST). In the quest to achieve IOC for the USMC, a major milestone crossed was the completion of sea trials for the US Marine Corps (USMC) using F-35B OT-1.

"Trials were extremely positive with the F-35B and no changes were requested following their completion," said Martin. The F-35B has impressed the USMC with its precision landing ability on a carrier during the recent trials. An important barometer of the programme has been the cost of the F-35 and Lockheed Martin has invested a significant amount of resources and manpower to reduce the cost of the 5th generation combat aircraft. Plans call for the time taken to produce an F-35, which is 54,000 man hours today, to be reduced to 35,000 man hours by 2020. This would afford savings across the entire F-35 family which have substantial commonalities in avionics and structure and help in achieving a cost of USD 80 million per aircraft by 2019. Production efforts across the world are now ramping up not only to cater for deliveries to the US armed forces but also air forces around the world. Italy will take delivery of its first F-35 later before the end of the year and Israel and Japan will both take deliveries of their first JSFs in 2016. ■

Better Helmets for the World's Most Advanced Combat Aircraft

The F-35 is the first tactical fighter jet in five decades without a traditional Head-Up Display (HUD) system. The month of October saw the issue of the first Generation III F-35 Helmet Mounted Display System to Norwegian Air Force Maj. Morten Hanche, 62nd Fighter Squadron training pilot at Luke Air Force Base.

"I think the helmet is going to be an important factor in enhancing my situational awareness," Hanche said. "I don't have to look around. I can glance with my eyes and get the info I need." The helmets are custom built for each pilot and are not interchangeable. A unique capability available on the helmet is the projection of the HUD on the helmet. This is usually projected onto the HUD at the front of the cockpit. Displaying HUD info on the helmet improves the pilot's situational awareness and data like horizon, airspeed, altitude, and weapons status is always available to the pilot.

Another incredible piece of technology on the helmet is the 360-degree digital view that it offers the pilot of what is taking place around the aircraft. When the pilot looks down, he doesn't see his knees, he sees 'through' the aircraft floor and walls, and knows what's below him. This is possible as a result of the feed from six cameras placed on the out-

side of the aircraft that are transmitted in real time to the helmet. Night vision capability is also built right into the helmet and the pilots don't need to flip down a set of goggles. "I'll now have access to two night vision options," Hanche said. "An infrared image and a night vision image. Having those two available at any time is going to be really great." All this technology is packed into a carbon fibre helmet that weighs just about 2.5kg. They are custom made for each pilot to not only fit correctly around the head but to also ensure the visuals are clear and undistorted.

Over a two day period, parameters like horizontal and vertical alignment of the pupils, eye spacing and other variables are measured. "It's a customised helmet for the pilot," said Christopher Culley, Rockwell Collins customer support specialist. "It's made to fit just him." Built and issued by Rockwell Collins, the new helmeted features number of upgrades, including improved night vision, optics and liquid-crystal displays. "It's Luke's first," said Donald Guess, Rockwell Collins customer support specialist. "It's something that's been coming for a while and something that all the pilots are going to want." The helmet integrates three advanced technologies, helmet-mounted display (HMD), HUD and visor projected night vision. ■

