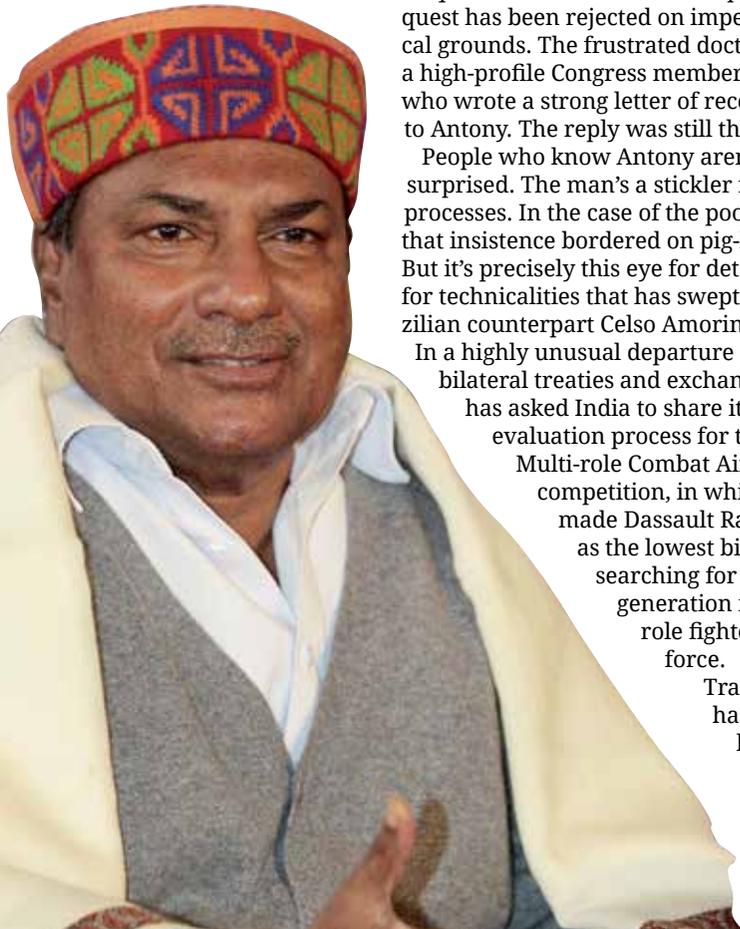


The stubborn man and his flying machines



R Swaminathan



Even at his best, defence minister Arackaparambil Kurien Antony is an obdurate man. Insiders in the usually tight-lipped ministry of defence have a favourite story. For the last two years an army doctor posted in Rajasthan has been writing to the ministry for a transfer to Chandigarh where his wife, an army doctor herself, is posted. The two have a child who is a Thalassemia patient. It's a genetic condition that requires frequent blood transfusion. Repeatedly his request has been rejected on impeccable technical grounds. The frustrated doctor approached a high-profile Congress member of parliament, who wrote a strong letter of recommendation to Antony. The reply was still the same.

People who know Antony aren't one bit surprised. The man's a stickler for details and processes. In the case of the poor army doctor that insistence bordered on pig-headedness. But it's precisely this eye for detail and a love for technicalities that has swept Antony's Brazilian counterpart Celso Amorin off his feet.

In a highly unusual departure from standard bilateral treaties and exchanges, Brazil has asked India to share its open tender evaluation process for the Medium Multi-role Combat Aircraft (MMRCA) competition, in which the French-made Dassault Rafale emerged as the lowest bidder. Brazil is searching for up to 120 4++ generation medium multi-role fighters for its air force.

Traditionally India has never been known for setting gold standards on processes and technical evaluations. Arms

Antony has done India a huge favour by absorbing pressure from different lobbies and allowing IAF to select the best possible fighter aircraft

acquisition has been a singular black hole. Nobody has quite been able to figure out what goes in and what comes out. And, no one expected a veshti-clad, painfully shy and inarticulate defence minister to put India on the global process map. But that's what Antony has done. Even the difficult-to-please Air Commodore Jasjit Singh has a word of praise for the prolonged but 'systematic and scientific process' that has finally laid the 'ghost of Bofors' to rest.

Brazil and Air Commodore Singh are saying something significant: a beleaguered nation beset by numerous scandals can still show the rest of the world that a \$18.4 billion mega arms deal can be straight, transparent and yet select the best.

With the twin threats of Pakistan and a rapidly modernising China, the Indian Air Force (IAF) should ideally have 45 fighter squadrons. Each squadron has 18-20 aircraft. But currently India has only 33 squadrons and experts are of the opinion that the country requires at least 39.5 squadrons to adequately protect itself. It's in this context that the MMRCA deal needs to be located.

The IAF asked the ministry of defence for medium multi-role combat aircraft in 2000 and formally floated a Request for Information (RFI) for 126 aircraft in 2001. In two years, by 2003, IAF, alarmed at decreasing force levels due to attrition and the phased decommissioning of MiG-21 FL, asked the MoD the permission to acquire 50 Mirage 2000H with upgraded avionics. The top brass at the IAF had immense faith in the Mirage 2000H as it was the only aircraft to have performed creditably in the high altitude bombing missions during the 1999 Kargil war. Even the famed MiG-27 and MiG-29 came up short.

In response, the MoD in 2004 asked IAF to float an open tender. Then the general elections happened, the NDA suffered a shock defeat and a new defence minister, Pranab Mukherjee, took over the reins. But continuing with the earlier process, the MoD floated

the initial tender in 2005. The tender had been prepared in a hurry during George Fernandes's tenure. Insiders said that the tender had loopholes and did not specify parameters properly. One insider who has been privy to the entire process called it "loose and shoddy". There were several parameters, which were either open to interpretation or not clearly defined. For example, the specifications of the radar were so vague that one could have entered an aircraft with vintage vacuum-tube radar. Similarly, there were no benchmarks at all on the Radar-Cross Section (RCS) of an aircraft. Importantly, there were no details given on the transfer of technology (ToT) and licensed production.

Defence minister Pranab Mukherjee had egg on his face and the ministry had to beat a hasty retreat when it realised that the vendors were exploiting loopholes in the tender terms to enter upgraded versions of existing aircraft. For instance, Dassault entered Mirage 2000-5 and Russia's United Aircraft Corporation (UAC) entered MiG-29 OVT, which was essentially a MiG-29 with thrust vectoring nozzles, in the competition.

Insiders said that a furious Mukherjee realised he had a ticking time-bomb on his hands that could topple the government. This was a potential Bofors, only ten times more potent.

The ministry and the IAF were caught in a catch-22 situation, with the airmen increasingly getting frantic and the ministry logjammed. Everything was in a limbo and things got from bad to worse when Mukherjee was shifted to the external affairs ministry. His replacement was AK Antony. With a reputation for squeaky cleanliness, processes and procedures, almost everyone groaned quite audibly. The IAF top brass was convinced that the logjam would only get worse, and the ministry mandarins were getting their feet up for a long haul.

This is when the low-profile Malayali decided to show his true colours. Displaying his stubborn streak as a stickler for rules, terms and conditions, Antony started getting everyone in line. One insider who has been part of the process from the beginning said that Antony was obsessed about not getting any dirt on this deal. "There were days when he would be in office at 7.30 in the morning with detailed notings in the MMRCA files and asking officials really

tough questions," he recounted. In less than a year, in August 2007, a revised tender was issued that had absolutely crystal clear 643 parameters for evaluation of aircraft submitted by the vendors.

The global military majors, used to slipshod Indian processes, were in for a rude shock. They realised that Antony meant serious business and they would have to pull out their best wares, if at all IAF had to be made interested. Five aviation majors – American Boeing and Lockheed Martin, Russian United Aircraft Corporation (UAC), French Dassault, European consortium's EADS and Sweden's SAAB – entered the fray with six aircraft – F-16 Block 60 (renamed F-16 IN), F/A-18 E/F (Super Hornet), MiG-35, JAS-39 Gripen, Rafale and Eurofighter Typhoon.

Antony decided to show the ministry mandarins and IAF bosses that he meant business. First, he made the IAF bosses negotiate hard with the United States Air Force (USAF), Royal Air Force (RAF) and the French Air Force (FAF) to bring in their latest aircraft for the joint exercises. In all there were three Cope India exercises conducted with the US in India, one Red Flag exercise in Nevada and two Indradhanush and Garuda exercises with RAF and FAF respectively. Second, he constituted a special team within the ministry to coordinate with the IAF to understand the performance of the MMRCA contender aircraft that were entered by the foreign air forces.

One insider said that Antony monitored every single joint exercise and performance of contender aircraft closely. Antony would demand briefings on technical issues again and again so that he understood the complexities involved. "After numerous such briefings he would question technical experts on dry thrust, gross thrust ratio, supercruise and the use of afterburners," said the insider. Antony's team would keep a checklist of each aircraft's performance and would constantly compare data.

When the long evaluation process of the contending aircraft across 643 mission parameters started, the Americans, especially, started getting jittery. Some of the parameters were so stringent that the Americans, it seems, hadn't accounted for it. For instance Indian airfields, especially at the border areas, are underprepared and are filled with pebbles and foreign objects. An IAF officer familiar with the evaluation process said that F-16's GE F110 afterburning turbofan

Terminology

MMRCA

Medium Multi-role Combat Aircraft

ToT

Transfer of technology

UAC

Russian United Aircraft Corporation

EADS

European Aeronautic Defence and Space Company

SAAB

Svenska Aeroplan AB (aktiebolag) (Swedish for 'Swedish Aero-plane Company Limited')

USAF

United States Air Force

RAF

Royal Air Force

FAF

French Air Force

FoD

Foreign-object Damage

HAL

Hindustan Aeronautics Limited

AESA

Active Electronically Scanned Array radar

PESA

Passive Electronically Scanned Array radar

AWACS

Airborne Warning and Control System

jet engine and F-18's GE F404-GE-402 turbofans were extremely susceptible to Foreign-object Damage (FoD), which adversely impacted the turnaround times.

The Russians, on the other hand, actually loved this challenge. Underprepared airstrips dotted the erstwhile Soviet Union and the Mikhoian-Gurevich design bureau came up with an innovative system of mesh grills of closing the engine intakes for MiG-29 while on the ground, protecting the compressor from FoD. The MiG-35 had a similar but a more advanced mechanism. While this gave MiG-35 a quick turnaround time, a critical requirement for a scramble, the Klimov RD-33 MK engine, which featured thrust vectoring nozzles, required relatively frequent overhauling. This in turn pushed up the lifecycle costs. It was a problem that was also faced by the RD-33 engines of MiG-29.

Similarly, another of the mission parameters on which the aircraft were judged was the performance in high altitude environments. The oxygen-deficient thin air impacts the performance of jet engines, especially the ability to supercruise which allows the aircraft to perform sustained supersonic flight without the engagement of afterburners. In aircraft without supercruise ability afterburners are employed to outrun and outmaneuver enemy aircraft or sometimes air-to-air missiles. But use of afterburners significantly reduces combat persistence – the ability of the aircraft to stay in a fight longer without requiring more fuel – and increases radar signature. It also means that aircraft would require external fuel tanks, thereby effectively reducing the number of hard points for missiles and smart munitions. The American F-16 and F-18 as well the Russian MiG-35 did not have supercruise ability. Both Eurofighter Typhoon's Eurojet EJ200 afterburning turbofan and Rafale's Snecma M-88-2 engines outperformed them.

During the evaluation, when the Americans realised that they were lagging behind, they decided to go on a charm offensive and brought in big guns from the American administration and policy experts like Ashley Tellis. Moreover, Boeing and Lockheed Martin tied up with Indian companies in the private sector in order to fulfil the exacting offset obligations of the contract – up to 50 percent of its value. The US also declared a willingness to

How it all played out

The behind-the-scenes drama had all the ingredients of a potboiler

R Swaminathan

Insiders who are privy to the entire process of the MMRCA deal have a fascinating story to tell. The Russians, Swedes and the Americans initially underestimated the tight process laid down by the MoD and the requirements of the Indian Air Force (IAF). The Russians were the first off the block in rectifying their error. Long used to being the main supplier of military hardware to India, the Russians had mistakenly assumed that an upgraded version of MiG-29 would make the IAF bosses happy. But they were rebuffed in no uncertain terms and they got back to the drawing board.

The Americans believed their own hype about having the world's best air force with the world's best flying machines a little too much. They should have woken up when Indian pilots flying upgraded MiG-21 Bisons

with Russian Phazatron Kopyo (Spear) radar, Vympel R-73RDM2 missile and the Beyond Visual Range (BVR) Vympel R-77/RVV-AEE air-to-air missiles licked the formidable F-15C and the F-16 Block 52 fighters of the USAF clean on one-on-one as well as in Dissimilar Air Combat Training (DACT) exercises in the Cope India 2004 in Gwalior. The USAF acknowledged that the Indian pilots displayed "unexpected situational awareness and tactical maturity" and said that MiG-21 Bisons and Su-30MKIs were the toughest to counter.

But they didn't wake up. In the next Cope India exercise in 2005 at Kalaikunda airbase the Indian pilots operating in an AWACS environment for the first time responded to target information faster than their American counterparts. Yet again the Americans found their F-15C/D and F-16 Block 60 fighter aircraft being taken on by MiG-21 Bisons the Su-30MKI air superiority fighters. More often than

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ease export controls applicable to India and the removal of most of the remaining Indian organisations from the US Entity List, especially the DRDO-related ones, imposed after the Pokhran-II. "During this time Antony faced intense pressure to go easy on the parameters. There was a lot of lobbying and the Americans were pouring in money sponsoring trips for journalists and policy experts to write positively on F-16 and F-18," said an

insider. "But Antony is stubborn and he refused to do anything to tone down the parameters."

The Russians also did not lag behind in dangling carrots. They decided to transfer the technology of RD-33 MK engines to Hindustan Aeronautics Limited (HAL) to manufacture them in Nashik. In addition, they hinted at reducing the unit cost of MiG-29K to be outfitted with the naval carrier Admiral Gorshkov. "When the Russians realised that Antony will give the IAF technical evaluation team complete freedom to finish their process, they decided to step aside," said the insider.

The Americans, however, finally realised that they would have to up the ante and offered India upgraded version of F-16 Block 60 with AN/APG-80 Active Electronically Scanned Array (AESA) radar – rechristened F-16 IN – and a comprehensively redone F-18, which was larger, called F/A-18 (Super Hornet) with probably the best AESA radar – AN/

not the Indians emerged victorious in Within Visual Range (WVR) combat and could hold their own in BVR combat. The subsequent Cope India exercises in 2006 and 2009 and the Red Flag Exercise in 2008 at Nellis Airforce Base in Nevada showcased India's appetite for high-performance aircraft and the advanced skill levels of its pilots. This was an emerging and confident India and the Americans underestimated the IAF's strategic insight and depth, requirements and the ability to absorb technology. What Boeing and Lockheed Martin initially offered was F-18 and an upgraded F-16 Block 52 aircraft respectively. Both had airframes which were over 30 years old and, more importantly, were often beaten or held up by upgraded MiG-21 Bisons and the latest Su-30MKIs.

The British and the French were smarter, quickly recognising India's increasing appetite for a strategic role in the larger Asian context and understanding that the IAF was looking for a top-of-the-line product. In the 2007 Indradhanush joint IAF-RAF exercise the British fielded the Eurofighter Typhoon. The Typhoons took on the Su-30MKIs and a mutual respect was born. In the subsequent Indradhanush exercise in 2010, the RAF specially



invited Indian pilots to fly the Eurofighter Typhoon. One senior and experienced Su-30MKI pilot who had flown the Typhoon told this author that the aircraft was the best in terms of cockpit layout and pilot friendliness. It was a big endorsement as this pilot had flown a lot of world's best fighter aircraft. The French also used Garuda, the codename for the IAF-RAF joint exercise, to field Rafale against top-line Indian fighters and also allowed Indian pilots to fly the aircraft. A pilot who flew Rafale said that the learning curve in adapting to the aircraft was minimal as they had the experience of flying the Mirage.

The Russians tried to undo the damage of MiG-29 OVT by fielding the MiG-35, unveiled for the first time ever in the Aero

India show in Bangalore in 2007. Even though the airframe was similar to MiG-29, again an over 25-year-old airframe, the plane had a Phazotron Zhuk-AE Active Electronically Scanned Array (AESA) radar, the first fighter in the MMRCA competition to offer so, an RD-33MK engine, a variant of the RD-33 infamous for its high-soot visibility, and a newly designed Optical Locator System (OLS). The major problem for the Russians was not the aircraft per se. It was an excellent aircraft with a practically next to nothing learning curve for integration with the existing IAF systems. After all India was the first non-Warsaw Pact country to have been offered the MiG-29. The aircraft had everything going for it, except spare parts, engine overhaul cycles and lifecycle costs. Sweden offered the SAAB produced JAS-39 Gripen. It was always considered the wild card and in every possible way it really was. The design, like the earlier Drakken and Viggen, was unconventional and it had a very high proportion of US-supplied hardware, including electronics, large portions of avionics and weaponry. In the end, only Typhoon and Rafale remained and Typhoon lost out on per unit acquisition cost and over lifecycle cost. ■

APG-79 – in the market today. In comparison to Passive Electronically Scanned Array (PESA) radar, an AESA can track up to 30 targets and engage over 10 simultaneously. Coupled with situational awareness provided by a network of AWACS planes, AESA radar can mean the difference between life and death in a BVR (Beyond Visual Range) combat. The F-16 IN and F/A-18 performed better, but their over-sensitive engines susceptible to FoD, lack of combat persistence, a relatively high unit cost and a need to integrate them with the existing IAF inventory from scratch brought down their overall scores.

JAS-39 Gripen, the dark horse, actually performed creditably on several parameters. The Swedes also realised quite late in the day, like the Americans, that Indians needed to be offered a top-of-the-line product. SAAB offered the IAF Gripen NG (Next Generation) with AESA radar and more powerful engines. "The unit cost was really steep and there was too

much dependence on American components, especially the GE-414 engine," said an insider. Ironically, the GE-414 engine is going to power Tejas MK-II. When it became clear that Antony will not budge from the set parameters and will only go by a technical assessment, a whisper campaign was started about how Antony was not being 'strategic' about the MMRCA deal. The Americans, by then probably knowing that they would be knocked out, hinted at offering F-35, including its co-production, to India. "But nothing was concrete and on paper," said the insider.

On April 27, 2011 the IAF announced that they had shortlisted Typhoon and Rafale. A couple of weeks ago the ministry announced Rafale as the lowest bidder. Even though Typhoon and Rafale did very well on all parameters, the Typhoon lost out due to higher lifecycle costs and direct acquisition costs.

During this entire process, Antony had been at the receiving end of several brickbats. One that would have hurt

him a lot was the allegation that he was muddling along and not being 'flexible' enough. The other one that would have pricked him further was the constant accusation that he was somehow missing the strategic picture. In his own way, without opening his mouth, Antony has answered those two allegations and countless more. In doing so, he has forever changed the landscape of Indian defence industry and has put it on a growth path that only a few could have imagined. The shy man from the backwaters of Kerala has shown uncommon strategic acumen in securing India's interests. No one gives him the credit for it today. But one day he will be saluted and it will be well deserved. ■

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