



**OUT OF THE RACE** (left) Boeing's Super Hornet and (top) Lockheed Martin's Super Viper & (right) the author of the piece

# Decoding India's MMRCA Decision

The IAF gave primacy to technical aspects over everything else

**ASHLEY J. TELLIS**

INDIA'S REJECTION OF THE F-16IN Super Viper and the F/A-18E/F Super Hornet in its hotly contested medium multirole combat aircraft (MMRCA) competition has disappointed many in the United States. Because there were great expectations that New Delhi would leverage this fly-off to cement its strategic partnership with Washington — particularly in the aftermath of the

herculean American efforts to consummate the civilian nuclear cooperation agreement — India's selection of two European platforms, the Eurofighter and the Rafale, as the finalists for the multirole component of its air force led many American observers to conclude that the country had settled for an airplane, not a relationship.

Several analysts have attempted to explain why the Indian decision turned out the way it did. Bruce Riedel, a former official in the Clinton administration has been reported by the *Washington Post* as concluding that India rejected the American contenders because of the 'perception' that the United States was 'an unreliable arms supplier because of past embargoes imposed

after various wars and nuclear tests.' Arguing that 'there is a belief that in a crisis situation, particularly if it was an India-Pakistan crisis, the US could pull the plug on parts, munitions, aircraft — precisely at the moment you need them most,' he inferred that India's rejection of the F-16IN and the F/A-18E/F was a product of bad 'memories,' which run 'deep in this part of the world.'

Other commentators offered alternative explanations. Richard Aboulafia, an internationally respected aviation analyst at the Teal Group speculated that India's exclusion of the American platforms was evidence of the continuing tensions in the US-India strategic partnership and a subtle protest against the current US policy of continuing to arm

Pakistan. More substantively, however, he argued that the Indian decision was linked fundamentally to issues of technology transfer. The Europeans, he contended, 'were willing to bend over backwards in terms of technology transfer, in terms of industrial work share and in terms of other regulatory issues, and they really needed this (sale)... For the US contractors, it would have been gravy, but for the Europeans, it's survival through the end of the decade.'

Other analysts echoed this reasoning. Some conjectured that India's decision was driven by the presumed American reluctance 'to see key AESA (active electronically scanned array) radar and other avionics and electronic warfare technology made available at the level India wanted,' whereas others wondered whether the International Traffic in Arms Regulations (ITAR), which restrict exports of sensitive US technology and are enforced by the US State Department, were to blame.

Another hypothesis offered for the Indian decision was straightforwardly political. As Trefor Moss argued in a widely read analysis, 'Why India Chose to Disappoint the US,' 'by opting for a European aircraft, India is not seeking

to avoid aligning itself with the United States. India clearly is aligning itself with the United States, but as a partner rather than a client; it also sees the United States as one of several key strategic partners, rather than the only ally that counts.' Carrying this logic to its conclusion, Moss concluded that the MMRCA decision epitomised 'India's strategy,' which 'above all, is to spread the risk.'

While all these explanations sound credible, they are mistaken. The Indian Air Force's (IAF) decision regarding the final shortlist — the 'down-select' in Indian procurement parlance — was made entirely on technical grounds. No political, strategic, or financial considerations intervened in any way: in retrospect, this may have been exactly the problem, but the exclusion of these factors was a necessary consequence of the 'two-step' procurement procedure adopted in the MMRCA competition. This procedure led to the rejection of the American contenders but it also demonstrates that the acquisition process worked largely as intended, at least at a bureaucratic level. Whether it serves India's larger national security interests, however, still remains an open question, one that Indians should debate in the months and years ahead.



## Take a First Step...

The technical reasons for the IAF's rejection of the F-16IN and the F/A-18E/F are not hard to appreciate. Although it was unlikely that the F-16IN Super Viper stood a serious chance in the MMRCA competition because of the perception that a similar version was deployed by

the Pakistan Air Force, the IAF did put the aircraft through its paces. At the end of the day, however, it was found 'non-compliant' — a term indicating that the aircraft did not meet certain technical criteria in the IAF's Air Staff Quality Requirements (ASQRs) — in five areas, some of which were of critical importance to the service: growth potential; carefree handling (and automatic sensing of external stores); sustained turn rate; engine change time; and assurance against obsolescence over a 15-year period.

The F-16IN Super Viper is already a mature aircraft and while it is likely to evolve further where its sensors and weapons are concerned — especially for foreign markets — it is unlikely to remain the premier dogfighter it was when first introduced into the United States Air Force. Since the IAF was looking to acquire an aircraft that would remain competitive over the next 30 years, the F-16IN appeared like a poorer choice relative to the competition in both growth potential and assurance against obsolescence. Although the IAF's judgment on both these counts can be debated by airpower specialists, even the most ardent supporters of the F-16IN would find it difficult to claim that this legendary airplane would remain the world's most nimble close-in combatant or its premier multirole combat aircraft in, say, 2030.

The F-16IN's failure to meet the IAF's standard where engine change time was concerned was due largely to an idiosyncratic mishap during the field trials. It is certain that if the trials were to involve multiple stochastic demonstrations of engine change, the F-16IN would have easily made the mark. Unfortunately, second chances are sometimes not available, and the IAF, for its own reasons, chose not to accept Lockheed Martin's subsequent evidence of being able to meet the engine change standards laid down in the ASQR.

The more serious weaknesses identified by the IAF in regards to the F-16 pertained to its handling and turn rates. (The deficiency in automatic sensing of external stores is an odd finding — most modern aircraft routinely provide such information in the cockpit — but, in any case, it involves an easy software fix and thus cannot be considered as a problem of consequence.) The concerns about handling and turn rates, however, clearly indicate something important about the IAF's preferences in the MMRCA competition, while highlighting the fact

that the F-16IN remains in some ways a retrograde development where close-in air combat manoeuvring is concerned.

Starting with the latter first: the F-16IN Super Viper that Lockheed Martin offered in the MMRCA competition grew out of the F-16 Block 60 developed for the United Arab Emirates (UAE). The UAE partially funded its development in order to acquire an aircraft capable of carrying a useful ordnance load to the extended distances necessary to target Tehran. Lockheed Martin responded to this requirement by equipping the F-16 — until then, among the world's most wickedly agile air combat platforms — with conformal fuel tanks (CFTs). These CFTs, which can be removed between missions but not jettisoned in flight, extended the F-16's already impressive reach, but at the cost of robbing it of its renowned sprightliness.

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With its CFTs, the F-16IN's handling and sustained turn rates — which otherwise rank among the world's best — dropped to the bottom relative to the other MMRCA competitors and thus provided the final strike against its inclusion in the shortlist. The fact that the CFT-equipped F-16IN would be less manoeuvrable compared to Pakistan's F-16 Block 50/52s made the Super Viper's exclusion from the MMRCA shortlist virtually a foregone conclusion.

The focus on agility, turn rates, thrust-to-weight ratios, handling, and in general, aerodynamic performance, provides clear indication that what the IAF wanted most dearly in its MMRCA was a 'super hot rod of the skies' — an aircraft that would excel in air combat manoeuvring because it possessed superior speed, acceleration, and nimbleness — or, more generally, a larger flight envelope

— compared to its rivals. Beyond these characteristics, the service also wanted a fighter that would be the newest of the new, something unmatched in the region, the latest of the available choices, and one with the greatest growth potential. The two American aircraft in the Indian MMRCA competition were deficient by some of these yardsticks, when matched against the three 'Eurocanards': the Eurofighter, the Rafale, and the Gripen.

Obviously, this by itself did not make them inferior war-fighting machines. Far from it. Marginal differences in aerodynamic performance rarely affect combat outcomes and whenever such deficiencies exist, better sensors and weapons and advanced combat tactics can often serve to compensate. Fourth-generation American multirole aircraft like the F-16IN and the F/A-18E/F, in particular, have long relied on their superior sensor and weapon suites to make up for any limitations in manoeuvring parameters. And the changing nature of air warfare — exemplified by long-range engagements — has only reinforced this particular propensity. As a consequence, American combat aircraft aim to enter every aerial encounter with the intention of detecting and destroying any opposing fighters long before the latter are even aware of their presence — at beyond-visual-ranges (BVR), where aerodynamic dexterity matters less than it does in within-visual-range (WVR) combat.

It is possible to argue that the IAF should have put a premium on exactly these variables — sensors, avionics and weapons — rather than on aerodynamic effectiveness because the incipient presence of airborne warning and control systems (AWACS) and active BVR air-to-air missiles in both Pakistan and China will make long-range engagements increasingly the norm in southern Asia.

The IAF, however, has laid its bets on the hope that the Eurofighter and the Rafale would provide both superior close-in air combat capabilities as well as effective BVR performance, in contrast to their American rivals which appear arguably weaker at least where close-in air combat manoeuvring is concerned. (Note that close-in air combat manoeuvring is not synonymous with close-in air combat capabilities because even less agile fighters can be dreadfully effective in shorter-ranged dogfights if they possess the requisite sensors and high off-boresight air-to-air missiles, as

all American aircraft do.)

In any event, it is not yet certain whether the two European finalists will be able to eventually deliver on the IAF's expectation that they will be superior in both air warfare regimes, given their current lack of AESA radar and the financial and technical constraints still faced by European manufacturers in this regard. But if the Eurofighter consortium and Dassault are able to field an effective active primary sensor by the time the winner enters service, the Indian wager will have paid off because the two Eurocanards have superlative passive sensors, excellent information fusion and displays, good-to-outstanding propulsion systems, potentially effective weapons (if cleared for sale to New Delhi), and outstanding manoeuvrability.

These issues will nonetheless be debated endlessly by airpower specialists. The point of note, however, is that while the American contestants exemplified war-fighting proficiency — the end result of possessing superior sensors, avionics and weapons in a highly integrated package — the IAF was simply unprepared to privilege this component at the expense of platform manoeuvrability, the age of the basic airframe design, and the overall finesse of the aircraft when judged as both an aviation platform and a combat system. The ASQRs defined in the Request for Proposals reflect this clearly and the IAF's evaluation of the F/A-18E/F Super Hornet only corroborates the point.

Although the F/A-18E/F Super Hornet remained America's best shot at making the down-select in the MMRCA competition, the IAF ultimately rejected this aircraft on four grounds: the maturity of its engine design, the growth potential of its engine, assorted performance shortfalls, and issues related to special preventative maintenance. Unlike the case of the F-16IN, where IAF reservations are easier to appreciate, the case against the F/A-18E/F Super Hornet is more blurry, raising some doubts about whether the IAF gave the twin-engined fighter an equitable shot.

These concerns arise in part because of the way the F/A-18E/F's General Electric F414 Enhanced Performance Engine (EPE) was scored during the competition. Boeing offered this engine, which is in its final development stage, as the standard power-plant for the production version of the F/A-18E/F Super Hornet because its 20 per cent greater thrust and advanced design — involv-



IN THE FRAY Eurofighter

ing a two-stage integrated blade and disk fan, an advanced six-stage high-pressure compressor, and a new high-pressure turbine design — mitigated many of the flight envelope deficiencies that had hampered the airplane when equipped with the older F414-GE-400 engine. Thanks to the EPE, the F/A-18E/F's climb performance, its transonic acceleration, its maximum sustained G, its maximum sustained turn rates, and its top-end speed all improve considerably, with beneficial impact on its performance in both the air-to-air and the air-to-ground regimes.

The IAF, however, held the engine's development status as proof of its immaturity, despite the fact that when it enters service it will be a substantially new engine with greatly improved performance and decades of active life ahead of it. That the IAF was unwilling to accept the engineering test results of the F414 EPE where the F/A-18E/F was concerned, even as it accepted the bench test results of the developmental AESA radars proposed by the Europeans, raises questions about whether the service may have interpreted compliance with some ASQRs a tad subjectively.

The IAF's judgment about the limited growth potential of the G414 EPE

may also have been premature, given the significant increases in thrust that have been gained already by new technological insertions — but on this score at least, the IAF's assessment is easier to concede in contrast to its judgments about the viability of the engine's design. These judgments should not have been affected in any case by the F/A-18E/F's engine start-up trouble during the high-altitude trials because the demonstration aircraft was still equipped with the F414-GE-400 engine.

Most significantly, the F/A-18E/F was perceived to have fallen short in aerodynamic performance, especially with respect to those parameters that distinguish the nimblest of fighters from the rest. These assessments are not surprising. Although the Super Hornet remains one of the most carefree aircraft in the world where handling is concerned, with a high alpha performance to boot, it has traditionally been hampered by weaker energy addition compared to its contemporaries. Further, it still remains qualified only for manoeuvres up to 7.5G, in contrast to the IAF's ASQRs which specified a criterion of 9G.

These limitations can place the F/A-18E/F at a disadvantage in turning fights with modern adversaries — though the new engine will mitigate these deficien-



ALSO A CONTENDER Rafale

cies somewhat — which is exactly why its pilots exploit the aircraft's superb sensors and weapons to destroy its opponents long before close-in engagements become necessary. Should the latter become unavoidable, the aircraft's sensors and its high off-boresight WVR air-to-air missilery preserve its edge even in what might otherwise be an unfavourable tactical environment.

Unfortunately for Boeing and the United States, however, the IAF, while respectful of these capabilities, nevertheless sought a platform without compromised manoeuvrability and acceleration, thus resulting in the F/A-18E/F being excluded from the final shortlist. It is regrettable too that the Super Hornet's true multirole proficiency, unlike many of its competitors, did not suffice to compensate for its assessed weaknesses in air combat manoeuvring — again, a consequence of the IAF's preference for superior flying machines rather than simply an effective war-fighting package. This partiality could come back to haunt the IAF in time because neither the Eurofighter nor the Rafale can yet match the Super Hornet in the strike mission, which given modern warfare is fundamental to success even in a defensive counter-air campaign.

In any event, the IAF's choices in the MMRCA down-select highlight three important realities that should be recognised in any evaluation of why the two American fighters ended up out in the cold.

To begin with, the IAF is at heart — in its ethos and organisational culture — a fighter force. Not surprisingly, then, it sought the ultimate fighter for fighter pilots. Obviously, it wanted a successful weapon system as well, but not at the cost of a superior flying machine. The two Eurocanards turned out to be better on this account, however marginally, in comparison to their American competitors — a fact that a detailed study, *Dog-fight! India's Medium Multi-Role Combat Aircraft Decision* (Carnegie Endowment for International Peace, 2011) had earlier pointed out. By the standards of the Indian Request for Proposals, the Eurofighter came first, followed by the Rafale — an assessment now corroborated by the decision regarding the down-select. This does not imply that the two European finalists were flawless, only that they had the highest number of fulfilled requirements and thus met a baseline that satisfied the IAF.

Further, the IAF sought the newest airplane that money could buy. Again, this requirement should not be unexpected because Indian planners, contemplating the threat environment over a 30-year horizon, wanted an aircraft that would remain at the cutting edge for the longest possible time. The Eurocanards had an advantage here because their more recent designs arguably promised a longer period of puissance in comparison to their American rivals. Supporters of the Super Hornet would challenge this conclusion pointing out

to the timelines when the airplane is likely to remain in US Navy service, but obviously this argument was not persuasive enough to the IAF.

Finally, when all is said and done, the United States was simply not well positioned to win the MMRCA competition because, odd as it may seem, its best current combat aviation technology was either simply unavailable or inconsistent with Indian needs as defined in the IAF's Request for Proposals. US fifth-generation fighters like the F-22 Raptor and the F-35 Lightning are without peer anywhere in the world, but neither was available to India in the MMRCA fly-off. The Raptor remains the finest air dominance fighter ever built, but it is predominantly a single-mission aircraft that, despite now acquiring limited secondary mission taskings, would still be inappropriate as a multirole fighter for the IAF. Current US policy, moreover, prohibits the export of the Raptor to any country, including to Washington's closest allies.

The F-35 Lightning, in contrast, is a true multirole fighter that, although not optimised for all-aspect stealth, remains uniquely capable of undertaking both air-to-air and air-to-ground missions as required. But it is still a platform in development, has not yet entered US military service, could never be integrated into the IAF on its desired schedule, and was never considered for export to, or co-development with, India because New Delhi until very recently had not

demonstrated any formal interest in the programme. While the Obama administration has now indicated that India would be offered the F-35, this policy initiative would have been of no help to the IAF in its MMRCA acquisition for all the reasons above. The only currently deployed and readily available multirole fighters in the American inventory are all fourth-generation platforms — F-15Es, F-16s, and F/A-18s — and, ironically, the Europeans did better in the MMRCA competition because they possessed more recent iterations of what are essentially sunset designs.

### ...And then a Second

What the discussion so far should substantiate is that the IAF's rejection of the US contenders in its down-select was based on technical considerations. The significance and validity of the parameters employed in this assessment, and the kind of scoring utilised during the trials, may be debated by airpower theorists, but there is little doubt that the decisions about the shortlist were made on the basis of the Flight Evaluation Trials and the Staff Evaluation reports without consideration to any of the other factors believed by many to be decisive: the political reliability of the supplier, the quality of technology transfer, and the issue of strategic partnership.

This focus on technical criteria was a natural consequence of the 'two-step' approach adopted by the ministry of defence, consistent with India's defence procurement procedure. This methodology required the IAF to winnow the contestants — the first step — solely on the basis of the assessed compliance with the ASQRs adumbrated in the Request for Proposals sent out to all the competing vendors. That no other considerations pertaining to cost, technology transfer or political partnership intervened is proven simply by the fact that when the ministry of defence announced its decision, it had not yet scrutinised either the commercial proposals or the technology transfer package, let alone assessed issues of strategic partnership which fall way beyond its statutory competence.

This is exactly as the two-step process intended. The theory underlying this approach is that the initial selection of any military technology should be undertaken solely by the armed services based on compliance with specific performance parameters. Only those contenders that pass this preliminary scru-

tiny would proceed to the second step, where their costs, technology transfer offers, and offset proposals would be judged by the ministry of defence before a recommendation pertaining to acquisition was made to the Cabinet Committee of Security (the highest decision-making body in India where major military purchases are concerned).

This two-step procedure was devised to impose orderliness in defence acquisitions and the present minister of defence, A.K. Antony, has adhered rigidly to the system in order to minimise both opportunities for corruption and the dangers of illegitimate influence peddling. In the case of the MMRCA competition, Antony — hoping to eliminate all extraneous risks — went so far as to insist that even critical geopolitical considerations relating to India's national security writ large would play no role in his ministry's procurement process, which would be driven entirely by technical judgments about the merits of the competing aircraft. Repeatedly offering assurances that the IAF's preferences alone would be decisive, Antony's directives set the stage for a down-select that would emphasise technical excellence in aerial knife-fighting to the neglect of much else.

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Unfortunately for the American vendors, the current outrage in India about governmental corruption, the political blows suffered by Prime Minister Manmohan Singh, and the general drift in the United Progressive Alliance government all combined to ensure that the strategic considerations usually present in all major Indian arms acquisition decisions were absent in this case.

The mechanistic application of the two-step procedure and the Indian political leadership's inattention to the MMRCA evaluation process in fact created the crisis in US-Indian relations when the facts about the IAF's down-

select became known. In its zeal to treat this competition as just another routine procurement decision falling solely within its own competence, the acquisition wing of the ministry of defence communicated its final choice to the American vendors through the defence attaché's office at the US Embassy in New Delhi without first informing the ministry of external affairs. This action put the latter in the embarrassing position of not knowing about the defence ministry's decision a priori and, as a result, was unable to forewarn the United States.

While the contretemps produced by this perverse adherence to process will blow over in time, the damage done in the interim has been significant in part because of President Barack Obama's strong personal advocacy, which has been matched by deep Congressional interest in this issue. India's senior most decision-makers now recognise that the system failed them at least in this regard: even if the two finalists represented the best choices for the IAF — which they arguably did from a technical perspective — the manner in which the results were conveyed did not win New Delhi any friends in Washington, a process that Indian government officials now recognise and ruefully admit was counterproductive.

In any case, the deeper problem with the current two-step approach is not that it precluded informing strategic partners like the United States of what was coming. It did not, because the failures in this instance were owed to an obtuse ministry of defence, rather than to bad faith on the part of Indian foreign policy managers. Rather, the most serious weakness of the prevailing procedure is that it potentially permits a costly misallocation of defence resources that could over time subvert India's larger national security.

Simply put, a procurement process that does not include shadow prices in the first step of its evaluation is fundamentally flawed. Indian policy-makers may console themselves that focussing on technical compliance alone initially enables them to identify the best technology, but this reasoning is fallacious.

There is no such thing as 'best' technology in the abstract, especially where defence procurement is concerned. The pre-eminence of any war-fighting technology in the real world can be judged only against the constraints of price — and, particularly in regards to India, against additional variables of conse-

quence, such as the quality of technology transfer, the character of the offsets, and the effectiveness of transferring production lines, all of which taken together require serious analysis demanding, what economists call, 'constrained maximization.'

These supplementary factors are vital in the case of India because its national policies treat acquisition not merely as an opportunity to acquire advanced weaponry but rather to leaven the entire defence industrial base as a means of advancing the grand strategic objective of self-reliance.

The current Indian procedure of attempting to first select technology without reference to any other constraints leads inexorably, using an infamous American example, to purchasing a USD640 airplane toilet seat. By pristine technical standards alone, it is certain that the more expensive toilet seat outperforms its USD64 counterpart under the widest range of conditions, but the critical question is whether the differential in marginal price is worth the commensurate difference in performance.

In the case of the MMRCA, the comparisons are necessarily more complicated and obviously do not involve toilet seats — but the principle at issue is the same. The IAF, for example, specified that all fighters worthy of consideration should have a sustained turn rate of at least 16 degrees per second. Assume, for the sake of argument, that the Eurofighter and the F/A-18E/F were equal in all other respects save sustained turn rate, with the former

demonstrating 16.2 degrees against the latter's 15 degrees at 5,000 feet. By this measurement, the Eurofighter is clearly the tighter turning aircraft and, thus, more manoeuvrable. Therefore, by technical standards alone — the only criterion encoded in the first step in India's procurement procedure — it would be the desired airplane.

A more effective procurement procedure, however, would require the IAF to assess two other important questions before it conclusively rejected the F/A-18E/F as a competitor. First, do the assessed differences in turn rate have any operational significance on the battlefield? And, second, how are the assessed differences in turn rate to be valued relative to the costs of the two aircraft? Since the Eurofighter costs somewhere in the region of USD125 million per copy against the F/A-18E/F's cost of USD60 million apiece, the questions then boils down to whether the Eurofighter's 1.2 degree superiority in sustained turn rate is worth the additional USD65 million that the IAF must commit to its acquisition? Similar questions will also have to be asked and answered in connection with the technology transfer, offset proposals, and production line schemes tabled by the two competing manufacturers.

It may well be the case that Indian planners could decide after all the

relevant issues are interrogated that the additional costs associated with the Eurofighter are worthwhile because there are unique payoffs either operationally to the IAF or to the Indian nation at large. The present Indian procurement system, unfortunately, does not permit the decision-maker to price these advantages (or disadvantages) appropriately from the get go, thus preventing the Indian state from being able to make the right judgment about the true *cost-effectiveness* of the various competitors facing off in any given race. The natural consequence of the current process is to enthrone abstract technological potency at the cost of other vital competing considerations, without offering even an accurate evaluation of the burdens imposed by the acquisition of the technology itself.

It is possible that if factors like cost, technology transfer, offsets, production efficiency, and strategic partnership were factored into the first step of the selection procedure itself, American aircraft like the F/A-18E/F Super Hornet would have made the short-list because they represent extraordinary *value* for a combat force, even if they do not rise to the top where every performance parameter is concerned. As Admiral Arun Prakash (ret'd) has perceptively asked in a recent analysis, "... if numbers are indeed so critical for the IAF, then why have the cheaper MMRCA options been discarded? ... The IAF could have, for example, added 400 Super Hornets to its inventory for the price of 200 Typhoons, and resolved

many of its problems."

Parenthetically, it is also worth noting that if the IAF was thinking strategically about its own interests in the MMRCA competition, it would have been worthwhile to include the F/A-18E/F Super Hornet in the short-list, even if the service had no intention whatsoever of finally purchasing the aircraft, because it would have increased India's bargaining leverage tremendously. Without a cheaper option in the mix, the IAF is now left with the choice of two expensive fighters — the Eurofighter at some USD125 million and the Rafale at some USD85 million — both of which have much smaller production runs, are equipped with similar weapons, and have a more limited capacity to transform India's technology base, given the higher risks to their economic viability, competitiveness, and future market shares.

This problem assumes added significance because of the fact that the European Aeronautic Defense and Space Company (EADS), one of the main pillars of the Eurofighter consortium, aims to shift away from fighter aircraft as part of its strategic business plan. While Dassault will likely persist in fighter manufacturing, thanks to both France's desire for independence and the prospects of continuing state support, neither vendor is likely to be at the cutting edge of combat aviation technology in the future. This reality is already foreshadowed by their lack of any fifth-generation platforms — an issue that should concern India greatly as it proceeds to cast its lot with manufacturers who may not be in the forefront of manned combat aviation for very much longer.

The suggestion that India should broaden the criteria beyond technology in the first step itself of its procurement procedure should, at any rate, not be read as special pleading on behalf of the American entrants; although US offerings may have been advantaged by such an approach in this particular competition, another nation's products could stand to benefit in other procurement races. The goal of advocating a reconsideration of the two-step procedure is not to urge that India 'buy American' in every instance, but rather to promote more rational decision-making in India's defence procurement — an outcome that allows technology to be priced more effectively relative to various constraints, thus leading to a more efficient allocation of defence resources within a given service and across na-

tional defence as a whole.

Reforming the procurement process to realise these gains, however, would require that judgment be permitted to take centre stage from the beginning of a competition. Unfortunately in India today, the obsession with defeating corruption in defence procurement has justified the creation of a mechanistic system that seeks to dispense with discernment altogether in favour of supposedly objective scoring intended to preempt controversy and permit a placid acquisition of new weapons and technology. While the zeal for probity in defence is indeed commendable, it is not clear that such rectitude actually advances Indian national security if it comes at the cost of the inefficient apportionment of scarce defence resources.

These are issues that ought to preoccupy Indian policy-makers as they think about defence procurement reform in the years ahead. This is actually a matter of some urgency because India is slated to spend about USD100 billion on foreign military acquisitions over the next five years. Ensuring that India gets its money's worth should be the objective of further adjustments to the defence acquisition system and the fact that Indian security managers are already examining the reforms required to further improve the procurement process provides some reasons for hope.

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As far as the MMRCA competition itself is concerned, the ministry of defence at this juncture should only look forward: whatever the inadequacies of the current acquisition system may be, the government of India ought to now concentrate on speedily concluding the commercial negotiations so that the aircraft finally chosen can enter the force as soon as possible. Given the steadily decaying fighter force structure in re-

cent years, the IAF's viability as an aerospace defence arm will be at grave risk if the MMRCA and the Light Combat Aircraft components are not integrated in strength into the service at the earliest.

**Future US-India Defence Cooperation**

Whatever the disappointment caused by the IAF's down-select in the MMRCA competition, the good news is that this decision does not portend any strategic setback for US-Indian defence cooperation over the long term. The geopolitical imperatives that drew the United States and India together after the Cold War — and which received such a decisive impetus during the George W. Bush administration — still persist and if anything will grow stronger over time.

Yet the path of cooperation and partnership may not always be smooth because of the differences in relative power between the two states, the pressures of domestic politics in two feisty democratic nations, and the asymmetries in expectations that will arise from time to time. But the analysis here underscores the following three critical propositions relevant to the future of US-Indian defence cooperation.

First, the Indian decision regarding the MMRCA shortlist was emphatically not intended as a strategic rebuff to the United States. The merits of India's choices can be debated — as they have been by Indians themselves — but those picks resulted from narrow technical assessments that had no political overtones. In fact, the lack of political content in the Indian ministry of defence's decision-making actually worked to America's disadvantage in this competition, but even on this count, the expectations of a different outcome should not be exaggerated. Although many Americans have hung on to the notion of a quid pro quo, believing that US exertions in regards to the civilian nuclear agreement should have resulted in preferential treatment of its aircraft, the hope that specific reciprocity of this sort would prevail was simply untenable.

India's democratic system and its fetish about process — something that has only deepened given the current concerns over governmental corruption — ensured that even if political intervention in support of the American airplanes had occurred, it would have been difficult to arrive at a different decision, given the IAF's perceptions about the disparities in technical qual-



ALSO OUT MiG-35



NO MORE IN THE COMPETITION Gripen IN

ity between the US fighters and their European rivals. Again, the merits of these assessments can be disputed, but the fact that such a judgment obtained made it virtually impossible for Indian political leaders to contest the IAF's conclusions, which flowed inexorably from the methodology underlying the two-step selection process.

Second, the myriad public claims about why the IAF finally decided to settle for an all-European shortlist are highly suspect. There is simply no evidence to suggest that the decision to exclude the F-16IN and F/A-18E/F from the down-select was motivated by Indian suspicions about the reliability of the United States as a supplier. While such concerns dominated Indian calculations in the past, they have abated dramatically in recent years. The evidence of increasing Indian purchases of major weapon systems from the United States only proves the point: since the Bush years, India has purchased its entire long-range maritime patrol aircraft, very heavy lift transport aircraft, and advanced special operations tactical transport aircraft fleets from American vendors at an outlay of over USD Eight billion thus far — a figure that is certain to increase as additional platforms are procured beyond that committed to in the original order.

US companies are also favoured to win the attack helicopter, the ultra-light howitzer, and the anti-tank guided missile competitions that are now nearing completion, all of which only prove the point that Indian perceptions of the reliability of the United States as a supplier have changed dramatically in the new political environment and when the superiority of specific US defence technologies is deemed uncontested.

Similarly, the questions about technology transfer too were not an issue in the case of the MMRCA down-select; technology transfer, offsets, and costs will be critical considerations when the Indian government has to choose between the Eurofighter and the Rafale, but they were of no relevance in the processes leading up to the rejection of the American fighters. In fact, the ministry of defence's Technical Oversight Committee and its Technical Offsets Evaluation Committee are only just now completing their assessments of some of these issues.

Third, the decision in the MMRCA down-select was fundamentally a product of a particular acquisition procedure, which by privileging technological considerations at the expense of cost and other relevant constraints produces distortions that lead to the misallocation of defence resources. But it was not a repudiation of the US-Indian strategic partnership or a hedge against overdependence on the United States as a geopolitical partner. It is likely that many IAF officers had strong admiration for the Eurofighter and the Rafale based on their encounters with each aircraft during past bilateral exercises with the United Kingdom and France respectively. If these preferences finally proved determinative, it was only because the two Eurocanards came closer than their American competitors to the IAF's vision of what constituted a desirable multirole fighter that was expected to remain in Indian service until at least the year 2040.

The IAF's yearning for an airplane that was nimble, sophisticated, and longer-lived — rather than any political considerations about hedging — produced a decision that favoured the Europeans,

an outcome that was only reinforced by an acquisition procedure that permitted the user to disregard costs, technology transfer, offsets, and production line management when selecting the contestants that made it past the crucial first post. While India ought to review the merits of this procurement process for the future, the United States should at least take some solace from the fact that the exclusion of its airplanes from this race does not portend anything injurious for the long-term health of its strategic partnership with India.

To be sure, defence cooperation between the United States and India presently is challenged by a variety of factors in both countries. Some of these are transient, while some of these are structural, with the weightier impediments lying, on balance, in New Delhi rather than in Washington.

It is to these hindrances that Indian and American leaders ought to focus their attention. This is important because the current threats to the burgeoning defence partnership derive less from abortive military sales and more from the lack of vision, focus and determination to create the strategic affiliation that serves common interests. As both sides work toward remedying these lacunae, at least they need not worry that the one unconsummated defence deal involving the MMRCA means anything more than what any open competition inevitably entails — you win some, you lose some, but the game goes on. ■

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