FORCE STRUCTURING AND DOCTRINES OF THE IAF

BHASHYAM KASTURI

Air power has truly been transformed in this century. Not only is air power today really aerospace power but, in an era of technology intensive military affairs, air power has begun to give military commanders the reach to project a nation's power far beyond its shores. Therefore, it is possible for air forces to reach different parts of the world with air-to-air refuelling, as well as operate from terrains away from home bases. The example of the Indian Air Force (IAF) flying to destinations in Alaska, with air-to-air refuelling, for an exercise with the US Air Force, is a sign of the changing times.

The probability of future conventional wars being short, swift and intense has necessitated a shift in focus of the land battle to manoeuvre warfare. The air-land doctrine stresses on the fundamental shift away from the attrition style of warfare to one where the air force makes a significant contribution to the success of battle. It progressively recognises that the inherent flexibility, variety and reach of air power make it a prime contributor to the future war.

Despite the rapid advances in technology and its impact on combat capability, it is not easy to take advantage of the revolution in military affairs (RMA). This is so because of the prohibitive costs involved and for a capital intensive force like the IAF, it is only more so. The IAF is today at the crossroads. With less than its authorised strength of squadrons, it is battling a problem of ageing aircraft, pilots leaving the service for more lucrative private jobs and the need to reorient itself to fight future wars. The problem the IAF is facing today

* **Dr Bhashyam Kasturi** is a Ph.D from Delhi University and currently is a consultant, Nehru Memorial Museum and Library.

The air force is trying to carve a niche for itself as an independent strategic entity with aerospace capabilities.

has been before it for several decades, but has really come to a head now. Issues such as phasing out of the MiG-21s, the need to modernise other MiG variants and the need to keep up with falling force levels have been dealt with before, but within the force, the crunch is being felt now.

It is necessary to contextualise these and other issues keeping in mind the need to replenish aircraft, weapons and other equipment as the IAF gets ready to fight the wars of the future. While the air-land battle doctrine is still in vogue and the cold start doctrine has become the doctrine of the Indian Army, the air force is trying to carve a niche for itself as an independent strategic entity with aerospace capabilities, at a time when force levels do not lend themselves for operational confidence. That is precisely why it is so necessary to study the operational doctrines and force structuring of the air force in order to posit the future.

THE IAF'S DOCTRINE

The 1995 Air Power Doctrine (APD) provides the main roadmap to ensure that the IAF remains a viable deterrent against its principal potential adversaries. The doctrine lays emphasis on certain fundamental issues, including the need to accord offensive air operations the same priority as air defence, the acceptance of a reduction in force levels, but compensated by an increase in technology levels, emphasis on the acquisition of force multipliers and improvements in command, control, communications, computers, intelligence (C4I) structures, plus a revamped, modernised air defence and communications network.

There are four issues of importance underlying the doctrine. All four are interlinked and attempts have been made by the IAF to move forward on all fronts.

- According offensive air operations the same priority as air defence.
- Acceptance of a reduction in force levels, compensated by an increase in the levels of technology.
- Emphasis on the acquisition of force multipliers.

- Improvements in C4I structures and a revamped, modernised air defence and communication network.[1]

This doctrine revolves around the primacy of air power in 'shaping' the battlefield.

In the middle of 2007, the IAF reportedly decided to reformulate its doctrine, keeping in mind the need to transform itself into an aerospace power with "potent strategic reach." This doctrine revolves around the primacy of air power in 'shaping' the battlefield. Obviously, the IAF has been influenced by the US-led attacks in Afghanistan and Iraq, which saw "smart bombs" like high-accuracy JDAMs (joint direct attack munitions) being used in all-weather conditions.[2]

Though the IAF was the first among the three Services to come out with a doctrine in 1997, it has become necessary to update its plans since globally the employment of air power has seen considerable change. Additionally, the IAF has inducted a wide array of sophisticated technologies since then. The earlier doctrine, for instance, was written when the IAF did not have mid-air refuelling aircraft like IL-78s or long-range air dominance fighters like Sukhoi-30MKIs. The already considerable 3,200-km range of the Sukhois can be more than doubled with in-flight refuelling by IL-78 tankers, configuring strategic capabilities.

Moreover, the new doctrine also factors in the valuable experience gained, especially in beyond visual range (BVR) combat, during joint exercises conducted with more technologically-advanced air forces like the US and French in recent years. The utilisation of space as a medium for 'real-time' military communications and reconnaissance missions, ballistic missile defences and delivery of precision-guided munitions through satellite signals should also be part of the new doctrine.

A new cold start doctrine for the Indian Army marked a break from the fundamentally defensive orientation of the Indian military.

The April 2004 announcement of a new cold

1. R.Chattopadhyay, "The Indian Air Force: Flying into the 21st Century," *Bharat Rakshak Monitor*, vol. 3(1), July-August 2000, available at http://www.bharat-rakshak.com/MONITOR/ISSUE3-1/chatto.html.
2. Rajat Pandit, "IAF Plans War Doctrine to Expand 'Strategic Reach'," *The Times of India*, August 2, 2007, available at http://timesofindia.indiatimes.com/IAF_plans_doctrine_to_expand_strategic_reach/articleshow/2249654.cms

To be restricted in operations is anathema for the IAF, for air power can operate over a very wide area.

start doctrine for the Indian Army marked a break from the fundamentally defensive orientation of the Indian military. For the first time, a doctrine was evolved which required combined arms operations jointly with the IAF. The timing of the doctrine was also significant because India was just beginning to find its roots for integrated warfare at the institutional level, with the creation of the Integrated Defence Staff. This combined with the belief that cold start, with its integrated battle groups, could become a tri-Service doctrine, is really at the heart of the inter-Service quarrel, if one may call it that, over priorities and roles, both independent and joint.

The two Services have very different views of how joint operations should be conducted. In essence, the army believes that modern wars are best fought under a unified command, where a single commander controls unified formations from all three Services. The air force, on the other hand, believes that the different Services should coordinate their plans but fight the war separately, in order to achieve integrated political and military objectives.[3]

According to the IAF, assigning air force units by geographic command would lead to cause a gross underutilisation of air power. To be restricted in operations is anathema for the IAF, for air power can operate over a very wide area. In comparison, army formations are usually assigned a clearly defined and relatively limited operational area. Likewise, strike targets are defined very differently for the air force, and limiting a squadron of multi-role combat aircraft for close air support or air cover places artificial and unacceptable constraints on employment of air power. Worse, it nullifies the IAF's considerable numerical and qualitative advantages over the Pakistan Air Force (PAF) by allowing it to concentrate in a spatially limited theatre of operations.

Given this fundamental difference in approach, it is but natural that the actual conduct of war in the subcontinent continues to suffer from a lack of coordination. Opposition to "integrated battle groups" and the command structure for

3. Dr Subhash Kapila, "India's New 'Cold Start' War Doctrine Strategically Reviewed," South Asia Analysis Group, Paper no. 991, 4.5.2004. http://www.southasiaanalysis.org/papers10/paper991.html.

conducting integrated operations currently creates obstacles to evolving joint doctrines for the forces. Whatever be the merits of the arguments, it stands to reason that evolution of joint doctrines for operations is a necessity, but there is no reason not to aspire for aerospace power within that overall framework.

In March 2008, the armed forces carried out Exercise Brazen Chariots, an exercise which revalidated the existing air-land battle situation in a joint and synergistic setting. As far as the IAF was concerned, it needed to integrate its air-lift capabilities to paradrop special forces and paratroopers with heavy combat and logistic loads. During the exercise, fighters, transport aircraft and helicopters, including SU-30, MiG-21, MiG-27, IL-76, Mi-17 and MI-35, unleashed a variety of weapons on simulated targets like artillery gun positions, company defended localities, communication nodes, logistics camps and armoured depots. Essentially, it brought home to observers that these exercises were joint to the extent that one force was willing to support the other in the larger battlefield.[4] But what happens when air power is to be used differently or is to operate independently?

One has to visualise the IAF operating on its own to gain air superiority.

One has to visualise the IAF operating on its own to gain air superiority, engaging enemy targets deep within his territory and, in the worst case scenario, taking out his nuclear assets. This, combined with space assets that will give tracking and targeting capability that is currently available only to the US, means the IAF will be required to operate on a scale far beyond its present abilities.

It is, therefore, appropriate to take a relook at the IAF experience in terms of threats and operational roles. The Indian armed forces are ready to fight a one and a half front war, with the IAF providing close air support, offensive air support and deep strike roles. In a nuclear environment, it is assumed that the IAF could be used for a possible first strike, even though our commitment is to a no-first strike doctrine. The other option in a conventional war would be to engage in a preemptive strike to take out the enemy's nuclear capability,

4. Y. I. Patel, "Dig Vijay to Divya Astra: A Paradigm Shift in the Indian Army's Doctrine," available at: http://www.bharat-rakshak.com/LANDFORCES/index.php?page=shop.browse&category_id=324 &option =com_virtuemart&Itemid=26&vmcchk=1&Itemid=26

What eventually happened is that the IAF adapted to the task and used resources accordingly, in the end demonstrating the Indian genius for adaptability.

command and control and electronic warfare (EW) assets and the like. Past experience with air operations indicates sufficient capability for attrition warfare and for close air support. A look at the Kargil conflict will inform us of the current capabilities of the IAF.

THE ROLE OF THE IAF IN KARGIL

The IAF in 1999 had a brief but unique operational experience in the Kargil sector of Jammu & Kashmir (J&K), providing it with real-life opportunities to evaluate its strengths and limitations and to acquire expertise in the operation of precision guided munitions (PGM) and deploy beyond visual range (BVR) missiles under combat conditions. The early loss of aircraft in combat immediately exposed it to the dangers of a man-portable air defence systems (MANPADS) environment.[5]

Kargil had several interesting highlights. First, there was the issue of whether or not to apply air power. Added to this was the question of whether to cross the Line of Control (LoC), if required operationally. The other issue arising from the application of air power was the intensity of its use. Just like the Indian Army, the IAF was as much in the dark in terms of who and what the opposition was. Therefore, the question of what resources to allocate to such high altitude air warfare did generate considerable debate. What eventually happened was that the IAF adapted to the task and used resources accordingly, in the end demonstrating the Indian genius for adaptability.[6]

Battlefield interdiction was found to be of greater utility than close air support in the mountains.

The Kargil action provided the IAF with a unique environment to fine tune its operating skills. The IAF launched PGMs for the first time with Mirage 2000s, while MiG-27s and MiG-23 BNs carried out devastating attacks

5. Air Commodore Jasjit Singh, "The IAF: Realities of the 21st Century, *Vayu Aerospace Review*," January-February 2005, issue no. 1, available at http://www.vayuaerospace.in/Selected_articles/Vayu%20special/iafin21cent.htm
6. Ved Shenag, "The Kargil Operations - 1999, Operation Safed Sagar," available at: http://www.bharat-rakshak.com/IAF/History/Kargil/Shenag.html.

against enemy command nodes and logistics. The Mirage 2000s, equipped with Litening pods, took out enemy positions atop high mountains with pinpoint accuracy, and infrared (IR) seekers tracked ground targets from 15 km out and then released weapons at about 6 km, holding the lasers onto targets which allowed them to remain well outside the envelope of enemy air defences.[7]

The conflict also exposed some limitations of the attacking aircraft and tactics. In particular, battlefield interdiction was found to be of greater utility than close air support in the mountains, while it was quickly learnt that general lack of counter-measures (chaff/flare dispensers) across the IAF fleet contributed significantly to the early losses. Until Kargil, only the MiG-23 BNs, some Jaguars and a handful of MiG-27s were fitted with automated counter-measures (in addition to the air defence types). Upgrading the self-defence and jamming capabilities of the rest of the attack aircraft fleet assumed a sense of urgency and base repair depots took on the task of integrating chaff/flare dispensers.

The Kargil experience was an important training ground for the IAF, for the force had never actually operated in the high altitudes. Inadequate attention to this aspect, despite the lessons of the Soviet experience in Afghanistan and, much earlier, the operations by the IAF in Jammu and Kashmir in 1947-48, is a reminder of the constant need to keep the learning curve in mind. Further, the lack of counter-measures against ground fire led to the initial losses, but subsequently, the force modified its tactics and equipment to perform interdiction and battlefield attrition of a high quality. The experience of Kargil had important lessons, both strategic and tactical, and it remains to be seen how effectively the force will move towards the next conflict, keeping in mind the need to prepare itself for all contingencies.

FORCE LEVELS

The IAF currently has over 60 air bases grouped under the five Air Commands (apart from the Training Command and Maintenance Command). There are a number of newer air bases being built as well, in line with India's strategic doctrine.[8] The majority of the strike bases are under the Western and South-

7. Chattopadhyay, n.1.
8. See Indian Air Force, http://en.wikipedia.org/wiki/Indian_Air_Force.

Over the years, the IAF has accepted that the increased costs of maintaining a modern and effective air force necessitate a reduction in quantitative levels.

Western Air Command, followed by the Eastern Air Command, giving an indication of the threat perception. Given the increasing importance of maritime security and the IAF's extended reach with the SU-30s, there is a need to increase the number of bases in the south, as also in the Andaman and Nicobar Islands.

Over the years, the IAF has accepted that the increased costs of maintaining a modern and effective air force necessitate a reduction in quantitative levels. Therefore, even though the IAF is not at its authorised strength of 39 squadrons, it is not too worried. What is bothering the IAF is the delay in filling the already existing gaps in aircraft, force multipliers and missiles, so essential to make up for the lack of numbers.

There has been a delay in preparing the ground for the acquisition of 126 new multi-role combat aircraft, and this will lead to the first lot of these fighters being delivered only by 2012 at the earliest. By then, the IAF would have retired many more squadrons of MiG-21s, which constitute the bulk of its combat fleet, and 40 more MiG-27s.

To counter the sharp fall in numbers, the IAF has upgraded 125 MiG-21 'Bisons' and 100 each of the MiG-27MLs and Jaguars with new avionics, weapon systems and life-extension refits. And now, after signing a Rs 3,840 crore deal with Russia to upgrade its 69 MiG-29s by 2011, the IAF is looking for a similar package for its 51 Mirage-2000s with France.

The MiG-21 Bis-UPG (or MiG-21 Bison as the IAF calls it) upgrade programme is underway. The IAF's second-generation fighter types—the MiG-29 and Mirage 2000—will see intensive avionics upgrades as well as the ability for some of the MiG-29s being equipped for air refuelling. The multi-role capability and very high serviceability of the Mirage 2000 (close to 90 per cent), led the IAF to order an additional ten aircraft. The Sukhoi Su-30 MKI is the most important combat aircraft programme currently underway. The licensed production of this combat aircraft began in 2004 and will be completed by 2017.

The first Su-30MKs were converted to the MKI configuration when the 32 Su-30 MKIs built in Russia were delivered.

The MiG-27 M remains the backbone of the IAF's tactical strike force, equipping some six squadrons plus. Five squadrons of Jaguars form the deep penetration strike element now being complemented by the Sukhoi Su-30MKI, which has a far greater radius of action. The MiG-27s and Jaguars are expected to remain in service until 2020 and keeping this in mind, a comprehensive sensor and electronic warfare upgrade programme has been initiated. The IAF's commitment to keeping the Jaguar in service for at least two more decades was reaffirmed by its decision to order additional batches of the aircraft. The new Jaguars are to DARIN II standard and have much enhanced precision strike capability than the early batches, also incorporating the much-needed autopilot.

Given the range of threats faced and the fact that the assets of the IAF are dwindling, it does make the task of allocating roles more difficult.

In addition to fulfilling overland strike duties, the IAF is tasked with providing tactical air support to the navy. One maritime squadron of Jaguars has been specifically earmarked for this role on the western coast and is equipped with a mix of Sea Eagle-armed Jaguar IS and IMs. Additionally, the IAF has tasked a MiG-27 squadron to cover the eastern sea board, to operate in conjunction with the navy's own air assets, including Sea Harriers and Tu-142s.[9]

The IAF is also using a variety of unmanned aircraft for reconnaissance. In 2004, the IAF ordered three Phalcon airborne early warning radars from Israel, which is considered to be the most advanced airborne early warning and control (AEW&C) system in the world, before the introduction of the American-made Wedgetail. The air force will use the three newly-acquired Il-76 as a platform for these radars. Prior to 2006, the IAF used to operate the MiG-25R for high altitude reconnaissance. The MiG-25, in service since the late 1980s, were decommissioned in 2006. The IAF also used the Canberra aircraft for reconnaissance and photoreconnaissance missions during the Kargil conflict. The air force also has a

9. Singh, n.5.

The air force mix of aircraft, weapons and equipment since 1947 indicates that the primary task is air defence and close air support.

huge complement of transport aircraft and helicopters which perform a variety of roles that help round off the mission of the IAF in all its aspects.

Given the range of threats faced and the fact that the assets of the IAF are dwindling, it does make the task of allocating roles more difficult. In 1947, it had some six and a half squadrons, which slowly rose to 25 by the end of the Fifties although the planners had reckoned on a 20-squadron force as early as in 1951. It was only after the 1962 Sino-Indian conflict that a 45-squadron force was mooted. But even today, the IAF continues to have an inventory plan of some 39 combat squadrons, actual numbers being smaller.[10]

The IAF has already phased out about half a dozen of its MiG series of combat squadrons in the past couple of years—the latest phase out being an MiG-23MF squadron in March 2008. Consequently, the present strength of the IAF fighter squadrons is down to about 30 from 39, which was declared as a minimum requirement a couple of years ago by the then chief of air staff. Pakistan fields about 18 fighter squadrons, or about two-third of what India has. Given China's vastly expanded, and upgraded, capabilities on the other side of our frontiers, this is a tricky situation for the air force.[11]

What the IAF has been able to do is periodically replace available equipment, usually of Soviet/Russian origin. This has had an adverse effect on the IAF's combat capability and, more importantly, its doctrine and thinking. Short-range aircraft have meant that the IAF could play only a subordinate and supportive role. Most of its strike aircraft had limited range and its interceptors little endurance, as the same type of aircraft was used for both the tasks. The MiG-21 aircraft, which was essentially a high level interceptor designed to stop the B-52 bombers during the Cold War, became the mainstay of the IAF. The Hunters,

10. Air Chief Marshal A. Y. Tipnis, "Indian Air Force 2020: Perspective Planning - An Essential Requirement," *Security Research Review*, vol., (1) 2, available at: http://www.bharat-rakshak.com/SRR/Volume12/tipnis.html
11. Singh, n.5.

Mysteres, Gnats, S-22s, and later even the MiG-23/27 class of strike aircraft were essentially short on range and armament carriage.

It was only with the induction of the Jaguar and later the Mirage-2000 multi-role fighters, that the IAF addressed these shortcomings. This inventory shows an enduring obsession with the Pakistani threat and an unplanned and unchecked multiplicity of types. The IAF has continued to emphasise air defence while hoping to get the best out of the existing rudimentary multi-role capability of these aircraft for strike missions. As a result, both the strike and air superiority missions have suffered. Air defence accounted for some 45 per cent of the air effort in the 1971 War. It would be easy to see the adverse effect of such massive defensive effort on the IAF's throw-weight or offensive capability.[12]

Attention has to be paid to fighting future wars in all three spectrums of conflict. This requires analysis of the technology factor in helping air power in fighting future wars.

The air force mix of aircraft, weapons and equipment since 1947 indicates that the primary task is air defence and close air support. Support to the army has been a major task of the air force. It is to be seen whether for the IAF, with its new doctrine and aim to evolve into a aerospace power, it will be possible to get into an offensive air situation and ensure gaining air superiority in a future war. That sort of capability requires a large amount of weapons and electronics fit onto existing platforms that will provide combat capabilities that can be simultaneously used on the battlefield.

The primary task of the IAF is defence against Pakistan. For this purpose, there are a number of airfields within striking range of our western neighbour. But the new era of technology and tactics requires a reorientation of strategies keeping in mind the needs of an integrated battlefield, possible preemptive first strike, and the need to win air superiority. Supporting the ground troops in an air-land battle situation is going to remain a part of the mainstay of the IAF's operations in the future, but the aerospace dimension cannot be ignored.

There are many ways of looking at the IAF, but in the present context, it seems

12. Tipnis, n.10.

At the minimum, this would require building up of force levels to 45-odd combat squadrons.

to be most appropriate to analyse the force as it is today—look at the medium term posture and then posit long-term force structures. Given the resources constraints faced by the armed forces in general, and the IAF being a capital intensive force, the issue of resource allocation will remain a constant factor now and later.

As seen above, the IAF is today faced with the following problems:

- Falling force levels.
- Ageing aircraft and equipment.
- Inadequate modernisation of assets to meet interim battlefield requirements.
- As in the case of the other two forces, delays in acquisition of aircraft and platforms that affect capability in all spheres of combat.
- Attention to be paid to fighting future wars in all three spectrums of conflict. This requires analysis of the technology factor in helping air power in fighting future wars.

Currently, the IAF has the capability to engage in all aspects of air combat and support ground troops. It also has a limited but valuable capability to deliver a portion of India's nuclear deterrent, as and when required. Its force mix has the ability to operate well within Pakistan, but has limited engagement capability deep within China. With the Su-30, it is possible to cover a large area of the subcontinent, including the maritime sphere, but it is as indication of the necessity of inducting more such aircraft if the force is to transit into the future digital battlefield. What this means is that the IAF needs more aircraft with the range and capability of the Su-30.

In the medium term, while the force grapples with new acquisitions and ensures that their induction is done as effectively as possible, there is also a need to identify sources of technology that will help battlefield situations in all spheres of combat. The RMA affords several cost-effective options, several of them already in the pipeline, to increase combat capability without an actual increase in numbers. In terms of actual accretion of numbers, the planned

induction of 126 medium multi-role combat aircraft (MMRCA) is a step in the interim to fill force gaps and to increase combat capability, given the need to keep pace with technology. But one must remember that the MMRCA will not arrive before 2012 in adequate numbers to make up for depleting force levels.

The final aspect is to focus on the long-term force levels required in the context of the changes taking place across the frontiers and the tasks and missions of the IAF having increased manifold. At the minimum, this would require building up of force levels to 45-odd combat squadrons, in the knowledge that that 'earliest' could be 20 years or more away.

One must keep in mind that more aircraft will have finished their design life by this time, with a negative impact on force levels which would be difficult to compensate with currently known acquisition programmes. For example, the six squadrons of the upgraded MiG-21 (Bison) would need to be replaced in another 10-15 years, while the fully operational light combat aircraft (LCA) would barely enter service by that time. So the long-term acquisition plans of the IAF would have to be put in place beginning now.

FUTURE OPTIONS

There are twin options for the IAF as it looks to the future. First, maintenance of existing force levels by upgradation of all aircraft and equipment. This is happening in the case of the MiG-21 and other aircraft. But these upgrades will only last for a decade or so and then it will be time to replace all these aircraft. Upgradation also means an enhancement of maintenance facilities. With the Russian aircraft in the inventory, India, fortunately, has the infrastructure, but with aircraft of other origin, this facility is not there.

The second option, as is also being currently attempted, is to equip the force with a number of platforms that are capable of force multiplier effects. For instance, upgradation of all aircraft in the inventory with air-to-air refuelling probes is a step in the direction of increasing endurance. The Su-30 MKI is presently the only aircraft in the inventory that is capable of long-range penetration strikes. More of these aircraft are required for a variety of roles, ranging from air superiority to maritime strike.

The air force wants to reduce the inventory in its combat jet arsenal to three aircraft systems only.

The air force wants to reduce the inventory in its combat jet arsenal to three aircraft systems only, and over the next few years, it plans to use the Tejas as the LCA, the new MMRCAs as the medium combat aircraft (MCA) and the 35-tonne SU30-MKIs as the heavy combat aircraft (HCA). The SU30-MKI is a near fifth generation fighter giving the IAF substantial strategic reach, and although this aircraft is still in the process of acquisition, future upgrades for it are already being planned to ensure that it retains 'its cutting edge' over the coming decades.[13]

The combat experience and force structures of the IAF indicate a defensive-offensive doctrine of air warfare, largely dedicated to tactical air support and achieving air superiority in the battlefield. In the past, the IAF played a largely supportive role, with little to show for its strategic capabilities. During the Kargil War in 1999, there was an effort to engage in battlefield interdiction, and earlier in 1988, the IAF demonstrated its airlift capabilities during Operation Cactus.

Providing close air support and carrying out ground strikes at both the forward edge of the battle area (FEBA) and deep penetration remain the principal tasks of the IAF also. But the latter is really a concept for Pakistan-centric operations. Our force structures can probably gain air superiority in a limited area in cold start conditions, but this capability has to be augmented along with quick integration with other military assets. Combined operations with geographic co-location of assets may be a necessity in the future as warfare heads towards more integration and optimum use of resources.

While air defence has been a primary role for the air force, future wars suggest that we will have to take the war into enemy territory. Even though during Kargil, the IAF was not allowed to cross the LoC, it is suggestive of the operational terrain that sometimes the air force had to engage targets on the borderline. This requires accuracy of a high level and Operation Safed Sagar (the name given to the IAF's operations during Kargil) is a tribute to the training and

13. Remarks of the Air Chief, Marshal Fali Major in "Single Vendor To Win Air Force MRCA Contract: Air Force Chief," 1.7.2007, available at: http://www.india-defence.com/reports/3385

innovative capabilities of the force in that it managed to fulfil its role within the given constraints.

Assume that future wars will be short in duration, and intense. Also assume that given the internal security dimension of an ongoing proxy war with Pakistan, it is likely that the IAF will have to engage with the unseen enemy. Can we visualise a role for the air force in combating terrorism in J&K? We can definitely see a role for the IAF in combating Naxalism in several parts of India. Employment of air assets in combating insurgencies and against terrorist infrastructure is likely to be a part of the future roles of the force. But the exact dimension of this role will have to be defined in conventional terms before assets are deployed in this direction. But one must realise that the IAF has been created to fight wars and it has to prepare itself for future wars, where the attacker will have the initiative.

While air defence has been a primary role for the air force, future wars suggest that we will have to take the war into enemy territory.

Therefore, the IAF has to adopt an offensive-defensive posture that is capable of taking war into the enemy's territory and dominating the air space over the battlefield area. This requires force structures to be integrated with user-friendly sensors and electronic systems. In terms of overall strength, needed for strike roles, the IAF will need at least one squadron or one and a half for every army division. If, of the 34 divisions, some 20 are fielded in war, the IAF would need at least 30 squadrons to support them.[14] Current squadron strength is inadequate in this sense. Not only are the aircraft old, their capabilities are also limited. With air-land battle being the call of the day, the IAF will have to operate in tandem, firstly, with the army and, to a lesser extent, with the navy. Combat capability has to be extended to all weather and all terrain capability.

Presently, the IAF is down to just about 30-32 squadrons, with many more older MiG variants lined up for progressive retirement. Even with new acquisitions, India will only have 35.5 fighter squadrons by the end of the 11th Five-Year Plan (2012), and 37.5 squadrons by end of the 12th Plan. Though the IAF is inducting

14. Bhashyam Kasturi, "The IAF: Search for a Doctrine," *Defence Today*, August 1994, pp. 104-105.

The former IAF chief warned the government that "unless immediate steps are taken to arrest the reduction in the IAF's force levels, the nation will, for the first time in its history, lose the conventional military edge over Pakistan."

advanced multi-role fighters such as the Sukhoi-30MKIs and force multipliers like IL-78 mid-air refuellers and 'Phalcon' AWACS, numbers do matter in the ultimate analysis.

It is interesting to note that the former IAF chief, Air Chief Marshal S.P. Tyagi, even warned the government that "unless immediate steps are taken to arrest the reduction in the IAF's force levels, the nation will, for the first time in its history, lose the conventional military edge over Pakistan."[15] Even though the strength of IAF combat squadrons has temporarily fallen below the authorised level, the IAF needs to project its demand for the future in the light of the increasingly dominant role it would have to play. While technology and weapon-load carrying capacity of the present/future front-line force will offset to some extent the actual numbers of aircraft required, given the multiplicity of roles and the vast extent of frontiers to be covered, a strength of 40-45 combat squadrons is considered necessary by 2020. Unless there is a drastic change in our processing methodology, this is indeed a challenging goal for the next 15 years.[16]

It is possible to identify some key areas of attention for the IAF. A first priority is optimising force capability and levels. A second aspect relates to the gaps in the existing air defence system and the need for a review, keeping in mind the nuclear and terrorist environment. Given the increasing emphasis on systems rather than platforms, it is necessary for the IAF to pay greater attention to research and development (R&D) and force structuring in the area of PGMs, cruise missiles, unmanned aerial vehicles (UAVs) and unmanned combat aerial vehicles (UCAVs), C4I/BM/T/BDA systems, night-all-weather and BVR warfare capabilities, training and combat simulation. An integrated approach to

15. Rajiv Singh, "The IAF's MRCA Contract: A Three Way Shoot-out," March 27, 2007, available at: http://www.domain-b.com/aero/20070327_mrca_contract.htm

16. Tipnis, n.10. The former air chief seeks a 50-55 squadron force by 2020. Given the present rate of inductions, this seems possible. But it seems more realistic to seek a 45 squadron force with adequate force multipliers and force projection capabilities.

information warfare is also needed as the issue is multi-layered and far more complex today than ever before.

At another level, it seems rational for the IAF to search for capabilities that will give it reach, interoperability and yet ensure safety, within the given constraints. It is worth, therefore, flagging the focus areas of capability building for the IAF in the future:

- Power projection capability.
- Deep strike capability.
- Airlift capability.
- Nuclear deterrence.

With the aim of achieving aerospace status, the force needs a perspective plan for the next 25 years on how this transformation is actually going to take place. That is an issue of separate study and not dealt with here. But, by and large, the quandary in terms of resources and actual acquisitions and the time taken for these reflect the basic problem faced by the IAF.

CONCLUSION

As the IAF begins its operations in the new century, it is faced with a dilemma. This relates to how to face the future in terms of limited resource allocation, but with an ever increasing need to enhance combat capability. This requires money and a detailed plan for acquisition that is spread over the next 50 years, keeping in mind future threats and opportunities. One may well argue that it is no use to plan that far ahead in a budgetary situation that does not look beyond one year. But the lesson that we learn is to plan ahead now so that we are not caught unawares in the future.