

INDO-RUSSIAN COOPERATION IN MILITARY AVIATION: AN OVERVIEW

BHARAT KUMAR*

INTRODUCTION

The saga of Indo-Russian military cooperation began in 1955 when Mr. Khrushchev presented the IL-14 aircraft—Meghdoot—to Indian Prime Minister Nehru for transportation of VIPs. Since that time, the level of cooperation has increased from year to year. Today, the equipment of Russian origin in the Indian Army, Indian Navy and the Indian Air Force (IAF) accounts for nearly 75, 80 and 85 per cent respectively. The year 2005 will mark the 50th anniversary of this cooperation and it will be worthwhile to examine the reasons underlying this cooperation, its growth over these years, the benefits derived by both sides from this intrinsic relationship, and the ideal way ahead for India. This paper does not cover the whole canvas of Indo-Russian military cooperation but restricts itself to the cooperation in the field of military aviation only.

In this paper, the terms the Soviet Union, Russia, the Soviet and the Russian have been used freely in lieu of each other, mainly for the sake of clarity.

BACKGROUND

India did not figure in a positive sense on the Soviet political radar during the Stalin era. This perspective underwent a marked change and there was some thaw in Indo-Soviet relations only after Stalin's death in 1953 and US expansion of its "containment" policy backed by military alliances in Asia that started to change Moscow's attitude toward India. It

*Air Marshal (Retd) Bharat Kumar, PVSM, AVSM, VM, Former AoC in-C Southern Air Command, IAF

offered economic and heavy industry opportunities to India. Soviet Premier Bulganin accompanied by Khrushchev undertook their first ever visit to India in 1955 to strengthen this relationship. As mentioned earlier, the first IL-14 medium transport aircraft was presented on this visit. This was followed by purchase of another 24 IL-14 and 10 Mi-4 medium lift twin engine helicopters in 1960. Eight An-12 heavy transport aircraft and six jet engines for the under development indigenous HF-24 aircraft were purchased in 1961. It needs to be remembered that India had already set out on the path of defence self-reliance, seeking both diversification of sources of supply as well as indigenous capacity building. The IAF was in the process of the first phase of expansion from a 10 squadron force (depleted to just six squadrons after more than three squadrons were transferred to Pakistan in 1947) to a 25 squadron force. Demands for air lift, especially into the Himalayan regions for civil and military air maintenance had been increasing rapidly.

It will be evident that the military cooperation began prior to the 1962 Sino-Indian conflict. The Soviet decision to provide only communication aircraft indicated her desire to explore an opening towards India without alarming China unduly. These acquisitions were meant to be used by the Border Roads Development Board for communication purposes and were not, strictly interpreted, combat equipment. From the Indian perspective, the C-119 Packet transport aircraft and Sikorsky S-55 had proved less than satisfactory; and the US was unwilling to sell aircraft like the C-130 Hercules. The An-12 and the Mi-4 were extensively used for logistic support during the Sino-Indian conflict of 1962. Of these, the An-12 continued in service, for over three decades as the main workhorse of the IAF's transport fleet before being phased out in the mid-Nineties. The IL-14 went out of service in 1974 and Mi-4 in 1981.

A hundred MiG aircraft (presumably MiG-17/19) had been offered to India in 1955 during Prime Minister Nehru's visit to the USSR. This offer was not accepted as India did not want to become too reliant on the USSR for its arms acquisition. This offer was again made in 1961. This time, the

offer was taken seriously due to the changed security environment caused by increased Chinese belligerence and the acquisition of F-104 Starfighter by Pakistan. Accordingly, an agreement for the supply of the MiG-21 and its licensed production in India was signed in August 1962. This agreement was one of principle, and required further negotiations. There were some doubts regarding the fulfillment of this agreement during and immediately after the 1962 Sino-Indian conflict. But things began to change as Sino-Soviet relations soured. An agreement was finally inked in August 1963 for transfer of 38 MiG-21 and provision of technical aid and machinery for establishing manufacturing facilities for these aircraft in India. The supply of the first four Type 74 (out of the promised 19) took place in early 1964.

With strengthening of Indo-Soviet relations in the economic, industrial, trade and political fields, this cooperation also grew. The IAF acquired an additional 16 Mi-4 helicopters and eight An-12 aircraft immediately after the 1962 debacle. These were primarily meant for air defence of cities like New Delhi. It may be recalled that India did not use its combat component of the IAF in the war in 1962 for fear of Chinese air attacks on undefended Indian cities. This was followed by the purchase of SAM-II surface-to-air missile systems and some radars. The acquisition process got further impetus when the Western countries imposed an embargo on arms supplies to India and Pakistan post Indo-Pak conflict of 1965. The Russians offered the Sukhoi-7 and the same was accepted by the Indian side and nearly seven squadrons of this aircraft were inducted into the IAF. The Su-7 which was otherwise a sturdy, rugged but rather large size aircraft, suffered significant attrition, mainly due to anti-aircraft and small arms fire during the 1971 operations and was progressively phased out by the early 1980s.

To meet its need for a tactical air strike aircraft, the IAF acquired a limited number of swing-wing aircraft MiG-23 BN in 1981. The aircraft had been offered earlier also but the IAF had opted for the Jaguar, which had longer radius of action. The Soviet offer of two squadrons of the MiG-23 MF- air superiority version of the swing-wing fighter with beyond visual range missiles (selected earlier) was accepted in 1982 as an interim solution

to counter the threat posed by the new generation F-16 aircraft acquired by Pakistan in the same year. A limited number of these aircraft were acquired. However, the Soviet offer of the MiG-23 ML, which according to the Soviets was a more credible match for the F-16, was turned down. Since these

The political events in the erstwhile Soviet Union and the severe financial constraints in India in the early 1990s resulted in disruption in the procurement programme. Normalcy in this relationship returned with improvement in the Russian political and industrial atmosphere.

offered an interim and short-term solution, one option could have been leasing of these aircraft rather than their outright purchase. But apparently the system of leasing did not exist in the Soviet Union at that time. It is doubtful if this idea figured in the Indian bureaucracy's mind and whether the Soviets would have

been amenable to such a suggestion.

The IAF also acquired the MiG-25 R in very small numbers in 1982. The MiG-25 gave the IAF an ultra-high altitude tri-sonic strategic reconnaissance capability which surpassed anything which existed in the region. Considering their small numbers, the overhaul of these aircraft was done in Russia.

The aircraft that could match the F-16 and even exceeded its performance was the new technology aircraft—MiG-29—which was offered in 1984 and was accepted after detailed flight evaluation. The aircraft was subsequently inducted in 1986. Besides the MiG-29, India also acquired 165 MiG-27 M strike aircraft which were produced under licence from 1984 onwards.

The political events in the erstwhile Soviet Union and the severe financial constraints in India in the early 1990s resulted in disruption in the procurement programme. Normalcy in this relationship returned with improvement in the Russian political and industrial atmosphere. The year 1997 saw the signing of the contract for the state-of-the-art fourth-generation multi-role combat aircraft Su-30. After procuring 40 aircraft initially, a contract was signed to upgrade these to Su-30 MKI standard. In addition, 10 more aircraft were acquired. Further, an agreement for technology transfer and

licensed manufacture of 140 Su-30 MKI was signed in December 2002, making up the total of 190 Su-30 MKIs.

The contract for the purchase of MiG-21 envisaged its licensed production in India starting from fly-away aircraft progressing to manufacture of sub-assemblies and finally leading to manufacture from the raw material stage in the three factories set up for this purpose. An airframe factory was set up at Nasik, for the engine at Koraput, and avionics and accessories at Hyderabad, with final assembly being done at Nasik. Over 600 MiG-21s and 165 MiG-27s were produced. The production under licence of 140 Su-30 MKI is also in progress and the first of these aircraft should come off the production line in 2005. The repairs and overhauls of the aircraft produced in these factories are also undertaken here.

The task of overhauling Mi-23 and MiG-29 aircraft has been given to 11 BRD which is collocated with Hindustan Aeronautics Limited (HAL), Nasik. Needless to say, the Russians provided all assistance and technical literature, machinery and equipment for setting up overhaul facilities for these aircraft.

As far as the helicopter fleet is concerned, the Mi-8 was the first twin jet engine helicopter to be inducted in 1971, which, along with the Mi-17, and its upgraded version, is the workhorse of the IAF till today. A limited number of Mi-26 heavy lift helicopters were inducted in 1986. Simultaneously, one squadron each of Mi-25 and its upgraded version, Mi-35 attack helicopter, was added in 1984 and 1990 respectively, giving the Indian armed forces badly needed capability in close air support. These helicopters have served us well so far and there has been only praise for these machines.

On the transport side, three Tu-124 were inducted for VIP duties, but had to be phased out after they had been with the IAF for less than two decades mainly due to the limited range and lack of product support for the two aircraft, with one having crashed. One hundred plus An-32 medium transport aircraft manufactured specifically to meet the Indian requirement of operations from high altitude airfields like Leh to replace the IL-14, Dakotas, C-119 Packets and Caribous were inducted into the IAF from mid-1982 onwards. The IL-76 heavy transport aircraft fleet forms the backbone

of the heavy lift fleet today. The fleet gives the IAF a previously non-existent true strategic airlift capability. To this has been added the force-multiplier and much sought after IL-78 flight-refuelling aircraft which had also been under discussion since 1984. Their induction into the IAF commenced in January 2003 and eventual fleet strength will rise to six. The A-50 AWACS project has also been the subject of discussion since 1984. India has now opted for the IL-76 platform for the Israeli Phalcon early warning radar and allied systems and for which the agreement has been signed, with expected deliveries from 2005 onwards. A total of three such systems are on order.

The IAF acquisition from Russia has not been restricted to aircraft. In addition to the existing SAM II SAGW systems, we procured SAM III Pechora, OSA AKM along with shoulder-fired Igla missiles. Except for the SAM-II which has been phased out, the others continue to be the mainstay of the IAF's air defence surface-to-air guided weaponry. To augment our detection and direction capability, we also acquired assorted high powered, medium and low level radar systems from Russia.

The Indian Navy acquired the IL-38 anti-submarine warfare and TU-142 long-range maritime reconnaissance aircraft as well as ASW Kamov helicopters. The navy has also contracted for 24 MiG-29K and six Kamov helicopters for the latest acquisition, the *Admiral Gorshkov*.

Over these decades, the Indian Army has also acquired anti-aircraft systems like the Kwadrat, Shilka, OSA-AK, ZU-23 and Tunguska, besides T-54/55/72 main battle tanks and 120/130 mm field artillery.

The Indo-Russian joint venture on the Brahmos cruise missile is well on track and hopefully it should be inducted into the Indian Navy early next year. Other variants of the Brahmos should be inducted a little later.

Today, nearly 80–85 per cent of the IAF's equipment is of Russian origin. This includes almost the entire transport and helicopter fleet, all surface-to-air missiles, most medium and low-level radar systems with some high-powered radars and around three-fourths of combat aircraft fleet. The

situation in the other Services, as it relates to aviation-related equipment, is no different.

WHY INDO-RUSSIAN COOPERATION?

At the time of independence, most Indian hardware was of British origin. Initial attempts at modernisation were through acquisition from Western sources. What made India turn towards the Soviets? The main reasons were availability, financial considerations like cost and the need to preserve foreign exchange, and India's attempt towards self-reliance in defence hardware.

Availability

India went for the Russian option not because the items selected were her first choice but because nobody was willing to sell the requisite equipment to her even if she was willing to pay for it. She was literally pushed into this relationship, as would be evident from the following events:

- In 1952, President Truman denied the Indian request for 200 jet aircraft valued at US \$ 150 million. Between 1947 and 1962, India purchased 230 Vampire MK 52/55 from the UK (produced in India under licence), 104 Ouragons (Toofani as the aircraft was called in India), 110 Mystere IV A from France, 182 Hunter and 80 Canberra aircraft from the UK. She also bought 55 C-119 Fairchild Packet from the USA. Her request for Sidewinder air-to-air missiles was, however, rejected by the USA. As already mentioned, India turned down the Russian offer of 100 MiG aircraft made in 1955 i.e., immediately after supplies of American arms to Pakistan started.
- India had originally planned to fit the Rolls Royce Bristol Orpheus 12 on the HF-24 aircraft. The engine was to be developed by the company

India went for the Russian option not because the items selected were her first choice but because nobody was willing to sell the requisite equipment to her even if she was willing to pay for it. She was literally pushed into this relationship.

primarily for the Royal Air Force (RAF). However, the development was stopped after the RAF opted out and India refused to meet the full development costs. The purchase of six Soviet engines was necessitated because of this reason. It is another matter that the Russian engine could not be integrated and the aircraft was fitted instead with the underpowered Orpheus 703.

- The USA supplied F-104 to Pakistan in 1961–62. The request for the same aircraft was denied to India. Britain, not wanting erosion of existing Indo-British military cooperation, and possibly prompted by the Americans, offered Lightning P1 aircraft to India at half the market price. France also offered to sell the Mirage III. These offers were rejected as both Britain and France did not permit licensed manufacture of their aircraft. It was only after these rejections that the Indian evaluation team proceeded to Russia for evaluating the MiG-21. India did purchase Gnat and HS-748 from the UK and L-70 anti-aircraft guns from Sweden post-1962, and produced them under licence.
- To meet its requirement for deep strike penetration aircraft (DPSA), India evaluated the Mirage F-1, Viggen and Jaguar in the 1970s after it was clear that the HF-24 could not be developed to its full potential. Viggen was ruled out as it had an American Pratt & Whitney engine and the USA refused to authorise its sale to India as it felt that the DPSA would destabilise the situation in the subcontinent. India did not opt for any Russian aircraft as none met its Air Staff requirement. The Soviet offer of the MiG-23 BN was rejected as the aircraft did not meet ASR in terms of its radii of action. The eventual purchase of two squadrons of the MiG-23 BN was to augment tactical strike capability and, hence, its limited acquisition.
- After Pakistan acquired the F-16, India looked for a suitable aircraft to meet this threat. The US refused to sell F-16s to India though India offered to pay for them in hard currency. The MiG-23 MF purchase as an interim measure was the result of this refusal. India finally went on to purchase the French Mirage-2000 to counter the F-16 threat.

Financial Factors

There were certain financial imperatives that made the Russian acquisitions attractive. Some of these are as follows:

- *Cost.* The initial cost of acquisition of Russian aircraft and other equipment was half or less than half that of their Western counterparts. According to *Flight International*, the MiG-21 was sold to India for Rs.26 lakh vis-à-vis Rs. one crore paid by Pakistan for her F-104! These were not “friendship prices” or “political prices,” as is generally implied, as no country can afford to write down enormous costs for over three or four decades, especially when one considers the quantum of Indian purchases, purely for some expected political advantages. The Soviet system of price structures, the economy of scales and slightly lower degree of sophistication ensured significantly lower cost of production. The Soviets tended to compensate themselves somewhat by overpricing spare parts—the most lucrative field for aircraft manufacturers the world over. As one analyst has stated, the Russians made 25 per cent profit from the aircraft and 75 per cent from the spares, the reverse of the practice followed by the Western companies. The Western profit margins are also reported to be double those of the items of Russian origin.
- *Rupee payment.* India did not have to dip into her meagre foreign exchange reserves as the payment had to be made in rupees as part of the larger rupee-ruble trade relationship. For a foreign exchange starved India, it is inconceivable that it could have built up its air power capability to the extent that it did, without this great advantage. This advantage is no longer available and all purchases are in free foreign exchange.
- *Credit terms.* All sales were offered either on military credit or in the case of some transports or helicopters, on civil credit terms. In either case, the initial payment on signing the contract was a mere 1.5–3 per cent with the rest of the payment spread over 15 years for the military, and 10 years for civil credit. The interest rate charged was around 2 per cent. The interest rate for the Mirage-2000 was 9 per cent and even this high

rate was considered favourable, considering the overall rates prevalent in the world at that time.

Self-Reliance

The Annual Report of the Ministry of Defence (MoD) 1967–77 states, “Over the years, India’s defence production policy has focussed on achieving the twin objectives of modernisation of arms and equipment and achievement of the maximum degree of self-reliance and self-sufficiency in the shortest possible time.” The acquisitions for the air force, thus, envisaged indigenous development and licensed production. The preference was to tap the source that permitted licensed production. Accordingly, the Gnat, Jaguar and HS-748 were procured from the UK as these conditions were met. The Mirage contract also had this option to India, though this was not taken up. The Russians permitted licensed production of their products in most cases. As a result, the MiG-21 and MiG-27M were manufactured in India. Licensed production of Su-30 MKI is in progress. The contract for the BAe Hawk also envisages their licensed manufacture in India.

Reliability of Supplies

The West cut off all supplies during the 1965 and 1971 conflicts. There was also an embargo by some of the Western countries after our nuclear tests in 1998. For obvious security reasons and without having to build up large inventories, it is imperative that the arms procurement deals are pure commercial endeavours so that one does not have to look at alternate sources in emergent situations. The Russian contracts did not have any clauses which

The Russian contracts did not have any clauses which could put an embargo on sale and supply of contracted equipment and spares. This tilted the scale in favour of the Russians. It must be conceded that the Russians have gone out of their way to meet our additional requirements on the eve of, and during, various conflict and conflict-like situations.

could put an embargo on sale and supply of contracted equipment and spares. This tilted the scale in favour of the Russians. It must be conceded that the Russians have gone out of their way to meet our additional requirements on the eve of, and during, various conflict and conflict-like situations.

THE RUSSIAN RATIONALE FOR MILITARY COOPERATION

What was the rationale for Russia to supply arms to India? There were basically two reasons: political and commercial.

Political

As mentioned earlier, India did not figure on the Russian political radar and Stalin attached little diplomatic significance to India. During that period, the Soviet policy was Euro-centric and that towards the Third World countries can, at best, be defined as “passive neglect.” The Soviet Union was strongly opposed to the non-alignment policy that for India was an article of faith. The Soviet attitude changed radically with the rise of Indian diplomatic strength in the early 1950s. The cracks in the Sino-Soviet relationship and the increased Western presence in Asia by the formation of the Central Treaty Organisation (CENTO) and Southeast Asian Treaty Organisation (SEATO) helped in bringing out Indian significance as a counter-balancing force in the region. India was seen as a possible counter to China in the region, and also as the vehicle for furthering the Soviet cause in the non-aligned world. In the early Seventies, the deepening of the Sino-Pakistan relationship and emergence of the Sino-American dialogue had reduced the Soviet influence in the subcontinent. This, along with increased American maritime activity in the Indian Ocean, raised certain strategic concerns for the USSR. India could be the Russian vanguard in the region. On the other hand, India was somewhat isolated at this time, and this isolation and the Indian requirement of arms for its expanding armed forces provided an opportune foothold to the Soviet Union for further Indo-Soviet cooperation.

The build up of the IAF with the aircraft and equipment of Russian origin has been mentioned in the early part of this paper. The relations between the two countries have been warm except for a very brief time during the early period of the Yelstin era; in fact, they have been extremely friendly. India continues to figure in the strategic thinking of the Russian Federation as an important ally.

India, on the other hand, maintained its independent foreign policy and treated these arms purchases as pure commercial transactions. This should be apparent from the fact that India has not provided bases or other special facilities, and Russian advisors and instructors have never been posted in India, as has been the case with the Soviet allies elsewhere in Asia, Africa and Eastern Europe. Of course, there were technical assistance teams to provide necessary maintenance support during the one year guarantee period of the aircraft. There were some speculations in the media reports of the Russian pilots stationed in India, when one Russian pilot ejected from an MiG-25 aircraft and left India even before a court of inquiry could be ordered. The fact was that this aircraft had been erected in India after its overhaul in Russia and was being air tested by the Russian pilot before its formal handover. Legally and technically, the aircraft was Soviet property till it was handed over to the Indian side, and we had no jurisdiction to carry out an inquiry. Similarly, during the 1971 Indo-Pak War, the IAF had used MiG-21 aircraft to relay messages to various strike aircraft operating at night and at low level. These transmissions were picked up by the Pakistanis and some other countries. It was then alleged that the Soviets had provided AWACS cover to India and was one of the reasons for its creditable performance during the operations. Nothing could be further from the truth.

Commercial

India, rather than Pakistan, offered a bigger market for Russian arms. Pakistan had been receiving aid from the USA and had also diversified her sources of arms acquisition when she started buying aircraft and other military equipment from China. Russia felt that increased sale of arms to

India gave her a certain amount of leverage. It is different that she did not use this leverage for any political gains. India's non-criticism of the Soviet intervention either in Hungary or Afghanistan has been attributed to this special relationship. It is opined that this non-criticism in public was due to the overall relations between the two countries and independent assessment of the situation by the Indian government rather than because of the military cooperation.

The rupee payment made commercial sense as India was able to supply what the Soviet Union needed and that too at a reasonable price. It was a win-win situation for both sides, as it provided impetus to India to step up its trade, and for the Russians, it meant that they did not have to pay in foreign exchange to the Western countries for procuring these products.

SOME OTHER ASPECTS OF INDO-RUSSIAN COOPERATION

Value for Money

The Soviet equipment received less than flattering reviews during the combat operations in the Middle East, Afghanistan, Iraq and Lebanon. Did we get value for our money or did we sacrifice quality by buying cheap? What has been our own experience in this regard?

A careful analysis of operations in the above mentioned countries would indicate that the tactics used were faulty and the pilots were tied down by close control from the ground rather than being allowed to use their own judgment, initiative and skills. Compare this to the way the IAF utilised the MiG-21 during the 1971 Indo-Pakistan conflict. The MiG-21, even in its earliest version (Type-74) was far ahead of its time. The aircraft was optimised to meet the high-level strategic bomber threat that the Soviet Union faced from the North Atlantic Treaty Organisation (NATO) and was not ideally suited to meet the low-level threats, which is what the IAF faced. The IAF innovated and evolved its tactics and utilised the aircraft taking this threat into consideration. It also improved on the Soviet operating procedures. The Russians were amazed at the excellent account the IAF gave with its MiG-21 force during the 1971 conflict and sent a high level delegation to

India post 1971 conflict to study this utilisation by the IAF, never visualised either by the Soviet Air Force or by the designers of the aircraft. Credit is also due to the MiG-design bureau for designing such a wonderful machine. From the Type 74 to the MiG-21 BIS, the aircraft continued to evolve and improve with further upgrade being done in the form of the MiG-21 Bison. The MiG-21 is, and has proved to be, a versatile and potent machine that can match most modern aircraft in close combat even today, nearly half a century since its first flight. The same is the case with other aircraft of Russian origin.

While there is no doubt that Russia enabled India to have a potent air force with vast potential combat, there is a negative side to it also in the form of life-cycle costs or cost of ownership. While life-cycle costs are the major considerations in any civilian purchase, the aircraft's performance and its ability to meet Air Staff requirement parameters are the main considerations for selection of combat aircraft. No doubt, affordability is the prime consideration that figures even before the selection process commences. It is important that the cost of ownership should also be taken into account when preparing the matrix for comparing various aircraft that otherwise meet Air Staff requirements. This will help in making a correct decision, taking all financial aspects into consideration. To the best of the knowledge of this author, no such studies have been carried out except when the IAF had to make a choice between the British Westland and the French Dauphin 365. It is different matter that the Government of India decided to hand over this task to the Helicopter Corporation of India (now Pawan Hans) instead of the IAF and both these helicopters were acquired for various other reasons.

One does wonder if the decision would have been the same when the Jaguar, Viggen and Mirage F-1 were shortlisted and the matrix included the life-cycle costs! There is a general perception—unproven though—that the cost of ownership of aircraft of Russian origin would be significantly higher as compared to their Western counterparts. The factors influencing such thinking are as follows:

- Calendar and technical life. The Hunter aircraft was in service for nearly 40 years and would have continued in service but for the product support problems. There is no calendar life of most aircraft of Western origin though checks are required to confirm the airworthiness of aircraft from time to time. The Russian aircraft and systems' life is based on both calendar and hours/cycles of operation. This period of technical life in both calendar and hours bases is significantly shorter vis-à-vis their Western counterparts. This combined with shorter time between overhauls and more frequent inspections and, in some cases, lower mean time between failures, means greater quantum of maintenance, resulting in reduced availability as well as much higher costs.
- The Russian engines of the 1950s and 1960s vintage were fuel guzzlers. The other problem that most Russian engines have is that they are not based on the modular concept and the entire engine has to be overhauled/serviced instead of just those modules which form the core engine. These aspects further escalate the life-cycle costs.
- The accident rate of the MiG-21 in the IAF has been in the media glare and the subject of much discussion in all quarters. Though the MiG-21, MiG-23 and MiG-27 are really good combat machines, their accident rate, in both the IAF and the Russian Air Force has been comparatively higher than most other combat aircraft.* There are a number of reasons for this which we need not go into here. The higher accident rate implies higher life-cycle costs.

Assured or Controlled Supplies?

The instances of embargos by the Western countries have been mentioned earlier. Russia has been a reliable supplier in this regard. Indeed, there were some disruptions in supply of spares immediately after the collapse of the Soviet Union but these were due to internal problems, not deliberate or part of any political manoeuvring.

*But the accident rate of the British-designed Gnat, the great "Sabre Killer," was almost eight times that of the MiG-21, and so was the accident rate of the French built Mystere IVA much higher than that of MiG-21.—Editor

But that is only one side of the story. The Russians controlled the supply of aircraft, spares and armaments to meet what in their opinion were India's genuine needs. Instead of supplying the quantities indented by India, the Russians came up with their own offers. It was a "take it or leave it" situation in many cases. In some cases, the Russian even asked for justification of the numbers demanded by us! The conclusion of the contract for the MiG-29 aircraft was delayed by about two years as we insisted on certain minimum quantities of spares along with the initial supply of the aircraft. This indirect 'control' adversely affected the operational potential and capabilities of the IAF. This control also led to premature retirement of some of the aircraft fleet that had adequate technical and calendar life and still met the operational requirement.

The Russians, in most cases, offered equipment that they were willing to export to India at that time. The equipment on offer was not necessarily the most modern. When enquiries were made regarding equipment making news in the Western professional journals, the existence of such equipment was totally denied. It was natural in those Cold War days for Russia to reserve the most modern equipment for herself and provide the slightly less capable types for her closest Warsaw Pact allies, after which came the turn of countries like ours. There were instances when this denial was made even when another agency in the USSR had briefed about the equipment. This was one way in which the Soviet Union limited the growth of our overall capabilities.

The Russians did everything to dissuade India from diversifying her sources of acquisition. There was much heartburn when the Jaguar deal was signed but the Russians just could not come up with an aircraft that met the Indian Air Staff requirement. The MiG-23BN on offer did not have the requisite radii of action and had to be rejected. The MiG-23 BN was contracted after the Jaguar deal had been signed but the manufacturing option was cancelled. In an effort to dissuade India from buying the Mirage-2000, Defence Minister Ustinov led a delegation to India in March 1982 and offered additional MiG-25 aircraft and licensed production of the MiG-27. This

attempt to alter the original decision was successfully resisted. The Russians were upset and even questioned the continued need for the favourable credit terms of 17 years at 2.5 per cent interest. The IAF was interested in the MiG-29 which was in the initial stages of development in the USSR. They finally agreed to give sketchy details of the MiG-29 to the visiting Indian Defence Minister R. Venkatraman in June 1983. The offer included licensed production of aircraft. Though India went ahead with the Mirage-2000 deal, the offer of licensed manufacture of 110 Mirage-2000 was not taken up and instead the MiG-29 were purchased.* Similarly, when the IAF needed a medium tactical transport aircraft, it evaluated various options and was about to make its final recommendations to the government for an aircraft from Western sources, when the Russians offered the An-26 aircraft for evaluation. The aircraft failed to meet the criteria of operation from high-and-hot airfields like Leh. The Russians quickly re-engined the An-26 with An-12 engines and offered the same as the An-32. Fortunately, for the Soviets, the aircraft met the Air Staff requirement. The An-32 was finally inducted into service in 1983. The Russian interest in our continued dependence on them for our defence supplies is evident.

Information Exchange

The Russians have always been extremely fussy about the secrecy of their equipment and its capabilities. Even their operating and technical manuals of aircraft and systems are classified "Secret", which is not the case with the Western manufacturers. This causes problems in dissemination of the important and essential information.

Exchange of data on aircraft performance, flight safety, maintenance and upgrade on a continuous basis is a part of the customer-seller relationship. The customer apprises the manufacturer of the various problems

*Leave alone manufacture of MiG-29 in India, even repair and overhaul facilities were not established in India for almost another decade, resulting in high costs of sending engines and other equipment back to Russia for repair and overhaul which in turn was adversely reported on the Comptroller & Auditor General of India.—Editor

faced and furnishes data on snag rates, mean time between failures, premature withdrawals, etc. The details of accidents are also normally furnished. The manufacturer is not only expected to take necessary action in this regard but also informs the customer about the peculiar and major problems faced by other customers. While the Russians always assisted us in our accident investigation whenever we requested them and helped us in maintenance problems, the flow of information about similar problems in the Russian and other air forces has not been forthcoming. This parting with information was probably not part of their culture. Even when the problem was passed onto them, they did not reveal that they or other customers were facing similar problems and tended to blame us for poor standards and practices. It is different that they did come up with modification(s) in a very short time in most cases which goes to indicate that the problem had been inherent and the designers were at work to rectify the situation. This prevented the build up of confidence and trust between their industry and the IAF personnel which should have been automatic, considering our relationship at the political level. The problem on defect investigation got further accentuated as the chain in this case is from the operator to the designer through HAL, the Russian General Engineering Department (GED)/Rosoboronexport, manufacturer and back via the same way. This has also led to unusual delays and, at times, lack of accountability.

As for as exchange of operational experiences is concerned, this aspect was totally absent. There was very little Service to Service contact and, hence, there was very little exchange of operational information and methods of best exploiting the aircraft and systems. There were no joint operational exercises, seminars or even discussions between the two air forces. The Service chiefs did pay visits to each other's country. The IAF top brass was taken around various Service establishments but these visits were fairly controlled by the Russians and they showed what they wanted us to see. Since these contacts were restricted to the highest level, the lower echelons of the IAF generally felt that the Russian operating environment and air

threat was widely different and we could exploit the aircraft better either on our own or by emulating the tactics followed by the Western countries. We had set up institutions of our own to develop and employ air tactics in our environment. The general impression around the world was that the Russian pilots operated in a very controlled environment which restricted the exploitation of the aircraft to its full potential. It was also perceived that with the Russian concept of information security, very little additional information, apart from what was given in their publications, would be forthcoming from them during any formal interaction. With these restrictions, there was very little that one could learn from them. How far that impression was correct cannot be said with any degree of certainty because the Russian Air Force has not been involved in any major conflict except in Afghanistan but again, that was a totally different scenario.

This lack of information flow, and the tendency of passing the blame onto the Indian side had another repercussion. Non-supply of spares and disruption in product support immediately after the break-up of the Soviet Union forced India to shop elsewhere to ensure that its operational fleet remained airworthy. In most cases, the spares came from stocks of the erstwhile Warsaw Pact countries which had either obtained these from Russia or had got them manufactured in their plants set up with Russian collaboration. The same factories had been supplying the spares through GED, the central Soviet agency for supply of aircraft and spares. Under these conditions, allegations made by the media and even by the Russian brass that the spares obtained from other than Rosoboronexport sources were second rate, were not tenable.

IMPLICATIONS AND EFFECTS OF INDO-RUSSIAN COOPERATION

There were certain implications and effects of this fruitful Indo-Russian cooperation in the field of military aviation. The obvious one was that we were dubbed as a member of the Soviet camp and, in some cases, as a Soviet ally with all its implications. This was, of course, not true. The arms purchases

from the Soviet Union were because of economic reasons and, of course, the unwillingness of the Western countries to supply the same. But there were other implications too. The two areas that need discussion are the effect on our endeavour toward self-reliance and, second, on the internal planning process.

Self-Reliance

Self-reliance to the extent possible in the field of defence equipment has been the goal of the government. Towards this end, design and manufacture of the HF-24 aircraft was taken up. The HF-24 was planned to be a supersonic multi-role combat aircraft and was to be the mainstay of the IAF. The problem of a suitable power plant for the aircraft inordinately delayed the project and finally it was plagued by underpowered engines. In the meantime, induction of the MiG-21 and its manufacture under licence started. The entire focus shifted from the HF-24 to the MiG-21. The momentum of designing and manufacturing a state-of-the-art combat aircraft indigenously was lost and lessons learnt in this process were forgotten. One of the reasons for the inordinate delay in the light combat aircraft (LCA) project is that we had to start from scratch and all the lessons had to be re-learnt. The licensed manufacture route provided an expedient solution to the IAF, the HAL and the government, and the long-term vision and goal was lost in the process. This was the most serious implication.

Planning Process

As mentioned earlier, the Russian prices were low, the payment was in

rupees resulting in nil outflow of precious and meagrely available foreign exchange, and the credit terms were very favourable.

The other advantage of dealing with the Soviet Union was that one did not have to deal with a plethora of agencies and vendors. The interaction was restricted to a few agencies, the GED, General Technical Department (GTD) and Aviaexport. These agencies had a standard contract which meant that one did not have to bargain very much on most clauses as one contract did not vary from the other except for the items in the contract and their prices as well as delivery scheduled. These agencies have been superseded by one single agency viz., Rosoboronexport. The system had its advantages in that there were no allegations of any payoff: no middlemen were involved as all contracts were on a government-to-government basis. This meant a shortened bureaucratic and political decision-making process.

This meant that there was not much resistance from the MoD and MoD (Fin) as long as the purchases were from Russia. The overall scrutiny was minimal and this led to little or no accountability. Since the acquisition process from Russia was so easy, the bureaucrats were reluctant to deal with Western companies, especially for fear of payoff allegations, depriving the Services of state-of-the art technology and more sophisticated and technically advanced weaponry. The situation became worse after the Bofors crisis as most bureaucrats were reluctant to process any contract lest they be held responsible for any irregularity at a later date. The situation has further worsened with almost every deal being put under the scanner of the Central Vigilance Commission (CVC), thus, lengthening the decision-making process even further. This includes procurement from the Russian sources as well. The finalisation of a contract with Russia is now as difficult and cumbersome as with the Western vendors.

The other and the more consequential disadvantage was that both the MoD and the IAF stopped thinking on a more long-term basis as the supply chain for combat equipment from Russia was extremely short. Once the Russian offer for any equipment was accepted, the entire order was executed in an extremely short period of time. After all, Russia was the preferred

source of procurement of defence equipment for nearly 75 countries. The lead time in planning and procuring similar systems from Western countries would have been far greater, and it would have been manifold that if the equipment was to be designed and produced indigenously. The extent of

Both the MoD and the IAF stopped thinking on a more long-term basis as the supply chain for combat equipment from Russia was extremely short. Once the Russian offer for any equipment was accepted, the entire order was executed in an extremely short period of time.

the lead time required in planning and procurement can be gauged if one looks at the time interval between the decision to go in for development and entry into service of aircraft like the F-22 and joint strike fighter (JSF). If one takes instances like the advanced joint trainer (AJT) and LCA, this period would be much longer.

While the credit terms were favourable, it had some negative results too. Under the barter agreement of 1953, India could export domestic products and crops to the Soviet Union in exchange for Soviet products in rubles. The terms of this agreement stipulated that any account surplus that India accumulated from non-military trade could not be used to pay for capital goods and credits accumulated through arms transfer. Up through 1971, however, the balance of trade was always in the Soviet Union's favour but things changed thereafter. India began to achieve a surplus in trade with the Soviet Union and, thus, accumulated rubles. This growing pool of non-convertible rubles became an even greater burden as imports of certain goods from India decreased. With little or no scrutiny of purchases from the Soviet Union, one suspects that the MoD did not have any idea of the total military procurement debt owed to the Soviet Union when the latter collapsed. It was much later that figures of around Rs 36,000 crore emerged. The clearance of this debt was a major irritant for some time in the relations between the two countries—it has been finally and amicably resolved though not necessarily on favourable terms to India.

THE COURSE AHEAD

HAL has been manufacturing aircraft under licence for over five decades now. The terms of licensed production called for transfer of technology as well. Transfer of technology does not mean just *how* to manufacture but also the *why* of design. The latter information would have enabled us to leapfrog and produce our own sophisticated designs. Unfortunately, this transfer of technology never took place. We have produced nearly 600 Russian designed aircraft under licence and another 140 are in the pipeline. The manufacturers supplied us with the process sheets, i.e. knowhow of how to manufacture various parts and components. But the design and material know why was never given. Every design agency wants to know the “why” of the design of every system and component so that it can then take off on its own in designing and manufacturing the same or similar system/component. While one does not expect the source code for avionics, etc., to be given to one on a platter, one does expect that the details of the material used will be given, especially when the contract calls for licensed production from the raw materials stage. When there was breakdown of supplies in the early 1990s, we were unable to manufacture the requisite spares mainly because of non-availability of basic raw material which had to come from Russia. This relationship cannot, therefore, be termed as one of a partnership but that of a seller-buyer. Do we want that kind of relationship to continue?

Not only were new designs not forthcoming from our design bureaus, we reverted to requiring the Russian nod even for modifications and upgrade that were well within our capability. The key to self-reliance was to have learnt from the Russians and used that knowledge for designing and manufacturing a successor aircraft to one under licensed production. Non-transfer of design data forced us to send our MiG-21s to Russia for integration of new equipment which has gone into the upgraded version—the MiG-21 Bison. It has cost us valuable time and money. If we had the design data, many alternative routes for this programme could have been followed. A similar problem is being faced for the upgrade of the Tu-142 long range maritime patrol aircraft by the Indian Navy.

It will not be right to blame the Russians and their systems totally. We ourselves never took up this matter forcefully with them. We accepted what the Russians told us as gospel truth, and implemented it in most cases.

The dream of self-reliance remains unfulfilled. Hopefully, lessons learnt will be applied during the licensed production of the Su-30 MKI and the contract modified, if required. The country cannot be dependent on others for its need of combat aircraft and systems. It is imperative that these be designed and manufactured either by us alone or in partnership with other countries at the earliest opportunity.

There have been Press reports about a proposal for the joint development with Russia for fifth-generation combat aircraft. What does joint manufacture involve? Does it mean just financial partnership or does it mean something else? Where would the design work take place? What would be the work share of each partner in the project? How many aircraft would each partner country buy and who would be responsible for marketing of the final product? These are some of the questions that must be addressed. Ideally, if we are to enter into a joint development and manufacture programme, then 40–50 per cent of all activities must take place in India, and our designers and engineers must be involved in every stage of the programme. This will ensure that we get the full benefits of this venture. We have some experience with the LCA and AJT. The strengths of the two countries should be synergised. The Eurofighter (Typhoon) is a prime example of this concept. The alternative is to become just a financial partner and take on some work to offset the payout, with partner countries having little or no say in design, etc., as is the arrangement that most partner countries have made with the USA for the JSF programme. There is some talk that Russia is looking for a financial partner (perhaps financier would be a better term to describe the deal) for the development of the Su-37. There would be very little addition, if any at all, to our capabilities and we will continue to depend on other countries for our combat aircraft needs. This is neither desirable nor is it our goal. If we have to have this arrangement with Russia, we might as well consider joining the JSF programme which is well underway and will make

our relationship with the United States stronger and more stable. The programme is well on track and the timeframe for its induction is known, as is the financial investment. We may be able to have access to advanced weaponry and sensors as well some advance technologies as a fallout of joining this programme. This would be better than the likely financing arrangement with Russia where we will have no say in its performance and there would be uncertainties like development costs and timeframe for production and induction. The Russian aircraft industry is starved for funds and this leverage can be used to our advantage. The joint venture agreement for joint development of the Brahmos cruise missile does show a promising road map ahead. There have been some Press reports that China is keen to join the Su-37 programme. This multilateral collaboration would mean firm commitments from the partner nations in terms of financing, likely numbers to be bought, and work sharing, in both design and manufacture. Some kind of monitoring mechanism to oversee the project would be required. This path is probable the quickest and financially most viable.

CONCLUSION

The saga of Indo-Russian cooperation in the field of military aviation has been of mutual advantage to both countries. However, we have failed to take full advantage of the licensed manufacture arrangement and are still nowhere near achieving our long-term vision of self-reliance. With the cost of development and manufacture of combat aircraft and armament escalating manifold, it is not possible for one country to design and manufacture the same. The need of the hour is collaborative arrangement with one or more countries. As far as Indo-Russian cooperation is concerned, the time has come for it to graduate their relationship from that of buyer and seller to one of full joint partner. This will be beneficial to both countries. ■