



that trends could be identified, analysed and perhaps, eventually, even shaped.

45 years on, the Journal has striven to maintain its *raison d'être* and is regarded, both within the country and globally, as such, not only reporting on contemporary aerospace matters, but becoming an invaluable reference for posterity. The *Vayu* has been recognised for its professionalism by leading organisations such as the *Royal Aeronautical Society* and others, receiving honours repeatedly at international forums, and regarded as amongst the leading aerospace journals of the world.

Essentially, however, the *Vayu* keeps its Indian flavour, concentrating on matters that concern the country, be it on the national aviation industry, the services, the airlines and space research. Thus, as

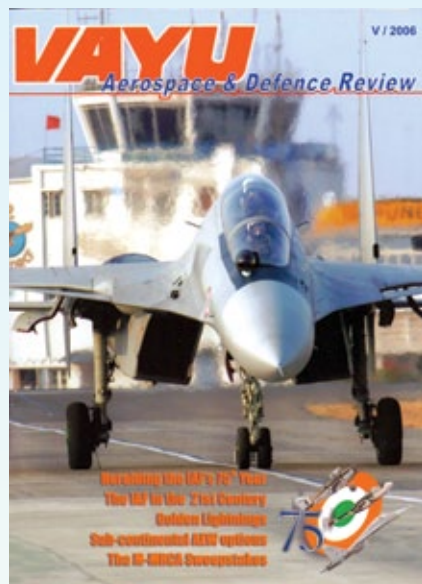


When India's Defence Minister officially launched this journal in New Delhi on 7 November 1974, he had hoped that this journal 'would give professional satisfaction to those would be associated with this ... serving to disseminate real knowledge in-depth ... touching the chord of those people who are serious minded and who want to go deeper'.

Editorial of the premiere issue proclaimed that *the Journal, was intended to span, appropriately, the gap for a specialised Asian aviation magazine. Conscious of the environment constraints and the limitation in which we function, it will nevertheless be our endeavor to offer the highest standards of accuracy presenting solid fact and data recorded in an informative and readable manner.*

*The journal would strive to report with objectivity which is as important as professional knowledge and skill, style and a capacity to keep up with change. From reports on air arms and their sophisticated weapon-systems, the highly organised air transport industry and space research to those on historical events that have shaped man's flight, the Journal would provide for concentrated reading by those involved or associated with aviation and, hopefully, given an impetus to the air-minded.*

*Although international in flavour, the magazine would have a strong Asian bias... with the hope that the vantage point of New Delhi, as geographic centre of the arc from West Asia to the Pacific, would enable it to heighten its impact on Governments and industry, making each the better informed on aviation parameters and programmes so*



the years and decades go by, readers can review as to how the Air Force expanded and modernised in the 1980s, began endeavours to supplant obsolescent aircraft types from start of the 21<sup>st</sup> century, how the Indian Navy has progressed in keeping up with stated Maritime Capability Plans, foundation and expansion of the Coast Guard, formalisation of the Army Aviation Corps, even as the 'Open Skies' policy spawned a rash of startup private airlines with, in the event, many disappearing sooner or later. Other are expanding.

Some short but sharp conflicts in the sub-continent were analysed in-depth, from Kargil in 1999 to Balakot in 2019 and the *Vayu* remains unique in having

covered at first hand *Operation Pawan*, the 33 months of Indian armed involvement in northern and eastern Sri Lanka, also flying in helicopter gunships during some actions there. *Vayu* was also uniquely positioned on the heights overlooking Drass on last day of that action, 20 years back.

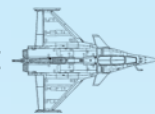
In the international arena, the *Vayu* has continuously covered on-the-spot air shows at Farnborough, Le Bourget, Changi, Dubai, Zhukovsky, Langkawi as also visited leading international aerospace companies in America, Britain, France, Germany, Sweden, Italy, Spain, Russia, Brazil ... China is a hopeful next !

But essentially, it is India. The *Vayu* has very assiduously reported on and analysed national endeavours for achieving self-reliance not only in the production of aircraft but *de novo* design and development of various types ranging from motorised gliders, basic trainers, light transport aircraft, advanced helicopters to new generation multi-role fighters, as also space launch vehicles.

The next 15 pages are a virtual 'pilots eye view' of aviation and aerospace developments that have impacted on India over 45 years but to go into depth, readers are urged to visit <http://www.vayuaerospace.in> for hundreds of selected articles – or order copies from the past in digital format as are available.

With *Vayu Aerospace Review* on the way towards completing its half century in 2024, readers are assured that the standards they have grown to expect, will be maintained, with uprightness, professionalism and style.

**Vayu Editorial Team**



## 1974



→ A significant development is the setting up of a Design Organisation in HAL headed by a whole time Director responsible for planning and co-ordinating all the design and development activities of the Company. Development of the HF-24 Marut will continue with new engines and systems.

→ The HF-24 Mk. II is virtually rejected as the Indian Air Force has not confirmed its initial interest in the afterburning Orpheus 703. HAL have submitted firm proposals for the Mk. III or HF-73, and this aircraft would reportedly exhaust the growth potential of the HF-24.

→ The second Indian-built *Leander*-class frigate, INS *Himgiri* was commissioned at Bombay on 23 November. Similar to the INS *Nilgiri*, the first such type to be built at Mazagon Dock Yard, the *Himgiri* carries a MATCH Alouette III helicopter and is equipped with Seacat short-range anti-aircraft missiles amongst other armament.

→ Air India has ordered its fifth Boeing 747B for delivery in December 1975. During the Fifth Plan, Air India was to procure three wide-bodied jets and the DC-10 was strongly considered but its lower operating cost was outweighed by additional investment in new engineering facilities, ground support equipment and crew training which would have been entailed.

→ HAL Kanpur will be delivering the 69<sup>th</sup>, and last, Avro 748 to the Indian Air Force in 1975 but owing to the delay in submission of the Dhawan Committee report, plans for the production of the freighter version (30 HS 784Ms) and development of a maritime reconnaissance variant at the insistence of the IAF, has resulted in an inevitable break in production and idle capacity at Kanpur, "causing serious concern and the matter is being pursued with the Government for an expeditious final decision".

## 1975

→ Defence Minister S Swaran Singh stated that it would be incorrect to say that the Indian Air Force was facing difficulty in equipping itself "properly" owing to foreign exchange shortages. "Our effort has always been to keep our defence preparedness at a satisfactory level within our resources."

→ Soviet Defence Minister, Marshal Andrei Grechko, accompanied by Chiefs of the Soviet Air Forces and Navy, Air Chief Marshal PS Kotakhov and Admiral SG Gorshkov, respectively, visited India for three days in February. Considerable significance has been attached to this high powered defence visit to India as detailed talks covered the whole gamut of present co-operation and collaboration between the two countries concerning India's security requirement.

→ According to reports from London, the keen Indian interest in procuring Jaguar strike fighters has been toned down because financial problems could "not be satisfactorily resolved".

→ Indian Naval missions visiting Moscow recently have discussed a comprehensive list of requirements, which includes more submarines, *Kresta*-type helicopter carriers as well as long-range maritime reconnaissance aircraft.



→ The Indian Navy's second Sea King ASW helicopter squadron, INAS 336, was commissioned at INS Garuda, Cochin. The Unit will be committed on the Western coast of India, the total number of Sea Kings in Indian Navy Service is now twelve, with two squadrons.

→ The Satellite Introduction Television Experiment (SITE) began from 1 August with a message from the Prime Minister. About 2,400 villages in six different states- Andhra Pradesh, Madhya Pradesh, Karnataka, Orissa, Rajasthan and Bihar have got the benefit of the TV programmes.

→ Aryabhata, India's first satellite, completed six months in orbit on 19 October 1975.

## 1976

→ Hindustan Aeronautics Limited are proceeding with four new aircraft projects, being the armed Kiran Mk. II jet trainer whose prototype flew end July 1976; the HPT-32 primary trainer the Ajeet trainer (to fly in 1978); and an Advanced Light Helicopter (ALH) to be designed and developed with Aerospatiale assistance, (having a fenestron tail rotor design) and to be operated from helipads as high as 6000 metres above sea level.

→ The IAF plans to induct the definitive MiG-21bis into service during next year to supplement and eventually replace the MiG-21Ms and MiG-21FLs in service. The MiG-21bis will be powered by the Tumansky R-25 engine and have "improved ground attack capability"

→ The IAF have "turned down" the Soviet offer of MiG-23 swing-wing strike fighters, largely on the basis of inadequate range to meet its requirements. The IAF has also shelved the HAL proposal for a SNECMA M.53-powered derivative of the HF-24 Marut but is studying an alternative design with the Tumansky R-25 engine (the HF-25).

→ Commenting on Professor Satish Dhawan's reports which "cleared" operations by the HS 748, Air Chief Marshal OP Mehra has said that the Indian Air Force continued to operate the HS 748 without any "rethinking" and would continue to receive the new HS 748s for which orders had been placed with HAL.

→ The lone aircraft carrier INS *Vikrant* is to undergo modernisation but no decision has been taken concerning new flying equipment on board.

→ The Indian Navy's first long-range maritime reconnaissance unit, INAS 312, was formally commissioned at INAS Hansa, Goa on 18 November, equipped with ex-Air India / ex-Indian Air Force Lockheed L.1049G Super Constellations fitted with ASV-21 radars.

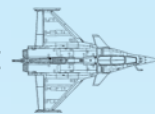


→ The first of three Airbus A.300 B2s on order by Indian Airlines was delivered to the Corporation on 30 October, 1976, with the second and third airliners reaching Bombay in monthly intervals thereafter.





# VAYU @ 45



## 1977

→ The Defence Minister has stated that the long awaited decision for a Deep Penetration Strike Aircraft (DPSA) for the Indian Air Force “was likely to be taken soon” which will allow the IAF to start replacement of the Canberra, Hunter and Sukhoi Su-7.

→ Substantial expansion and capability upgrading of Indian Naval Aviation is anticipated throughout remainder of the decade and a major increase in maritime patrol effectiveness is expected towards the end of the year when a new squadron (INAS 315) completes working up on the Ilyushin Il-38 at Dabolim, Goa.

→ Growth of the helicopter component of Indian Naval Aviation is continuing with the follow-on contract for five Westland Sea Kings. The Sea King is currently operated by two shore-based squadrons, INAS 330 and INAS 336, and the additional helicopters will be deployed aboard the three new frigates which are following on the Seacat-equipped *Leander*-class frigates in the Bombay shipyards.



→ The Indian Air Force recently received its first Tumansky R-25-powered MiG-21bis fighters from the Soviet Union and No. 21 Squadron (formerly mounted on the Gnat) is now converting to this type.

→ First prototype of the HAL HPT-32 primary trainer (X 2157) made its maiden flight at Bangalore at 6 January, flown by Wg Cdr Inder Chopra, CTP.

→ One of the first actions of the newly-elected Government under Prime Minister Morarji Desai was cancellation of orders for the VIP-configured and specially-equipped Boeing 737s to be operated by the IAF's Air Headquarters Communication Squadron.

→ First prototype of the Dassault Breguet Mirage 2000 is to be rolled out at St Cloud in October, with first flight scheduled in early 1978 and first deliveries in late 1981. The Mirage 2000 will initially be powered by the Snecma M53-2, to be followed by the more powerful M53-5 after a year.

## 1978



→ Air India's latest Boeing 747 'Emperor Kanishka' arrived in Bombay on 2 July, 1978, with whose addition the Airline now has six Boeing 747s.

→ On 6 October 1978, after years of evaluation, deliberation and final negotiations, the Government of India announced selection of the Sepecat Jaguar International as the strike aircraft to replace the aging Canberras and Hunters of the IAF.

→ A British Aerospace mission, led by Sir Fredrick Page, the Chairman and Alan Keys arrived in New Delhi in mid-October for formal signing of the 'Intention to Proceed' (ITP) and this was followed by the visit to Britain of a high-level Indian team led by Dr. Sushital Banerjee, Secretary for Defence, to sign the MoU with the British Government on policy aspects of this major and long term defence contract.

→ Following the long anticipated decision on the Indian Air Force's DPSA, the Government of India announced the procurement of yet another combat aircraft, this being the Sea Harrier V/STOL fighter.

→ After several rounds of meetings Hindustan Aeronautics Limited (HAL) and Dornier GmbH of West Germany have signed a MoU on 31 May to prepare feasibility studies on the joint design and development of the 19-24 seater Light Transport Aircraft (LTA).

→ Air Chief Marshal Idris Hasan Latif took over as Chief of the Air Staff Indian Air Force on 1 September, in the thirty-seventh year of his service.

→ The Indian Coast Guard was formally established on 19 August and its air component will comprise four Alouette III helicopters and 12 light twin-engined fixed-wing aircraft of an as yet unselected type. Studies have been made of the Dornier Sky servant, the Britten-Norman Maritime Defender and the GAF Nomad N22B Search Master. The aircraft will be operated from Bombay, Cochin, Madras and Port Blair.

## 1979

→ Formal agreement for acquisition of the Sea Harrier V/STOL fighter for the Indian Navy was signed at New Delhi on 23 November between the Government of India and British Aerospace (Kingston Division).

→ The first two Jaguar International aircraft for the IAF were formally accepted by Mr. IP Singh, India's Acting High Commissioner in London from Sir Frederick W. Page, Chairman of British Aerospace at Warton aerodrome in Lancs, on 19 July.



→ The new Indian Defence Minister, C Subramaniam, has strongly defended acquisition of the Jaguar by the IAF, and has stated that any criticism against it is “ignorant and ill-informed” and that his predecessors are “patriotic and not ignorant in importing Jaguar technology”. Further, he remarked that “though the credibility of politicians may be low, the capability of our scientists and technologists cannot be underrated”.

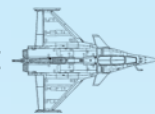
→ The second prototype HPT-32 primary trainer made its maiden flight at Bangalore in mid-March. Incorporating minor modifications and a faired over landing gear, the aircraft joins the first prototype in flight development which includes spin trials. The HPT-32 is to supplant the HT-2s in the primary training role from 1982.

→ In the 25th year of nationalisation, Air India made a record net profit of Rs 25 crores, largely attributed to increased load factors, stable fuel prices, increased operations to the Gulf and optimum utilisation of its fleet

→ Indian Airlines' first scheduled Boeing 737 service on the Srinagar-Leh-Srinagar sector was made on 14 January. Commanded by Captain AM Kapur, with Captain Vishwanath, the flight to Leh carried 82 passengers including Chairman Mahesh Sarin plus 1.5 tons of cargo, whilst on the return; there were 108 passengers from Leh.



# VAYU @ 45



## 1980

→ Defence Minister C Subramaniam has announced a number of decisions on the induction of modern equipment and weapons for the Air Force. Apart from induction of the Jaguar as a long range strike aircraft, the Government has also taken the decision for acquisition of new medium transport aircraft (Antonov An-32).

→ The IAF is to phase out the last of its Gnat lightweight fighters by March 1981, the remaining squadrons (Nos. 2, 22 and 24) to convert to the Ajeet and MiG-21bis respectively. The IAF also plans to acquire two Boeing 737-200s for use as VVIP transports at a cost of Rs. 45 crore (US \$8 million), replacing the present Tu-124s in this role.

→ There are reports that orders have been placed with HAL for the first phase production of Jaguar in India, comprising 45 aircraft.

→ Following evaluation in the Soviet Union of both the interceptor and ground-attack versions of the MiG-23 swing-wing fighter by senior pilots of the IAF, the MiG-23MF and MiG-23BN are to be procured to augment the all-weather air defences of India.



→ The Indian Coast Guard have placed orders for six patrol vessels to be built in Indian dockyards, for delivery in 1981-82. Three of the 1000-ton offshore vessels, embarking a HAL-built Alouette III helicopter each, will be built by the Mazagon dockyards at Bombay whilst three of the smaller 200 ton inshore patrol vessels are being built by the Garden Reach Workshops at Calcutta.

→ A follow-on batch of three Sea King Mk.42A ASW helicopters has been delivered to the Indian Navy at INS *Garuda*, Cochin by Belfasts of TAC Heavy Lift.

→ Indian scientists have designed an advanced version of the Satellite Launch Vehicle which can put into orbit a payload weight up to 3,500 kg.

## 1981



→ Air Chief Marshal Dillbagh Singh took over as CAS Indian Air Force on 31 August 1981, having earlier been Vice Chief of Air Staff and AOC-in-C Western Air Command.

→ The first Jaguar airframe components destined for final assembly in India left Warton in Lancashire by air on 5 May, loaded aboard a Belfast freighter aircraft and airlifted out on the first stage of their journey to HAL in Bangalore.

→ Singapore has requested India to continue assistance in training the Island's fledgling Air Force. The Indian Air Force started the training programme in 1979 and a 10-man IAF group has completed its tour of duty in July 1981.

→ An advanced Boeing 737 in IAF colours with special interior configuration for flying VVIPs was officially received by the HQ Communication Squadron on 26 August.

→ With the selection of the Antonov-32 to fulfil the IAF's METTAC (Medium Tactical Transport Aircraft) requirement, replacement of the Antonov An-12 heavy transport aircraft from the late-eighties is now in process of review.

→ The first batch of MiG-25 reconnaissance aircraft, including the two seat operational trainer variant, have just been received by the Indian Air Force, as evidenced by the flight (on 25 August) in a two-seater by Air Chief Marshal Idris H Latif, the out-going Chief of Staff.

→ The Indian Navy would soon acquire another aircraft carrier and choose an anti-submarine warfare helicopter according to the Chief of Naval Staff, Admiral RL Pereira, who has said that the "half-life modernisation" of the Indian Navy was a regular process and the Navy was equipping itself with necessary sophisticated vessels and armaments.

→ *Vindhyagiri*, the last of the six *Leander*-class frigates built by Mazagon Dock Limited was commissioned by Mr. Shivraj Patil, Minister of State for Defence at Bombay on 8 July.

## 1982



→ During a meeting of the Parliamentary Consultative Committee for Defence in July, the Defence Minister Mr Venkataraman hinted that India was going to acquire "an advanced version of the MiG" which has been claimed by the Soviets to be superior to the F-16s being acquired by the PAF.

→ Deliveries of 80 MiG-23BN fighters (plus 15 MiG-23UM two-seat trainers) to the IAF for the equipment of Nos 10, 220 and 221 Squadrons will be completed during the course of this year, and earlier plans to procure the MiG-23MF air-air version have now been resurrected.

→ In the fiscal year that ended in March, the Nasik facility of HAL delivered 40 MiG-21M and MiG-21bis fighters to the IAF despite a three-month lock-out of employees suffered during the course of the year.

→ The prototype tandem-seating Ajeet jet trainer made its first flight at Bangalore on 20 September, flown by Wg Cdr MW Tilak, HAL's Chief Test Pilot.

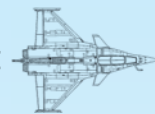
→ Vayudoot commenced air services in Northern India from March, connecting Delhi with Ludhiana in the Punjab with a wet-leased HAL/BAe 748.

→ Between 9 and 23 November, the Dornier 228-200 demonstrator aircraft (D-IDCO) was involved in strenuous and comprehensive flight test and technical evaluations under formal invitation from the GoI. IAF, Navy and DGCA pilots flew the Dornier 228 to the limits of its design performance, carrying out some 32 sorties, flying over 15,000 kilometres ranging from Srinagar to Kanpur to Bagdogra to Paro Valley (Bhutan), Vishakapatnam and over the Bay of Bengal.

→ The Swedish Parliament has given its approval to development of the JAS multirole combat aircraft which calls for delivery of some 140 aircraft by the year 2000.



# VAYU @ 45



## 1983

→ The Government of India has formally selected the West German Dornier 228 to meet the varied requirements of a Light Transport Aircraft (LTA) for India, the detailed contracts, covering transfer of technology for a progressive programme to manufacture the Dornier 228 versions in India.

→ It has been officially announced that the Ilyushin Il-76 heavy duty military freighter and strategic airlift transport has been selected to meet the Heavy Tactical Transport Aircraft (HETAC) requirement of the IAF.

→ According to the CAS Air Chief Marshal Dilbagh Singh, India is to develop an indigenous AWACS aircraft system, commenting that “no developed nation was prepared to provide AWACS aircraft and that as such a type was essential to safeguard national territorial integrity India was developing its own system”.

→ First booster launch of the Pilotless Target Aircraft (PTA) configuration, coded as the ELV (Experimental Launch Vehicle) 01, was successfully carried out at the Kolar range in late October.

→ The third *Kashin*-class guided weapon destroyers for the Indian Navy, INS *Ranjit* has joined its earlier sister ships, INS *Rajput* and *Rana* as part of the Indian Navy's 11<sup>th</sup> Destroyer Squadron.

→ INS *Godavari*, the first of a series of Indian-designed and built multi-purpose frigates, was commissioned on 10 December, 1983 at the Naval Dockyard, Bombay by the Defence Minister Mr R Venkataraman.

→ An initial production order for 40 HAL HPT-32 primary trainers has been placed by the IAF against a total requirement of between 100 and 150 aircraft.

→ The DGCA-designed motorised glider (MG-1) was first flown on 30 May with Capt. Karminder Singh ('Ralph'), Civil Aviation Advisor Punjab at the controls.



→ The Indian Navy's first three BAe Sea Harrier FRs 51 VTOL fighters arrived at Dabolim naval air station, Goa on 16 December 1983.

## 1984

→ A new operational Air Command (Southern) was officially established with headquarters at Trivandrum, Kerala in South India, on 19 July 1984 with Air Marshal Terence D'Sa as first C-in-C.

→ On 21 July, the Government of India and MBB of the Federal Republic of Germany formally signed the contract for joint design and development of an Advanced Light Helicopter to be undertaken by HAL and MBB.

→ The HTT-34, turboprop version of the HPT-32, made its initial flight at Bangalore on 17 June 1984, piloted by HAL's test pilots Wg Cdr Ashok and Apte.

→ Squadron Leader Rakesh Sharma, test pilot of the Indian Air Force, became India's first man in space when, along with two Soviet Cosmonauts, he orbited the earth in the USSR's Salyut 7 orbital station.

→ Three new Russian-built inshore minesweepers of GRP construction were commissioned into the Indian Navy by Vice Admiral KK Nayyar, FOC-in-C, Southern Naval Command at Cochin on 10 May.

→ The Prime Minister of India, Indira Gandhi inaugurated the country's first submarine construction facilities at the state-owned Mazagon Dockyard Limited (MDL) at Bombay on 6 May. The collaboration between HDW of Kiel, West Germany and MDL envisages comprehensive transfer of technology for the construction of Type 209 SSKs in India, including full know-how, training of Indian personnel at Kiel and deputation of German specialists to Bombay.



→ The first three of a total of 95 Antonov An-32s on order for the Indian Air Force were officially received in India on 10 July at Palam (Delhi), enroute to their base at Agra, replacing the venerable C-119 Packets in service.

## 1985



→ The first batch of IAF Mirage 2000s was officially inducted into the IAF at Gwalior AFS on 29 June 1985 by Defence Minister PV Narasimha Rao and Air Chief Marshal LM Katre.

→ The first MiG-27M strike fighter to be assembled by Hindustan Aeronautics Limited at the Nasik Division was officially handed over in January.

→ An important milestone in the transfer-of-technology programme involving HAL's licence-production of the Dornier 228 light transport aircraft was recorded on 3 March, when the first Phase I kit was delivered to the Kanpur Division of HAL.

→ President Giani Zail Singh presented standards to Nos.10 and 11 Squadrons of the Indian Air Force at a combined ceremony at Jodhpur air base on 18 March.

→ First scheduled flight by a Vayudoot Dornier 228 was on 2 January, from Delhi to Rae Bareilly and on to Lucknow and Dehra Dun and return.

→ Defence expenditure during 1985-86 has been put at Rs. 7686 crore, which is Rs. 511 crore more than the revised estimates for the current year.

→ The Ilyushin Il-76 long range heavy transport aircraft has been christened the *Gajraj* (King Elephant) in Indian Air Force service.

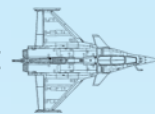
→ A new engine test bed, designed, developed and fabricated by Hindustan Aeronautics Ltd., for the Garrett TPE-331 turboprop engine was inaugurated at the HAL Bangalore complex on 31 August by the Chairman of HAL, Air Marshal MSD Wollen (Retd).

→ The Polar Satellite Launch Vehicle (PSLV) four stage, space rocket, programmed to place IRS satellites in 900 km polar sun-synchroniser orbits from the late 80s, has entered development phase at the Vikram Sarabhai Space Centre (VSSC) at Trivandrum.





# VAYU @ 45



## 1986

→ Formal agreement for the sale to India of HMS *Hermes* was signed on 19 April 1986, with the aircraft carrier to be delivered to the Indian Navy in spring next year.

→ The Government of India and the Soviet Union have finalised an MoU for the supply of MiG-29s for the IAF.

→ Addressing members of the consultative committee attached to the Defence Ministry, Prime Minister Rajiv Gandhi has defended the Light Combat Aircraft (LCA) and said that “if India did not invest in the project now, it might not be possible to develop the multi-mission tactical fighter aircraft which would be required for the IAF from the mid-nineties”.



→ The first five HAL-built Dornier 228 light transport aircraft were handed over to Vayudoot, the regional airline at HAL's Kanpur Division on 22 March.

→ HAL's Korwa Division was formally inaugurated by Prime Minister Rajiv Gandhi on 3 April.

→ Indian Airlines have ordered 19 Airbus Industrie A320s in a deal worth Rs. 1,238 crores, which brings a modern fuel efficient 160 seater shorthaul jet aircraft capable of operating from most current airports in India.

→ The United States has reportedly granted licence to India for General Electric F-404 engines for the Light Combat Aircraft (LCA).

→ The first two Dornier 228 Coastal Surveillance Aircraft, fitted with special sensors, were formally handed over to the Government of India by Dornier GmbH at their Oberpfaffenhofen airfield southwest of Munich, on 7 July.

→ The Indian Air Force is acquiring Mi-26 heavy-lift helicopters from the Soviet Union, the “heaviest and most powerful helicopter in the world”.

→ The foundation stone for India's largest future naval base was laid on 24 October 1986 at Karwar, in Northern Karnataka on India's western coast by Prime Minister Rajiv Gandhi.

## 1987



→ During the Republic Day Parade, there was no flypast by the Indian Air Force. Official reasons given include the danger of bird-hits on the low flying aircraft in formation but it is unofficially known that the IAF was extensively involved with preparations for Exercise *Brass Tacks* along the western border.

→ The Indian Navy's second aircraft carrier, the INS *Viraat* (R-22), formerly the Royal Navy's HMS *Hermes*, arrived at its home port at Bombay on 22 August.

→ The advanced performance MiG-29 air superiority fighter was formally inducted into the Indian Air Force by the Defence Minister, KC Pant, during a ceremony at Lohegaon AFS (Poona) on 6 December.

→ The Indian Foreign Secretary, AP Venkateswaran has stated that in the event of the US providing AWACS to Pakistan, India would be forced to seek similar capability from the Soviet Union.

→ Swedish aerospace company Saab-Scania have offered transfer-of-technology to India on the Light Combat Aircraft project.

→ France has offered “help” to India on the Light Combat Aircraft (LCA) and Avions Marcel Dassault-Breguet Aviation had carried out an independent study, according to Arun Singh, MoS for Defence (R&D).

→ The Aviation Research Centre (ARC) of the Research and Analysis Wing (RAW) has acquired two of the five remaining Air India Boeing 707s for Rs. 9 crores, including spares and landing equipment.

→ The first batch of Dornier 228-201s for the Indian Air Force was completed by Hindustan Aeronautics Limited, Kanpur Division by the end of March 1987.

→ Air India has finalised purchase of one Boeing 747-200 from Singapore Airlines, for \$48 million. This replaces the B-747 which was lost off the Irish coast in 1985.

## 1988

→ Prime Minister Mr Rajiv Gandhi inducted the first Soviet-origin SSN nuclear propelled submarine INS *Chakra* into the Indian Navy at Vishakhapatnam naval base on 3 February.

→ INS *Ranvijay*, the fifth and last of the modified *Kashin*-class destroyers acquired by the Indian Navy from the Soviet Union, has arrived in Bombay.



→ The Tupolev Tu-142M (*Bear-Foxtrot*) long-range MR/ASW aircraft was formally inducted into the Indian Navy on 16 April at a ceremony held at INAS *Hansa* Goa.

→ First of the final Phase Jaguars representing indigenous standard aircraft to be built under licence by HAL at their Bangalore Complex was formally handed over to the IAF by Defence Minister KC Pant on 28 January.

→ First test-firing of indigenous Prithvi, tactical surface-to-surface missile, took place at Sriharikota space station in Andhra Pradesh on 25 February.

→ The IAF's fleet of heavy lift Soviet-built Mi-26 and Mi-17 helicopters is being augmented by further numbers in order to support the ground forces deployed in the Siachen glacier area.

→ Mi-25 helicopter gunships of the IAF rocketed and destroyed by cannon fire a major camp of the LTTE in Eastern Sri Lanka on 15 October.

→ India and the United States have signed a 'Letter of Offer and Acceptance' (LOA) opening up the possibility of US cooperation in the projected Rs. 2,000 crore Light Combat Aircraft (LCA) project.

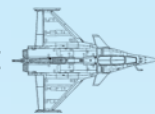
→ The IAF will begin to phase out its MiG-21 fighters from 1992, indicated by the CAS Air Chief Marshal SK Mehra. Several versions of MiG-21s were first inducted in early 1963, followed by licence-manufacture by HAL.

→ The Agriculture Aviation Wing was formally taken over by Vayudoot, on 18 January following its transfer to the Aviation Ministry as directed by the Union Cabinet.

→ The INSAT-1C satellite, designed by ISRO to complement the earlier INSAT-1B, was launched into geostationary orbit above the Indian Ocean on 21 July.



# VAYU @ 45



1989



→ A contract has been signed with a French Government-owned design bureau to carry out project studies on development and construction of the third aircraft carrier for the Indian Navy.

→ The first of a batch of 20 Westland Sea King Mk.42B ASW helicopters was formally accepted by the Indian Navy at Yeovil in West England in mid-January 1989.

→ “The first prototype of the light combat aircraft (LCA) will fly in 1992 and its production version will be ready in 1996”, according to Dr Kota Harinarayana, LCA programme director, ADA.

→ Second test flight of the Prithvi surface-to-surface missile was successfully carried out on 15 September.

→ On 30 September, as the first SSK Type 1500 submarine was undocked and put to sea at Bombay, India joined a select group of ten other technologically advanced countries in the world who build their own submarines.

→ National Aeronautical Laboratory (NAL), which plays an important role in indigenous aerospace efforts, has, in a significant achievement last fiscal year (1988-89) commissioned its second transonic tunnel, designated H3.

→ France has offered India the technology of its HM-7 cryogenic rocket engine for the geosynchronous satellite launch vehicle (GSLV) which is expected to be ready for tests some time during the second half of the '90s.

→ India has entered into an agreement with the French for the carrier's design concept, which is expected to be completed by end-1989 and this would be then subjected to detailed design by the Indian Naval Design Organisation.

1990

→ The first Demonstrator aircraft of the Aerospace Surveillance Warning and Control System (ASWAC) Project has been test-flown in Bangalore.

→ The IAF is equipping two of its units with the HAL-Dornier 228, being Nos. 41 and 59 Squadrons earlier flying DHC Otters in the light logistics support and communications role.

→ The DRDO will soon undertake flight-testing of the indigenously manufactured medium-range, surface-to-air missile *Akash*.

→ In a deal worth US \$ 236 million, the Pakistan Air Force has ordered 50 ex-Royal Australian Air Force Dassault Mirage IIIOs.



→ The Comptroller and Auditor General's (CAG) has reported that the Mirage 2000 in IAF service has been without its key weaponry for two years after induction.

→ In a major development with great security implications for India, the Chinese and Soviets have reportedly made progress on the matter of advanced-technology combat aircraft supplies to the PLA Air Force which currently has a large, but obsolescent, fleet of fighters and attack aircraft.

→ British Secretary of State for Defence Tom King has outlined proposals for reduction in RAF strength under the overall 18 per cent reduction of the armed forces over the next five years approved by the Government.

→ After 32 months of development work, the Chinese Government has terminated its Agreement with the US company Grumman Corporation for upgrading its Shenyang J-8II all-weather fighters including the fire control systems, radar, computers displays, a power system and environmental control systems.

→ The Pakistan Air Force has announced that 95 Chinese-built F-7P Skybolt fighters will be received by them along with a small number of FT-7 operational conversion trainers.

1991

→ INS *Dega*, the Indian Navy's new Naval Air Station, was commissioned at Vishakhapatnam on 21 October by the Chief of Naval Staff Admiral Laxminarayan Ramdas. A brief ceremony involved reading of the Commissioning Order of INS *Dega* hoisting of the ensign and unveiling of a plaque marked the formal commissioning of the Air Station.

→ India made a record purchase of more than \$21 billion worth of arms, largely from the Soviet Union in the 1980s, registering a massive increase in the volume of its arms deliveries from 1983-1986 to 1987-1990 rising from \$8.3 billion in 1983-1986 to over \$13 billion in 1987-1990.

→ On 7 August, India's guided missile programme, crossed yet another milestone with the fifth successful launch of the surface-to-surface missile Prithvi from the Sriharikota space complex.

→ The Bush Administration has threatened to intensify economic sanctions against China if it goes ahead with the planned sale of M-11 missiles to Pakistan.

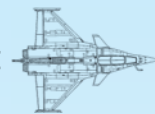


→ The Pakistan Air Force is to receive an additional batch of 40 F-7P fighter aircraft from China.

→ It is confirmed that the Chinese Air Force has received a first, small quantity, of Sukhoi Su-27 long-range air superiority fighters from the Soviet Union.

→ The world's longest range airliner, the Airbus 340, made its maiden flight at Toulouse, France, on 25 October, in a highly successful mission lasting four hours and 47 minutes.

→ “The LCA will be ready for its first test flight in 1995” according to Dr VS Arunachalam, SA to RM and DG DRDO. He said that advanced technology posed some problems and the experience of solving these was invaluable whatever the time spent.



## 1992

→ The IAF's Diamond Jubilee was marked by ceremonial parades and other functions but the Service faces inevitable reduction in force levels unless its pressing requirements are urgently addressed and the picture appears "even more bleak when one considers the aspect of continuous obsolescence and the need to keep up the ongoing process of re-equipment and modernisation".

→ Prototype of HAL's Advanced Light Helicopter will be test flown "positively" by September 1992 according to Chairman HAL.



→ Indian Naval Air Squadron 310 *Cobras* has recently been re-equipped with the Dornier 228 Maritime Patrol Aircraft.

→ Nine women flight cadets will enter the portals of the Indian Air Force Academy at Dundigal, near Hyderabad, on 6 July, 1992.

→ In a significant development, France has agreed to sell 40 Mirage 2000E multi-role fighters for the Pakistan Air Force. The Defence-sale agreements also include the sale of submarines, minesweepers and air defence radars to Pakistan and is seen as a direct consequence of the suspension of all US economic and military aid to Pakistan since October 1990.

→ The Rafale Marine 01 prototype for the French *Aeronavale*, made its maiden flight at Istres on 12 December.

→ Nearly 9 years after the light combat aircraft (LCA) programme was launched, there have been varied reactions to development delays, these varying from cautious optimism to outright adverse commentary.

→ The disappointing performance of India's 3<sup>rd</sup> level airline Vayudoot has been attributed to "lack of professional management, tilt towards individuals self interests, supported by the bureaucracy and the politicians to advance their personal interests at the cost of the State".

## 1993

→ Dr Abdul Kalam, SA to the RM, informed the Committee that the "first roll out" of the light combat aircraft was expected in June 1996, "about six months ahead of schedule".

→ Second prototype of the Advanced Light Helicopter (ALH) was test flown at Bangalore on 8 April 1993 in the presence of General SF Rodrigues and Dr APJ Abdul Kalam SA to the RM.



→ First production JAS39 Gripen made its first flight in Linköping, on 4 March.

→ 40<sup>th</sup> anniversary of the Indian Naval Air Arm was marked by parades and flypasts at INS *Garuda* at Wellington Island, Cochin.

→ Dassault has delivered the first 2-seat Rafale (B01) to the Istres Flight Test Centre for various tests which will be followed by ground run-ups and taxiing tests before the first flight scheduled for the spring of 1993.

→ The CAG has revealed poor record of the MiG-29's RD-33 engines in that 74 per cent of the engines had "failed prematurely".

→ India's defence-related external debt stood at nearly \$11 billion at the end of March 1993, having come down from \$13.6 billion at the conclusion of fiscal year 1990-91.

→ Air Chief Marshal Swaroop Krishna Kaul took over as CAS of the IAF on 1 August 1993.

→ The first ever International Air Show in India (*Avia India '93*) took place at Yelahanka Airfield Bangalore 15-18 December, organised by Convex, a private sector company with considerable experience and expertise in such expositions.

→ Pakistan PM Benazir Bhutto has stated that in view of the continuing impasse concerning supply of the additional 71 F-16 Fighting Falcons long contracted for but withheld by the United States Government under the Pressler Amendment, the Pakistan Government would have to implement new plans to enhance its defence potential.

## 1994

→ It has been officially announced that upgradation of the IAF's MiG-21bis fleet will be responsibility of the MiG-MAPO Bureau of Russia, thus setting to rest much speculation about the possibility of Israeli or US companies being given the task.

→ India and Pakistan have not agreed to pull back their forces from the Siachen Glacier, the world's highest battlefield.

→ The Clinton administration has urged India to consider the "dangerous consequence" of deploying its indigenously developed medium-range surface-to-surface *Prithvi* missile. The US ambassador to India said that the US hopes "India will consider very carefully the wisdom for deploying the missile." Replying to a question about the intermediate range 'Agni' missile, the ambassador-designate said, "Agni is an experimental rocket system".

→ The UK and Swedish Governments have signed a MoU which will form the framework for British Aerospace and Saab to co-operate on defence projects, initially concentrating on Saab's JAS39 Gripen fighter.

→ Maiden flight of the Eurofighter 2000 took place on 27 March 1994 at the Deutsche Aerospace Flight Test Centre at Manching in Germany.

→ The United States have decided to repay Pakistan the \$ 658 million deposited as advance for 71 additional F-16s.



→ Jet Airways, the start up airline headquartered at Bombay has gone global with interline agreements with 31 leading international airlines to fly their passenger and cargo in India.

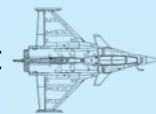
→ The Government will neither allow foreign airlines to operate in the domestic circuit nor will it allow air taxi operators (ATOs) to fly on international routes, as per the Minister of Civil Aviation and Tourism.

→ The Tata Group and Singapore Airlines are planning to establish a new airline in India, which is likely to start off with an initial capitalisation between \$150 million and \$300 million.





# VAYU @ 45



## 1995

- In a severe criticism of the DRDO, Parliament's Standing Committee on Defence has called for a "review" of the Light Combat Aircraft (LCA) project, which, according to it, was taken up without proper ground work.
- The Minister for Defence has stated that the Indian Navy would receive greater financial allocations to make up for reduced effectiveness owing to obsolescence and serviceability problems.
- India plans to be the third partner (along with China and South Korea) for development of the 100-plus seater 'Asian Express' jetliner.
- Following the American volte face on the F-16 deal, the Pakistan government is now considering the Swedish JAS 39 Gripen as a possible replacement. According to reports, the Pakistan government has already sent a letter to Sweden, and intends to follow it up shortly with an evaluation of the type.



- The US Air Force has declared its 17<sup>th</sup> Airlift Squadron at Charleston AFB, South Carolina, equipped with 13 McDonnell Douglas C-17 Globemaster IIIs, as fully operational.
- Hyderabad based VIF Airways new generation Dornier 328 regional airliners with the first aircraft flying on scheduled service out of Begumpet (Hyderabad) airport in May 1995.
- Mr Russi Mody, Chairman of Air India and Indian Airlines, visualises merger of both the airlines in two to three years time as the emerging aviation scene will make this imperative.
- Boeing has decided to double the amount of business it gives to HAL from \$ 5 million to \$ 10 million. HAL began with components for the B-747 and has now moved on to manufacture the overwing doors for the A.320.

## 1996

- Sources in Moscow indicate that India and Russia are 'on the brink' of a deal covering the sale of 40 Sukhoi Su-30MK multi-role fighter aircraft.
- Senior BJP leader Atal Behari Vajpayee has sharply criticised the outgoing Congress government's reported decision to buy an initial eight Sukhoi Su-30s at a staggering cost of Rs 1,200 crores and darkly hinted at the possibility of "huge commissions" in the deal.
- "Two prototypes of the Light Combat Aircraft (LCA) Technology Demonstrators will fly in the middle of next year" according to Dr Kota Hari Narayana, LCA Project Director.
- The Government of India has ruled out licensing of any new foreign or domestic airline except for operations on short-haul routes, at present.
- Pakistan has confirmed that the 'mid-tech' Super-7 fighter will be produced in a joint venture by China and Pakistan, and is meant to replace all Chinese-origin aircraft on the inventory of the PAF.



- Pakistan may have acquired 15 *Scud* ground-to-ground ballistic missiles captured by the Taliban in Kabul, which can be equipped with nuclear warheads.
- An Airbus Industrie survey estimates that airlines in India will acquire some 275 aircraft worth \$20 billion between now and 2014, whilst 78 ageing aircraft will be retired and replaced.
- Indian Airlines have stalled plans to acquire 50-seater turboprop airliners to select for the north-eastern sector. The technical evaluation committee was unable to justify selection of the three types short-listed: Saab 2000 has airfield limitations, Fokker have closed down and DHC (Bombardier) "are very casual".

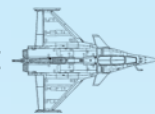
## 1997



- The first four Sukhoi Su-30Ks for the IAF, disassembled and in crates, have been flown to Poona by special Antonov An-124 aircraft, arriving during the second week of March 1997.
- Formal contract for the Su-30s (worth US \$ 1.8 billion) was signed by Mr TK Banerji, Secretary for Defence with representatives of the Irkutsk Aviation Industrial Association on 30 November 1996 which also provided for licence production of the Su-30 in India by Hindustan Aeronautics Limited.
- The new *INS Delhi*, guided missile destroyer being indigenously built under 'Project 15' was commissioned at Bombay on 15 December.
- Developed under the Integrated Guided Missile Programme (IGMDP), two test firings of Trishul SAMs took place on 25 November from the Chandipur Interim Test Range (ITR).
- The Chinese Government is reportedly considering acquisition of the Rafale, with an official visit to Dassault in 1996, while, more recently, French representatives including those from Rafale's engine manufacturer Snecma, "have spent time in Beijing".
- Three regional airliner manufacturers have submitted commercial bids to Indian Airlines, with the airline set to purchase six aircraft initially and 12 more at a later date.
- Maiden flight of the first Boeing F-22 Raptor (billed as the "USAF's air dominance fighter for the 21<sup>st</sup> century") took place on 7 September 1997.
- On 8 October, the German *Bundestag* finally cleared procurement of 180 Eurofighter 2000s for the Luftwaffe.



# VAYU @ 45



## 1998



→ India's integrated ballistic missile programme had received a major boost with the BJP Government taking a decision to develop and produce a full-fledged missile system based on the Agni technology.

→ The Pakistan Air Force, which has been desperately looking for a new fighter aircraft to replace the obsolescent fighter-types in its inventory, has been keen on Russian aircraft types for some time, particularly the MiG-29 and Su-27.

→ Naval version of the *Trishul* surface-to-air missile was tested from an Indian naval establishment near Cochin on 3 June.

→ The Indian Navy is to acquire 50 more Russian-made Kh-35 anti-ship missiles for its three new 6,700 tonne INS *Delhi*-class destroyers at a cost of \$150 million.

→ The first MiG-21bis of the Indian Air Force (MiG-MAPO designation MiG-21-93) made its first flight at Enizhny Novgorod (formerly Gorky) on 7 October 1998.

→ Belgium has agreed to sell 24 Mirage 5s to Pakistan, these aircraft being in varying storage conditions after being phased out of service.

→ Air Chief Marshal Anil Y Tipnis, will take over as next Chief of the Air Staff IAF from 1 January 1999.

→ Russia is currently executing an order to build six frigates for the Indian Navy, a submarine programme is underway and some maritime reconnaissance/attack helicopters are also understood to have been ordered.

→ Russia has outlined a new \$700 million defence package to India for the sale of the "modernised" 44,500-tonne aircraft carrier *Admiral Gorshkov* equipped with 24 MiG-29K fighters.

## 1999

→ Indian defence deals with Israel worth near \$200 million are in the offing, with the visit to Israel by Brajesh Mishra, National Security Advisor to the Vajpayee Government, in the first week of September to endorse Indian requirements.

→ Air Chief Marshal AY Tipnis said that "induction of the Advanced Jet Trainer must be accorded the highest priority to ensure operational preparedness of the IAF."



→ IAF fighter-bombers and helicopter gunships went into action on 26 May 1999, with strike missions launched against heavily armed, Pakistani-led infiltrators occupying the higher reaches of Kashmir's Dras and Kargil sectors.

→ In the second half of June, four more Su-30Ks were airlifted to India and another six are to follow even while more *Tungushka* air defence systems have been shipped, along with T-90 tanks for field trials.

→ In a major setback to India's own Airborne Early Warning development programme, the HAL (Avro) 748 Airborne Surveillance Platform (ASP) technology demonstrator aircraft had a fatal crash some 2.5 km short of the runway at INS *Rajali*, near Arrakonam.

→ Mr George Fernandes accepted the fact that the LCA programme had suffered a setback after the US had imposed sanctions "but the great Indian spirit has prevailed" and the country will find a solution to the embargo on avionics, flight-control systems and the power plant, he stated.

→ Seven more Dornier 228 MPAs have been ordered by the Indian Coast Guard, equipped with state-of-the-art mission sensors required for maritime patrol operations and the surveillance of India's 3500 km long coastline.

## 2000

→ Air Chief Marshal AY Tipnis has said that the IAF is considering an alternative to the Light Combat Aircraft (LCA), including purchase of new aircraft.

→ The MoD's Standing-Committee has tabled reports on the *Demands for Grants* (2000-2001) on 19th April. The foremost is for the Advanced Jet Trainer (AJT), 66 of which are to be acquired for the IAF.

→ The already long-dragged out programme of the IAF for an AJT may have run into new and unexpected problems with the newly constituted Parliamentary Standing Committee on Defence demanding that the Government virtually "throw open" the competition to aircraft manufacturers world-wide.

→ The Indian Navy plans to enhance its maritime surveillance and strike capabilities by upgrading its existing fleet of Tupolev Tu-142M and Ilyushin Il-38 maritime patrol / ASW aircraft and acquiring "some numbers" of supersonic Tupolev Tu-22M3 bombers on lease from Russia.



→ Eight more ships of the Indian Navy would be commissioned during the year according to Defence Minister George Fernandes, the first in the series being the fleet tanker INS *Aditya* which was commissioned in Calcutta recently, followed by another first in the series, *INS Brahmaputra* glided missile frigate.

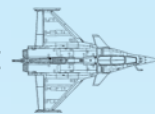
→ An agreement was signed on 28 December 2000 between the Irkut Aircraft Production Organisation (IAPO) HAL for licence-production of Sukhoi Su-30MKI multi-role combat aircraft in India, the programme to span 17 years according to the Interfax news agency of Moscow.

→ After six years of introspection, the GoI has decided to privatise Indian Airlines by 31 March 2001 by selling 51 percent of its equity. Of this, a block of 26 percent will be sold to a strategic investor in the joint venture. According to Arun Jaitley, the Minister concerned, the Cabinet Committee on disinvestment approved the case on 24 January, which conclusively overturns the earlier policy of selling only minority stakes in public sector undertakings.





# VAYU @ 45



## 2001



→ The first Technology Demonstrator (TD-1) of the Light Combat Aircraft (LCA) made its maiden flight on 4 January 2001 from HAL's Bangalore airport. Piloted by Wg Cdr Rajiv Kothiyal of ADA's National Flight Test Centre, the flight lasted 18 minutes and was "uneventful".

→ As part of protocols signed at Moscow on 6 June was one to "jointly develop fifth generation fighter" which would fly by 2006 and be ready for induction by 2009. Observers feel that this new fighter could be an attractive option for India, which has a definite requirement for such a new generation fighter.

→ The Agni II 2000-km. range ballistic missile (IRBM) with a one-tonne payload was successfully test launched on 17 January 2001 from the Interim Test Range at Inner Wheeler Island.

→ India has embarked upon a major submarine building programme to manufacture 24 'Hunter' and 'Killer' submarines as part of efforts to make underwater, surface and air wings of the Navy more potent by equipping them with long-range missiles.

→ India's plan to launch an unmanned mission to the moon has received a boost with scientists at the Ahmedabad-based Physical Research Laboratory (PRL) supporting the convention that the country has the technological capability for the project.

→ ADA "is studying accelerated development of the LCA after the US Government lifted sanctions on 22 September". The LCA development had been severely hampered by the sanctions imposed in 1998 after India and Pakistan tested nuclear weapons.

→ Flight tests of the two IAF MiG-21bis fighters, upgraded to MiG-21bis UPG standard (earlier Russian designation was MiG-21-93) have now been completed by RSK MiG. Another 123 MiG-21bis in the programme will be upgraded over the next four years at HAL Nasik.

## 2002



→ The Cabinet has given "go-ahead" for the country's nuclear arsenal to be placed under a new Strategic Nuclear Command (SNC), which will function under the Integrated Defence Staff set-up, with the first C-in-C of the SNC likely to be from the Indian Air Force.

→ With successful test-flight of the supersonic missile BrahMos at the Interim Test Range at Balasore on 28 April, the Indian Navy is all set to launch this from a surface ship in a few months.

→ India ranked second only to the United Arab Emirates (UAE) in arms transfer agreements made by developing nations during 1998-2001, according to a report prepared for the US Congress.

→ To secure surveillance of the Line of Control (LoC) in J&K, the Indian Army is importing man-portable radars capable of detecting movements across the border.

→ The medium range surface-to-air missile *Akash* was test-fired from the interim test range (ITR) at Chandipur-on-Sea, the *Akash*, which is one of the five missiles under various stages of development by the DRDO, has a range of 25km and the capability to carry a payload of 55kg, supported by state-of-the-art radar named *Rajendra*, which can keep track of 64 aircraft simultaneously within a range of 40 to 60km.

→ In a complete reversal of its existing policy, the Indian Government will allow entry of foreign airlines into domestic aviation with a foreign equity of up to 49 per cent.

→ The Indian space programme took another leap forward on 24 January with successful launch of the third generation Communication satellite INSAT-3C. A 'multi-purpose space system', the satellite is expected to sharply boost telecommunication and broadcasting facilities in the country.

## 2003

→ Over four years after India declared itself a state with nuclear weapons, the Cabinet Committee on Security (CCS) on 4 January 2003 adopted and made public the key elements of its nuclear doctrine and command structure.

→ Absence of Advanced Jet Trainers (AJTs) was the key reason for frequent crashes of MiG-21s. "It is penny wise and pound foolish to not go in for the AJTs," was stated by an MP, while pointing to a statement of Defence Minister George Fernandes that "mysterious elements" were preventing the purchase of the jet trainers.



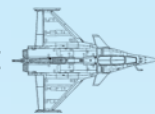
→ At a ceremony in Tashkent on 28 February, the first of six Il-78s equipped mid-air refuelling, was officially handed over to the Indian Air Force.

→ Even as the Tejas LCA (TD-1) scored a century of test flights on 6 September, being flown by Gp. Capt. Rakesh Bhadauria, the former ADA Director responsible for development Dr Kota Harinaryana has mooted development of its spin-off, the Medium Combat Aircraft (MCA) which being projected as a replacement for the Jaguar and Mirage 2000 which the IAF operates and which will be phased out by 2020.

→ INS *Trishul*, commissioned at St. Petersburg last June, has arrived in India.

→ In the largest scale naval exercises held between India and Russia, major warships from the former's Western and Eastern Naval Commands and frontline warships from the Russian Pacific and Black Sea fleets, began manoeuvres off the Yemeni island of Sokotra in the Western Arabian Sea during the fourth week of May.

→ Air India has announced its biggest one-time plan to acquire 28 new aircraft as part of fleet expansion at the cost of over Rs. 10,000 crore.



## 2004

- Admiral Arun Prakash has taken over as the new Chief of the Naval Staff.
- The much awaited MoU between the Governments of India and UK was signed in New Delhi on 19 March 2004, "for the effective and uninterrupted implementation of the contracts regarding acquisition of 66 Hawk Advance Jet Trainers (AJTs) from BAE systems and other equipment manufacturers of UK."
- The Indian Air Force has begun work on developing an Aerospace Command to bring the country's space-based assets under one umbrella.
- The stealth frigate INS *Tabar* was commissioned in mid-April, the third of the *Talwar* class of guided missile frigates being built by Russia for the Indian Navy.



- First prototype of the NAL *Saras* light transport aircraft powered by twin PT6A-66 turboprop pusher engines, flat rated to 850 s.h.p. each, made its maiden flight at HAL Airport Bangalore on 29 May 2004, piloted by test pilots from the ASTE, who flew the *Saras* for 22 minutes and reached an altitude of 7,000 feet.
- The Indian Navy commissioned its latest Guided Missile Frigate INS *Betwa* on 7 July 2004 at Kolkata.
- Over a year after its induction into the Indian Army, the Agni II intermediate range ballistic missile (IRBM) was test fired from the launch site on Wheeler Island in the Bay of Bengal on 29 August 2004.
- An improved version of the Prithvi-II missile, having higher accuracy, was launched from the Interim Test Range (ITR), Balasore in mid-March. The shore-based and down range tracking system like radar, EOTS and telemetry of ITR at Balasore tracked the flight path of the missile till impact, validating the accuracy of the missile guidance.
- Air Marshal Shashindra Pal Tyagi, earlier AOC-in-C Western Air Command has been appointed as next Chief of the Air Staff.

## 2005

- In a major defence deal announced on 12 September 2005, the Government of India confirmed acquisition of French *Scorpene*-class submarines worth \$3 billion.
- The GoI has approved construction of an Air Defence Ship (ADS) at Cochin Shipyard Ltd. (CSL), which has signed two contracts with Fincantieri, an Italian shipyard for undertaking design, integration, installation, and commissioning of the propulsion system for the ADS.
- Production of *BrahMos*, supersonic cruise missile co-developed by India and Russia, has begun in the country and the Indian Navy has placed orders for it, the Navy had identified such vessels on which the *BrahMos* missiles would be integrated.
- On the eve of Indian Prime Minister Dr Manmohan Singh's visit to Moscow in early May 2005, the Russian Government confirmed its offer to replace the first batch of 18 Sukhoi Su-30Ks with new build Su-30MKIs of the definitive standard selected by the Indian Air Force.



- InterGlobe Enterprises Limited has launched the new low-cost airline IndiGo and has committed for 100 A320 family of aircraft with Airbus, the venture being jointly promoted by InterGlobe Enterprise Limited and Rakesh Gangwal, globally recognised for his management skills and expertise in the airline industry.
- India and Israel have entered into military purchases worth Rs. 11,882.54 crores.
- Jet Airways' first Boeing 737-800 with winglets was delivered in late November, making it the first regularly scheduled commercial airplane with winglets to operate in the country.

## 2006

- In one of the biggest defence deals with the US since 2002, the government has approved purchase of the amphibious transport warship USS *Trenton* to bolster the Indian Navy's strategic sea-lift capabilities.
- Release of RFPs for Medium-Multi Role Combat Aircraft (M-MRCA) has been further delayed. Six companies have expected for receive an invitation to tender for the 126 aircraft fighter requirement and the document had reportedly been scheduled for release 6 months back.
- CNS Admiral Arun Prakash commissioned INAS 342, the Navy's first UAV Squadron at Cochin on 6 January 2006.

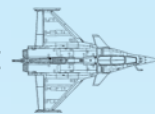


- On 9 March 2006, the Cabinet Committee for Security cleared the proposal for acquisition of 12 HJT-36 intermediate jet trainers by the Indian Air Force from HAL at a cost of Rs. 486.82 crore.
- Almost exactly nine years after the first batch of Sukhoi Su-30Ks were received by the Indian Air Force from Russia to re-equip No.24 Squadron at Poona, these 18 aircraft are to be returned to their country of origin for transfer and further service within the air arm of Belarus.
- Defence Minister Pranab Mukherjee released the Joint Doctrine prepared by Headquarters Integrated Defence Staff, which is considered a "landmark" for the three armed forces for developing a truly 'joint' capability.
- The Navy has successfully integrated anti-missile defences into its operational capability and now wants to have Baraks on additional warships, starting with the INS *Brahmaputra* missile frigate.
- Vice Admiral Sureesh Mehta has been appointed as next Chief of the Naval Staff, taking over from Admiral Arun Prakash, who retires on 31 October 2006.
- Jet Airways has concluded negotiations to buy Air Sahara for Rs. 2500 crore (\$560 million) thus creating the largest airline in India in terms of fleet, turnover and evaluation.





# VAYU @ 45



## 2007

- Defence Minister AK Antony has dispelled misgivings about acquisition of 126 MMRCAs for the IAF, an RFP for which is yet to be issued, this assurance to be seen in light of the concerns addressed by the CAS in July 2006 to the then Defence Minister on the depleting force levels of the IAF and urging expeditious remedial steps.
- Maiden flight of the Indian Navy's first MiG-29KUB took place in January at the Gromov Flight Research Institute, Zhukovskiy.
- Air Marshal Fali Homi Major has taken over as Chief of the Air Staff, IAF prior to which he was AOC-in-C, Eastern Air Command.
- The Indian Air Force has embarked upon acquisition of longer range air-to-air missiles, its dominance in offensive air superiority operations presently being "dented" by the supply of similar performance BVR missiles to Pakistan by the USA.
- The first Tejas LCA of the Limited Series Production batch (LSP-1) with tail number KH2010, made its maiden flight from HAL's Bangalore airfield on 25 April 2007.
- Second prototype Saras light transport aircraft (PT-2) with registration VT-XRM (for 'Raj Mahindra') made its maiden flight on 18 April 2007 from HAL Airport, Bangalore.
- The USS *Nimitz* docked in Chennai in early July, the first ever port call in India by a US aircraft carrier and a "landmark event in US-India bilateral relations."



- In its tenth flight conducted from Satish Dhawan Space Centre (SDSC) at Sriharikota on 10 January 2006, ISRO's Polar Satellite Launch Vehicle PSLV-C7, successfully launched four satellites into a 635km high polar orbit.

## 2008

- The first step towards meeting the IAF's requirement for 126 medium-multi role combat aircraft, (MMRCA) which has excited much international interest, was taken on 28 April when representatives of six companies supported by respective Government officials, submitted their proposals in response to the RFPs received in August 2007.
- Dassault have reportedly made an offer to supply the IAF with 40 Rafales as "a short term measure to augment its combat force."
- The government has ruled out any plans for "a strategic partner" of the Tejas LCA programme, a total of Rs. 4806 crore having been spent till date on development.



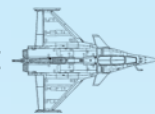
- The Cabinet Committee on Security has approved procurement of 159 Dhruv ALH at a cost of over Rs. 14,000 crore, for the Army and the Air Force.
- The IAF has undertaken trials of the Agusta Westland AW101 and Sikorsky S-92 in January 2008, these types competing for the IAF requirement for a new medium-lift and VIP transport helicopter.
- The Agni-1 strategic missile launched on 23 March 2008 from the Island Launch Complex in Orissa had "textbook performance" in terms of range, accuracy and lethality.
- The IAF has initiated processes for inducting the medium-range Akash SAM and is expected to place an order soon, initially for "two squadrons" worth.
- The PSLV-C9, India's versatile Polar Satellite Launch Vehicle, launched ten satellites including the country's latest remote sensing satellite CARTOSAT-2A, from ISRO's Satish Dhawan Space Centre on 28 April.

## 2009

- First of the six contenders for the IAF's M-MRCA tender began flight trials at Bangalore on 17 August 2009, being a pair of F/A-18F Super Hornets.
- India's first indigenously built nuclear-propelled strategic submarine INS 'Arihant' was launched on 26 July 2009, at the Ship Building Centre, Visakhapatnam.
- The GoI have cleared the largest ever indigenous defence contract, worth Rs. 45,000 crore, for the production of seven advanced stealth frigates for the Navy at Shipyards in Kolkata and Mumbai.
- The Government of India has selected Boeing IDS to provide eight P-8(I) long-range maritime reconnaissance and anti-submarine warfare aircraft to the Indian Navy.
- The Government has appointed Air Marshal Pradeep Vasant Naik (presently Vice Chief of the Air Staff) as the next Chief of the Air Staff with effect from 31 May 2009.



- The first of three IL-76TD AWACS aircraft fitted with the Israeli 'Phalcon' system for the Indian Air Force (IAF) arrived in India on 25 May 2009, with first landing at the Air Force Station, Jamnagar.
- Even as Tejas LCA development flight trials have continued at Bangalore, with the 1100th sortie being flown in end-April 2009, bomb dropping trials were successfully conducted by three aircraft at the Jamnagar ranges.
- Russian shipyards have begun full-scale construction of three more *Krivak*-class stealth frigates to be armed with anti-ship version of BrahMos cruise missiles for the Indian Navy, the new warships to be delivered to India in 2011-2012.



## 2010

→ On the eve of President Barak Obama's visit to India, the Government has acquiesced to the IAF's request for increasing the number of Boeing C-17 Globemaster IIIs heavy airlift aircraft required, from ten to sixteen.

→ The Governments of India and Russia have signed several agreements to deepen co-operation on the T.50 (or PAK-FA) fifth-generation fighter. Alexander Klementiev, vice president and deputy director general at Sukhoi Aviation Holding stated, "The joint venture is going very well. Both parties are happy now".



→ In what has virtually become a pattern, the Indian Air Forces' steadily expanding fleet of Sukhoi Su-30MKI fleet of 'air dominance' fighters is to be augmented by another batch of these aircraft, increasing contracted numbers by another 42 aircraft.

→ The IAF intends to equip its Sukhoi Su-30MKIs with air-launched BrahMos supersonic anti-ship missiles even as the development of a BrahMos Mk.II has been announced which will be hypersonic (Mach 5-7).

→ The Government of India has confirmed a \$2.2 billion deal with France to upgrade the fleet of 51 Mirage 2000 fighters, "to enhance their combat capabilities and increase service life."

→ "India has agreed to buy 250-300 advanced stealth fighters from Russia, to be jointly developed and manufactured," stated Defence Minister AK Antony on 7 October.

→ An additional four Boeing P-8I long range maritime patrol/anti-submarine warfare aircraft will be acquired by the Indian Navy to supplement the 8 similar aircraft ordered earlier, for \$2.1 billion.

## 2011

→ Even as the last MiG-21FL (Type 77), in service with the IAF since 1996, is to be retired by 2012, the remaining five MiG-21MF squadrons will follow into retirement two years later, with the last of the six MiG-21 bison squadrons phased out by 2017.

→ Concerning 'Initial Operational Clearance' of the Tejas LCA at HAL in Bangalore on 10 January 2011, the Minister for Defence handed over the 'Certificate of Release to Service' to the IAF.

→ The MoD has issued a global RFI (request for Information) for procuring integrated computer and communication systems (ICCS) for the infantry, which arm constitutes well over one-third of the 1.13 million-strong Indian Army.

→ The Government has announced that Air Marshal NAK Browne will take over as the next Chief of the Air Staff on retirement of the present incumbent Air Marshal Pradeep Naik on 31 July 2011.

→ On 27 April 2011, just days before the commercial bids submitted by the six contenders for the M-MRCA programme would have become invalid, the Ministry of Defence, asked Eurofighter and Dassault to extend the validity (or re-submission) of their offers till end of the year.

→ The Indian Army's Aviation Directorate is to be expanded with attack and tactical assault helicopters embedded with the three Strike Corps.



→ The third and fourth of six Lockheed Martin C-130J Super Hercules for the Indian Air Force departed the company's facility in Marietta en route to Air Force Station Hindan in mid-June.

→ The Government has cleared acquisition of eight LCUs (landing craft utility) capable of 'hard beaching' on shores, to improve the Navy's amphibious warfare and island projection capabilities.

## 2012

→ On 31 January 2012 Defence Minister AK Antony announced that acquisition process had begun for the Dassault Rafale which was selected to meet the IAF's MMRCA requirement.

→ Air Chief Marshal NAK Browne confirmed a number of decisions taken by the GoI which concerned IAF modernisation and expansion. These include the decision on procurement of 22 Boeing AH-64 Apache attack helicopters and induction of more Sukhoi Su-30MKI air dominance fighters.

→ On 3 May 2012 the Cabinet Committee on Security (CCS), gave approval for procurement of 75 Pilatus PC-7 Mk.II basic training aircraft from the Swiss company.

→ The Cabinet Committee on Security (CCS), chaired by Prime Minister Manmohan Singh, cleared the acquisition of 500 MICA air-to-air missiles from European firm MBDA.

→ Lt. Gen Bikram Singh, presently GOC-in-C Eastern Command, has been appointed as the next Army Chief from 31 May 2012 to succeed General VK Singh.

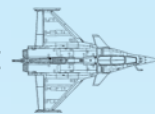
→ The Defence Acquisition Council has cleared 14 additional HAL-built Dornier 228 light transport aircraft for the Indian Air Force.

→ As a prelude to the acquisition of Boeing Apache helicopters by the Indian Air Force, the US Government is offering 245 Stinger missiles and 56 launchers to India as part of the weapons package.

→ Maiden flight of the first Jaguar strike fighter modified to DARIN III standards took place on 28 November, 2012 at HAL's Airport Bangalore.







## 2013

→ The Airbus A330 MRTT (Multi Role Tanker Transport) has been selected to provide six in-flight refuelling tankers to the Indian Air Force, chosen instead of the Ilyushin Il-78MKI, six of which are already operated by the IAF. The RFP for the new tankers was reissued in September 2010 after nine months after a similar contract featuring the same competing aircraft was withdrawn. Final contract is expected during FY 2013-14.

→ Test flights by MiG-29K/KUB fighters have been carried out by Russian test pilots from the carrier *Admiral Gorshkov*, before its commissioning as the INS *Vikramaditya*.



→ The Indian Air Force received its first Boeing C-17 Globemaster III in-country when the first of this new heavy transport aircraft landed at Air Force Station Hindan on 18 June 2013.

→ Some 90 aircraft, mostly helicopters, of the Indian Air Force, Army and civilian operators evacuated thousands of stranded pilgrims and local inhabitants from the Uttarakhand hills following the 'Himalayan Tsunami' in June.

→ The Agni 5, India's long range inter-continental ballistic missile and designed to deliver nuclear warhead with high precision, was successfully launched on 15 September 2013.

→ The first Boeing P-8I LRMR/ASW aircraft of INAS 312 arrived at INS Utkrosh airfield in Port Blair on 6 August 2013.

→ The Pilatus PC-7 Mk.II basic trainer aircraft was formally inducted into IAF service at the AFA, Dundigal on 31 May 2013.

→ The Government has appointed Air Marshal Arup Raha, presently VCAS as the next Air Chief on retirement of the present incumbent on 31 December 2013.

## 2014

→ Lt. Gen Dalbir Singh has been appointed as the next Army Chief, to succeed General Bikram Singh, due to retire on 31 July.

→ Following the dramatic resignation of Admiral DK Joshi on 26 February 2014, claiming moral responsibility for a spate of accidents affecting the Navy's warships, the Indian Navy functioned without a chief for close to two months before Admiral Robin K Dhowan assumed charge.

→ Five modernised Antonov An-32s arrived at Kanpur from the Ukraine on 29 March 2014, being the seventh batch of upgraded An-32s delivered to India, bringing the total number to 35.



→ Boeing has delivered the fifth P-8I maritime patrol aircraft to the Indian Navy "on schedule", fulfilling the first half of a contract for eight aircraft.

→ The Border Security Force (BSF) is to procure eight more helicopters from Russia to enhance mobility of troops engaged in anti-Maoist operations.

→ The Indian Government has signed a £250 million contract with European missile manufacturer MBDA to equip the Indian Air Force's Sepecat/HAL Jaguar strike aircraft with the company's ASRAAM short-range air-to-air missile.

→ On 29 August 2014, the Government's Defence Acquisition Council (DAC) approved the procurement of 22 Boeing AH-64E Apaches and 15 CH-47F Chinooks, for an estimated US \$2 billion.

→ The new Tata-SIA joint venture airline *Vistara* marks the return of Tata's in the airline industry after 1953 when Air India was nationalised. *Vistara* will initially have five A320-200s in its fleet by the end of 2014.

## 2015

→ Indian Prime Minister Narendra Modi announced that he had "requested" the French Government to make available 36 Dassault Rafales for the Indian Air Force to meet its urgent requirements.

→ On 9 January 2015 HAL delivered the first overhauled Su-30MKI to the Indian Air Force at HAL Nasik. Dr RK Tyagi, Chairman HAL stated that they would 'act as a single window OEM for supporting the Su-30MKI fleet'.

→ On 17 January 2015, Defence Minister Manohar Parrikar formally handed over the first series production (SP-1) Tejas light combat aircraft to the Indian Air Force at HAL Bangalore.

→ On 25 March 2015 Dassault handed over the first two upgraded IOC-standard Mirage 2000 I/TI aircraft to the Indian Air Force in Istres, southern France.

→ The fourth anti submarine warfare (ASW) corvette of Project-28, INS *Kavaratti*, was launched at Kolkata on 19 May 2015 with RRM Rao Inderjit Singh presiding as Chief Guest at the occasion.

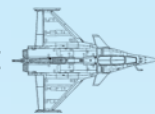
→ The Defence Acquisition Council has selected the Ka-226T as the RSH to be licence-built in India as successor to the HAL Chetak/Cheetah.

→ The first of six *Scorpene*-class diesel-electric attack submarines on order for the Indian Navy was floated out at Mazagon Dock Limited (MDL) in Mumbai on 29 October 2015.



→ The Indian Air Force has re-established its aerobatic display team, the Surya Kirans, with new BAE Hawk Mk.132 aircraft, as part of No.52 Squadron.

→ Slovenian light aircraft manufacturer Pipistrel will supply 194 micro light aircraft to the IAF, IN and NCC.



## 2016

- The Defence Acquisition Council (DAC) has cleared purchase of the Russian S-400 Triumf air defence system involving five units at an estimated cost of Rs 40,000-crore.
- Sweden has offered to manufacture the next generation Gripen MRCA 'with comprehensive technology transfer to India' as also development of futuristic programmes with the ADA to 'consolidate such capability for next 100 years'.
- Civil Aviation Minister P Ashok Gajapathi Raju launched the Ministry's much awaited Regional Connectivity Scheme UDAN in New Delhi.
- The first IAF formation with the Tejas LCA (No.45 Squadron) was formally established at Bangalore on 1 July 2016 with two series production fighters handed over.
- The Indian Navy has commissioned its first nuclear-powered ballistic missile submarine (SSBN) INS *Arihant* in August 2016.



- HAL's HTT-40 basic trainer aircraft made its first official flight on 17 June 2016.
- The Indian Air Force commissioned its first women fighter pilots on 18 June 2016, AFA Dundigal when a total 130 flight cadets were commissioned.
- On 23 September, Indian Defence Minister Manohar Parrikar and his French counterpart Jean-Yves Le Drian signed a formal agreement for purchase of 36 Rafales for the IAF. Reliance ADA Group will pursue a JV with Dassault on Rafale offsets.
- The US Government is in 'full support' of Lockheed Martin and Boeing respectively offering their F-16 Block-70 and F/A-18 Super Hornets to India.

## 2017

- Air Chief Marshal Birender Singh Dhanoa took over as 25th Chief of the Air Staff on 31 December 2016 and General Bipin Rawat took over as the 27th Chief of the Army Staff on the same day.
- The CCS has approved procurement of 12 more Dornier 228 surveillance aircraft for the Indian Navy, equipped with new sensors and systems. Meanwhile, MoS Civil Aviation Jayant Sinha, inaugurated assembly of the first HAL Dornier 228 for the civilian market at HAL Kanpur.



- The first indigenous AEW&C aircraft, based on the Embraer EMB-145 regional airliner, was officially handed over by the Minister of Defence to the CAS on 14 February during Aero India 2017.
- The Indian Navy test-fired a land-attack version of the Brahmos supersonic cruise missile on 21 April.
- The first of the *Scorpene*-class submarines, INS *Kalvari*, was formally delivered to the Indian Navy by Mazagon Docks on 21 September 2017.
- A modified Sukhoi Su-30MKI of the IAF air-launched a BrahMos ALCM supersonic cruise missile on 22 November 2017 against a sea-based target in the Bay of Bengal.
- The Indian Navy has issued RFI for 57 multirole carrier-borne fighters (MRCBF), this exploratory document preceding an eventual RFP.
- IndiGo is to purchase 50 ATR-72-600 regional airliners based on 'certain conditions', beginning regional services to Hyderabad, Chennai, Bengaluru, Mangalore, Madurai and Nagpur.
- The CAS has restated that new fighters for the IAF was a priority and that the RFI was to be issued "very soon".

## 2018

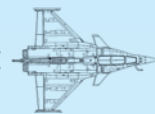


- CNS Admiral Sunil Lanba has projected that the Indian Naval Air Arm will expand to some 500 aircraft 'within a decade'.
- The IAF is to receive 48 more Mi-17V-5 medium lift helicopters to augment its considerable inventory of the same. 90 Mi-17 are to be upgraded by No.3 BRD at Chandigarh.
- India and Russia have finalised contracts for 4 new stealth frigates of the *Upgraded Krivak III-class*.
- Vistara are ordering new airliners including Boeing 787 Dreamliners in preparation for international schedule services plus additional A320/321neo for augmenting the present fleet.
- The Defence Acquisitions Council (DAC) has issued an RFP to HAL for 83 Tejas LCA Mk.1As, production of which is planned to begin from 2019-20.
- The MoD has confirmed that the RFIs for Predator 'B' Sea Guardian [drones] was issued to the US Office of Defence Cooperation on 14 November 2017 "but no transfer of technology is envisaged".
- On 6 April 2018, the Indian Air Force formally issued a 'Request for Information' concerning procurement of 110 aircraft of which 75% would be single-seaters and the balance twin-seaters, "but having full operational capability."
- For two weeks in April 2018, the Indian Air Force carried out its largest exercise extant, the aim of *Gagan Shakti* 2018 being "deployment and employment of IAF assets in a short and intense battle scenarios."
- On 5 October 2018 in New Delhi, Rosoboronexport (part of the Rostec State Corporation) signed a contract to supply India with the S-400 Triumf long-range air defence missile system (ADMS).
- IAI will supply Barak 8 LR-SAMs for installation on seven warships of the Indian Navy, the contract being with BEL which is main contractor for the project.





# VAYU @ 45



## 2019

And so to 2019. With 45 years of publication behind it, the *Vayu* entered the last lap towards completing its half century. The year literally started with a 'bang', with several "live" matters concerning air power in the region, including the IAF's precision strikes against terrorist targets in Khyber Pakhtunkhwa, the short but sharp air battles the next day, all being preceded by the IAF's 'routine' fire power demonstration at the Pokhran range, in between which was the biennial Aero India Show at Bangalore.



→ Tejas LCA Mk.1 was accorded 'limited' final operational clearance (FOC) by CEMILAC at Bangalore on New Year's eve. HAL is to deliver all IOC Tejas LCA Mk.1s to the IAF by 31 March 2019.

→ At Aero India 2019, Lockheed Martin unveiled its F-21 multirole fighter, configured for the IAF and offered as "*For India, From India*".

→ MoD issued Expression of Interest(s) for shortlisting of potential Indian Strategic Partners (SP) and foreign OEMs for the 'Procurement of 111 Naval Utility Helicopters (NUH) for the IN.

→ On 25 March 2019, the IAF formally inducted CH 47F(I) Chinook heavy lift helicopters into service at AFS Chandigarh.

→ The first batch of Boeing AH-64E (I) Apache attack helicopters were inducted at AFS Pathankot in September 2019.



→ Admiral Karambir Singh took over as the 24<sup>th</sup> Chief of the Naval Staff, Indian Navy on 31 May 2019, the 4<sup>th</sup> Naval Aviator as CNS.

→ India's first indigenously designed and developed long-range sub-sonic cruise missile *Nirbhay* was launched on 15 April 2019 from the Integrated Test Range (ITR) at Chandipur in Odisha.



→ The first IAF Rafale (RB001) was 'technically accepted' at Dassault's manufacturing facility at Bordeaux-Mérignac in France on 20 September 2019. Defence Minister Rajnath Singh formally inducted the Rafale into IAF service at a ceremony in France on 8 October 2019.



→ The Navy's fifth Dornier 228 squadron, INAS 313 *Sea Eagles*, was commissioned by the CNS Admiral Karambir Singh on 22 July 2019 at Meenambakkam and was followed by INAS 314 *Raptors* at Porbandar.

→ Discussions are reportedly taking place between the Indian and UK Governments on the design and construction of the Indian Navy's 65,000 tonne indigenous aircraft carrier-II.

→ First arrested landing of the LCA Navy took place at the SBTF in Goa on 13 September, paving the way for carrier landings on INS *Vikramaditya*.

→ Air Marshal RK Bhadauria took over as CAS, IAF on 30 September 2019.

→ Perhaps the largest order for airliners in recent history is that placed by IndiGo for 300 Airbus A320neo family aircraft.

