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SP'S AVIATION

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EXCLUSIVE
Another Regional Airline from India?

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AN EVENTFUL JUNE 2016

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B.K. PANDEY, R.K. BALI

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The National Civil Aviation Policy approved by the Indian Government on June 15, 2016, will be a game changer for the Indian civil aviation industry.

Cover images by: SP Guide Pubns

LEADING FROM THE FRONT: THE MINISTER OF CIVIL AVIATION P. ASHOK GAJAPATHI RAJU STATED THAT THE OBJECTIVES OF THE NATIONAL CIVIL AVIATION POLICY ARE TO "MAKE FLYING AFFORDABLE, SAFE, CONVENIENT", PROMOTE BALANCED REGIONAL GROWTH, TOURISM, INFRASTRUCTURE AND, MOST IMPORTANT OF ALL, TO HELP IMPROVE THE EASE OF DOING BUSINESS

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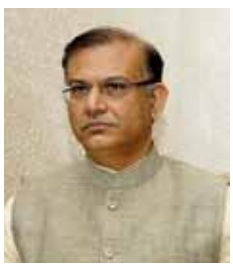
Dr Subhash Ramrao Bhamre
Minister of State for Defence



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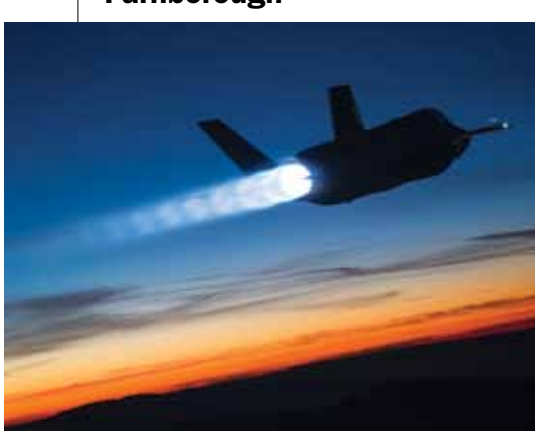

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INDIAN AIR FORCE DESERVES THE KUDOS ON TWO FRONTS: FIRST, INDUCTION OF THREE WOMEN PILOTS INTO THE COMBAT ROLE THEREBY BREAKING THE BARRIERS; SECOND, INDUCTION OF TEJAS, THE LCA, INTO ITS SQUADRON NAMELY FLYING DAGGERS 45. THE REASON WHY THIS EVENT BECOMES REALLY IMPORTANT IS THAT THE TEJAS FINALLY REACHES ITS DESTINATION OF OFFERING COMBAT SERVICE TO IAF.

GONE MONTH HAS BEEN quite eventful for India's civil aviation sector. The Ministry of Civil Aviation (MoCA) released the National Civil Aviation Policy. Same time the Government of India declared increase in FDI up to 100 per cent for aviation sector. As June ended, we also witnessed the release of draft Regional Connectivity Scheme by the Ministry which should prove to be the catalyst for regional connectivity in India as claimed by the Ministry. The industry has been invited to comment on the scheme by July 22.

The very important factor behind the release of the said policy documents is that the government has shown willingness to not only receive the feedbacks and comments from the industry but to implement some of the ideas which can be beneficial for the country's civil aviation industry and the passengers at large.

It was also interesting to note that the Secretary of Civil Aviation Rajiv Choubey invited inputs from the industry as to how to reduce the cost of leasing of aircraft during one of the seminars supported by the Ministry. He argued that the cost control will bring in the potential of massive growth particularly in regional aviation segment of India which otherwise remains completely untapped.

We have therefore included some articles which attempt to address such developments. My very good friend Byron Bohlman who has, apart from being the industry expert, been heading the marketing of one of the global players in aviation world, written an article on the Cost of Leasing if it can really be affordable. Byron has also presented the case and the need of right aircraft with right capacity for the right demand in his article Competing with Goliaths.

Air Marshal B.K. Pandey, who is also the Editor of *SP's AirBuz* (sister journal), has commented holistically on the National Civil Aviation Policy and also the draft Regional Connectivity Scheme. He has been joined by Rohit Kapur (former President of BAOA) suggesting the foundation and the pillars of civil aviation need a careful look else even the greatest of the policies will bring in very little changes. In fact, Air Marshal Pandey has been joined by R.K. Bali (Managing Director of BAOA) as well who has commented on civil aviation policy and the draft Regional Connectivity Scheme, suggested the key steps which will surely help effective implementation.

R. Chandrakanth has written an article on yet another start-up from down South of India on regional connectivity. Does this mean that the government's push for regional connectivity has started bearing fruit? Our readers should read and decide. This issue also includes a recently conducted interview with Kanika Tekriwal by Chandrakanth who pioneered the web-based booking process for the general and business aviation passengers. He also argues that the business aviation in India is still going pretty slow in his another article and drawing the attention of the government for support to this sector which still appears to have been kind of neglected.

Further, the issue touches upon the induction of LCA Tejas which finally gets inducted into the Indian Air Force (IAF) taking a time line of almost 33 years. Irrespective of prolonged delay, the stakeholders of Tejas and indeed our Air Force deserve kudos. IAF specifically announced and inducted three women pilots into combat role. This has been reviewed by Air Marshal Pandey in his piece Breaking the Barriers. Moreover on space front ISRO has done immensely commendable job yet again – a report by Chandrakanth is included as to how ISRO is taking the country onto the global space map.

This issue not only refers to eventful period but also offers much more to our readers. We very much hope they will not only enjoy reading the new issue but might feel rejuvenated in the process.

Happy reading!

JAYANT BARANWAL
PUBLISHER & EDITOR-IN-CHIEF

NEWS WITH VIEWS

NEWS:

SUPPLY OF F-16 BY THE US TO PAKISTAN STALLED

As per a report in the media, Pakistan seems to have failed to seal the $700-million deal for the purchase of eight F-16 fighter jets from Lockheed Martin Corporation of the US following a row between the two countries over their financing. The Pakistani Government was required to provide the letter of acceptance for purchase of the eight F-16 fighter jets by May 24, 2016;

but *Dawn* newspaper reported that the document was not issued leading to expiry of the offer. "Pakistan decided not to fully fund the case with national funds, so the terms of sale have now expired," a diplomatic source was quoted as saying to the newspaper. However, Pakistan's Ambassador to the US Jalil Abbas Jilani said that "a dead-end has not been reached as yet".

VIEWS:

FOLLOWING THE INITIATION OF a proposal in February this year pertaining to the possible sale of eight F-16 Block 52 Fighting Falcon fighter jets to the Government of Pakistan along with weapons, associated equipment, training and logistics support, the Defense Security Cooperation Agency of the US delivered the required certification notifying the US Congress of the deal which was estimated to be to the tune of $700 million. Ostensibly, the F-16 fighter jets were to be supplied to Pakistan to fight the terrorists active in the North West Frontier Province.

As expected, India expressed disappointment over US administration's decision to sell the F-16 fighter jets to Pakistan. US Ambassador to India Richard Verma was summoned to the Ministry of External Affairs by the Indian Foreign Secretary to convey India's displeasure at this move by the US Government. The US Ambassador to India was told by the Foreign Secretary that India was not in agreement of the rationale put forth by the US Government that the F-16 fighter jets would be used by the Pakistan Government to combat terrorists.

Quite unexpectedly, some of the senior members of the Congress also expressed their concern over the US Government's decision to sell front line fighter jets to Pakistan. They were of the view that the aircraft would, in all likelihood, be used against India in the event of a war and not for combating terrorism which was the justification put forward by the US Government for the deal. They pointed out that despite massive financial aid to the tune of $25 billion to Pakistan to combat terrorism since the 9/11 episode, terrorist organisations continue to operate in Pakistan with impunity and have been impinging on American interests especially in Afghanistan.

The cancellation of the F-16 deal ought to be viewed in the context of the evolving geopolitical situation in the region wherein it appears that there is a paradigm shift in favour of India's security interests. As initially proposed by the US Government, Pakistan was to be sold the eight fighter jets at a subsidised rate of $270 million as against the actual price of $700 million. The difference in the price of $430 million was to be regarded as a part of military aid to Pakistan by the US. However, possibly after vehement objections by the top US lawmakers and hopefully on account of the forward movement in the strategic partnership between India and the US, the Obama Administration decided to cancel military aid and asked the Government of Pakistan to make full payment for the eight F-16 fighter jets.

As per a statement in May this year by Sartaj Aziz, Adviser on Foreign Affairs to the Prime Minister of Pakistan, the nation's ties with the US had witnessed a downward slide on account of the move by the US Congress to block the supply of the fighter jets to Pakistan as a part of military aid. But this does not mean that the problem for the Indian Air Force has been totally alleviated and there is no room for complacency as Pakistan has other readily available options. Defence Minister of Pakistan Khawaja Asif had said recently that Pakistan had the option to explore other sources to meet its defence needs. Somewhat distressed at the growing Indo-US strategic ties, in all likelihood, Pakistan will first turn to China to more than make up for what she may have lost by way of the cancelled F-16 fighter jet deal with the US. In collaboration with China, Pakistan is already manufacturing in-house the JF-17 Thunder. Even though this is said to be a third-generation combat aircraft, Pakistan Air Force has plans to induct nearly 300 of these platforms. Given the ever-strengthening ties between China and Pakistan, the former will only be too willing to provide Pakistan Air Force with its latest stealth fighters such as the Chengdu J-20 and the Shenyang J-31, the export version of which is known as the FC-31. China may in due course even manufacture these aircraft in Pakistan through its joint venture company already functional. China will leave no stone unturned to empower her ally Pakistan to take on a common adversary India.

Apart from China, another option that Pakistan could explore is the acquisition of the Su-35 combat aircraft from Russia. This, however, would be purely a commercial deal bereft of any political connotation. In the context of these developments, it ought to be obvious that India can no longer continue to dither over the acquisition of modern combat aircraft in the numbers required to arrest the alarming erosion that has already taken place in the combat fleet of the IAF. SP

—By Air Marshal B.K. Pandey (Retd)

PHOTOGRAPH: USAF

20 SATELLITES IN A GO!

According to market reports nearly 200 small satellites will be launched in the period 2014 to 2023 and India is perfectly positioned in this segment

THE STRIDES MADE BY the Indian Space Research Organisation (ISRO) are highly commendable as it is not only in the forefront of science, but is also becoming a key commercial enterprise. And in June this year, it created yet another record. ISRO's Polar Satellite Launch Vehicle (PSLV) in its 36th flight (PSLV-C34) successfully launched the 727.5 kg Cartosat-2 Series Satellite along with 19 co-passenger satellites on June 22, 2016 from the Satish Dhawan Space Centre SHAR, Sriharikota. This is the 35th consecutively successful mission of PSLV and the 14th in its 'XL' configuration. The total weight of all the 20 satellites carried on-board PSLV-C34 was 1,288 kg.

RUSSIA HOLDS THE RECORD

After PSLV-C34 lift-off from the second launch pad with the ignition of the first stage, the subsequent important flight events, namely, strap-on ignitions and separations, first stage separation, second stage ignition, heat-shield separation, second stage separation, third stage ignition and separation, fourth stage ignition and cut-off, took place as planned. After a flight of 16 minutes 30 seconds, the satellites achieved a polar Sun Synchronous Orbit of 508 km inclined at an angle of 97.5 degrees to the equator and in the succeeding ten minutes, all the 20 satellites successfully separated from the PSLV fourth stage in a predetermined sequence. In 2008, ISRO had launched ten satellites. Currently, Russia holds the world record for placing the most number of satellites in a single launch. Its Dnepr rocket launched 37 satellites in 2014.

REMOTE SENSING SERVICES

After separation, the two solar arrays of Cartosat-2 series satellite were deployed automatically and ISRO's Telemetry, Tracking and Command Network (ISTRAC) at Bengaluru took over control of the satellite. In the coming days, the satellite will be brought to its final operational configuration following which it will begin to provide remote sensing services using its panchromatic (black and white) and multispectral (colour) cameras.

The imagery sent by the Cartosat-2 series satellite will be useful for cartographic applications, urban and rural applications, coastal land use and regulation, utility management like road network monitoring, water distribution, creation of land use maps, precision study, change detection to bring out geographical and manmade features and various other Land Information System and Geographical Information System applications.

INVOLVEMENT OF STUDENTS

Of the 19 co-passenger satellites carried by PSLV-C34, two i.e. SATHYABAMASAT weighing 1.5 kg and SWAYAM weighing one kg, are university/academic institute satellites and were built with the involvement of students from Sathyabama University, Chennai, and College of Engineering, Pune, respectively.

The remaining 17 co-passenger satellites were international customer satellites including 13 from the United States, two from Canada and one each from Germany and Indonesia. With the success of this mission, the total number of satellites launched by ISRO's workhorse PSLV has reached 113, of which 39 are Indian and the remaining 74 from abroad.

The Chairman of ISRO, A.S. Kiran Kumar said that the PSLV has 'done its job.' "Each of these small objects that you are putting into space will carry out their own activity, which is independent of the other and each of them will live a wonderful life for a finite period for which they have been designed,"

GOOGLE'S SATELLITE IN ORBIT

The 13 US-made small satellites were also placed in orbit. These include an Earth imaging satellite made by Terra Bella, a Google-owned company. The 110-kg Google satellite called SkySat Gen-2 is capable of taking very high resolution images and high definition video. The launch of the 20 satellites, weighing about 1,288 kg, cost about half of what is incurred by other space agencies.

Prime Minister Narendra Modi while congratulating the scientists tweeted "20 satellites in a go! @isro continues to break new barriers."

India's Cartosat-2 series is similar to the earlier Cartosat-2, 2A and 2B. The images sent by Cartosat satellite will be useful for cartographic, urban, rural, coastal land use, water distribution and other applications.

India is on the verge of becoming a space superpower. However, it has some major challenges as the PSLV can only launch satellites up to a weight of 1,800 kg. The currently operational Mk-II version of the Geosynchronous Satellite Launch Vehicle (GSLV) can handle payloads weighing 2,500 kg. But the GSLV Mk-III, now under development, will be capable of launching satellites weighing close to 5,000 kg.

According to market reports nearly 200 small satellites will be launched in the period 2014 to 2023 and India is perfectly positioned in this segment. SP

— By R. Chandrakanth, Bangalore

PHOTOGRAPH: ISRO

CAN LEASING BE MADE MORE AFFORDABLE?

Ministry of Civil Aviation Secretary **R. Choubey** recently called for greater participation from policy makers and users to promote MRO services, offer training, and provide more attractive leasing packages that could spur new initiatives for improved regional connectivity

BY BYRON BOHLMAN, VANCOUVER / CANADA

AS ANY START-UP AIRLINE can attest, a war chest of cash is an essential thing to have on the company's checklist prior to the first flight. Notwithstanding the expenses associated with launching service and day-to-day operations, a huge cash outlay for initial deposits and pre-delivery payments for the purchase of a fleet of new aircraft isn't always an option. Without a previous track record or sterling credit history, a carrier's inability to qualify for traditional financing or its reluctance to assume the risk of asset ownership means that leasing is often the most economical and sensible alternative, even in today's low interest rate environment.

ILLUSTRATION: ANOOP KAMATH

REVENUE IN RUPEES. EXPENSES IN DOLLARS

The Ministry of Civil Aviation Secretary Rajiv Choubey's call for lower aircraft lease rates is likely a consequence of the country's chronically low domestic airfares that generate the lowest revenue per passenger-kilometre compared to local yields in Japan, Indonesia, Australia and Malaysia, according to first-quarter 2016 IATA data. Reducing the cost of leasing aircraft would certainly benefit fledgling regional airlines yet rentals are commonly paid in US dollars or euros. The strength of those currencies against the rupee poses a real challenge for carriers to earn sufficient revenue to cover not only the monthly lease expense, but other dollar-based costs as well, like fuel. Given the number of new aircraft and seats to be added by AirAsia, IndiGo, SpiceJet and Vistara, it's unlikely that domestic airfares will rise any time soon. If fares won't go up, operating costs must come down.

SUPPLY, DEMAND, TIMING AND TECHNOLOGY

Anticipating the need to replace the world's ageing narrow-body fleet, aircraft lessors went on a shopping spree between 2007 and 2010. Their acquisitions were welcomed by airlines who found themselves restricted by tight access to capital following the 2008 contraction in financial markets. With oil above $100 a barrel and airline balance sheets awash in red ink, narrow-body lease rates were under pressure by 2011-12, a reflection of too much supply and not enough demand.

The high price of oil prompted manufacturers to introduce more fuel-friendly, technologically-advanced, high-efficiency

VALUATIONS AND AVERAGE LEASE RATES — SELECT NARROW-BODY JETS (MAY 2016)

Seats	Model	Aircraft List Price	Lowest Aircraft Value	Lowest Monthly Lease	Highest Aircraft Value	Highest Monthly Lease
70	Bombardier CRJ700	$41.0 M	$7.5 M	$90 K	$17.7 M	$200 K
70	Embraer E170	$41.7 M	$11.3 M	$100 K	$27.0 M	$240 K
78	Embraer E175	$45.0 M	$14.0 M	$125 K	$29.7 M	$245 K
86	Bombardier CRJ900	$46.0 M	$8.9 M	$135 K	$25.1 M	$233 K
100	Sukhoi SSJ 100	$39.1 M	$14.1 M	$130 K	$25.2 M	$195 K
100	Bombardier CRJ1000	$49.0 M	$16.9 M	$195 K	$25.5 M	$233 K
100	Embraer E190	$49.8 M	$15.0 M	$165 K	$34.7 M	$285 K
100	Airbus A318	$75.0 M	$6.3 M	$65 K	$8.6 M	$95 K
116	Embraer E195	$52.7 M	$16.1 M	$175 K	$36.4 M	$285 K
124	Airbus A319	$89.6 M	$7.4 M	$75 K	$36.9 M	$270 K
140	Boeing B737-300	N/A	$1.3 M	$30 K	$3.8 M	$68 K
144	Boeing B737-700	$80.6 M	$10.6 M	$125 K	$35.5 M	$260 K
165	Airbus A320	$98.0 M	$1.9 M	$40 K	$44.0 M	$335 K

Source: myairlease.com
All amounts US dollars

aircraft. Even with the A320neo, B737 MAX, E-Jets E2 and CSeries on the market, narrow-body lease rates were recovering from their 2013 lows by last year. Today, for regional airlines wanting to access Tier-II and Tier-III cities with smaller jet equipment, the strong US dollar, inventory of aircraft available for lease, and market rates still aren't conducive to attracting new regional entrants as the Ministry of Civil Aviation is hoping.

AGE AND SIZE IMPORTANT

The balance of aircraft supply and demand often determines market rates with older, less economical jets offering the cheapest rents. They may be a bargain to lease, but the trade off is usually high operating costs, high fuel consumption, and the need for heavy maintenance during the term of the lease. Moreover, there can be significant costs to reconfigure leased aircraft to ensure they are compatible with the local market profile. Premium cabins, for example, have rarely been successful on regional routes.

Are regional airlines in India doomed to be dumping grounds for old airplanes? Flying those fuel-hungry, high-maintenance low-rent jets to domestic Tier-II and Tier-III cities may seem like an inexpensive way to provide seats, but scheduling all their excess capacity in low-demand markets encourages fare dilution and weak, unsustainable yields. Even though smaller, newer aircraft may command premium rents, their lower operating and obsolescence costs and ability to generate higher unit revenue (up to 30 per cent higher, according to Embraer) often make them more economically viable.

May 2016 valuations and sample average lease rates for regional and narrow-body jets published on MyAirlease.com (referencing recent transaction history and manufacturer-sourced prices) show how smaller aircraft with their lower operating costs command premium monthly rents.

CAN RATES GO LOWER?

Lease prices are a function of supply, demand and aircraft age. Since a lessor's portfolio of airplanes can be placed anywhere around the world, they often seek the most creditworthy, reliable prospects that are operating in a stable environment. Leased aircraft are unique assets. Their mobility allows the lessor to go where there is opportunity and to price monthly rents accordingly. Carriers with weaker financial footings and poor track records will find their lease rates incorporate an element of risk should they fail. Lessors then incur repossession and remarketing expenses.

In this cycle of continued growth in passenger enplanements and fuel price volatility, new, leased aircraft are in demand. Consumers have become more sophisticated and expect newer-technology airplanes, which they often equate with safety. The expanding fleets of India's main domestic carriers reflect the trend to new equipment. Any acquisitions of very old, low-rent, over-capacity jets by regional airlines would be incompatible with the drive for greater efficiency in such a competitive domestic landscape.

Regional carriers in India may not have much bargaining power in this upward-moving market where lease rates for new aircraft are not heavily discounted. Short-term gain renting big, old, cheap airplanes may incur long-term pain when the price of fuel inevitably rises or the rupee slides against the US dollar. SP

The author is an airline industry veteran for 35 years. He was a former domestic airline pricing director for Air Canada and global marketing director with some aircraft manufacturers.

DRAFT REGIONAL CONNECTIVITY SCHEME

It is clear that the role played by the state governments will be critical to the success of Regional Connectivity Scheme

BY AIR MARSHAL B.K. PANDEY (RETD)

REGIONAL AVIATION IS GENERALLY regarded as the segment of the Indian airline industry that offers immense potential for growth in the long term. It is not without reason therefore that there was a distinct focus on this segment of the industry in the National Civil Aviation Policy 2016 (NCAP 2016) unveiled on June 15 this year by the Ministry of Civil Aviation (MoCA). An important component of the NCAP 2016 is what is termed as the Regional Connectivity Scheme (RCS) which is aimed at providing air services to unserved and underserved airports of the country through revival of existing air-strips and airports retaining these in the no-frills category.

On Friday July 1, 2016, the MoCA has placed in public domain, a draft document on this scheme and has invited feedback from all stakeholders by July 22. Currently, air traffic is concentrated largely between the metros and a few other large cities. At present, there are 394 unserved and 16 underserved airports in the country. The MoCA is of the view that of these airports, 30 can be made operational without any additional investment and regional flights can commence operations immediately.

In addition, the government has made budgetary allocation for the development of another 60 airports under the RCS in the initial phase. This scheme is expected to provide the much needed impetus for the growth of airport infrastructure in the remote as well as those areas of the country that are not easily accessible by road. This will certainly provide a boost to regional aviation which in turn will fuel economic growth especially of the hinterland. The government expects the RCS to show results in just 12 to 15 months after its implementation.

The government aims to achieve this firstly by making operations to regional airports commercially attractive for regional airlines. This is proposed to be achieved by providing attractive financial incentives to regional carriers through a system called Viability Gap Funding (VGF) to compensate for losses suffered by them. Resources for VGF will be raised through imposition of a levy on tickets for flights on non-regional routes. This should provide sufficient incentive for airlines to operate flights to regional airports which for them may not be adequately remunerative. In addition, there are provisions for other financial concessions by both the central and state governments such as service charge exemptions, waiver of airport charges and reduction of value added tax (VAT) to less than one per cent on aviation turbine fuel (ATF). The state government would be required to provide fire services free of cost as also electricity, water and other utilities at the regional airports at substantially reduced rates. They will also be required to provide good road connectivity from different parts of the city to the local airport. All these will contribute to substantial reduction in operating costs for the airlines and the airports.

The government also aims to make flying from regional airports easily accessible as well as affordable for large segments of society in Tier-II, Tier-III and Tier-IV cities and towns that have not had the opportunity to avail of this facility so far. This has been attempted by capping air fares. Passengers flying from an airport which takes less than 30 minutes to reach the destination, will have to pay a fare of just ₹1,200. For a flight of 60 minutes, the maximum airfare will be limited to ₹2,500.

As per Dr Mahesh Sharma, Minister of State for Civil Aviation, the launch of RCS is an integral step in achieving the objectives of the NCAP 2016 of enhancing passenger traffic in the domestic segment to 30 crore by 2022 and to 50 crore by 2027. The RCS is likely to a give a major fillip to tourism and employment generation in Tier-II, Tier-III and Tier-IV cities. Through introduction of helicopters and small aircraft, it is also likely to significantly reduce travel time in remote and hilly regions, as well as island territories and other areas of the country afflicted with insurgency and other security issues.

To facilitate the RCS, the government has taken steps to make it easier for airlines by permitting them to import aircraft

that are up to 18 years in age. This will inspire new players to foray into the airline industry as the initial investment will be low. All these measures will bring in a multiplier effect in the growth of air travel.

THE UNCERTAINTIES

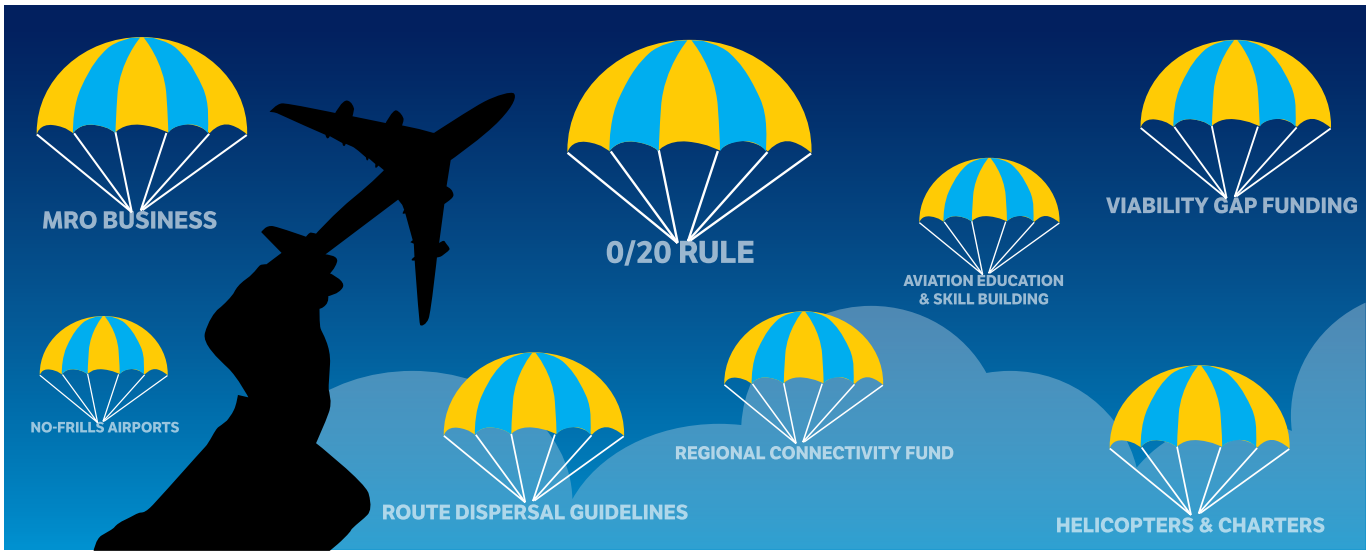
On the face of it, the scheme appears well crafted and is expected to prove to be a bonanza for the Indian airline industry. However, there may be impediments that could make it difficult if not impossible, for the MoCA to achieve the objectives of RCS as envisaged. While this scheme is regarded by analysts as bold and innovative that is expected to boost the growth of air traffic and consequently benefit both the regional carriers and large segments of the Indian society, it will unfortunately impose a burden by way of higher fares for air passengers flying on non-regional routes. This is seen as somewhat unfair.

In some ways, the RCS will impose new financial burden for regional carriers as well. Airlines seeking to use non-operational airports, which require substantial investment for revival, in addition to ₹50 lakh that they are required to submit as bank guarantee for every route, they will have to provide a bank guarantee of an additional ₹1 crore to the government. Even though this additional commitment by the airlines is limited to a duration of one year, the industry regards the added financial burden as inordinately high.

But most importantly, as this scheme calls for close cooperation with the governments of the states in which the regional airports are located, much will depend on whether the states would come forward to bear the burden of the tax breaks and other incentives to make the scheme a success. The liability of raising funds for VGF is required to be shared between the central and state governments in the ratio of 80:20. Also, the states involved in RCS should be willing to reduce VAT on jet fuel to one per cent or less. Currently, only West Bengal and Andhra Pradesh impose VAT on ATF of one per cent or less. Other states charge much higher rates, some as high as 30 per cent. It may be difficult for these states to willingly and easily accept loss of revenue. Suggestion by the Ministry of Civil Aviation to the states to cut VAT to four per cent has yet not drawn any favourable response from most of them. For the point of view of the states, any reduction in VAT will lower tax revenue for them. A report by GMR Group, which operates the Hyderabad airport, indicates that VAT at 16 per cent charged by the Telangana Government brought in a revenue of ₹150 crore in financial year 2014. If VAT is reduced to four per cent, the loss to the state government will be to the tune of ₹110 crore.

THE LIABILITY OF RAISING FUNDS FOR VGF IS REQUIRED TO BE SHARED BETWEEN THE CENTRAL AND STATE GOVERNMENTS IN THE RATIO OF 80:20

It is clear that the role played by the state governments will be critical to the success of RCS. To get all states affected by the new policy on board to make the scheme a success could prove to be a daunting challenge especially in the prevailing political climate in the country. SP



TAKE-OFF FOR NATIONAL CIVIL AVIATION POLICY

As the Indian civil aviation industry is expected to become the third largest by 2022, it would be necessary for the government to have the right vision, planning and execution

BY AIR MARSHAL B.K. PANDEY (RETD)

THE LONG-AWAITED NATIONAL CIVIL Aviation Policy (NCAP) was finally cleared by the government on June 15, 2016. This is the first time since Independence that an integrated civil aviation policy has been issued. Quite understandably, this has generated considerable excitement not only in the Indian civil aviation industry, but amongst the travelling public as well. The airline industry has reasons to be enthralled as the new policy document contains a variety of measures to develop an eco-system that will provide the required impetus for the balanced growth of the country's underdeveloped and underexploited civil aviation industry.

On coming to power in May 2014, the NDA Government had unveiled the draft NCAP in November 2014. After initial revision, the draft policy document was circulated amongst the stakeholders for their comments, views and suggestions. There were also several rounds of deliberations with them. The Ministry of Civil Aviation (MoCA) received as many as 450 responses from the stakeholders who would now be anxiously looking for the takeaways from the new dispensation.

ABROGATION OF THE 5/20 RULE

Initially, the policy was expected to be finalised by March 31, 2016, as some of the proposals were to be in effect from the commencement of the current financial year. However, resolution of the differences among stakeholders especially on the highly controversial 5/20 rule, proved to be a sensitive and a tricky issue to resolve. This led to the delay in the government saying the final word. Disposal of the 5/20 rule was the single issue that generated considerable debate and some acrimony in the process of

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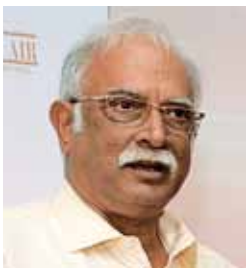
evolution of the policy. As expected, the Indian airline industry was clearly divided on the issue with legacy carriers opposing any changes to the 5/20 rule while the newly established airlines vociferously insisting on its abrogation. It will be some time before the details of the newly approved policy document is made available in the public domain and its impact is accurately evaluated by all the stakeholders.

Just to recap, the highly controversial 12-year-old 5/20 rule enforced by the UPA Government that required new carriers entering the market to meet with two preconditions before they could be permitted to operate flights in the international segment. Application by a newly established domestic carrier for a licence to fly on international routes would only be considered if the airline had a minimum of 20 airliners on its fleet and had completed five years of operations in the domestic sector. With the arrival on the scene of heavyweights such as AirAsia India and Vistara, the two joint venture airline set up by the house of Tatas with AirAsia Berhad and Singapore Airlines that had an immaculate global reputation, the 5/20 rule suddenly got embroiled in an ungainly controversy. However, the 5/20 rule has now been replaced by what is being referred to as the 0/20 rule. This implies that a new entrant will be required to have a fleet of a minimum of 20 aircraft before it can apply for licence to operate on international routes. The precondition of experience of five years of operation in the domestic sector has been done away with. At present, Vistara has 11 aircraft in its inventory and AirAsia India is operating with six. Both these carriers will be inspired to quickly build up their fleet strength to 20 to benefit from the abrogation of the 5/20 rule. This however, may take a few years.

Thankfully, the suggestion by the MoCA to introduce a system of accumulating a certain number of domestic flying credits (DFC) points before becoming eligible to operate on international routes, has not been adopted. If the system of accumulating DFC points had indeed been adopted, it would have involved considerable amount of number crunching and, as observed by experts, it would have been a case of "the cure being worse than the disease"! Mercifully, better sense has prevailed.



WE HAVE PUT OUR HEART AND SOUL INTO DRAFTING THE NATIONAL CIVIL AVIATION POLICY. WE WILL MAKE SURE IT IS IMPLEMENTED PROPERLY. (PART OF THE ANSWER GIVEN TO SP'S)

—P. ASHOK GAJAPATHI RAJU, MINISTER OF CIVIL AVIATION

WE INVITE INDUSTRY TO GIVE US THE INPUTS AS TO HOW TO REDUCE THE COST OF LEASING AS THIS WILL ENABLE REAL GROWTH IN REGIONAL CONNECTIVITY

— RAJIV NAYAN CHOUBEY, SECRETARY OF CIVIL AVIATION

FILLIP TO REGIONAL AVIATION

The other area of focus of the NCAP is the Regional Connectivity Scheme to strengthen regional aviation by making flying attractive and financially affordable for the middle class. Largely neglected so far, it is this segment of the industry that is the proverbial low-hanging fruit and hence it is only appropriate that the NCAP has set the stage for the Indian airline industry to exploit the immense growth potential of this sector. While the new policy has lucrative financial incentives to motivate the domestic carriers to operate on regional routes and avail of the benefits provided for by the government such as waiver of airport charges and reduced level of taxation on aviation fuel, the NCAP also has a slew of measures to induce passengers to exploit the convenience of regional connectivity. Passengers will benefit from the provision in the policy to cap airfare at ₹2,500 for a flight of a duration of an hour and ₹1,200 for a 30-minute flight on regional routes. As per the scheme, the Central Government will provide funds to make up for up to 80 per cent of the losses suffered by the airlines operating on regional routes. The state governments would have to bear the remaining 20 per cent. To generate resources to compensate the domestic carriers operating on loss-making regional routes, the policy has a provision for Viability Gap Funding through the creation of creating a regional connectivity fund through a levy of a cess of two per cent on non-regional domestic routes and international flights.

A SLEW OF INITIATIVES

Apart from the two major issues discussed above, the NCAP incorporates initiatives to revive in consultation with the state governments, the large number of airstrips in the country that are lying in disuse, build new low-cost, no-frills airports through then public-private partnership model even within 150 km of the existing ones, institute dedicated regulations for rotary-wing aircraft, facilitate the growth of the maintenance, repair and overhaul industry through lower taxes or other levies, rationalisation of policy related to ground handling at airports, rationalisation of route dispersal guidelines and measures to boost skill development to meet with future demands of the aviation sector. A number of measures have also been incorporated to enhance convenience of the travelling public through regulation of charges and fees imposed by the domestic airlines on passengers as also to ensure that services offered are fair and consumer-friendly. There are special provisions for the disabled.

PERSPECTIVE OF THE GOVERNMENT

As per Ashok Gajapathi Raju, the Minister of Civil Aviation, the NCAP approved by the government on June 15, 2016, will be a 'game changer.' He went on to say that as the Indian civil aviation industry was expected to become the third largest in the world by 2022, it would be necessary for the government to have the right intentions, vision, planning and proper execution. The Minister stated that the objectives of the National Civil Aviation Policy are to "make flying affordable, safe, convenient", promote balanced regional growth, tourism, infrastructure and, most important of all, to help improve the ease of doing business. The Minister also observed that the Indian civil aviation sector was most under-penetrated. Referring to data, the Minister stated that while around 35 crore individuals constitute the middle class in India that have the financial capability to avail of air travel, the total number of persons travelling by air in the course of a year stands at a measly eight crore. The average Indian thus flies only once in five years. There is obviously immense scope for growth.

With the implementation of the NCAP, there is a good chance that the Indian civil aviation industry and the air traveller could look forward to good times ahead! SP

GENERAL AVIATION IGNORED IN NCAP

We are trying to build a grand palace on a weak foundation. Therein lies the biggest concern for NCAP 2016.

THE NATIONAL CIVIL AVIATION Policy (NCAP) 2016, which has been issued by the Ministry of Civil Aviation (MoCA) on June 15, 2016, is a much awaited and overdue policy document. We must commend the Minister of Civil Aviation, and Secretary Civil Aviation for making an attempt to give a policy direction to the aviation industry for the first time in India.

The policy covers some details but remains silent on a number of key issues. We hope that this is work in progress, and that MoCA will continue to fine-tune and address key issues which have been ignored in this document. One of the biggest segments of the industry which has been ignored is the General Aviation (GA) sector, which consist of small aircraft (below 19 seats), and helicopters. These are mainly used as charter aircraft, or owned by Indian corporates for transport of their top executives. It is prudent to point out that with a fleet of 280 helicopters, 150 business jets, and 150 turboprops, the GA sector consists of a fleet of almost 580 aircraft, which is as large as the commercial airline fleet in India, if not larger. There are 130 non-scheduled operators (NSOP), most of whom have been hurting, and some have shut shop in the past few years due to poor policy, irrational taxes, and infrastructure for GA in the country.

The policy makers are strangely silent on this segment, and have not addressed any concern of the GA sector, be it infrastructure, day to day ease of business or taxation issues. The policy makers remain strangely ensconced in their ostrich-like approach that the only relief that GA needs is to convert into scheduled commuter operator (SCO) and serve the regional routes. Somehow, it hasn't yet dawned on them that small aircraft are also used by the Indian industry leaders and to access places of their business interest, and provides security and safety to their movements.

Just as political leaders hire aircraft to access their areas of interest by using chartered aircraft and helicopters, industry leaders also need to use the same by either owning aircraft or chartering them. It is imperative for the Government of India to make this an easy process for them for the sake of enabling growth in the country. The perception of GA being used "by rich people who can afford it" needs to change.

The other major concern of the policy is that it does not give a clear-cut vision of implementation. No good policy is worth the effort if it cannot be implemented. The NCAP 2016 falls short of strengthening the pillars of the government which are to implement this policy. The DGCA, BCAS, AAI and even MoCA are functioning in a predated mindset, by and large. By having a few capable bureaucrats at the top, they fall woefully short at the mid and lower level of staffing of people of adequate professional competence, drive and integrity, to oversee the implementation of the policy. The NCAP 2016 should have addressed ways of strengthening these pillars by making adequate provisions to staff, fund and skill the human resource of these agencies, and make them accountable for the implementation of this policy. We are trying to build a grand palace on a weak foundation. Therein lies the biggest concern for NCAP 2016. I hope we are able to address this at the earliest. SP

ILLUSTRATION: ANOOP KAMATH

—By Rohit Kapur, Managing Director, Arrow Aircraft Sales and Charters & Former President, BAOA

CATALYTIC STEPS TO EFFECTIVELY IMPLEMENT NCAP 2016

The implementation of the policy, in letter and spirit, is going to be more challenging, requiring an open-minded approach and flexibility

THE NEW NATIONAL CIVIL Aviation Policy (NCAP), released by the Ministry of Civil Aviation (MoCA) after due approval of Union Cabinet, has generally been hailed by the industry as the most visionary and comprehensive civil aviation policy since India's independence. Most would agree with the view that, for the first time, such a widest and longest stakeholder consultation process was undertaken to accommodate views of all the affected segments of the aviation industry. The entire team involved in finalisation of NCAP deserves kudos from all the stakeholders of the industry. However, the implementation of the policy, in letter and spirit, is going to be more challenging, requiring an open-minded approach and flexibility.

NCAP aims to make domestic air travel affordable for the rapidly growing Indian middle class, especially connecting underserved and unserved airports, mostly located in remote areas of the country. The draft Regional Connectivity Scheme (RCS), released by MOCA on July 1, 2016, gives in details its features and, operating mechanism for supporting RCS routes through Viability Gap Funding (VGF) for up to three years. As the money for VGF would be generated by MoCA through 2 per cent levy on routes other than Cat II/IIA/RCS, the funds available, as part of RCS, are going to be limited to around ₹500 crore during a financial year. MoCA plans to prioritise all the proposals under RCS to address the availability of limited funds. It is suggested that while prioritising is always the right thing when funds are limited, more enabling environment needs to be simultaneously created to develop RCS routes with least availability of funds.

Encourage NSOP/BA Industry to develop RCS Routes. Non-scheduled and business aviation (BA) industry has the same multiplier effect on the industry, if not more, when it comes to connecting remote areas through air. NCAP recognises the fact that growth in populated metros/big cities would spill over to hinterland due to factors like high cost of land and labour. This would result in growing trend among business houses to set up industries in remote areas. Therefore, the first movers on RCS routes are going to be BA flights undertaken by corporate setting up new industries in the remote regions. Besides, BA industry is going to play a vital role in speeding up rail, road and power projects in remote areas. The NSOP industry is already providing Aero Medical Transportation for critically ill patients in remote areas and undertaking flights for conducting surveys, oil exploration and agricultural research. Helicopters, as part of NSOP industry, continue to be boon for pilgrims visiting remote and inaccessible religious places. All these activities boost economic growth and industrialisation of remote areas. During the implementation phase of NCAP, MoCA must consider giving all the RCS benefits to NSOP and BA industry, without providing any VGF support, as being done in case of cargo operations. Starting of scheduled operations to any region is generally preceded by regular non-scheduled flights. It is expected that by facilitating NSOP and business aviation flights on RCS routes, the need for VGF support for RCS flights would be reduced and, the limited VGF resources could then be optimally utilised to ensure balanced growth of air connectivity for all regions of India.

Reduce Ownership Cost for RCS/NSOP Aircraft. MOCA is anxiously looking at ways to reduce the cost of owning or leasing aircraft, as interest rates of above 12 per cent on loans is an additional burden on aircraft industry, given the thin operating margins. It is the time to follow the worldwide practice of Fractional Ownership and Aircraft Management Companies to overcome the avoidable burden of servicing interest on loan. The new CARs being prepared separately for Scheduled Commuter Airlines and NSOP should provide for Fractional Ownership model and functioning of Aircraft Management Companies.

Remove Ambiguity between Aeronautical and Non-aeronautical Services. NCAP envisages building of aircraft maintenance hangars at all future airports to boost maintenance, repair and overhaul (MRO) industry. However, the historical error by the Airports Authority of India (AAI), of treating maintenance hangars as non-aeronautical services at major airports, has been allowed to be perpetuated, in spite of subsequent promulgation of AERA Act. Periodic maintenance activity, to ensure continuous airworthiness of an aircraft, at an airport hangar cannot be termed as non-aeronautical—being integral part of aircraft operations. MoCA should address this issue immediately, as part of implementation of NCAP, to control the steeply increasing rentals for maintenance hangars at major airports.

Adhere to Target Date for e-GCA. NCAP has set target date as December 2016 for the start of e-GCA project at DGCA. This would ensure timely processing of all aircraft related transactions by the regulator in a transparent and objective manner. MoCA must ensure this target date is strictly adhered to for 'ease of doing business' and efficient functioning of DGCA.

The key objective of the new NCAP is to establish an integrated ecosystem which will lead to robust and sustainable growth of civil aviation sector – promoting tourism and achieving industrialisation of remote areas. It will not be prudent to deprive the NSOP/BA industry of the RCS benefits, barring VGF, as it is an essential part of the integrated ecosystem which NCAP aims to create for balanced regional growth. SP

—By Group Captain R.K. Bali (Retd), Managing Director, BAOA

FOREIGN DIRECT INVESTMENT IN AVIATION

While the existing Indian carriers, particularly the state-owned Air India may find the going tough in future, the travelling public can look forward to good times ahead!

CLOSE ON THE HEELS of the release of the National Civil Aviation Policy on June 15, 2016, has come another piece of news from the government that would certainly be beneficial for the Indian civil aviation industry. The NDA Government has promulgated a number of major changes in policy governing foreign direct investment (FDI) in the civil aviation sector. This is the second major attempt at reforms in this sector after the changes announced in November 2015.

The provisions in the FDI policy announced this time, are aimed at further liberalising the civil aviation sector as well as simplifying the norms with a view to promoting ease of doing business, encouraging greater capital flow and making India an attractive destination for foreign investors.

The policy has a distinct focus on the development of infrastructure for civil aviation. The limit of FDI in brownfield projects that was set at 74 per cent under the automatic route has now been enhanced to 100 per cent. This has brought it on par with the provisions for FDI in greenfield projects. This will hopefully facilitate speedy modernisation of the existing airports including those in disuse, to ease the pressure on the existing airports as well as to expand regional connectivity. As for investment in the Indian airline industry, FDI up to 49 per cent that until now was authorised under the automatic route in Scheduled Air Transport Service/ Domestic Scheduled Passenger Airline and Regional Air Transport Service has now been raised to 100 per cent. However, FDI above 49 per cent is permitted for only non-airline foreign investors with permission from the government. Non-resident Indians however, can invest in Indian carriers up to 100 per cent without the need for government approval. The limit of 49 per cent will continue to be applied to the foreign carriers who wish to invest in the Indian airline industry.

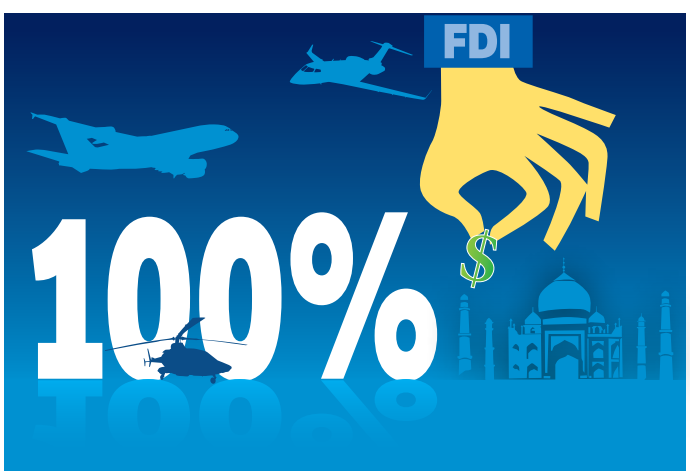


ILLUSTRATION: ANOOP KAMATH

Incidentally, in 2012, the then government in power had permitted FDI of 49 per cent by foreign airlines in domestic carriers. This decision had paved the way for setting up of two new joint venture airlines namely Vistara and AirAsia India as also investment by Etihad in Jet Airways. Singapore Airlines, a globally renowned carrier, holds 49 per cent stake in Vistara and AirAsia Berhad, a leading low-cost carrier in Malaysia, holds 49 per cent share in AirAsia India. In both these joint venture airlines, the house of Tatas is the major Indian partner. While both these joint venture airlines are reported to be faring well, concerns have frequently been raised over ownership and control of the joint venture airlines in India in which foreign airlines have a substantial stakeholding. There has also been some paranoia about security implications of allowing large foreign holdings in airlines based in India. This concern is somewhat misplaced.

The fact of the matter is that the Indian airline industry needs huge investments which is not available domestically. Policy on FDI adopted by the government has led to increase in the level of investment into India from abroad. From a figure of $36.04 billion in 2013-14, FDI went up to $55.46 billion in 2015-16, the highest ever inflow of funds from abroad in one financial year. The new policy on FDI has the potential to provide the impetus the Indian civil aviation industry needs to fully exploit the potential of growth the nation holds. With new carriers funded by the major international players emerging on the scene, the existing airlines in India will definitely be confronted with enhanced level of competition. While the existing Indian carriers, particularly the state-owned Air India may find the going tough in future, the travelling public can look forward to good times ahead! SP

THE FACT OF THE MATTER IS THAT THE INDIAN AIRLINE INDUSTRY NEEDS HUGE INVESTMENTS WHICH IS NOT AVAILABLE DOMESTICALLY

—By Air Marshal B.K. Pandey (Retd)

COMPETING WITH GOLIATHS

Regional airlines have cranked up daily aircraft utilisation in order to reduce unit costs and survive in India's highly-competitive domestic low-fare environment

BY BYRON BOHLMAN, VANCOUVER / CANADA

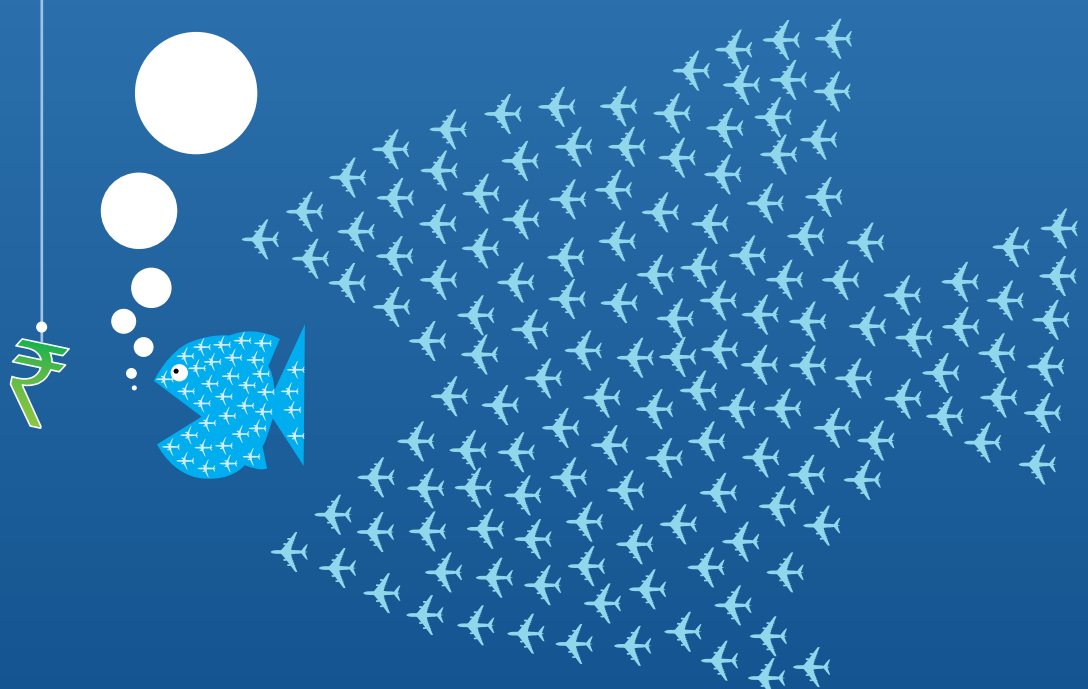


ILLUSTRATION: ANOOP KAMATH

WHAT A DIFFERENCE SIX years make. The frenzy with which airlines in India added aircraft to their fleets near the end of the last decade seems ominously familiar today as new carriers enter the domestic market and bring hundreds of new airplanes with them. Where is all that capacity to be placed and is there sufficient demand to fill the seats at sustainable ticket prices without duplicating the fare wars that led to the demise of several airlines in the late 1990s?

Today's landscape is dramatically different – domestic revenue passenger kilometres are growing at double digits, the price of jet fuel is substantially lower, cabin load factors are healthy, carriers are making profits, incentives are in place to support a regional connectivity scheme, and underserved airports are getting more attention. Yet there are still some 130 non-stop flights every business day between Delhi and Mumbai with ticket prices that reflect all that capacity. It may be one of the reasons why domestic airfares (yields) in India have remained so chronically low compared to other countries with local airline networks.

SMALL AIRPLANES AND LOW YIELDS

Those weak domestic yields make it tough for independent carriers with smaller-capacity regional jets to compete with the pricing power of India's low-fare airlines especially when they, themselves, enter low-demand, secondary markets with high-density, one-size-fits-all 180-seat A320s.

Compared to larger single-aisle aircraft, regional jets have fewer revenue-generating seats and flown seat-kilometres over which to amortize costs. They fly shorter routes, often complete more cycles per day and, consequently, have higher direct operating unit costs, measured per available seat kilometre (DOC/ASK.)

Short-haul flights normally command higher fares per kilometer than long-haul flights. Regional airlines, in particular, must recover the fixed costs associated with taking off and landing (terminal charges, maintenance, passenger processing, airport fees) without amortizing those expenses over a long distance.

The fare-distance relationship is generally true today yet low-cost carriers (LCCs) may be pushing ticket prices lower on short-haul routes and where seat supply often exceeds passenger demand.

TOO MANY SEATS UPSETS THE REGIONAL FARE MIX

Travellers with a high value of time pay a premium for schedule convenience, a characteristic of regional airlines that fly smaller-capacity aircraft frequently. The mix of high and low-fare passengers on a regional jet is usually sufficient to make a flight economically viable. In secondary markets of, say, 200 daily each-way passengers, a 100-seat regional jet can offer three daily directional flights timed to satisfy morning and evening peak and midday off-peak demand. Price-sensitive travellers are often attracted to discounted fares on non-peak flights, an incentive that helps distribute demand more evenly throughout the day.

Average Domestic Revenue per Passenger Kilometre in India

$0.068

COMBINE BIG WITH SMALL:
INDIA'S GROWING CIVIL AVIATION MARKET SHOULD HAVE THE ROOM FOR BOTH - BIG AND SMALL AIRLINERS SO THAT SHORT HAUL ROUTES ARE WELL SERVED

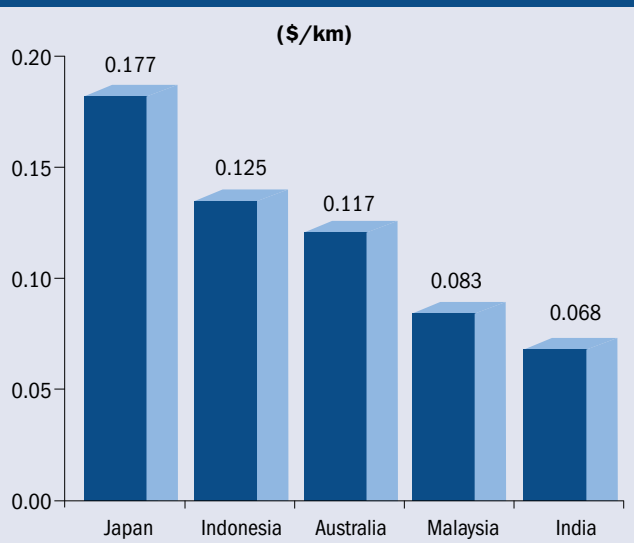
PHOTOGRAPH: KARTHIK KUMAR

ASPIRING TO CONTRIBUTE MORE: AIR COSTA IS BRINGING IN A HOST OF EFFORTS TOWARDS ITS PASSENGERS AND IN TERMS OF PROFESSIONAL WORK FORCE. SHOULD THE GOVERNMENT CONSIDER TO EXTEND SUPPORT TO AIR COSTA, THE AIRLINE CAN BE A BENCHMARK TO BE FOLLOWED.

But aircraft with too many seats in a 200 daily each-way passenger market can skew the fare mix. LCCs, looking to deploy their large airplanes after satisfying morning peak demand on Tier-I routes, routinely schedule midday flights to Tier-II or even Tier-III regional markets before the aircraft return to the primary city pairs for the evening peak. The extra flying generates more flight hours that serve to keep unit costs down but the big airplanes offer seats where there is little or no demand for them. Consequently, tickets are sold at deep discounts simply to generate cash in an attempt to stimulate sales. While a 180-seater may, in fact, break even on a Tier-II or Tier-III route, the abundance of bottom-priced seats negatively impacts a regional carrier's own fare mix when it is forced to match its competitor's low prices on the same city pair.

Heavily discounted fares in one market can also impact nearby markets that aren't even served by LCCs. Online travel search engines make shopping for airfares completely transparent. Smart consumers can easily find more attractive fares and schedules in neighbouring cities.

AVERAGE DOMESTIC REVENUE PER PASSENGER KILOMETRE



Source: IATA (12 months ending March 2016)

CRANKING UTILIZATION UP TO KEEP UNIT COSTS DOWN

Unless regional carriers have sweet financial arrangements with their co-branded mainline partner airlines to cover their operating costs for feeder flights (as most regionals do in the United States), regional jet operators in India face a tough battle in the new low-fare environment. Their aircraft need to work harder to ensure maximum daily utilisation so that unit costs

PHOTOGRAPHS: EMBRAER

NEED TO MAINTAIN A HEALTHY BALANCE: THE OPERATORS OF LARGE CAPACITY AIRCRAFT SHOULD BE LOOKING AT THE OPTIONS FOR SMALLER ROUTES THEREBY MAKING USE OF RIGHT CAPACITY FOR RIGHT DESTINATIONS

AIRCRAFT OPERATING COST COMPARISON (US$) – DOMESTIC INDIA

	Average Seats	Average Flight Distance	Average DOC/ Flight	Average DOC/ Seat	DOC/ ASK	DOC/ Seat Variance
Low-cost Carrier (A320)	180	950 km	$4,484	$0.026	$24.91	
Regional Airline (E190)	114	711 km	$3,452	$0.042	$30.28	+$5.37

Source: Embraer

are rock bottom. This is already happening. Each of Air Costa's four E-Jets, for example, was flying a whopping 12.6 hours per day on average in late May. And those E190s were working hard – some aircraft completed ten daily flights with just 20 to 30 minutes on the ground between each arrival and departure. That utilisation corresponds to about 3,600 annual block hours per E190, about the same as an A320 in a LCC fleet, yet each E190 flight is about one-third shorter and has one-third fewer revenue-generating seats.

The productivity of Air Costa's fleet is impressive. Even with such high daily utilisation, its average flight DOC per seat is still greater than that of a LCC. In other words, on their current route networks, the E190 would need to reduce its operating cost by a further $612 per flight to have the same cost per seat as a LCC's A320. It's the equivalent of the airline adding between ₹350 and ₹500 to the price of every E190 ticket sold (depending on load factor) just to offset the LCC's big-jet cost advantage.

MAINTAINING A HEALTHY BALANCE

The key to sustaining regional jet service in Tier-II and Tier-III markets is having ideally-timed flights that attract a healthy mix of premium-fare business and discount-fare leisure travellers and with just the right frequency to profitably balance the number of seats with the number of passengers. Since regional jet utilisation seems to be at its limit (at least in the case of Air Costa), it may be difficult to further reduce unit costs unless there are untapped economies of scale that could be derived from operating larger fleets, or there are further concessions granted to carriers with regional aircraft.

It puts renewed focus on domestic fare levels and the influence LCCs have on an emerging, fragile regional industry. As sure as night follows day, what goes down will eventually come back up: the honeymoon with cheap jet fuel will end. When that happens, carriers with big airplanes might well be forced to rethink at what price they should sell their surplus seats and whether it makes economic sense to be flying those aircraft on low-demand routes that are better suited to smaller regional jets. SP

PHOTOGRAPH: KARTHIK KUMAR

ANOTHER REGIONAL AIRLINE?

With the government's proactive approach and general aviation climate in India, the Sankeshwars started scanning the sector and found that regional airlines was a good bet

BY R. CHANDRAKANTH

EXCLUSIVE

YET AGAIN, THE SOUTHERN region of India continues to play a vital role in regional aviation. One more player has shown keen interest in joining the bandwagon of regional airlines. Promoters of Karnataka's VRL Group, Dr Vijay Sankeshwar, former Member of Parliament from BJP, and his son Anand Sankeshwar are planning to foray into regional aviation, given the new civil aviation policy which promotes regional and remote area connectivity.

Subsequent to his announcement in May 2016, the government has unveiled the National Civil Aviation Policy which is expected to give fillip to the aviation sector in general and regional aviation in particular. The regional connectivity scheme (RCS) is to come into effect in the second quarter of 2016-17 and key feature is that there will be a cap on airfare at ₹2,500 for a one-hour flight.

The benefit for the operators are there will be no airport charges; reduced service tax on tickets (on 10 per cent of the taxable value) for one year initially; reduced excise duty at two per cent on ATF picked at RCS airports; state government will provide police and fire services free of cost and power, water and other utilities at concessional rates etc.

With the government's proactive approach and general aviation climate in India, the Sankeshwars started scanning the sector and found that regional airlines was a good bet.

In a press release and clarification to the Bombay Stock Exchange, Dr Vijay Sankeshwar said that "the opportunities in regional airlines that I see are phenomenal and I am personally excited to be part of the fastest growing aviation market in the world. My principles of cost focus and high utilisation has made us a leader in domestic transport, which I think are key attributes to succeed in the aviation sector as well," he said adding that the proposed venture was still at a very early stage.

₹1,400-CRORE INVESTMENT

He said that preliminary estimates suggested a total investment in the airline business of about ₹1,400 crore over three to four years of which his equity would be ₹400 crore and further ₹1,000 crore will be debt to fund the regional airline business. The proposed airline business when set up would be run by professionals with strong sector experience and "I will primarily play the role of a financial sponsor", he clarified to the Bombay Stock Exchange as media reports said VRL Logistics would be venturing into airline business.

Following media reports, VRL Logistics shares crashed 20 per cent. "I wish to clarify that the proposed entry into airline business is a personal investment and at no point do we anticipate VRL's balance sheet being used for the venture. We remain the largest shareholders of VRL with a 69 per cent stake in the company today and do not anticipate our stake to significantly decrease in the company. VRL Logistics will continue to be the primary focus and interest of promoters and I will continue to be in full charge of the day to day operations."

VRL Logistics is into passenger and goods transportation business. It is also a parcel delivery service provider and has interests in wind power generation and air charter operations.

The group is internally deliberating on the mode of financing its entry into civil aviation. "We may seek to dilute a portion of our present-day holding in VRL Logistics in order to provide us with liquidity to enable our investment for the aviation venture," the promoters told the stock exchanges. "Subsequent to the same, we will continue to hold a majority stake in the company." Sunil Nalavadi, Chief Financial Officer of VRL Logistics, clarified that the promoters' plan to enter civil aviation has no connection with the logistics company. "This is purely a venture by promoters. Promoters many dilute up to two per cent stake of the company to start the regional airline," Nalavadi said.

To be sure, promoters of VRL Logistics said that the commencement of such regional airline service is subject to a number of approvals from governmental and regulatory authorities and promoters' intent to the board should not be considered as an eventual certainty of regional airline venture.

"THE OPPORTUNITIES IN REGIONAL AIRLINES THAT I SEE ARE PHENOMENAL AND I AM PERSONALLY EXCITED TO BE PART OF THE FASTEST GROWING AVIATION MARKET IN THE WORLD. MY PRINCIPLES OF COST FOCUS AND HIGH UTILISATION HAS MADE US A LEADER IN DOMESTIC TRANSPORT, WHICH I THINK ARE KEY ATTRIBUTES TO SUCCEED IN THE AVIATION SECTOR AS WELL.
— DR VIJAY SANKESHWAR

(L-R) DR VIJAY SANKESHWAR AND ANAND SANKESHWAR ARE THE PROMOTERS OF KARNATAKA'S VRL GROUP

WILL THEY FLY SOON ENOUGH?

NOW THAT THE GOVERNMENT has liberalised the civil aviation sector considerably, laying emphasis on regional connectivity, will the five airlines which had got the no-objection certificate in 2014 from the Minister of Civil Aviation, P. Ashok Gajapathi Raju, take to the skies?

In 2014, Air One Aviation Pvt Ltd; Zexus Air and Premier Air (seeking to become national airlines); Turbo Megha; Air Carnival and Zav Airways (seeking to become regional airlines) had got the certificates. Only Turbo Megha with brand TruJet has taken off from Hyderabad. The rest announced plans but did not get going, for some reason or the other.

One other regional airline proposal that has not materialised is FlyEasy from Bengaluru, promoted by ABC Aviation and Training. It had applied for air operating permit with the Directorate General of Civil Aviation and last year was aggressive in recruiting, and then all of a sudden there is no news. FlyEasy was planning to lease two Embraer E190 aircraft.

Premier Air, a new pan India low-cost carrier, was to start last year, but it was not to be. So also Zav Airways, a charter company, was to start regional airline service in the North East, but it was a similar story.

With the government providing a series of incentives to the aviation sector and also opening up avenues of investment, even through foreign direct, it remains to be seen whether these proposed airlines will finally make the grade.

VRL IN AIR CHARTER BUSINESS

In 2008, VRL Logistics ventured into the Indian air charter industry. It was a gradual progression for the company, from surface transport/passenger travel to air chartering. Keeping in mind the emerging market demand, VRL decided to enter the air-charter industry and serve VVIPs, VIPs and corporate India. To this end, the company had acquired a brand new, Premier 1A by Hawker Beechcraft. VRL offers the Jet aircraft on charter basis to the corporate sector, leisure and tourism sector, special mission charter, event management, advertisement agencies and VIP flights. During financial year 2013-14, the company acquired another second hand aircraft of similar make from Force Motors Ltd, the erstwhile owners and has also deployed this aircraft for charter.

HUMBLE BEGINNINGS

VRL was founded in 1976 by Dr Vijay Sankeshwar in Gadag, a small town in north Karnataka with a single truck and a vision that was way ahead of its time. VRL gradually expanded its services to Bengaluru, Hubli and Belgaum. From this humble beginning, VRL has today grown into a nationally renowned logistics and transport company which is also currently the largest fleet owner of commercial vehicles in India with a fleet of 4,253 vehicles (Including 381 passenger transport vehicles and 3,872 goods transport vehicles amongst others). There is room for more, particularly in the regional aviation realm as it is largely untapped. The South has shown the path of how it has successfully networked Tier-II and -III cities to metros and they have announced expansion plans, indicative of what the market potential could be. SP

> THE CUSTOMERS EXIST AND SO DOES AN ACTIVE MARKET – IT'S ALL ABOUT DELIVERING WHAT THEY WANT. IN THE WORLD OF PRIVATE JETS – THE SKY IS LITERALLY THE LIMIT.

PROUD TO INNOVATE: KANIKA TEKRIWAL POSES NEXT TO A KING AIR 250, WITH A GREAT LEVEL OF CONFIDENCE FORESEEING GROWTH IN THE SECTOR

PHOTOGRAPH: JETSETGO

JETSETGO, WAY TO GO

The end-to-end approach and putting the customer first is what differentiates us from the traditional aircraft charter market in India which is still broker driven who suggest aircraft based on what suits them more than what suits the customer

BY R. CHANDRAKANTH

JetSetGo is India's first online marketplace for private jet and helicopter charter. Launched by young and dynamic entrepreneur Kanika Tekriwal, the innovative company is going great guns. It recently got funding from cricketer Yuvraj's company YouWeCan and continues to capture the imagination of private jet flying. In an interview with ***SP's Aviation*** **Kanika Tekriwal**, the Co-founder and CEO of JetSetGo, talks about how the company is going to change the face of private jet flying in India.

SP's Aviation **(SP's): Could you briefly give the nature of your business?**

Kanika Tekriwal (Kanika): To put briefly JetSetGo provides Indian charter customers for the first time choice, transparency and flexibility to book a private jet online on both web and mobile platforms. For single leg trips, through its online demand aggregation model it maximises the chance for sale of empty travel legs to other customers thereby adding value to original leg customer by giving a credit against original charter cost and for the empty leg traveller a private jet at a more attractive price point. For aircraft operators, JetSetGo provides a cloud-based enterprise management tool which combine scheduling, advanced trip pricing and business intelligence capabilities with an in-built global marketplace for services and parts that will soon also have transactional capabilities.

SP's: Since inception what has been your company's growth

and what are the drivers?
Kanika: We have seen double-digit growth month-on-month. Every business owner likes to call their product unique/exclusive, I would rather let my customers do the talking about how we are changing the private aviation industry in India one step at a time.

There is as yet no end-to-end aggregation platform in India which in itself makes us unique. Not restricting our self to just this we extend the experience from the ease of the customised online booking process to providing superior unmatched level of service at every customer touch point through the journey process on ground at both departure and arrival airports and on-board based on the purpose of the customer charters, be it business or leisure. This end-to-end approach and putting the customer first is what differentiates us from the traditional aircraft charter market in India which is still broker driven who suggest aircraft based on what suits them more than what suits the customer, does arbitrary pricing to exploit individual situations and from the need for superior on-ground service (read experience) after having paid so much for a private jet charter in India.

SP's: How many charter companies are enlisted and what is the number of aircraft that you can access? Is it in India alone or overseas too?
Kanika: We only have operators listed in India. We have access and listing with close to 80 per cent of the GA fleet available for charter.

SP's: How many airports can you reach within India and overseas too?
Kanika: Any airport in the world.

SP's: What has been the general profile of your clients – industrialists, celebrities, politicians, etc?
Kanika: There are two types of customers JetSetGo caters to: the business traveller and the leisure traveller. Both of these consist of domestic and international clientele. The international traveller is accustomed to using private jets world over and comes with requirements which could range from a particular type of caviar being served on board to the thread count of the bed sheets – our business is to turn every wish into a command. The domestic traveller understands the ground reality in India and definitely comes with lesser requirements at the same time his expectations are increasing every day.

The business traveller: Those using private jets for business generally do so to travel to airports not being serviced by commercial airlines in India today or to save time or even a combination of both. We often see cases wherein business people who are travelling with three or four colleagues in business class, say "Why wouldn't we fly private for close to the same price?" Over and above which it saves on airport time, plus the aircraft are business enabled with sat-phones and Wi-Fi keeping the discerning business traveller ever connected. The business travellers priority is flexibility so if a customer calls five minutes ahead of departure and says reschedule departure to tomorrow – we have to make it happen.

The leisure traveller: Travel advisors report that the number of affluent travellers between the ages of 40 and 55 has skyrocketed. Not only that, more well-off families in their 30s and 40s are planning vacations and adventure trips with their young children. The reason: they love to travel and want their children to experience the world. At JetSetGo we have seen this trend takeover where leisure travellers use private jets to travel to offbeat locations with the desire for never tried before experience only increasing. The leisure traveller likes to be pampered and spoiled with fine dining, superior service and his choice of entertainment. At JetSetGo our USP is reimagining private aviation so we convert a private jet ride to a traveller's holiday destination into an experience by itself. Since leisure travellers involve travellers of all ages special care is taken to ensure there is something for everyone. The leisure traveller loves unique experiences – for example, we recently hosted an all-out bachelor party on a private jet for a customer. On another instance we hosted a little birthday party for young kids at a helipad along with joyrides on a helicopter.

Our customers who range from the likes of the Ferragamo family to CEOs of Fortune 500 companies to billionaires love the fact that post a phone call all their travel requirements are taken care of by us along with which the brand delivers an unsaid assurance of true luxury, quality, comfort and safety. Our biggest learning has been that in the world of luxury today, experience and perception are far more important than utility. Every customer using a private jet irrespective of the purpose likes the image that comes along with it – which simply reads rich and busy.

SP's: One of the problems of an aggregator could be unavailability of an aircraft to a client who has booked it. In such cases what do you do?
Kanika: Our USP is service, reliability and assurance. In case an aircraft is unavailable we send an alternate aircraft at our own cost irrespective of the costs we have to absorb.

SP's: What are your plans for expansion, growth?
Kanika: The only plan right now is to make JetSetGo the one-stop shop for private jet and luxury travel globally. Bigger, better – something the world's never seen.

SP's: The business aviation community, per se, has shown signs of strain and many companies are said to be in the red. How is it in such a scenario that you have positive sentiments?
Kanika: The future of the industry is all about bespoke, exclusive, discreet experiences. The customers exist and so does an active market – it's all about delivering what they want. In the world of private jets – the sky is literally the limit.

A recent Knight-Frank wealth report points to how some of the major emerging markets in Asia like India will churn out the highest growth rates in UHNI, billionaires and centa-millionaires over the next decade. They forecast India's UHNI population to increase from 1,652 to 3,371; centa-millionaires to increase from 401 to 811 and billionaires to increase from 53 to 77 in the next 10 years (2024). While India continues to lag China in growth of the luxury sector, a combination of improving macroeconomic fundamentals and fall in aviation fuel prices is now providing strong tailwinds to the business aviation sector with several aircraft and helicopter manufacturers registering increases in order book and betting on India being a core part of their future growth plan. JetSetGo sees its technology investments paving the way for wider strategic alliances and growth opportunities in the luxury travel and experiences market space.

SP's: What has been the most challenging aspect in this kind of business?
Kanika: We don't seem to have encountered any challenges worth mentioning as such. The business is a very people and machine reliant business and it's all about working efficiencies.

SP's: What needs to be done to prop up the business aviation sector in the country?
Kanika: More JetSetGos! SP

AWAITING THE "REAL" PUSH: GULFSTREAM G650 ER BEING TOWED TO APRON

TARDY GROWTH

International business aviation players are hoping that India will do well, if not in the short term but medium and long term. The National Civil Aviation Policy has been announced and there is no specific mention of the business aviation segment, while there is mention of international charters. It is this apathy and poor infrastructure for small aircraft that has stymied the growth of business aviation in India.

BY R. CHANDRAKANTH

PHOTOGRAPH: KARTHIK KUMAR

ACCORDING TO EXPERTS, INDIA'S fleet of business aircraft shrunk two per cent in 2015, the first such contract in 25 years. There are reports that the markets may contract further as about 40 per cent of the planes are said to be up for sale, hit by poor infrastructure, high taxes and other regulatory issues. As per the Directorate General of Civil Aviation (DGCA), as of June 22, 2016, there are 121 non-scheduled operators with 355 platforms that include fixed-wing aircraft, helicopters and hot-air balloons. There has not been any significant growth in the aircraft numbers in the past few years. It is hoped that the new policy, notwithstanding the absence of any mention of business aviation, will do good for the industry as a whole and business aviation in particular.

No doubt, the business aviation segment has been hit, with charter taking quite a brunt of it and it calls for immediate support by the government. According to media reports, Business Jets India, owned by Tata Sons, has reportedly returned all four planes (three Hawker Beechcraft and one Cessna Citation) to leasing companies. The Director of Operations of Taj Air, Atiesh Mishra in media interviews attributed it to 'combination of high costs and poor infrastructure.' "For instance a business jet can only park for 48 hours at Mumbai airport, post which there is

a penalty. So an operator has to park the plane in Ahmedabad or some other neighbouring airport. This burns extra fuel and makes business unviable," he said.

INDIA STILL AN ATTRACTIVE MARKET

Despite such trends, international players are still hoping that India will do well, if not in the short term but medium and long term. Global Jet Capital, a provider of financing solutions for large-cabin, long-range business jets, expects demand for business aviation in India to increase as a result of the country's strong economic growth. Simon Davies, Vice President, Sales–India at Global Jet Capital, is currently in India meeting prospective clients who are looking for finance to support potential acquisitions of mid to heavy business jets. New research from Global Jet Capital reveals that over the last decade (2006-15), 70 mid to heavy business jets were delivered to India, with a combined value of around $3.5 billion. Global Jet Capital says these aircraft typically cost between $25 million and $75 million each and up to 80 per cent of the funding used to purchase these is sourced through external financing.

The Indian business aircraft fleet has a greater proportion of mid-sized to heavy jets than the global average. 44 per cent of the Indian fleet is classed as mid-sized to heavy, compared with a worldwide figure of 31 per cent, indicating that demand for finance from Indian buyers is likely to be greater than from other regions. The aviation finance specialist, which recently completed the purchase of the aircraft lease and loan portfolio of GE Capital Corporate Aircraft in the Americas representing approximately $2.5 billion of net assets, has around $1 billion to lend to clients to purchase relevant business aircraft in India and elsewhere around the world.

Simon Davies said: "For the fiscal year 2015-16, India's GDP growth was around 7.6 per cent and some market commentators are predicting that growth will gain momentum in 2016-17, with GDP growth of around 7.8 per cent. "Demand for business aviation is closely correlated to economic growth so we believe that in the long term, India will see a significant increase in demand for business jets. This is already a very attractive market for us and we expect it to become even more appealing in the coming years."

Global Jet Capital, which was launched in 2014, is capitalised by three global investment firms – GSO Capital Partners, a Blackstone company in partnership with Franklin Square Capital Partners; the Carlyle Group and AE Industrial Partners. The company's current management team and executive committee is composed of leaders from business jet manufacturers, maintenance and service providers and leading financial institutions who have served the private aircraft industry for a combined 200-plus years and have completed over 3,500 aircraft transactions.

Jonathan McDonald of International Bureau of Aviation, a UK-based consultant, said, "There is a business jet market in India but it is sporadic in terms of demand. Few are actually owned by ultra high net-worth individuals, more by corporations. In terms of size-category, there is no set trend either—everything from Mustangs to Boeing Business Jets—unlike say Brazil where you have a lot of very light jets or Russia where they love super mid-size/heavy aitcraft such as the Legacy, Falcon 900, Challenger 604/605RE, etc".

BOMBARDIER'S OUTLOOK FOR THE REGION

In its 2015-24 business aircraft outlook, Bombardier has pegged the numbers at 310 aircraft for South Asia valued at $12 billion. It said that the region continues to develop its regional business aviation market and that there was slow improvement in infrastructure and regulatory environment. The average annual economic growth in India is seven per cent and the fleet compound annual growth rate is 12 per cent. The region is forecast to receive large category aircraft, accounting for over 50 per cent of total deliveries. The outlook pointed out that delivery of aircraft would be 80 in the light category, 70 in the medium category and 160 in the large category.

STABLE MARKET AS PER EMBRAER

Claudio Camelier, Vice President Sales and Marketing, Middle East and Asia-Pacific, Embraer Executive Jets, said that Indian executive jet market is stable which has not gone in the extremes. During India Aviation 2016, he said: "We are not seeing any kind of relevant movement, either up or down since the last two years. However, factors like high GDP growth rates, diversification of businesses, and the growing acceptance of executive jets by the business community in this country which has expanded geographical distances, make us confident that we will keep growing here."

Embraer has a strong presence in India with a total of 28 aircraft of different market segments, including 21 executive jets across six different models. The company had emerged as the market leader, delivering 35 per cent of the total executive jets into India over the last five years. Stating that Embraer forecast 490 executive jets to be delivered by all manufacturers in the Asia-Pacific region, excluding China, over the next ten years, he said a major portion of this would be from Embraer's stable.

THERE ARE REPORTS THAT THE MARKETS MAY CONTRACT FURTHER AS ABOUT 40 PER CENT OF THE PLANES ARE SAID TO BE UP FOR SALE, HIT BY POOR INFRASTRUCTURE, HIGH TAXES AND OTHER REGULATORY ISSUES.

GLOBAL SHIPMENT TRENDS

While India's market movement is laggard due to poor infrastructure, high taxes and regulatory policies, the global scene is also not too encouraging. The General Aviation Manufacturers Association (GAMA) published the first quarter 2016 aircraft shipment results. The general aviation industry shipped 614 aircraft in the first three months of the year for a total value of $4.5 billion.

"The entire industry is feeling the impact of retrenchment in the energy sector as well as global geopolitical and economic insecurity," GAMA President and CEO Pete Bunce said. "Despite these headwinds, our industry continues to invest in research, development and certification of more efficient and safe products. Therefore, actions taken by elected officials to stimulate R&D and improve regulator efficiency have a far-reaching impact on the economy."Shipments of general aviation aircraft were soft across the board with only a handful of bright spots. Piston engine airplane and rotorcraft shipments were stable at 191 and 60 units respectively in the first quarter compared to last year. Business jet deliveries declined by 4.7 per cent from 128 in first quarter 2015 to 122 in first quarter 2016. The turboprop airplane segment's deliveries slowed by 6.8 percent to 109 units. Turbine rotorcraft also declined from 141 to 103 units. SP

MEMBERSHIP OF MTCR FOR INDIA

The aim of the MTCR is to restrict the proliferation of missiles, complete rocket systems and unmanned air vehicles capable of carrying weapons of mass destruction

WHILE THE NATION WAS in the process of coming to terms with the disappointment of failure of the high-profile and vigorous diplomatic effort by the NDA Government to become a part of the Nuclear Suppliers Group (NSG), on June 27, 2016, came the somewhat encouraging news from Paris that India had been successful in joining the Missile Technology Control Regime (MTCR) as a full member.

Since the conclusion of the Indo-US Civil Nuclear Deal between President George Bush and Prime Minister Dr Manmohan Singh nearly a decade ago, India has been making efforts to be a part of these two export control regimes as also of the Australia Group and the Wassenaar Arrangement that together regulate the conventional, nuclear, biological and chemical weapons and technologies. As per the Ministry of External Affairs, it is believed that India's membership of the MTCR would help strengthen global non-proliferation objectives. India's entry into the MTCR is expected to remove or reduce impediments for the nation to export high-tech missiles such as BrahMos to other countries as well as purchase the Predator unmanned combat aerial vehicles from the US. However, fresh policy framework would have to be drawn up and implemented.

Established in 1987, the MTCR is an informal and voluntary partnership that with the entry of India now consists of 35 countries. The aim of the MTCR is to restrict the proliferation of missiles, complete rocket systems and unmanned air vehicles (UAVs) capable of carrying weapons of mass destruction. In particular, the regime keeps a check on transfer of missiles and UAVs capable of carrying a payload of at least 500 kg to a range of 300 km. The group also focuses on any equipment, software or technology that can enable a nation to produce such systems. MTCR partner nations encourage all countries to observe guidelines promulgated by the regime on transfers of missiles and related technology as a contribution to common security. A country can choose to adhere to the guidelines without being obligated to join the group and a number have done so. The partner nations of the regime welcome opportunities to conduct broader dialogue on proliferation issues with such countries.

THE MAJOR DIPLOMATIC CHALLENGE BEFORE INDIA WOULD BE TO NEGOTIATE THE NEXT ROUND OF NEGOTIATIONS FOR ENTRY INTO THE NSG WITHOUT FURTHER ESCALATING ANIMOSITY WITH CHINA

In June 2015, India had applied for membership of the MTCR with support from the US and France. The application was considered in the 29th plenary session of the MTCR that was held in Rotterdam in October 2015. However, India's maiden attempt at that time to be a part of the MTCR had not succeeded. It is generally believed that the successful entry into the MTCR will pave the way for India getting membership of the NSG.

However, attempts at entry by India into the NSG may be laced with hurdles as China is seeking similar status for Pakistan. Strangely, this is despite Islamabad's persistent and consistent record in both nuclear and missile proliferation. India faced stiff opposition from China and a few other countries and the fact that it is not a signatory to the Nuclear Non-Proliferation Treaty was a major issue. It was used by these nations for thwarting India's bid at the Seoul meeting despite the strong backing by the US. However, the nation need not lose hope as there will be fresh opportunities in not too distant a future for entry into the NSG. However, the major diplomatic challenge before the nation would be to negotiate the next round of negotiations for entry into the NSG without further escalating animosity with China. SP

ILLUSTRATION: SP'S DESIGN

—By Air Marshal B.K. Pandey (Retd)

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EMPOWERED FINALLY: ONE OF THE THREE WOMEN PILOTS COMMISSIONED INTO THE FIGHTER STREAM OF THE IAF

WOMEN BREAKING BARRIERS!

The commissioning of female pilots into the fighter stream of the Indian Air Force will indeed be inspiring as well as challenging for the future generations of women

BY AIR MARSHAL B.K. PANDEY (RETD)

PHOTOGRAPHS: IAF

HISTORY WAS SCRIPTED FOR the Indian Air Force (IAF) on June 18, 2016, when Manohar Parrikar, the Minister of Defence, the Chief Guest and the Reviewing Officer, formally conferred the President's Commission on to three women fighter pilots along with other flight cadets of various branches of the IAF, at a combined graduation parade held at the Air Force Academy in Dundigal, north of Hyderabad. This will indeed be recorded as a landmark event in the glorious history of the IAF and will be seen as the proverbial "feather in the cap" of the service. This day also marked the fulfilment of the commitment by Air Chief Marshal Arup Raha, Chief of the Air Staff, made on the last International Women's Day that the nation would see its first batch of female fighter pilots on June 18, 2016. In his address on the occasion of the combined graduation parade, the Minister of Defence assured the audience that step by step total gender parity will be achieved in the armed forces in the coming years and that the technical or administrative difficulties in this regard if any would be removed.

Women have been serving in the flying branch of the IAF for over two decades. Currently on the rolls of the IAF are nearly 100 women pilots and 20 women navigators. However, these have been restricted to flying transport aircraft and rotary-wing

platforms only. They did not have the option to join the fighter stream on account of policy restrictions prevailing at that time. Women pilots and navigators have been operating transport aircraft to forward bases and flying helicopters even in remote and high-altitude areas and over inhospitable terrain such as that of the Siachen Glacier. With the same level of training and grooming, they have, in no way, proved to be less capable than their male counterparts.

However, following a radical shift in policy, India's first three women pilots allocated to the fighter stream namely Flying Officer Bhavana Kanth, Flying Officer Avani Chaturvedi and Flying Officer Mohana Singh, have successfully completed Stage II of the training schedule for fighter pilots having logged a total of around 150 hours of flying on the Pilatus PC-7 Mk II basic trainer aircraft procured from Switzerland and on the HAL-built jet trainer, the HJT-36 Kiran. They were also awarded the pilot's "Wings" coveted by all those aspiring for flying career in the IAF. They will now relocate to Air Force Station Bidar in north Karnataka for Stage III of their training scheduled on the BAE Hawk 132 advanced jet trainer. On successful completion of Stage III, these three women fighter pilots will be assigned to different combat squadrons equipped with supersonic fighter aircraft such as the MiG-21, the Mirage 2000 and the Su-30MKI. It is in the combat squadrons that they will be required to undergo operational training along with their male colleagues before being declared fully operational or in other words 'combat capable' on any of these aircraft. This will by no means be an ordinary achievement for these high flying young girls fired by ambition to perform the combat role in the IAF! This is expected to inspire others to follow in their footsteps and hopefully reverse the declining trend amongst young women in the country to opt for the military as a career.

THE THREE WOMEN FIGHTER PILOTS UNDERGOING TRAINING AT AIR FORCE ACADEMY IN DUNDIGAL

Women have been flying combat aircraft successfully in a number of countries of the world such as the United States, Russia, UK, Canada, France, Germany, Norway, the Netherlands, Turkey, Israel, China, Singapore and even Pakistan that is three years ahead of India in this regard. The first woman in the world to be employed in a flying combat role was Sabiha Gökçen of Turkey in 1936. The US Defense Secretary Ashton Carter had stated a few months ago that the US Government had moved even further and decided to open to women all positions including front line combat roles in the armed forces. Said Defense Secretary Carter: "We cannot afford to cut ourselves off from half the country's talents and skills. We have to take full advantage of every individual who can meet the laid down standards." This philosophy ought to apply in the Indian context as well.

The US Air Force inducted its first woman fighter pilot Col Jeannie Leavitt in 1993. About the same time, the US Navy commissioned Lt Kara Spears Hultgreen as the first carrier-borne combat pilot. Unfortunately she died soon after in a crash at sea while flying the F-14 Tomcat. The UK followed suit in 1994 and today in the Royal Air Force (RAF), there are ten women fighter pilots flying the Eurofighter Typhoon or Tornado jets in combat missions. RAF women combat pilots flying the Tornado are reported to have flown hundreds of operational missions over Afghanistan as part of Britain's offensive against the Taliban. A female fighter pilot of the RAF led the first aerial combat mission into Iraq operating from an RAF base in Cyprus. It was a highly dangerous mission over territory in northern Iraq held by the ISIS. In Israel, women pilots had flown combat missions during the Israeli War of Independence; but thereafter women were excluded from combat flying. This restriction was lifted in 1995 following which the first woman to earn wings in 2001 as a fighter pilot was Lt Roni Zuckerman. Closer home, in June 2013, Flight Lieutenant Ayesha Farooq, one of the 19 female pilots in the Pakistan Air Force (PAF), became the first one to be a part of the fighter stream flying the Chinese made F-7PG. Tragically, in November last year, Marium Mukhtiar, another Pakistani female fighter pilot in the PAF, succumbed to her injuries sustained during ejection from a combat aircraft following a serious emergency in the air.

A woman going into combat is neither without precedent nor alien to Indian culture or tradition. After all, in 1858, the Rani of Jhansi went into the battlefield on horseback with a sword in hand and her infant son strapped to her back to take on the British who were on the offensive. Tragically, the Rani and her son were both martyred. She had left instructions with her soldiers that in case she dies in battle, her body must be burnt immediately and that under no circumstances should the British soldiers be able to get hold of it.

While entry of women into the fighter stream is indeed a landmark event, for the management in the IAF there are issues of serious concern. There is genuine apprehension about the fate of a woman fighter pilot if she is shot down over enemy territory and is captured alive. To obviate this possibility, there is a suggestion that women fighter pilots should be employed only in the air defence role or other missions within the boundaries of the nation.

In the final analysis it is really not a contest of skills between male and female fighter pilots. The three young ladies commissioned recently as fighter pilots have been reported to have performed as well and even better than their male colleagues. The latest move to induct them into the fighter stream of the IAF will indeed be inspiring as well as challenging for the future generations of women who aspire to 'Touch the Sky with Glory' and a positive development in respect of their emancipation and fulfilment of aspirations! SP

TEJAS INDUCTED, FINALLY

Indian Air Force's first squadron of home-grown light combat aircraft Tejas became a reality with the induction of two aircraft into the force on July 1, 2016

BY AIR MARSHAL B.K. PANDEY (RETD)

AFTER A WAIT OF over three decades, on Friday, July 1, 2016, the Indian Air Force (IAF) was finally handed over by the Hindustan Aeronautics Limited (HAL) two light combat aircraft (LCA) Tejas Mk I in the initial operational clearance (IOC) configuration to raise the first squadron of this type. This new squadron has been christened by the IAF as the 'Flying Daggers 45.'

The induction ceremony was held at the Aircraft Systems & Test Establishment at the HAL airport in Bengaluru in the presence of Air Marshal Jasbir Walia, Air Officer Commanding-in Chief, Southern Air Command. The Flying Daggers 45 will be based in Bengaluru for the first two years after which it will be relocated at Air Force Station Sulur near Coimbatore in Tamil Nadu.

The Tejas is a single-engine, lightweight, highly agile, multi-role supersonic combat aircraft, reported to be the smallest in its category in the world. Conceived as a MiG-21 replacement, the aircraft has been designed and developed by Aeronautical Development Agency (ADA) and produced by the Hindustan Aeronautics Limited (HAL). It is to the credit of its designers, manufacturer, technicians and test crew, that LCA has flown more than 3,000 sorties/2,000 hours till date without any accident. Capable of achieving a speed of up to Mach 1.6, the platform that has a 'Tail-less Delta' plan form with shoulder-mounted wings has been developed as a single-seat fighter aircraft and also has a two-seat trainer version. The aircraft is fitted with Martin Baker zero-zero ejection seats. The airframe is crafted with lightweight materials, including aluminium, lithium and titanium alloys as well as carbon composites. The ribs in the wing structure is made of composites with a carbon fibre-reinforced plastic skin. In respect of its speed, acceleration, manoeuvrability and agility, the design features of the LCA Tejas have been configured to meet with the challenges of modern aerial combat in future warfare scenarios. HAL is currently working on the establishment of facilities to scale up production initially to eight aircraft per year and then progressively raising the annual output to 16.

As per the existing plan, the IAF will induct a total of 120 LCA Tejas, the first 40 of the Mk I and the remaining 80 of the significantly improved version, the Mk IA. Of the initial order of 40 aircraft, the first 20 will be inducted in the IOC configu-

PHOTOGRAPH: IAF

TEJAS, LCA MK1

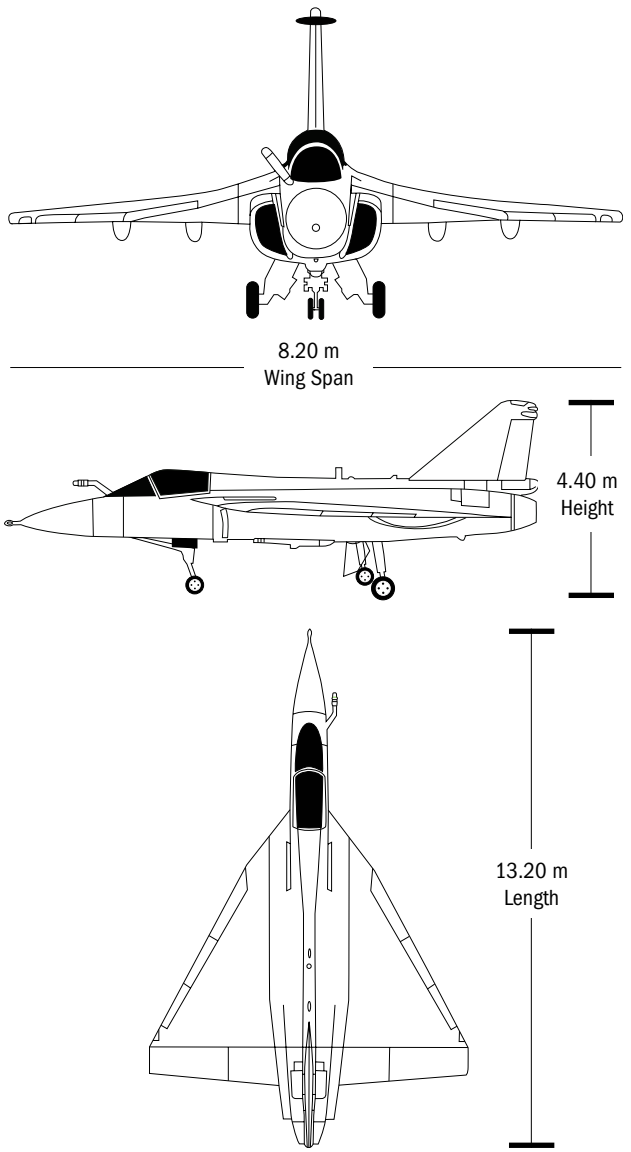


ILLUSTRATION: KUNAL VERMA

SPECIFICATIONS:

Wing Span	8.20 m
Length	13.2 m
Height	4.4 m
Max Take of Weight	13.5 t
Payload	5.3 t
Speed	1.6 m
Radius of Action	300 km
Takeoff distance	1,700 m
Landing distance	1,300 m
Service Ceiling	16 km
G Limits	+9/-3.5

Source: HAL, ADA

TWEET ON INDUCTION OF LCA TEJAS INTO IAF

- 'INDUCTION OF THE INDIGENOUSLY MADE TEJAS FIGHTER JET INTO THE AIR FORCE FILLS OUR HEARTS WITH UNPARALLELED PRIDE & HAPPINESS.'
- 'I LAUD HAL & ADA ON THE INDUCTION OF TEJAS FIGHTER JET. THIS ILLUSTRATES OUR SKILLS & STRENGTHS TO ENHANCE INDIGENOUS DEFENCE MANUFACTURING.'

— PRIME MINISTER NARENDRA MODI

ration and the next batch of 20 will be with final operational clearance (FOC) that will have some new features and marginally improved capabilities. The Mk IA, the upgraded version of Tejas, will be equipped with Active Electrically Scanned Array (AESA) radar, unified electronic warfare suite, midair refuelling capability and the capability to carry advanced beyond visual range (BVR) missile.

As for its other notable attributes, the Tejas incorporates state-of-the-art technologies such as a quadruplex fly-by-wire digital flight control system, advanced digital cockpit, multimode radar, integrated digital avionics system and night vision compatible glass cockpit. Its navigation suite includes Sagem SIGMA 95N ring laser gyroscope inertial navigation system with an integrated global positioning system. The pilot has the facility of helmet-mounted display and sight (HMDS) while the hands-on throttle and stick (HOTAS) control system minimises pilot workload and maximises situational awareness. The aircraft's electronic warfare suite has been developed by the Bengaluru-based Advanced Systems Integration and Evaluation Organisation (ASIEO) and includes a radar warning receiver, jammer, devices for laser and missile approach warning as also and chaff and flare dispenser.

The aircraft has eight external hard points for the carriage of weapon load and drop tanks. These are located three under each wing, one on the centre fuselage and one installed under the air intake on the port side. A 23mm twin-barrel GSh-23 gun is installed in a blister fairing under the starboard air intake. The aircraft can be armed with air-to-air, air-to-ground and anti-ship missiles, precision-guided munitions, rockets and bombs. These aircraft are also capable of dropping unguided bombs with much higher accuracy due to highly advanced indigenous mission computer. Electronic warfare, targeting, surveillance, reconnaissance or training pods can be carried on the hard points.

While commissioning of the Flying Daggers 45 will go down in the history of the IAF as a milestone to be cherished, the LCA Tejas has still a long way to go. It is indeed heartening that of the 50-odd deficiencies observed initially, most have been cleared and the remaining too should be resolved with the Mk IA. Hopefully, this success will inspire the Indian aerospace industry to move forward and achieve greater heights of glory with the Tejas Mk II and subsequently with the fifth-generation combat platform that is on the drawing board! SP

BREXIT TO CAST SHADOW ON FARNBOROUGH

A major highlight of the show will be the appearance of the F-35 Joint Strike Fighter (JSF) with two of its variants on display

BY R. CHANDRAKANTH

PHOTOGRAPH: PHIL WEYMOUTH

BREXIT IS GOING TO be the talking point at the Farnborough International Airshow (FIA) to be held from July 11 to 17. The aerospace industry, both civil and military, will seriously deliberate the implications of Brexit on the sector. Already some airline operators from the United Kingdom have expressed serious concerns of Brexit on their operations. As Brexit unfolds, the impact will be felt throughout Europe in the months to come. However, is bracing itself for the show with Brexit in the foreground. Though the organisers have not talked about it or have placed it on the agenda, Brexit will be the focal point.

Elaborating on the details of the show, Commercial Director Amanda Stainer indicated that they were hoping to repeat the success of FIA14. With exhibition space in halls already sold, positive sales reflect the continued strength of the international defence and commercial aerospace industry and the value that FIA brings to aerospace business.

F-35 JOINT STRIKE FIGHTER WITH TWO OF ITS VARIANTS WILL BE ON DISPLAY AT THE FARNBOROUGH AIRSHOW

PHOTOGRAPH: LOCKHEED MARTIN

NATIONAL PAVILIONS

Further proof of the airshow's standing was reflected in its continued international participation. 22 nations from Europe, the US, Canada, South America, Russia, Korea and Japan will be setting up national pavilions at the show. The show will also welcome for the first time, a Chinese pavilion which will include companies such as AVIC, COMAC, Aviage Systems and other Chinese supply chain companies that will look for opportunities to promote China's growing aerospace industry. Stainer noted that Chinese participation was at its largest with a dedicated Chinese pavilion representing a 103 per cent increase in footprint and a 98 per cent increase in spending compared to the 2014 show.

Strong international attendance is also expected by way of delegations. The civil and commercial programme is exceeding expectations with representative groups already confirmed from the UK, Australia, Italy and the Middle East.

F-35 JOINT STRIKE FIGHTER

A major highlight of the show will be the appearance of the F-35 Joint Strike Fighter with two of its variants, the F-35A and F-35B, on display. For the many commercial aerospace organisations involved in the development of the aircraft, the F-35's appearance is also a major opportunity to promote their achievements in the making of the aircraft to an international trade audience. Pratt & Whitney, BAE Systems, Rolls-Royce, Martin Baker, Esterline, Kongsberg Gruppen, Alenia Aeronautics and Ultra Electronics to name just a few, are all part of the F-35 global supply chain and will be present at the show. For Lockheed Martin, the F-35's appearance marks over a decade of development and will be central to its participation at the show this summer.

Networking and engagement was also noted as a key feature of the show with an increased number of briefings and workshops taking place. Apart from a host of ADS-led events, SAE International will be running MRO workshops and Aviation Week, a commercial manufacturing briefing. Furthermore, the EU Project Innovation Centre (EUPIC) will be hosting a conference regarding aerospace business opportunities in China. Alongside the popular 'Meet the Buyer' event and 'Welcome Reception', the show is expected to provide excellent business networking across all five days of the show.

STRONG MILITARY EVENT TOO

Strong international attendance is also expected via the civil and military delegations programme. The team is in discussion with all key emerging markets including the Middle East, North and South America, India, Australia and Europe and is working with all FIA exhibitors regarding engagement with the RAF and the UK MoD. The Civil and Commercial programme is also ahead of the game with five delegations already confirmed from the UK, Italy, Serbia and the Middle East.

Amanda Stainer said, "National pavilions are an excellent opportunity for aerospace companies to participate at the show alongside their Tier-I and Tier-

22 NATIONS FROM EUROPE, THE US, CANADA, SOUTH AMERICA, RUSSIA, KOREA AND JAPAN WILL BE SETTING UP NATIONAL PAVILIONS AT THE SHOW

HYBRID AIR VEHICLES WILL DEMONSTRATE ITS AIRLANDER, THE WORLD'S LARGEST AIRCRAFT AT THE FARNBOROUGH AIRSHOW

II counter parts. They serve to develop business relationships across borders and we are delighted that they choose the Farnborough International Airshow to do this."

She further added, "We are really excited at how FIA16 is shaping up. We are delighted to see the F-35 at the show which will be the first opportunity for those involved with the programme to showcase their contribution. The Space Zone is also looking really exciting and we expect to see lots of future aerospace technologies on display in the Innovation Zone. The seminar and event programme is also building up as is the civil and military delegations programme. As we move closer to the show, we look forward to announcing more features and attractions."

The show will also coincide with Boeing's Centennial Celebrations on July 15, 2016. While full details are still under the wraps, FIA will form a core part of the aircraft manufacturer's 100-year anniversary.

AIRLANDER DEMONSTRATION

Apart from the F-35 Joint Strike Fighter, other aircraft anticipated to be either on flying or static display include Antonov 187, Airbus A350, Bombardier C-Series, Boeing F/A-18F Super Hornet and Boeing C-727. Hybrid Air Vehicles is also hoping to demonstrate its Airlander, the world's largest aircraft which is currently in the earliest stages of a flight test programme.

DRONE AWARENESS WEEKEND

The Civil Aviation Authority (CAA), National Air Traffic Services (NATS) and Association of Remotely Piloted Aircraft Systems (ARPAS) have joined forces with the UK Drone Show and Farnborough International Airshow to create a Drone Safety Awareness Weekend to be hosted during the public weekend of the airshow.

Following an increasing number of incidents involving public drone flying, the purpose of the Drone Safety Awareness Weekend is to educate recreational drone pilots and the general public about the laws relating to operating unmanned aircraft in the UK, as well as give sensible advice regarding safe flying and possible dangers.

The CAA along with NATS and ARPAS have confirmed that they will be speaking at Farnborough International Airshow this year, which attracts up to 80,000 visitors over the public weekend, to cover the important aspects of drone flight to be aware of before piloting a drone. This will offer a rare opportunity to listen to industry UAV and flight safety experts on topics of drone safety and to see presentations on the future of the drone industry and beyond, an event not to be missed.

As well as safety awareness, the UK Drone Show will also allow visitors at the FIA to experience live first person viewing drone racing, wearables, specialist software, pilot training information, UAV gadgets and product demonstrations. Around 70 exhibitors and drone manufacturers will be in attendance, many of whom will be retailers with the latest drone technology being sold directly from their stands.

NO RED ARROWS

For the first time in 52 years, the Red Arrows will not be performing at Britain's biggest air show because of safety fears after the Shoreham disaster. Eleven people were killed when former British Airways pilot Andy Hill attempted a loop manoeuvre at Shoreham Air Show in a 1950s Hawker Hunter jet in August before it crashed onto the road below in a fireball. The no-show by Red Arrows is going to be a disappointment to the 80,000 visitors expected at the show. However, this is not going to stop the organisers from going all out in their bid to attract the best of the best. SP

PHOTOGRAPH: HYBRID AIR VEHICLES

AIRBUS A350 XWB AT THE SHOW

FOCUS ON INNOVATION & TECHNOLOGIES

ILA 2016 is synonymous with innovation and leadership in aerospace. It dealt selectively with forward-looking topics in the outward looking industry, including sustainability, digitalisation, 3D printing and Industry 4.0

BY R. CHANDRAKANTH

PHOTOGRAPH: MESSE BERLIN GMBH

WITH ITS NUMEROUS INNOVATIONS and advanced technologies, the ILA Berlin Air Show 2016 demonstrated the capabilities and achievements of the global aerospace industry. A wide range of the latest high-tech products as well as research and development projects were displayed by the 1,017 exhibitors from 37 countries. During this four-day event, 1,50,000 trade visitors and members of the public thronged the 2,50,000 square-metre Berlin Expo Centre Airport. ILA 2016 was organised by the German Aerospace Industries Association (BDLI) and Messe Berlin GmbH.

Some 200 aircraft were featured in the static and flying displays. For the professionals, there were 50 conferences providing details about the latest developments in the industry. Digitalisation and 3D printing, Industry 4.0 and eco-efficiency were among the main themes. The many high-tech products on view at the new Future Lab on the stand of the Federal Ministry of Economic Affairs provided insights into the technological future of the aerospace industry. The Start-up Day was another new feature this year that enabled 50 newly established companies to present their creative ideas and business models which have the potential to benefit the aerospace industry in the future.

Volker Thum, Chief Executive of the German Aerospace Industries Association (BDLI), said, "ILA 2016 is synonymous with innovation and leadership in aerospace. It dealt selectively with forward-looking topics in our outward looking industry, including sustainability, digitalisation, 3D printing and Industry 4.0. I am particularly pleased with the entirely positive feedback from our exhibitors from all over the world. The wide and varied programme of flying displays provided impressive proof of the fascination exerted by our products."

One of the big attractions was the demonstration flights of the Swiss national team. For many years Patrouille Suisse has been using the ILA for one of its rare foreign appearances. There were also breathtaking displays by individual aircraft: a German Air Force Eurofighter, a MiG-29 from the Polish Air Force and a Chinook heavy-lift helicopter from Boeing. The highlight of the presentation by the Bundeswehr was provided by the various displays offering impressive proof of the range of capabilities of military aviation. THOR from Airbus is the first aircraft to be produced almost entirely by 3D printing. Numerous unmanned aerial systems (UAS) for civilian and military use were also on show at ILA 2016. Multicopters were deployed in the first Copter Race to be held at the show in which these miniature remote-controlled aircraft flew around a course at speeds of up to 100 kmph.

SPACE PAVILION

The International Suppliers' Centre (ISC) was the ideal marketing platform for the entire supply industry with a substantial increase in international involvement and the participation of many more leading decision-makers compared with the last ILA. One of the main highlights was the Space Pavilion, which provided trade visitors and the public with graphic illustrations of the benefits that space research offers mankind. In the mission pavilion, the Bundeswehr and the military aircraft industry demonstrated the effective cooperation that ensures the operational capabilities of their aircraft. The German Aerospace Centre impressed with its fleet of research aircraft and details about its full range of research projects.

MIG-29, POLISH AIR FORCE; BLUECOPTER FROM AIRBUS GROUP

NEW AIRBUS FLAGSHIP – THE A350 XWB

Highlights of the flying display this year included the new Airbus flagship, the A350 XWB, and the A320neo, fitted with new and more environmentally friendly engines. The tanker and transport aircraft, the Airbus A330 MRTT, made its debut at the ILA. Visitors have been able to inspect the world's two largest commercial aircraft, the Airbus A380 in Emirates livery and a Boeing 747-8 from the Lufthansa. The Bluecopter from Airbus Helicopters represented a new generation of helicopters.

AIRBUS DEFENCE AND SPACE ON THE MOON?

The space and military division of Airbus may soon be landing on the moon. It has signed an agreement to cooperate with the European Space Agency (ESA) and its Russian counterpart Roscosmos to develop a device that will make moon landings more precise. This was announced by Francois Auque, Executive Vice President Space Systems, at the ILA 2016. This collaboration is part of a vision by the name of 'Moon Village' which was developed a few months ago by the Director General of ESA Jan Wörner.

PHOTOGRAPHS: MESSE BERLIN GMBH

SATELLITE COMMUNICATION
The new technologies that have been developed for communication satellites are exploring the limits of mobility and accessibility. In some 20 experiments involving communication, antenna and satellite systems the Heinrich Hertz test platform will be subjecting innovative technologies to extreme conditions that are found in space such as high levels of radiation, massive temperature fluctuations and weightlessness. The satellite was on show.

BOEING EYEING BUNDESWEHR HELICOPTER CONTRACT
Following Sikorsky, a second bidder to supply the successor to the CH-53G heavy-lift helicopter to the Bundeswehr, made use of the ILA to present itself. If the Bundeswehr decides in favour of the Chinook, it would be the ninth NATO country to operate this helicopter, according to Michael Hostetter, Director Vertical Lift Programs Germany for Boeing.

ALTERNATIVE FUELS
The Emission and Climate Impact of Alternative Fuels project (ECLIF) analyses the emissions of alternative fuels using various methods such as by combustion in a laboratory, on combustion chamber test beds and by measuring emissions during flight tests. At ILA, a liquid fuel combustion device in combination with a screen presentation was presented on how different alternative fuels display different combustion characteristics for use in aviation.

PART DRONE, PART AIRSHIP
At ILA, hybrid-airplane from Baden-Baden displayed the prototype of an eco-friendly hybrid aircraft, the world debut of this device. The first impression of H-AERO is of a flying saucer. In actual fact it is a mini-airship filled with helium and propelled by two solar-powered electric motors. The patented aircraft is three metres wide and has a five-metre wingspan, with the electric motors attached to the wings. Its overall weight is ten kg and the maximum payload is three kg. Designed by Csaba Singer, the aircraft can fly to over 2,000 metres and can remain airborne for unlimited periods.

COPTER RACE DRONES
Radio-controlled multicopters, also known as drones, have changed the face of the model aircraft racing scene. At ILA, the German Model Aircraft Association (DMFV) set up a course measuring 30 by 20 metres for daily copter races. The aircraft, most of which are homemade, flew through gates at speeds of up to 100 kmph, guided by pilots wearing video goggles.

ROYAL NAVY BLACK CATS
The two Royal Navy AgustaWestland Wildcat helicopters, painted in black and grey, were among the special attractions of the flying display. The primary role of these helicopters is search and rescue or submarine warfare. Their agile handling also make them ideal for flying displays of the kind currently being performed over Schönefeld. This year's display pilots were Lt Cdr David Lilly and Lt Chris Rebbeck.

ROLLS-ROYCE SIGNS DECLARATION
For its planned production of Trent XWB engines for the Airbus A350 in Dahlewitz, Brandenburg, Rolls-Royce intends to introduce various elements from Industry 4.0 and to set up a smart factory. A declaration of intent to investigate possibilities for a joint venture was signed by Alastair McIntosh, Chief Executive of Rolls-Royce Germany and Martin Eves, a member of the management board of QiO, in the presence of the Brandenburg Minister for Economic Affairs Albrecht Gerber.

THOR PROTOTYPE AT ILA AIRSHOW 2016; EUROFIGHTER TYPHOON

MTU BETS ON GEARED TURBOFANS
Digitisation and interconnection help to increase the pace of innovation, according to Reiner Winkler, Chairman of the Board of MTU Aero Engines. This engine manufacturer is concentrating on improving performance even further in its core areas of high pressure compressors and low pressure turbines. For the next 20 years, the geared turbofan that has been developed jointly with Pratt & Whitney, will remain the dominant power plant. Winkler reports that the initial software problems with the PW1100G for the Airbus A320neo have now been resolved and the delay in introducing these engines has been reduced by means of a physical fix and software support the production of the Eurofighter powered by the EJ200, which is manufactured by the Eurojet consortium, can be safeguarded after 2020. SP

PHOTOGRAPHS: AIRBUS GROUP, MESSE BERLIN GMBH

PINNING HOPES ON EUROPE

Business aviation in Europe will need 95,000 additional pilots and 1,01,000 additional maintenance technicians by 2034

BY R. CHANDRAKANTH

PHOTOGRAPH: NEETU DHULIA / SP GUIDE PUBNS

AS THE 2016 EDITION of the European Business Aviation Convention & Exhibition (EBACE 2016) drew to a close, organisers said the show continues to demonstrate its standing as Europe's foremost business aviation event. EBACE 2016 jointly hosted by the National Business Aviation Association (NBAA) and the European Business Aviation Association (EBAA), featured over 450 exhibitors, representing more than 40 countries. The sold-out static display of aircraft featured 60 aircraft, some were new to the event or were making a first show debut at EBACE. The footprint for the show was the largest to date. EBACE 2016 attendees came from over 100 countries, from the European region and beyond.

"By the numbers, this has been an enormously successful EBACE," said NBAA President and CEO Ed Bolen, "Our static display is completely sold out, the exhibit footprint is our largest ever, we have over 450 exhibitors and we have over 400 reporters covering over 20 press conferences." Ed Bolen added: "EBACE exhibitors and attendees repeatedly told us that the show continues to be a must-attend on the industry calendar. Additionally, EBACE once again highlighted the size and significance of business aviation in Europe and around the world."

EBAA CEO Fabio Gamba agreed, "You can really feel that people are here to do business. They are actually looking at the show as the premier place to do business." EBACE returns to Geneva, Switzerland, next year from May 22 to 24. "This year's show was a terrific success, characterised by a full exhibit floor with lots of business getting done. It's an affirmation that EBACE remains Europe's most important industry event."

SEMINAR HIGHLIGHTS HR CRUNCH

A business aviation talent crunch especially for pilots and maintenance technicians, is already starting to bite in the United States. At EBACE panel, representatives from across the industry considered whether Europe would face the same strains. "Business aviation in Europe will need 95,000 additional pilots and 1,01,000 additional maintenance technicians by 2034," said Christian Weiss, leader of the Hay Group's practice on organisation and workforce design.

BOMBARDIER HAS INTRODUCED A NEW LEVEL OF PASSENGER COMFORT IN THE LIGHT JET CATEGORY WITH THE INTRODUCTION OF A LEARJET 75 AIRCRAFT FEATURING AN INNOVATIVE POCKET DOOR DESIGN

CONVERGENCE

In the last 12 months, the business aviation market has seen an "unwelcome convergence," said Richard Aboulafia, Vice President of Analysis at Teal Group, at a State of the Industry education session. "After 2008, the business aircraft market was torn in half," said Aboulafia. "The 'big iron' segment of large cabin aircraft actually did fine because of emerging markets, but the small and midsize segment fell by 57 per cent, peak-to-trough." The recession in emerging markets has caused a decline in demand for large cabin aircraft, while a healthy economy in North America has spurred pickup in light and midsized jets. In Europe, business aircraft movements have declined four years in a row and because of the economic slowdown in Russia, Eurocontrol has seen 20 fewer flights a day between Europe and Russia.

DASSAULT UNVEILS FALCON 8X

Dassault Aviation unveiled Falcon 8X, the newest addition to the Falcon family in the ultra long-range category. Dassault Aviation's static display included a Falcon 900 LX, Falcon 2000LXS and a Falcon7X. Dassault announced that the Falcon 8X ultra long-range business jet was entering the final stage of its flight test and certification programme. The approvals by the US Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) are expected by midyear with service entry by late summer. The three jets which are in the flight test programme have logged over 650 hours in 325 flights.

LARGE ORDERS FOR EMBRAER

Embraer Executive Jets announced during a press conference at EBACE that Across, Mexico's premium business aviation services provider, signed a firm order for 23 business jets. The contract comprises the purchase of eight Legacy 500, eight Phenom 300 and seven Phenom 100E jets with an estimated value of over $260 million at current list price. The firm order was included in the company's backlog of the first quarter and the first deliveries have already begun.

"This fleet order reflects our growing presence in Mexico and confirms the long-term relationship we are building with Across," said Marco Tulio Pellegrini, President & CEO, Embraer Executive Jets. "The Mexican market has a solid business aviation utilisation culture and Embraer Executive Jets' portfolio is perfectly suited to fulfil the increasing demand for more efficient and reliable aircraft in the region. We are glad to support Across in expanding its best-in-class services."

Embraer Executive Jets and the Germany-based business charter operator Air Hamburg have signed a purchase agreement for yet another Legacy 650. The delivery of this aircraft is scheduled for the third quarter of 2016. This new acquisition brings to nine the total of Embraer business jets in Air Hamburg's fleet, currently comprised of seven Legacy 600/650 and one Phenom 300, which serve its customers' travels to European, Russian and Middle Eastern destinations.

NEW INTERIORS AND FEATURES

Embraer Executive Jets introduced new interior features for the Phenom 300 at EBACE 2016 that include a new flat table design, side ledge with wood veneer, new cup holder design, relocated power outlets and charging USB ports. The aircraft will also offer an optional mirror on the back wall. The new block-point changes, which stem from customer feedback, further improve the interior of the world's most-delivered business jet for the last three years. Embraer also announced a new technology for its Legacy 450 and Legacy 500—designated the 'upper tech panel.' This feature, an innovation unique to Embraer, is a backlit touchscreen valence that provides pertinent flight status information, ambient lighting and access to cabin controls.

GULFSTREAM UPDATE ON G500 AND G600

Gulfstream Aerospace announced that Gulfstream G500 and G600 test programmes continue to stride towards anticipated FAA certification in 2017 and 2018, respectively. The four G500 test aircraft have exceeded 1,000 hours of test time and production of the G600 test articles is well underway. "The G500 made its first flight nearly one year ago and we have spent 12 months since then expanding the test fleet and reaching the goals we established early on," said Mark Burns, President, Gulfstream. "At the same time, we have made significant progress in manufacturing the five G600 test articles. Thanks to the extensive ground work in Gulfstream's state-of-the-art test labs, these aircraft programmes are maturing at a consistent pace."

(CLOCK WISE FROM TOP LEFT) NEW INTERIOR ON LEARJET 75 BUSINESS JET; FALCON 8X; AIR HAMBURG ORDERED ONE MORE EMBRAER LEGACY 650 BUSINESS JET; SETP-INTERIOR FROM TEXTRON AVIATION

Gulfstream also pointed out that it had enhanced its support for a growing number of Europe-based operators with new company-authorised maintenance sites in Austria and Germany. The addition of two company-authorised maintenance sites, Jet Aviation's service centre in Vienna and Altenrhein Aviation's new Berlin line maintenance operation, help support a fleet of more than 220 aircraft in Europe, including over 30 based in the central section of the continent.

BOMBARDIER'S NEW PASSENGER COMFORT

Bombardier has introduced a new level of passenger comfort in the light jet category with the introduction of a Learjet 75 aircraft featuring an innovative pocket door design. The pocket door divides the cabin from the cockpit and galley area and reduces noise levels inside the cabin by up to eight decibels, while creating a distinct private living space for passengers. Bombardier also confirmed that Flexjet is the previously undisclosed customer that purchased 20 Challenger 350 jets. Bombardier and Flexjet celebrated the news at EBACE. The order is valued at approximately $534 million. Bombardier and Vistajet also celebrated an important milestone as the private jet company welcomed the 100th Bombardier business jet into the fold. The 100th jet is a Global 6000 business jet which entered service earlier this year.

DASSAULT AVIATION UNVEILED FALCON 8X, THE NEWEST ADDITION TO THE FALCON FAMILY IN THE ULTRA-LONG RANGE CATEGORY

TEXTRON AVIATION SETP DEVELOPMENT

Textron Aviation revealed further programme details around the development of its highly anticipated single-engine turboprop aircraft (SETP), including unmatched performance specification targets, a superior passenger experience and the programme's timeline. The company also announced that letters of intent for the high performance, clean sheet SETP are being accepted. The SETP will be designed to have cruise speeds of up to 285 knots and full fuel payload of 1,100 pounds. With a planned range of 1,600 nautical miles at high speed cruise with one pilot and four passengers, the aircraft will be able to fly from Los Angeles to Chicago, New York to Miami, London to Moscow or Geneva to Istanbul. It will feature the widest and most comfortable cabin in its segment while offering best-in-class operating costs. The programme is targeting first flight in 2018.

HONDAJET RECEIVES EASA CERTIFICATION

Honda Aircraft Company announced that Honda Jet received type certification from the EASA. Steve Higgins, EASA Section Manager for High Performance Aircraft and Turboprops, presented the type certificate for the HA-420 HondaJet to CEO Michimasa Fujino, Honda President and CEO. SP

PHOTOGRAPHS: BOMBARDIER, DASSAULT AVIATION, EMBRAER, TEXTRON AVIATION

CAPPING IS NOT THE ANSWER TO DEAL WITH RISE IN AIRFARES: ASHOK GAJAPATHI RAJU

THE CIVIL AVIATION MINISTER P. Ashok Gajapathi Raju has said that to deal with steep rise in airfares, capping would not be the answer as it would also push the floor prices up. Inaugurating the 9th International Conference & Awards on Civil Aviation and Tourism, organised by ASSOCHAM (Associated Chambers of Commerce and Industry of India) recently, the Minister said that the Ministry had done an analysis which showed that 1.7 per cent of the tickets sold were of high cost.

"The last minute high prices of tickets is a matter of concern. But we should not land up in a situation that pushes the price of tickets for over 90 per cent of passengers for the benefit of 1.7 per cent."

Speaking at the conference, the Secretary of Civil Aviation, Rajiv Nayan Choubey said, "The civil aviation policy is just the beginning. We wish to stay ahead of the growth curve and if we fall behind the growth curve, for example, as it happened in case of urban development in the country, there will be aviation chaos in the skies, airports...."

There are a couple of areas which require immediate attention like how to reduce the cost of leasing. If the cost of leasing remains high either because of capital or any other procedural requirement, regional connectivity may find it difficult in taking off, hence we are committed to exploring ways to reduce the cost of leasing, added Choubey.

Choubey further said if the crude price remains soft for the next four-five years, regional air connectivity would have found very strong roots in India. The Civil Aviation Ministry would look at the possibility of utilising certain unused airports for the purpose of parking aircraft and use aerodromes for plane-breaking or dismantling of old aircraft. There are around 400 unused airports and airstrips across the country.

He said: "In the last four-five months, we have interacted with aircraft manufacturers from all over the world where they could clearly see the scope of hundreds of small planes coming to the country in next three to five years".

Firstly, to sell aircraft in India, they need to sell an ecosystem and should have elements that are excellent aircraft and fuel-efficient. Secondly, it should also have maintenance facilities which should be created in the country or maybe tie up with MROs and make sure that the maintenance happens in the country. Thirdly, they must also come with training infrastructure for the cabin crew and for corporate groups. They must tie up with the institutes which are already here or set up their own. Lastly, they must bring very attractive leasing packages, said Choubey.

Ajay Singh, Chairman and Managing Director of SpiceJet Limited, said that "aviation sector will grow only if we are able to constantly work to reduce the cost of aviation in India. We have to bring down the cost and stimulate this market with low fares. The 20 per cent growth we have seen today is the consequence of reduction in fares from last year to this year and that must continue if you want to see the sector growing."

Rana Kapoor, Managing Director & CEO of Yes Bank, said, "It is indeed a great honour and privilege to be recognised for our contribution to promoting tourism. The award is a true recognition of Yes Bank's decade-long relentless focus on providing innovative solutions to key sunrise sectors of the economy like tourism and hospitality, which go beyond the traditional realm of banking and help unlock the enormous potential of the sector. The award will surely strengthen Yes Bank's endeavour in championing significant policy changes at various forums, aimed at the holistic development of the sector and unleash the sector's untapped potential."

OPEN TO INDUSTRY: MINISTER OF CIVIL AVIATION P ASHOK GAJAPATHI RAJU ADDRESSING AT THE 9TH INTERNATIONAL CONFERENCE & AWARDS ON CIVIL AVIATION & TOURISM

At the programme, Airbus was given the award for being the best global aviation company; Pawan Hans for promoting remote and regional connectivity; GMR Delhi for best airport; SafeExpress for the best air cargo logistics; Yes Bank for best banker promoting tourism; Club One Air for the best luxury jet charter Frankfin for the best airhostess training institute; and SpiceJet for the Swift Turnaround airline company.

Others who spoke during the conference were Dr B.P. Sharma, Chairman and Managing Director, Pawan Hans Limited; Zhang Zhihong, Cultural Counsellor, China Embassy; Dr Srinivasan Dwarakanath, President, Airbus Division in India; Amber Dubey, Partner and Head, Aerospace and Defence, KPMG in India; Vinod Bahety, Senior President, Yes Bank; K. Narayana Rao, Chairman, ASSOCHAM National Council on Civil Aviation; and D.S. Rawat, Secretary General. SP

—By SP's Correspondent

PHOTOGRAPH: ASSOCHAM

"HISTORY IS WRITTEN BY the victors," declared Walter Benjamin. That is perhaps why we know more about the British and American military heroes of World War II than those from Germany or Japan. However, the vanquished Germans produced some of the finest military strategists, aviation technologists, fighter aces. Adolf Galland was one of their more remarkable personalities. He worked his way up the ladder as an ordinary pilot in the Luftwaffe, became an ace during the opening days of the War and was appointed commander of a combat squadron.

He rose to command the German Fighter Force by the age of 30 and continued there till the end of the War. He flew 705 combat missions and was decorated with the Knight's Cross of the Iron Cross with Oak Leaves, Swords and Diamonds – one of Nazi Germany's highest awards in recognition of extreme bravery or outstanding military leadership during World War II.

Adolf Galland was born on March 19, 1912, in Westerholt Germany. As a teenager, he took gliding lessons. Under the Treaty of Versailles, Germany was denied an air force, but gliders were permitted and many young German pilots began their flying career on gliders. In February 1932, Galland joined the aviation school of Germany's national airline, Lufthansa. His first flight was in an Albatros Al-101 trainer. His early flying career was affected adversely by a couple of serious accidents. In February 1934, he joined the new Luftwaffe and by April 1935 became a fighter pilot with the JG-2 'Richthofen' Wing. In October 1935, while practising aerobatics, he crashed a Focke-Wulf Fw 44 biplane and was in a coma for three days. He also suffered a damaged eye, fractured skull and broken nose. Unsurprisingly he was declared medically unfit for flying. However, the doctor's report was concealed and he continued flying. A year later, he crashed an Arado Ar 68 fighter which aggravated the injured eye. This time he memorised all the eye-test charts and cleared the medical test.

In 1937, Galland joined the German Condor Legion in Spain, sent to support the Spanish Nationalists under General Franco. He commanded a unit equipped with the Heinkel He-51 biplanes, which were used in the ground attack and close support roles. He distinguished himself, flying 280 combat sorties. Just before the outbreak of World War II, Galland was promoted to Captain and flew 87 missions during the first couple of weeks of combat in Poland.

Adolf Galland's tiffs with Hermann Göring, Commander-in-Chief of the Luftwaffe, started during the Battle of Britain. In July 1940, the Germans began by attacking coastal targets and British shipping, gradually venturing out towards airfields and communication centres. The RAF's Fighter Command offered stiff resistance, but came under enormous pressure as the Luftwaffe launched its main offensive on August 13, 1940. Then the British decided to take on the Luftwaffe directly and gradually gained the upper hand. On a visit to a forward airfield Göring, irritated by the Luftwaffe's failure to prevail, asked Galland sarcastically what more the German fighter pilots needed to win. The young ace rather cheekily replied, "Herr Reichsmarschall, a squadron of Spitfires!"

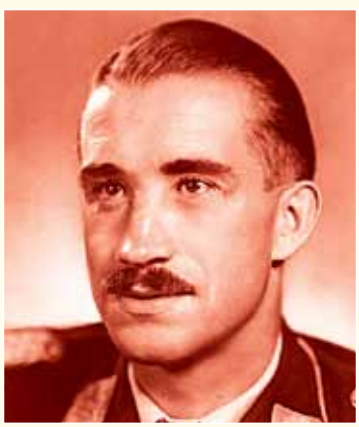
Galland continued to flirt with death and notch up victories during the intense aerial engagements of the War. On June 21, 1941, he was shot up by Spitfires and belly-landed in a field. Undeterred, he took off on another mission, but was shot up badly. Severely injured, with his aircraft on fire, he attempted to bail out, but the canopy was jammed shut. As the plane plunged towards earth, he struggled desperately, finally managing to free himself. His parachute opened just before he hit the ground.

In 1942, Galland was promoted to Major General and then Lt General soon after. He was just over 30 years old – the youngest general in the German forces. But his outspokenness and refusal to toe the party line when he felt Göring to be in error, eventually undermined his standing with the Nazi hierarchy. He emphasised the need for more fighters to counter the intense Allied bombing raids, but Adolf Hitler was intent on using his fighters as bombers and they were shot out of the skies. Hitler and Göring were always trying to find scapegoats for their own errors of judgement and as Germany began to face military reverses on all fronts, this tendency intensified. The fatherland came under severe bombardment even in broad daylight and the Luftwaffe fighter force, outnumbered and under relentless pressure, was unable to resist. Göring publicly denounced his own pilots as cowards. He accused Galland of not employing correct tactics, relieved him of command and placed him under house arrest.

Only Hitler's direct intervention saved Galland and he continued to fly combat missions as a Lt General, till he was shot down for the fourth and last time on April 26, 1945. By now, the end of the Third Reich was clearly inevitable. Galland was held in American military custody for two years and released in 1947. He went to Argentina and acted as a consultant to the Argentine Air Force for some time before returning to Germany.

Three Galland brothers had become fighter pilots and all three were aces. Adolf's youngest brother Paul scored 17 victories and was killed in combat in October 1942. Another younger brother Wilhelm-Ferdinand recorded 54 victories and was awarded the Knight's Cross before he was killed in August 1943. Adolf Galland himself was credited with 104 aerial victories. He lived to a ripe old age and died on February 9, 1996. SP

— Joseph Noronha



ADOLF GALLAND (1912-96)

Adolf Joseph Ferdinand Galland, a highly decorated fighter pilot in the Luftwaffe, was credited with 104 aerial victories and lived to a ripe old age of 84

MILITARY

ASIA-PACIFIC

INAUGURAL FLIGHT OF HAL'S BASIC TRAINER HTT-40

In a boost to 'Make in India', Defence Minister Manohar Parrikar on June 17 witnessed the inaugural flight of the indigenous HTT-40 basic trainer aircraft that has been developed by the Hindustan Aeronautics Limited (HAL). The Defence Minister also sat in the cockpit after the test flight. The aircraft, the prototype of which was rolled out in January, is aimed at being used for Stage I training of pilots for the three services.

CHINA'S AIRBORNE PSY WAR PLATFORM

The Chinese military has a new warplane which is capable of beaming propaganda and disinformation into hostile territory. The plane is the new, four-engine Y-8GX7 psychological operations plane, also known by its Chinese name, Gaoxin-7. It is analogous to the US Air Force's EC-130J, which it says "conducts military information support operations and civil affairs broadcasts in FM radio, television and military communications bands."

DEFENCE MINISTER VISITS VIETNAM

The Defence Minister Manohar Parrikar arrived in Hanoi on June 5, 2016, on an official visit to Vietnam. On arrival, the Defence Minister met the National Defence Minister of Vietnam, General Ngo Xuan Lich. During their meeting, both Ministers reviewed the entire spectrum of defence cooperation initiatives between the two countries and focused on measures to further strengthen their bilateral defence relations. Parrikar also called on the President of Vietnam Tran Dai Quang and Prime Minister Nguyen Xuan Phuc.

COMBAT FLEET OF THE INDIAN AIR FORCE

The crash of an ageing MiG-27 fighter jet of the IAF on June 14 has again cast a shadow on the decision to operate such obsolescent aircraft which are in service since the 1970s. As of now, the IAF has three MiG-27 squadrons and the IAF is at its lowest strength in a decade at just 33 squadrons against the mandated 42 to tackle a simultaneous two-front attack from Pakistan and China. The Soviet-era MiG-27 jets are slated to be phased out in batches from the IAF commencing in 2018.

AMERICAS

LASER-GUIDED ROCKETS ON F-16S

The US Air Force has acquired BAE Systems' Advanced Precision Kill Weapon System (APKWS) laser-guided rockets for use in ongoing operations in Iraq and Afghanistan. The Air Force fielded the initial units to fulfill an urgent operational need for F-16 and A-10 aircraft and it has already successfully used the weapon in combat operations. The deployment marks the first time these systems have been used in combat operations from an Air Force fixed-wing platform and comes on the heels of the US Marine Corps fielding the rockets on AV-8B fixed-wing aircraft.

US AIR FORCE KC-10 LOGISTICS CONTRACT

L-3 Communications has announced that its Vertex Aerospace division has been awarded a contract by the US Air Force to provide full contractor logistics support for the KC-10 aircraft. The total approximate value of this indefinite-delivery/indefinite-quantity contract is up to $1.9 billion over a nine-year performance period that begins with a July 2016 six-month phase-in. This includes Field Service Representative support for the Aerial Refuelling System for two Royal Netherlands Air Force KDC-10 aircraft. The contract includes all parts, materials and repairs to sustain the fleet.

PREDATOR C AVENGER

General Atomics Aeronautical Systems, Inc (GA-ASI) has announced the successful flight tests of Predator C Avenger, equipped with a MS-177 electro-optical/infrared sensor manufactured by UTC Aerospace Systems. MS-177, an advanced sensor in UTC's SYERS family of sensors, is a key component that provides Avenger with a long-range imaging capability. MS-177 is technically more advanced than the SYERS 2 flying on U-2 aircraft and also is

QUICKROUNDUP

AIRBUS HELICOPTERS

Airbus Helicopters has recently completed the first round of firing tests with HForce, a generic weapon system under development for the company's range of helicopters. The innovative system, which includes a central core unit, Thales' Scorpion monocular helmet mounted sight display, an electro-optical system from Wescam as well as gunner armament weapon grips and weapon pods, has been undergoing testing for the past five months.

AIRBUS SAFRAN LAUNCHERS

Airbus Safran Launchers has successfully finalised the first design phase for Ariane 6, for which the maiden flight is scheduled for 2020. This first design review, called 'Maturity Gate 5', enables Airbus Safran Launchers to confirm performance, schedule and operating costs.

BOEING

Boeing has been awarded a $667-million US Army contract to supply 24 AH-64E Apache helicopters to Qatar. The manufacturer is working with the US Army to accelerate the agreement of such a deal, which would cover the production of 275 aircraft – plus options to ramp up to 450 to support potential export deals – between then and financial year 2022.

BRAHMOS AEROSPACE

As many as five South East Asian nations are in talks to purchase the BrahMos supersonic anti-ship missile. News of the interest was reported by Reuters after seeing an undated note from the Indian Government to BrahMos Aerospace ordering the manufacturer to accelerate talks to sell the missile to Vietnam, Indonesia, South Africa, Chile and Brazil. The note also mentions 11 other countries in which to carry out further talks including Malaysia, Thailand and the Philippines.

DSCA

The US State Department has made a determination approving a possible sale under it's foreign military sales (FMS) programme to the Government of Iraq for AC-208 sustainment, logistics and spares support. The estimated cost is $181 million. The Defense Security Cooperation Agency delivered the required certification notifying Congress of this possible sale on June 14, 2016.

INDONESIA

The Indonesian Ambassador to Russia, Mohamad Wahid Supriyadi, has told Russian media that his country's talks with Moscow over the purchase of eight Su-35 multi-role fighters is drawing to a close. With the main negotiations over, the deal is now complete and the talks have now moved to discuss the matter of transfer of technology.

INDRA

Indra will equip Spanish A400M aircraft with its InShield infrared countermeasure system or Directional

QUICKROUNDUP

InfraRed Counter Measures (DIRCM), to protect the aircraft from surface-to-air missile attacks. The contract awarded by the Ministry of Defence for the characterisation and verification of the first unit is worth $4.6 million and will run until 2018. Deployment of the system will begin in 2017.

IRAN

Iran has reached a deal to buy 100 planes from Boeing and the two sides are awaiting approval by US Treasury authorities, the head of Iran's Civil Aviation Organisation said in remarks published by state media.

JAPAN AND THAILAND

Discussions are under way between Japan and the Government of Thailand for the purchase of Kawasaki P-1 maritime patrol aircraft and the ShinMaywa US-2 amphibious aircraft which could pave the way for both governments to become limited partners in defence.

LOCKHEED MARTIN

Lockheed Martin has announced that one of the company's test pilot's has made the first flight of the T-50A that is configured to compete in the US Air Force T-X competition. Equipped with a fifth-generation cockpit, the aircraft is billed as the only one being offered that meets all of the USAF's Advanced Pilot Trainer programme requirements.

PRATT & WHITNEY

Pratt & Whitney felicitated Irkut Corporation on officially rolling out its first MC-21 aircraft, in a ceremony at their manufacturing facility in Irkutsk, Russia. The MC-21 aircraft is powered by Pratt & Whitney's PW1400G-JM engine, the third certified PurePower Geared Turbofan engine.

SASTIND

The State Administration of Science, Technology and Industry for National Defense has announced on June 13 that China's first high orbit remote sensing satellite, Gaofen-4, went into operation after six months of in-orbit testing. Gaofen-4 is China's first geosynchronous orbit high-definition optical imaging satellite and the world's most sophisticated.

SRI LANKAN AIR FORCE

Plans of the Sri Lankan Air Force (SLAF) to purchase two refurbished C-130Ks from UK firm Marshall Aerospace, has raised some controversy over costs and previous history of the company. The former RAF aircraft were apparently sold to Marshall as scrap for $2.5 million each. A deal to modernise and resell the aircraft to the SLAF, however, is coming at a combined price tag of $35 million.

SIKORSKY

The global fleet of 275 Sikorsky S-92 helicopters recently surpassed one million flight hours, in an impressively short significantly more affordable to manufacture. The sensor is a 7-band multi-spectral system that can be upgraded to a 10-band system to enhance target detection for maritime applications. During trials, the system was able to collect high-resolution imagery of land-based and littoral objects at altitudes above 37,000 feet mean sea level. GA-ASI plans to begin flight testing of an improved Avenger in October 2016, which will further enhance the operational capabilities of the MS-177.

EUROPE

BAE'S COMBAT DRONE

BAE Systems has stated that it plans to employ the first combat drones fight alongside piloted aircraft rather than instead of them. Europe's largest defence company has modeled a battlefield scenario in which a super-stealthy successor to its current Taranis drone penetrates enemy lines and destroys key ground defences before calling in conventional strike aircraft. The simulation, made public this week, indicates that the drone BAE expects to emerge from a 10-year development programme with France would wield its own air-to-ground weapons; but leave the bulk of bomb and missile attacks to jets such as the Eurofighter Typhoon and Lockheed Martin's F-35.Unlike current military drones which are generally flown by ground-based 'pilots,' the new model would have the autonomy to reach its own operational decisions and would contact ground personnel only to initiate attacks.

INDUSTRY

ASIA-PACIFIC

SAAB OUTLINES GRIPEN NG PLAN FOR INDIA

Defence and security company Saab has outlined the Gripen NG concept for India. Saab recently unveiled in Linkoping the Gripen E, its first test aircraft of the next generation Gripen, and has comprehensive plans to further design, develop, manufacture and maintain the aircraft in India through transfer of technology. Gripen E is the variant of Gripen NG that has been selected by Sweden.

Saab has set out a comprehensive plan within India's 'Make in India' initiative, which will include transfer of state-of-the-art technology; setting up of an aerospace eco-system in India, including a manufacturing facility; creation of a local supplier base and employment of a well-trained Indian workforce in engineering and manufacturing. Saab's plan also includes a programme for training people to develop skills and knowledge that is critical to creating an aerospace eco-system.

Over previous versions of the Gripen, the recently unveiled Gripen E has a significantly improved avionics system. The capability to carry more weapons and the improved range performance is possible by a more powerful engine and the ability to carry more fuel. Gripen E is equipped with a highly integrated and sophisticated sensor suite including an Active Electronically Scanned Array (AESA) radar, Infra Red Search and Track (IRST), Electronic Warfare (EW) suite and data-link technology, which, when combined gives the pilot, and co-operating forces exactly the information needed at all times.

Gripen is, by design, a true multi-role fighter aircraft, capable of performing an extensive range of air-to-air, air-to-surface and reconnaissance missions under all conditions in any environment. Five nations currently operate Gripen: Sweden, South Africa, Czech Republic, Hungary and Thailand. Brazil has ordered Gripen and Gripen has also been down-selected in Slovakia. Besides that, Empire Test Pilots' School (ETPS) uses Gripen as platform for test pilot training.

SHOW CALENDAR

11–17 July
FARNBOROUGH AIRSHOW
FIVE, London, UK
www.farnborough.com

25–27 July
MILITARY HELICOPTERS 2016
Enterprise, Alabama, USA
www.militaryhelicoptersusa.com

25–31 July
EAA AIRVENTURE OSHKOSH
Wittman Regional Airport, Oshkosh, Wisconsin, USA
www.eaa.org/en/airventure

30 August–1 September
LABACE 2016
Av. Washington Luís, Sao Paulo, Brazil
www.abag.org.br/labace2016/eng

APPOINTMENTS

EMBRAER

The Brazilian aircraft manufacturer Embraer has announced the appointment of John Slattery as President and CEO of its Commercial Aviation business unit, effective July 1, 2016. The company has also announced that Paulo Cesar de Souza e Silva currently President and CEO Commercial Aviation will be the new Embraer CEO as of July 2016.

AIRASIA

On June 13, 2016, AirAsia appointed Kathleen Tan as President of North Asia responsible for building AirAsia's market in China, Hong Kong, Macau, Japan, Korea and Taiwan.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

The following leadership changes have been effected in IATA:

- Willie Walsh, CEO of International Airlines Group succeeds Andres Conesa, CEO of Aeromexico, as Chairman of the IATA Board of Governors.
- Effective September 1, 2016, Alexandre de Juniac, Chairman and CEO of Air France-KLM, will succeed Tony Tyler as IATA's Director General and CEO.
- Goh Choon Phong, CEO, Singapore Airlines, is to serve as Board Chair-elect for a one-year term from the close of 2016 AGM and to take office from June 2017 following Walsh's term

GULFSTREAM

Gulfstream Aerospace Corporation has named Mike West Sales Director, Metro New York, and Jeff Cole Sales Director, North-East US and Eastern Canada.

BOMBARDIER

Bombardier Commercial Aircraft has announced the following appointments effective immediately:

- Jean-Paul Boutibou as Vice President, Sales, Middle East & Africa.
- Christopher Jones as Vice President, Sales, North America.
- Kevin Smith as Vice President, Regional Aircraft.

BOEING

Effective July 1, 2016, Boeing Company has announced the appointment of John Bruns as President of Boeing, China, based in Beijing.

QUICKROUNDUP

time of less than 12 years. Sikorsky is now a Lockheed Martin company.

Sikorsky and the Government of the Republic of Turkey together have contracted under the Turkish Utility Helicopter Programme to produce the T-70 utility helicopter. The contract will allow Turkey to build and deliver 109 T-70 helicopters over the next 10 years starting from as early as 2021.

US

The US has changed its relationship status with India to 'major defense partners,' following a new series of agreements including on national security. The announcement comes after a meeting between President Obama and Prime Minister Narendra Modi on June 7, 2016. Under India's 'Make in India' initiative and the expansion of the co-production and co-development of technologies under the Defence Technology and Trade Initiative (DTTI), the two nations are starting DTTI working groups to include agreed items covering naval, air and other weapon systems.

US NAVY

Leonardo-Finmeccanica's new Osprey X-band active electronically scanned array radar has been selected by the US Navy for mounting on its MQ-8C VTOL unmanned aerial vehicle. This makes it possible for the MQ-8C to function with an airborne early-warning capability while operating on small ships.

PILATUS DELIVERS 1,400TH PC-12 AND ACHIEVES MAJOR FLIGHT TIME MILESTONE

Pilatus Aircraft Ltd has delivered its 1,400th PC-12 and achieved a significant flight time milestone for the NG (next-generation) fleet. Just over a year since celebrating the delivery of its 1,300th PC-12, Pilatus marked the delivery of the 1,400th aircraft. The new 2016 PC-12 NG, serial number 1612, was delivered to a customer in the south-western United States.

An additional milestone was achieved by the fleet of 630 PC-12 NG models, the latest version of the PC-12, which surpassed the 1 million flight hour mark since its introduction in 2008. The worldwide fleet of all PC-12 aircraft has accumulated more than 5.6 million total flight hours since certification.

Debuting at last year's National Business Aviation Association Conference and Exhibition, the 2016 model PC-12 NG incorporates a number of significant enhancements, including a five-blade composite propeller, aerodynamic drag reduction features, a 285-knot cruise speed, avionics feature upgrades, and new interior and exterior design choices.

"This is an exciting milestone for everyone at Pilatus, our customers, and our global sales and service network," said Ignaz Gretener, Vice President of Pilatus' General Aviation business unit.

"While much attention has recently been focused on the exciting new PC-24 Super Versatile Jet, the PC-12 is still the backbone of our general aviation business. We continue to invest in the PC-12 NG, and in our global support network, to ensure it remains the best-selling turbine-powered business aircraft, backed by outstanding customer service."

REGULATE BUT DON'T KILL

THE DIRECTORATE GENERAL OF Civil Aviation (DGCA) has recently issued draft regulations for private operations of unmanned aerial vehicles (UAVs). Initially, UAVs were employed only in military roles; but over the years, these platforms are being increasingly used for a wide range of non-military tasks. These include survey, crop spraying, preparation of maps, inspection of pipelines and railway tracks, commercial photography, maintenance of law and order, media coverage, film shooting, delivery of medical assistance to accident victims, etc. In the United States, e-commerce giant Amazon is contemplating employment of UAVs for delivery of products. With rapid advances in technology combined with human ingenuity, employment of UAVs will not only increase; but will become even more diverse covering every aspect of life. In India there are over two dozen companies engaged in the manufacture of UAVs with a large number of associated entities supporting the industry by way of products and services. Over four million small UAVs were sold worldwide last year.

While the proliferation of UAVs appears to be inevitable and is gathering pace, the risk to manned civil and military air traffic is also growing as both types of platforms operate in the same airspace. At the global level, the International Air Transport Association (IATA) has classified operation of unregulated UAVs as a serious hazard to air safety and has called for a greater stakeholder engagement to address this issue urgently. Apart from the conflict with manned air traffic, there is also the threat to national security as UAVs can easily be employed for espionage by the adversaries or even to target and eliminate national leaders. In March last year, a UAV was detected crossing the perimeter wall of the White House in Washington. Similarly, in April last year, a UAV carrying traces of radioactive material was found on the roof the residence of the Prime Minister of Japan.

There is no doubt that it has become necessary to regulate the operation of UAVs in controlled as well as uncontrolled airspace. The draft regulations issued by the DGCA in the recent past is the first and long overdue step by the Indian civil aviation regulatory authority to legalise the ownership of UAVs as well as to lay down a regulatory framework to govern the employment of these platforms. India, however, is not the first nation to introduce mechanisms to regulate UAVs; but it is better late than never.

However, effective implementation of the regulatory provisions for operation of UAVs in the civil domain is not going to be an easy task as there will be impediments and a host of practical difficulties. To begin with, there is a dichotomy of views between the Ministries of Civil Aviation and Defence over the agency that should be responsible for neutralising an unauthorised UAV flying in remote areas of the North and the North East, for example. Also, the draft regulations stipulate that the operator of a UAV will be required to file a flight plan with the air traffic control (ATC) and obtain clearance before undertaking the flight. Given the fact that the ATCs especially at the metro and other major airports are already overburdened with regular civil flight operations, it is doubtful whether they will be able to handle the substantially enhanced workload and effectively monitor operations by civilian UAVs without significant increase in manpower and technology upgrade.

The draft regulations lay down a height of 200 feet from the ground above which clearance by the ATC would be mandatory even while operating in uncontrolled airspace. Freedom to operate below 200 feet without clearance is unlikely to be of much help to UAV operators as the airspace below 200 feet is infested with obstructions such as skyscrapers and communication towers. Besides, operating below 200 feet will severely limit the range for visual contact with the platform.

The draft rules also require UAV operators to obtain clearance from a number of other agencies such as the local police, Department of Telecommunications and in some cases by the local administration. Security clearance must also be obtained from the Bureau of Civil Aviation Security. The permits will have to be acquired at least 90 days in advance of actual operations and will require renewal every two years with clearances from the Ministry of Home Affairs. But perhaps the most serious impediment will be the inability of the regulatory authority to enforce the regulatory provisions primarily on account of the poor state of manning of the regulatory body.

Unless the regulatory provisions for operation of UAVs in the civil domain are made uncomplicated, user-friendly and easily implementable, there will be little or no scope for this potentially high-growth segment of the Indian aerospace industry to exploit its full potential. SP

—By Air Marshal B.K. Pandey (Retd)

Effective implementation of the regulatory provisions for operation of UAVs in the civil domain is not going to be an easy task

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